Offset Management Plan (EPBC 2019/8389)

Frasers Property New Beith, Queensland
(Little Kipper Creek Road Offset Area)

Prepared for Frasers Property New Beith Pty Ltd by Saunders Havill Group

19 March 2026

KOALA FARMLANDFUND

FRASERS PROPERTY

Document Information

Additional Offset Management Plan (EPBC 2019/8389) prepared for KFF1 Pty Ltd ATF KFF1 Sub Trust as the offset provider for Frasers Property New Beith Pty Ltd, 19 March 2026.

Issue

Issue	Date	Prepared By	Checked By
A v1	19.11.2024	TC	AD / KM
A v2	28.11.2024	TC	AD / KM
A v3	21.07.2025	TC	AD / JG
A v4	07/08/2025	TC	AD / JG
A v5	18/08/2025	TC / JC	AD
A v6	11/11/2025	TC	AD
A v7	18/11/2025	JC	AD
A v8	28/11/2025	TC	AD
A v9	24/02/2025	TC	AD
A v10	03/03/2026	TC	AD
A v11	19/03/2026	TC	AD

Executive Summary

Frasers Property New Beith Pty Ltd are the Proponent for 'Residential Development, Lot 4 RP45728, New Beith, Qld' (EPBC 2019/8389, the proposed action). The proposed action requires offsets to acquit significant residual impacts on Matters of National Environmental Significance (MNES). This offset is proposed in addition to separate offsets also under assessment by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for the project.

The purpose of this Offset Management Plan (OMP) 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);
- *Pteropus poliocephalus* (grey-headed flying-fox);
- *Petauroides volans* (greater glider);
- *Lathamus discolor* (swift parrot); and
- *Anthochaera phrygia* (regent honeyeater).

Habitat quality relative to the impact and offset area were quantified utilising the respective Modified Habitat Quality Assessment (MHQA) methods for koala and greater glider, features assessment for greater glider, swift parrot and regent and honeyeater, and grey-headed flying-fox Foraging Habitat Assessment (FHA) method in addition to other baseline surveys including preliminary motion-triggered camera monitoring and foraging and habitat tree plotting. Baseline habitat quality metrics and scores for the offset area were established and they form the basis for proposed increases to be achieved as part of the offset delivery. These are summarised in **Table ES1** below.

Seven 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
7. Hollow Monitoring and Management

Interim milestone targets have been created for proposed environmental outcomes for each MNES to provide an indication of the relative success of management measures (refer **Appendix A**). A monitoring and reporting schedule has been prepared to assist in achieving these outcomes (refer **Table 9**). Additionally, an adaptive management framework and corrective action triggers are proposed whereby it is demonstrated that management measures are not effective in achieving results (refer **Table 57**).

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

- **5.84%** of the required offset for koala
- **16.80%** for grey-headed flying-fox
- **12.41% and 20.62%** for greater glider area and features (hollows), respectively
- **13.24%** for swift parrot features (foraging trees)
- **13.24%** for regent honeyeater features (foraging trees)

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

AU	Area /Features	Koala Habitat Quality Score		GHFF Habitat Quality Score		Greater Glider Habitat Quality Score		Swift Parrot Site Feature Score		Regent Honeyeater Site Feature Score	
		Baseline	Future	Baseline	Future	Baseline	Future	Baseline	Future	Baseline	Future
1	78.26	6	7	5	8	4	6	[redacted]			
	Features	NA	NA	NA	NA	24	117				
2	6.73	5	7	4	8	4	6				
	Features	NA	NA	NA	NA	0	10	493	2,397	448	1,481

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Acronyms

ACR	Annual Compliance Report
ATF	As Trustee For
AU	Assessment Unit
BPA	Biodiversity Planning Assessment
DAWE	Department of Agriculture, Water and Environment (Commonwealth, former)
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEHP	Department of Heritage and Protection (Qld, former)
DNRME	Department of Natural Resources, Mines and Energy (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	*Environment Protection and Biodiversity Conservation Act 1999*
FHA	Foraging Habitat Assessment
FMU	Fire Management Unit
GER	Great Eastern Ranges
GFPDA	Greater Flagstone Priority Development Area
GPS	Global Positioning System
GHFF	Grey-headed Flying-fox
ha	hectare
KFF	Koala Farmland Fund
km	kilometres
LGA	Local Government Area
m	metre
MHQA	Modified Habitat Quality Assessment
mm	millimetres
MNES	Matters of National Environmental Significance
NIR	Near Infrared
NJKHT	Non-juvenile Koala Habitat Tree
OAAR	Offset Area Assessment Report
OAG	Offset Assessment Guide
Offset Area	The proposed offset area
OFHAG	Overall Fuel Hazard Assessment Guide
OMP	Offset Management Plan
OMU	Operational Management Unit
PMAV	Property Map of Assessable Vegetation
RAI	Relative Abundance Index
RE	Regional Ecosystem
Referral Area	The area subject of the EPBC Act referral
SAT	Spot Assessment Technique
SEQ	South East Queensland
SEQERF	Southeast Queensland Ecological Restoration Framework
SHG	Saunders Havill Group
SPRAT	Species Profile and Threats Database

SRC	Sommerset Regional Council
SSR	Species Stocking Rate
The Guideline	Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy Version 1.2 April 2017
The Proponent	Frasers Property New Beith Pty Ltd
VDEC	Voluntary Declaration
WONS	Weeds of National Significance

Definitions

Year 1 of the offset – The 12-month period following legal securement of the offset area or as defined in the approval conditions

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

Full name

Position

Organisation

Date

Offset Provider Consent

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

Signed

Full name

Position

Organisation

Date

1 Introduction

KFF1 Pty Ltd ATF KFF 1 Sub Trust are the Offset Provider for Frasers Development New Beith Pty Ltd (the Proponent) and Saunders Havill Group (SHG) have prepared an Offset Management Plan (OMP) to acquit significant residual impacts on Matters of National Environmental Significance (MNES) resulting from the project 'Residential Development, Lot 4 RP45728, New Beith, Qld' (EPBC 2019/8389). This offset is proposed in addition to a separate offset already under assessment by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for the project.

On the 4th April 2019 a referral under the EPBC Act was made to the then Commonwealth Department of Agriculture, Water and the Environment (DAWE) for a controlled action assessment. On the 8th October 2019 this application was deemed a Controlled Action requiring assessment by "Preliminary Documentation" (refer Attachment A1).

The Controlled Action decision was based on the determination of potential impacts on the following Matters of National Environmental Significance (MNES):

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

The referral area (refer EPBC 2019/8389 referral Plan 1) is considered to provide critical habitat for the survival of the koala and potential foraging habitat for the grey-headed flying-fox. The referral area also contains critical habitat for the greater glider, swift parrot and regent honeyeater. As such, the significant residual impact expected includes:

- Koala: Loss of 187.09 hectares of habitat critical to the survival of the koala.
- Grey-headed flying-fox: Loss of 187.09 ha of potential foraging habitat.
- Greater glider: Loss of 246.8 ha of potential foraging habitat and 360 hollow features.
- Swift parrot: Loss of 2,894 key foraging tree features.
- Regent honeyeater: Loss of 1,570 key foraging tree features.

MHQA score of 6.27 (rounded to 6) for the koala, FHA Score of 6.01 (rounded to 6) for the grey-headed flying-fox (GHFF) and greater glider MHQA score of 4.06 (rounded to 4). The quantum impact for each species is therefore listed as:

- Koala: 112.25 hectares
- Grey-headed flying-fox: 112.25 hectares
- Greater glider: 98.72 hectares

1.1 Purpose of the Management Plan

The purpose of this OMP is to provide the objectives of the plan, key commitments including milestones and measurables (performance targets) and completion criteria to compensate for significant residual impacts on *Phascolarctos cinereus* (koala), *Pteropus poliocephalus* (grey-headed flying-fox), *Petauroides volans* (greater glider), *Lathamus discolor* (swift parrot) and *Anthochaera phrygia* (regent honeyeater). 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.

1.2 Report Structure

This OMP contains the following sections:

- Section 2: Roles and Responsibilities
- Section 3: Environmental Outcomes
- Section 4: Monitoring and Reporting Schedule
- Section 5: Overview of 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 – Offset Area Milestone Framework
    - Appendix B – Features OAG Reference Tables
    - Appendix C – EPBC Information Request 2019/8389
    - Appendix D – Offset Assessment Guide Calculator Results
    - 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 – Offset area – greater glider MHQA baseline scoring
    - Appendix I – Hollow Monitoring and Management Plan
    - Appendix J – Risk Assessment

2 Roles and Responsibilities

The successful implementation of this OMP 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	Belinda Ryan	Frasers Development New Beith Pty Ltd	belinda.ryan@fraserspropery.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 OMP identifies outcomes focused management actions pursuant to the EPBC Act, for the provision of koala (*Phascolarctos cinereus*), grey-headed flying-fox (*Pteropus poliocephalus*), greater glider (*Petauroides volans*), swift parrot (*Lathamus discolor*) and regent honeyeater (*Anthochaera phrygia*) habitat offset (target MNES). 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 target MNES.
- Provide a direct offset that is in proportion to the level of statutory protection that applies to the target MNES.
- Be of a size and scale proportionate to the residual impacts on the target MNES.
- 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 **Appendix A**.

Table 2: Koala baseline MHQA and offset improvement scores

MHQA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	AU2 – Uplift
Site condition (/3)	1.88	2.70	1.31	2.70
Site context (/3)	2.20	2.36	2.20	2.36
Species stocking rate (/4)	2.29	2.29	1.14	2.29
AU score	**6.36**	**7.34**	**4.64**	**7.34**
Rounded	**6**	**7**	**5**	**7**
Assessment Unit Area (ha)	78.26		6.37	

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 **Appendix A**.

Table 3: GHFF baseline FHA and offset improvement scores

GHFF FHA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	AU2 – Uplift
Site condition (/4)	1.89	4.00	1.49	4.00
Site context (/3)	1.75	2.00	1.75	2.00
Species stocking rate (/3)	1.20	1.80	1.20	1.80
AU score	**4.84**	**7.80**	**4.44**	**7.80**
Rounded	**5**	**8**	**4**	**8**
Assessment Unit Area (ha)	78.26		6.37	

3.3 Greater Glider

A summary of the baseline and improvement scoring for each assessment unit within the offset area is outlined in **Table 4**. Detailed environmental outcomes showing the specific attributes which are improved by the offset actions including interim milestones are provided at **Appendix A**.

Table 4: Greater glider MHQA and offset improvement scores

GG MHQA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	AU2 – Uplift
Site condition (/3)	1.21	2.85	0.92	2.85
Site context (/3)	2.04	2.79	2.04	2.79
Species stocking rate (/4)	0.57	0.57	0.57	0.57
AU score	**3.81**	**6.21**	**3.53**	**6.21**
Rounded	**4**	**6**	**4**	**6**
Assessment Unit Area (ha)	78.26		6.37	
Features (hollows)	20	117	0	10

3.4 Swift Parrot

The intent for the features based uplift for swift parrot is to deliver at least 130% of the offset requirement across all three offset sites to allow a buffer of 30% for planting losses, which is well above the acceptable margin of 10% losses under the South East Queensland Ecological Restoration Framework. **Table 5** summarises the number of plantings required at the offset site to achieve this goal.

Table 5: Swift parrot features summary

Impacted Features	Required Offset*	EMZ Areas** - Little Kipper (ha)	EMZ Areas – All Sites (ha)	Little Kipper Area Proportion	Offset Count – Little Kipper
2,894	18,707	84.5	830.34	0.10	1,904

*OAG required features to achieve 100% offset requirements plus 30% margin
**Refer Plan 16

In essence, from **Table 5** at least 1,904 *Eucalyptus tereticornis* and *Corymbia citriodora* need to be planted at the Little Kipper offset site to achieve 130% of the OAG requirements for features factoring in all offset sites (refer **Appendix B** for OAG features reference showing 14,390 features achieves 100.05% of the offset requirement).

Further analysis shows that, when the offset site is broken into Environmental Management Zones (EMZs) for rehabilitation (refer **Plan 16** and **Section 9.7** for further details), 84.5 ha of the offset site is suitable for restoration works including plantings. Review of the Regional Ecosystem technical descriptions across EMZs suggests that on average 3% of plantings will be *Eucalyptus tereticornis* and 10% of plantings will be *Corymbia citriodora* in EMZ1, and 5% of plantings will be *E. tereticornis* in EMZ2. If we assume for the purpose of this analysis that for EMZ1 and EMZ2 sparse regrowth trees can be planted at a density of 1/50m^2 as per the South East Queensland Ecological Restoration Framework, then it is anticipated an estimated 2,096 *E. tereticornis* and *C. citriodora* could be planted at the offset site to achieve expected tree species richness and relative abundance as per the Regional Ecosystem technical descriptions (refer **Table 6**).

Table 6: Swift parrot potential offset site tree planting rates analysis

EMZ	Area (ha)	Status	Planting Rate	Total Plantings	Average Cover		Combined Proportion	EMZ Count	Total Count
					E. tereticornis	C. citriodora			
1	78.16	Sparse Regrowth	1/50 m^2	15,632	0.03	0.10	0.13	2,032	2,096
2	6.34	Sparse Regrowth	1/50 m^2	1,268	0.05	0	0.05	63	

In summary, ecological restoration of the offset site targeting rehabilitation and re-establishment of inherent Regional Ecosystems will ably allow for the required number of offset plantings as set out in **Table 5** (at least 1,904).

3.5 Regent Honeyeater

The intent for the features based uplift for regent honeyeater is to deliver at least 130% of the offset requirement across all three offset sites to allow a buffer of 30% for planting losses, which is well above the acceptable margin of 10% losses under the South East Queensland Ecological Restoration Framework. **Table 7** summarises the number of plantings required at the offset site to achieve this goal.

Table 7: Regent honeyeater features summary

Impacted Features	Required Offset*	EMZ Areas** - Little Kipper (ha)	EMZ Areas – All Sites (ha)	Little Kipper Area Proportion	Offset Count – Little Kipper
1,570	10,147	84.5	830.34	0.10	1,033

*OAG required features to achieve 100% offset requirements plus 30% margin
**Refer Plan 16

In essence, from **Table 7** at least 1,033 *Corymbia citriodora* need to be planted at the Little Kipper offset site to achieve 130% of the OAG requirements for features factoring in all offset sites (refer **Appendix B** for OAG features reference showing 7,805 features achieves 100.03% of the offset requirement).

Further analysis shows that, when the offset site is broken into EMZs for rehabilitation (**Plan 16** and refer also **Section 9.7** for further details), 84.5 ha of the offset site is suitable for restoration works including plantings. Review of the Regional Ecosystem technical descriptions across EMZs suggests that on average 10% of plantings in EMZ1 will be *Corymbia citriodora*. If we again assume for the purpose of this analysis that for EMZ1 sparse regrowth trees can be planted at a density of 1/50m^2 as per the South East Queensland Ecological Restoration Framework, then it is anticipated an estimated 1,563 *C. citriodora* could be planted at the offset site to achieve expected tree species richness and relative abundance as per the Regional Ecosystem technical descriptions (refer **Table 8**).

Table 8: Regent honeyeater potential offset site tree planting rates analysis

EMZ	Area (ha)	Status	Planting Rate	Total Plantings	Average Cover C. citriodora	Total Count
1	78.16	Sparse Regrowth	1/50 m^2	15,632	0.10	1,563

In summary, ecological restoration of the offset site targeting rehabilitation and re-establishment of inherent Regional Ecosystems will ably allow for the required number of offset plantings as set out in **Table 7** (at least 1,033).

3.6 Offset Assessment Guide – Calculator

Table 9 outlines a summary of the MNES offset compensation associated with the impacts The offset compensation for the impacts on MNES is derived from the EPBC Offset Assessment Guide (OAG) calculator and habitat quality gains achieved from the successful implementation of the management actions.

Refer to **Appendix D** for the detailed EPBC offset calculator sheets.

Table 9: Summary of MNES offset compensation

	Impact Site			Offset Area				
	Impact Area / Features	**Impact Score**	**Quantum Impact (QI) Area**	**Habitat Quality Gain**	**Offset Area (ha)**	**% of Impact Offset**		**Total % of Impact Offset**
Koala	187.09 ha	6/10	112.25 QI ha	**AU1** 6/10 to 8/10	78.26	5.02 %		**5.84 %**
				AU2 5/10 to 8/10	6.37	0.82 %		
Grey-headed flying-fox	187.09 ha	6/10	112.25 QI ha	**AU1** 5/10 to 8/10	78.26	15.07 %		**16.80 %**
				AU2 4/10 to 8/10	6.37	1.73 %		
Greater glider	246.8 ha	4/10	98.72 QI ha	**AU1** 4/10 to 6/10	78.26	11.43 %		**12.41 %**
				AU2 4/10 to 6/10	6.37	0.98 %		
	360	NA	NA	**AU1** 93	NA	18.62 %		**20.62 %**
				AU2 10	NA	2.00 %		
Swift Parrot	2,894	NA	NA	2,397	NA	13.24 %		**13.24 %**
Regent Honeyeater	1,570	NA	NA	1,481	NA	13.24 %		**13.24 %**

3.6.1 Completion Criteria

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

A summary of the management actions and their completion criteria required to achieve the environmental outcomes are provided in **Table 10.** The management actions will result in a net gain of the overall habitat quality for the MNES over the period of effect of the offset through active management, maintenance, monitoring and reporting.

This OMP includes completion criteria and performance targets that evidence protection or improvement of koala 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.

Refer to **Appendix A** for species specific milestone frameworks. Here the intended goals for each assessment period have been provided at 5-yearly intervals (Years 5, 10, 15 and 20) for each of the MHQA and FHA criteria, including justification for scoring uplift framed around specific management actions, milestone reporting and adaptive management criteria. It is understood these tables are typically incorporated into the EPBC Act approval.

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 10: Completion Criteria and Performance Targets

Management Action	OMP Section	Performance Targets	Completion criteria
Management Action 1 – Legally Secure Offset Area	9.3	Not applicable	• The offset area is legally secured for conservation via a suitable method such as a covenant or the Voluntary Declaration (VDEC) process administered under the Queensland *Vegetation Management Action 1999* or a covenant under the *Land Act 1994* or *Land Titles Act 1994*. • The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP *i.e.,* the date from which the offset area is legally secured. • The offset area is not used for other purposes – site access is restricted.
Management Action 2 – Non-native Vertebrate Pest Management	9.4	• Development and implementation of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) to be utilised, will be completed within Year 1 of the offset. • Pests are managed within the offset area for the life of the offset.	• No recorded injury or death of MNES from non-native predator attacks within the offset area. • Non-native vertebrate pests and evidence of pests are managed within the offset area.
Management Action 3 – Management of Weeds of National Significance	9.5	• Establish an offset area specific Weed Management Plan in Year 1 of the offset. • Establish photo monitoring locations as part of the Weed Management Plan in Year 1 prior to treatment of weeds commencing.	• The management actions must reduce the extent of or maintain WONS below 5% cover by the end of Year 5 and be maintained for the life of the offset (20 years).

Management Action	OMP Section	Performance Targets	Completion criteria
		• All WONS will receive initial treatment from Year 1 of the offset to allow for planting works to commence. • Follow-up treatment of WONS will occur annually or as needed, determined by the suitably qualified regeneration contractor.	
Management Action 4 – Bushfire Management Plan	9.6	• A Bushfire Management Plan (BMP) will be developed and implemented in accordance with relevant Queensland guidelines and endorsed by an experienced bushfire practitioner to reduce potential threats from fires to MNES.	• Mitigate risk of high intensity fires in the offset area. • Mitigate risk of MNES 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	• Offset area planting completed by the end of Year 2 of the offset.	• Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland's VMA successor legislation by year 20 which requires 70% of canopy height and 50% of expected cover according to the relevant Regional Ecosystem benchmark to be reached. • Site condition metrics for MNES improves in accordance with environmental outcomes (refer **Tables 9 to 18**).
Management Action 6 – Fencing and Signage	9.8	• Fencing and signage is installed and retrofitted by the end of Year 1 of the offset and maintained for the life of the offset (20 years).	• Mitigate risk of mortalities or injury to MNES recorded as a result of barbed-wire fencing. • Mitigate risk of stock breaches or unauthorised access
Management Action 7 – Hollow Monitoring and Management Plan	9.9	• Hollows are mapped and monitored and new hollows created as per the Hollow Monitoring and Management Plan to be implemented in Year 1. • A target of 1.5 hollows per hectare are created.	• Foraging habitat is established. • 1.5 hollows per hectare are created.

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 11**. 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 MNES.

Table 11: 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 *Vegetation Management Act 1999* or a covenant under the *Land Act 1994* or *Land Titles Act 1994* prior to impacts occurring.	The Department will be notified that the offset area has been secured with timing as conditioned. Evidence in the form of the shapefiles and confirmation of declaration from the Queensland Department of Resources will be provided with the notification. Details will be included in the Annual Compliance Report (ACR).	The Offset Provider will manage the VDEC/Covenant process. The Proponent will report to the Department on confirmation and for ACRs
2. Pest management	Monitoring is to occur before the end of Years 5, 10, 15 and 20 and will include a repeat of offset area specific baseline survey methodologies to be completed in Year 1 (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 (OAAR, refer Section 9.10) is to be completed annually within one (1) month of the end of each offset year detailing pest management implementation. 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. Weeds management	Photo monitoring is to be completed annually 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. Baseline weed mapping specific to the offset area to be completed as part of the Weed Management Plan compiled in Year 1. 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.	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. 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 weed management contractor as appointed by the Offset Provider. Suitably qualified person as appointed by the Proponent.
4. Bushfire Management Plan	Annual monitoring requirements to review access tracks, fire breaks, seasonal fuel loads and outcomes of controlled burns or other management in accordance with Bushfire Management Plan.	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.	Offset Provider and suitably qualified bushfire management contractor as appointed by the Offset Provider.
5. Habitat creation and regeneration	Photo monitoring is to be completed annually 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.	An Offset Area Assessment Report is to be completed annually within one (1) month of the end of each offset year with input from the suitably qualified bush regeneration contractor to document: • Planting/seedling events, • Watering schedule,	Offset Provider and suitably qualified bush regeneration contractor as appointed by the Offset Provider.

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
	Reconstruction areas subject to infill planting will be subject to annual monitoring after the completion of planting works until establishment is reached. The monitoring timing is dependent on the planting cycle of the engaged bush regeneration contractor. Monitoring to occur regularly after initial planting in accordance with watering schedules.	• Implemented corrective actions, • Success/failure rates within initial maintenance period/watering period until establishment. • Certificate of practical completion of planting works - typically three years; • Certificate/sign off that establishment has been reached - typically three years but depends upon the need for corrective actions. OAARs will be included in the ACR.	
	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.	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.	Suitably qualified person as appointed by the Proponent.
6. Fencing and signage	Status of fencing and signage and any issues requiring rectification are identified through regular site inspections to be determined by the Offset Provider.	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.	Offset Provider
7. Hollow Monitoring and Management	Hollow Monitoring and Management Plan to be implemented, audit of existing hollows to be undertaken and then ongoing monitoring continued.	An Offset Area Annual Report is to be completed annually within one (1) month of the end of each offset year including reporting from the Hollow Monitoring and Management Plan, which is to be implemented in Year 1. Audit of existing hollows to be completed at Years 1, 5, 10, 15 and 20 will be included in the ACRs. Hollows and nest boxes to	Hollow Monitoring and Management Plan to be implemented by the Proponent in Year 1. Proponent and suitably qualified Arborist/Contractor as

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
		be installed in suitable host trees targeting 1.5 hollows per hectare.	appointed by the Proponent to implement.

Monitoring Summary

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

5 Overview of Impact Area

5.1 Project and site

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

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

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

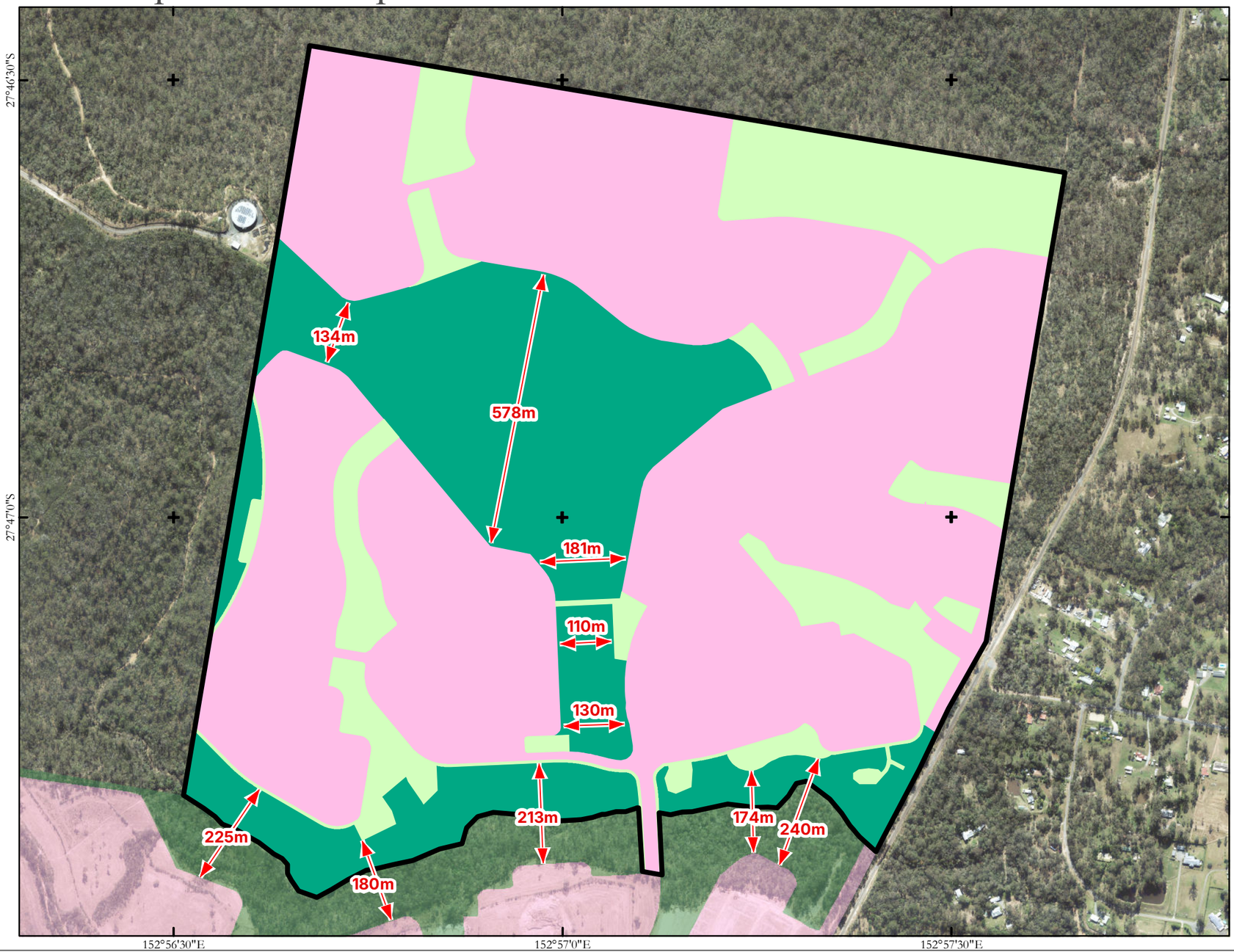
The referral area includes the development of approximately 147.47 ha, 37.39 ha for open space and parks and retention of 61.94 ha of vegetation for open space and conservation. As the proposed action will result in the clearing of vegetation identified as critical habitat for the koala, foraging habitat for the grey-headed flying-fox, potential habitat for the greater glider and potential foraging habitat for the swift parrot and regent honeyeater, an offset will be delivered in accordance with the EPBC Act Environmental Offsets Policy 2012.

Table 12 provides details on the impact area.

Table 12: Details of referral area

Address	Round Mountain, New Beith
Referral area	Refer to Plan 1 and Plan 2

1. Impact Site Development Footprint



Legend

- Qld DCDB
- Impact Area
- Development Zone [147.5 ha]
- Future open space (functionally lost) [39.6 ha]
- Vegetation Retention Zone [59.7 ha]
- Vegetation Retention Zone Widths

Adjoining Development

- Development zone
- Open space & vegetation retention zones

1:9,500

0 50 100 150 200 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

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

Date: 3/03/2026

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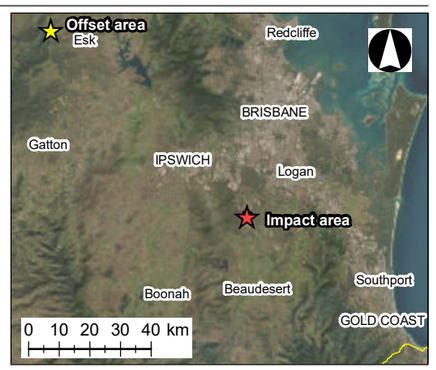


5.2 Summary of matters requiring offset

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

- Koala: Loss of 187.09 hectares of habitat critical to the survival of the koala.
- Grey-headed flying-fox: Loss of 187.09 ha of potential foraging habitat.
- Greater glider: Loss of 246.8 ha of potential foraging habitat and 360 hollow features.
- Swift parrot: Loss of 2,894 large tree features.
- Regent honeyeater: Loss of 1,570 large tree features.

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

5.2.1 Vegetation communities impacted

The referral area has been subject to a Property Map of Assessable Vegetation (PMAV) assessment which involved ground-truthing Regional Ecosystems (REs). The PMAV was certified by the then Department of Natural Resources, Mines and Energy (DNRME) (PMAV 2018/001365. The PMAV shows the site is mapped as Category B (remnant) vegetation encompassing the western portion. The remainder of the referral area is comprised of Category X (non-remnant). Category B vegetation is described in **Table 13** and consists of Of Concern and Least Concern REs, with portions of the Of Concern vegetation mapped as essential habitat for the Koala. Essential habitat mapping for the Koala occurs within the Of Concern composite RE's 12.3.11/12.3.7, RE 12.9-10.2/12.9-10.7, and the RE 12.9-10.3.

Table 13: Ground-truthed regional ecosystem present within impact area

Status	Regional Ecosystem	Description
Of Concern	RE 12.9-10.3	*Eucalyptus moluccana* open forest. Other canopy species include *Eucalyptus siderophloia* or *E. crebra, E. tereticornis and Corymbia citriodora subsp. variegata.* Understory generally sparse but can become shrubby in absence of fire. Occurs on Cainozoic and Mesozoic sediments, especially shales. Prefers lower slopes. (BVG1M: 13d).
Of Concern	RE 12.9-10.7	*Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia* woodland. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 13c).
Of Concern	RE 12.3.11	*Eucalyptus tereticornis +/- E. siderophloia and Corymbia intermedia* open forest to woodland. *Corymbia tessellaris, Lophostemon suaveolens and Melaleuca* quinquenervia frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include *Angophora leiocarpa, E. exserta, E. grandis, C. trachyphloia, C. citriodora subsp. variegata, E. latisinensis, E. tindaliae, E. racemosa and Melaleuca sieberi. E. seeana* may be present south of Landsborough and Livistona decora may occur in scattered patches or low densities in the Glenbar SF and Wongi SF areas. Occurs on

Status	Regional Ecosystem	Description
		Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c).
Least Concern	RE 12.3.7	Narrow fringing woodland of *Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca viminalis.* Other species associated with this RE include *Melaleuca bracteata, M. trichostachya, M. linariifolia.* North of Brisbane *Waterhousea floribunda* commonly occurs and may at times dominate this RE. *Melaleuca fluviatilis* occurs in this RE in the north of the bioregion. *Lomandra hystrix* often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. (BVG1M: 16a).
Least Concern	RE 12.9-10.2	*Corymbia citriodora subsp. variegata* open forest or woodland usually with *Eucalyptus crebra.* Other species such as *Eucalyptus tereticornis, E. moluccana, E. acmenoides* and *E. siderophloia* may be present in scattered patches or in low densities. Understory can be grassy or shrubby. Shrubby understory of *Lophostemon confertus* (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 10b).

5.3 Habitat quality scoring methods

5.3.1 Koala – Modified Habitat Quality Assessment Methodology

The quantum and quality of habitat for the koala within the impact area was assessed using a modified version of the Queensland State Governments *Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* Version 1.2 April 2017 (herein referred to as the '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 SSR under the MHQA.

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

5.3.1.1 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. The two Koala habitat index attributes are based on the balance site condition attributes where their score is utilised as follows; <27/80 scores 1, between 27/80 and 54/80 scores 5 and above 54/80 scores 10.

Site condition within the impact area was assessed by delineating the impact area into assessment units (AUs) as required by the Queensland environmental offsets framework. The impact area was delineated into one (1) AU based on ground-truthed VMA regional ecosystem mapping. This is summarised in **Table 14** 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 AU. The locations of MHQA transects within the impact area are provided on **Plan 2**. Transect sites and AUs are detailed in **Table 14**.

Table 14: Summary of assessment units and MHQA transects – impact area

Assessment unit	Vegetation community	Area (ha)	MHQA transect
AU1	Remnant RE12.3.11/12.3.7	14.42 ha	Transects 15 and 16
AU2	Remnant RE12.9-10.2	110.08 ha	Transects 4, 5, 7 and 10
AU3	Remnant RE12.9-10.7	3.37 ha	Transects 8 and 9
AU4	Remnant RE12.9-10.3	3.51 ha	Transects 11 and 14
AU5	Remnant RE12.9-10.2/12.9-10.7	8.06 ha	Transects 2 and 3
AU6	Non-remnant RE12.9-10.2	107.36 ha	Transects 1, 6, 12 and 13

5.3.1.2 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 – Connectedness 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 Guideline 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 The Guideline.

5.3.1.3 Species Stocking Rate (40%)

The MHQA incorporates SSR 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 SSR scoring methodology has been derived through the collation of site-specific surveys and surrounding contextual habitat analysis. **Table 15** outlines the attributes utilised to assess SSR.

Table 15: Species Stocking Rate Scoring

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

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

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.

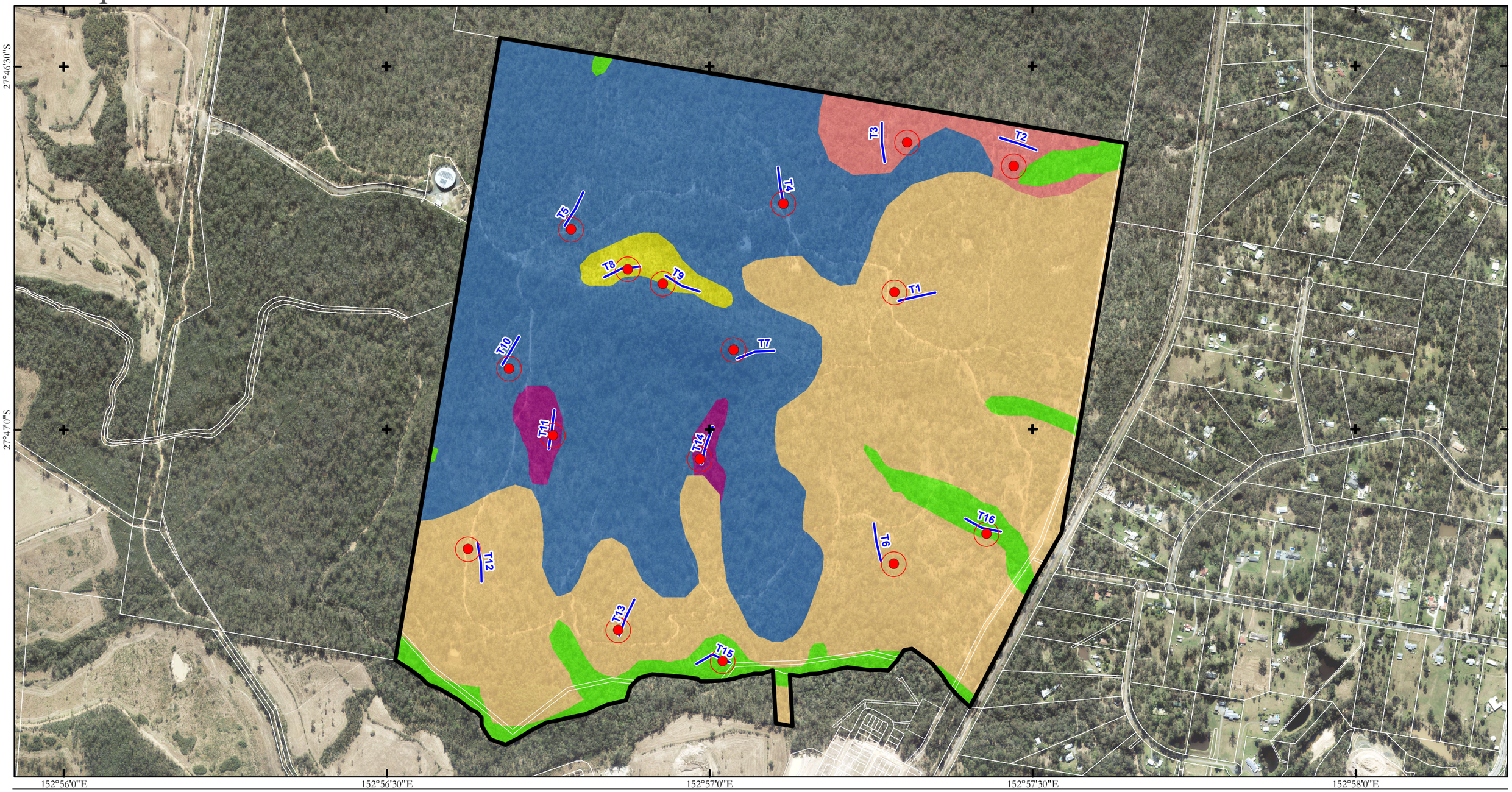
SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table (Philips & Callaghan 2011). These categories being 'East Coast (low)', 'East Coast (med-high)' and 'Western (med-high)' are shown in **Table 16** and are used to estimate koala activity within a given area. Depending on the population category applied, koala activity is described as 'low', 'moderate', or 'high'. Population categories are assigned as follows:

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

Table 16: 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. Impact Area Assessment Units



Legend

Impact Area

Qld DCDB

Vegetation Assessment Units

AU-1 [14.42 ha]
RE 12.3.11/12.3.7

AU-2 [110.08 ha]
RE 12.9-10.2

AU-3 [3.37 ha]
RE 12.9-10.7

AU-4 [3.51 ha]
RE 12.9-10.3

AU-5 [8.06 ha]
RE 12.9-10.2/12.9-10.7

AU-6 [107.36 ha]
Non-remnant vegetation

Koala Use SAT Surveys

Modified habitat quality transect

1:9,500

0 50 100 150 200 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

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

Date: 3/3/2026

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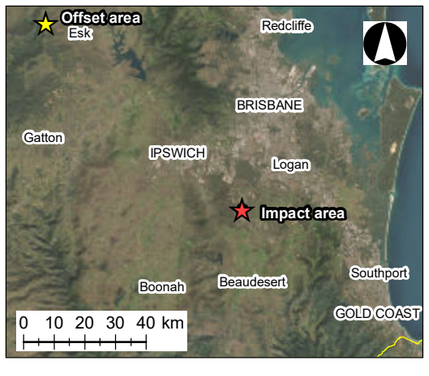


5.3.2 Koala Discussion

The referral area was given an overall weighted habitat quality score of 6.27 out of the total of 10 (rounded to a 6) which is considered a low to moderate habitat quality score. This score is calculated based on the combined weighted habitat quality scores for each assessment unit. The impact for Koala applies this overall weighted habitat quality score (6/10) to the referral area (excluding the vegetation retention zone).

5.3.2.1 Site Condition (30%)

Remnant habitat (AU1-5) makes up the majority of the referral area, however, non-remnant vegetation (AU6) makes up almost half of the referral area resulting in a weight of 0.50 in the final MHQA assessment. Site condition characteristics were relatively stable across the impact site scoring between 1.68 and 2.28.

As discussed, the Site Condition scores are used to determine the scores for Quality and Availability of Food and Foraging Habitat, and Quality and Availability of Shelter. For all Assessment Units except AU2, each of these values were scored a 5 out of 5, while AU2 achieved a score of 10 out of 10 for each of the values.

Although the proposed action will result in the loss of habitat critical to the survival of the Koala, a significant portion of the referral area and vegetation will be retained for conservation and biodiversity corridors. The existing environmental constraints have been considered throughout the masterplanning and design of the proposed action which has sought to retain areas of greatest environmental value, including Round Mountain, Flagstone Creek and a central corridor connecting these areas. Additionally, although considered potentially functionally lost for the Koala, other open space areas strategically located along existing waterways and drainage features will provide stepping-stones and immediate refuge for wildlife within an urban environment.

5.3.2.2 Site Context (30%)

Each assessment unit achieved the same scores for Site Context with a score of 2.04 out of 3. A score of zero (0) was given to the Ecological Corridors component of Site Context, as the referral area is located 1.5 km east of the nearest corridor.

5.3.2.3 Size of patch

This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of critical Koala habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS and determined the referral area to be part of a patch size of >10,000 ha due to the connection to the Flinders-Karawatha Bioregional Corridor to the west. This component was assigned a score of 10 out of 10.

5.3.2.4 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 90%, and consequently this attribute scored a 5 out of 5 as per the Queensland BioCondition Assessment methodology.

5.3.2.5 Context

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

Retained critical Koala habitat within a 1 km buffer of the site was calculated at 61%, and therefore the context attribute achieved a score of 4 out of 5 as per the Queensland BioCondition Assessment methodology.

5.3.2.6 Ecological Corridors

A score of zero was given to the Ecological Corridors component of Site Context. The State mapping indicates the SEQ Regional Corridor is located approximately 1.5 km west of the site therefore is not considered to function as a biodiversity corridor.

5.3.2.7 Role of site location to species overall population in the State

This attribute aims to quantify the geographical importance of the referral area for Koala populations across the broader State. This attribute achieved a score of 5 out of 5 as the then DAWE determined that the referral area contains habitat critical to the survival of this species and received a score of 8 out of 10 against the KHAT.

5.3.2.8 Threats to the species

The 'threats to the species' attribute quantifies potential risks to the survival of Koala existing within and adjacent to the referral area. Key known threats to the survival of the Koala include proximity to linear infrastructure (road and rail) increasing the risk of mortality and injuries, as well as predation by wild or domestic dogs. The site is within 1,500 m of major roads and rail, so warrants a threat score of 1. Wild dogs were also captured on camera within the referral area on numerous occasions during field surveys. Regardless, this attribute was scored a 7 out of 15 to be conservative.

5.3.2.9 Species mobility capacity

Species mobility capacity is used to quantify the ability of the species to move from the site and through the surrounding landscape to meet survival needs. Species mobility capacity is considered particularly important in response to rapid changes to the surrounding environment, such as the commencement of land clearing. Grey-headed Flying-fox and avi-fauna for example are considered highly mobile species due to their ability to fly quickly and over land barriers such as highly frequented roads or residential developments. Conversely, the Koala is considered a relatively immobile species due to it being a ground-dwelling species, moving relatively slowly and hence its vulnerability to threats on ground as outlined above.

In this instance, the species mobility capacity for the Koala on site was assigned the score of 7out of 10 due to the presence of the Brisbane-Sydney Interstate Railway line to the east and Flagstone City development to the south. Additionally, currently vegetation properties to the west and north are approved for development and will limit connectivity in the future. Although the connected habitat exceeds 10,000 ha, the site is not considered to be conducive for future Koala movement due to fragmentation by significant barriers within and surrounding the site, including Lantana infestation.

5.3.2.10 Species Stocking Rate (40%)

The final component of the MHQA technique is SSR. Species stocking rates are estimates of the Koala carrying capacity of the site at the time of undertaking the survey. Table A12 and A13 outline the attributes utilised to assess species stocking rate. Species stocking rate scores were calculated for each assessment unit due to the differing attributes of the vegetation and Koala presence based on detailed surveys.

A species stocking rate score of 40 out of 70 was attributed to all assessment units, which equates to a weighted SSR score of 2.29 out of 4. For each assessment unit, a score of 10 was attributed to 'presence detected on or adjacent to the site' due to the sighting of a Koala on site and the detection of scats. For AU1-AU3, SAT surveys did not detect Koala scats, therefore, these were considered suitable for dispersal only, however, DCCEEW attests that the assessment units are similar in canopy structure therefore the species stocking rate should be the

same for all assessment units, despite empirical evidence to the contrary. As such, all assessment units were scored 15 for breeding habitat and a score of 10 for 'approximate density (per ha)' as SAT surveys indicated low presence according to the east coast (med-high) category as per Phillips and Callaghan, 2011. A score of 5 was attributed to the 'role/importance of species population on site' as the south-east Queensland Koala population is considered a key source population.

To summarise, the proposed action is considered to only impact on lot to moderate quality Koala habitat and not the species or an important population, having a total weighted impact of 6.27 out of 10 (rounded to a 6, refer **Table 17**). Substantial avoidance, management and mitigation measures are considered to result in a reduced impact on Koala habitat in the context of the Greater Flagstone Priority Development Area (GFPDA).

Table 17: Impact area – Koala MHQA results

MHQA Final Weighting	AU 1	AU 2	AU 3	AU 4	AU 5	AU 6
Site Condition (/3)	1.68	2.28	1.85	1.82	1.89	1.71
Site Context (/3)	2.04	2.04	2.04	2.04	2.04	2.04
Species Stocking Rate (/4)	2.29	2.29	2.29	2.29	2.29	2.29
Assessment Unit Area (Impact) (ha)	7.46	76.82	0.00	2.21	8.06	92.54
Total Impact Area (ha)	187.09	187.09	187.09	187.09	187.09	187.09
Size Weighting	0.04	0.411	0.00	0.01	0.04	0.59
AU Weighted Score	0.24	2.71	0.00	0.07	0.27	2.98
Total Weighted Score	**6.27**					

5.3.3 Grey-headed flying-fox – Foraging Habitat Assessment Tool

The impact area has been assessed using a GHFF Foraging Habitat Assessment (GHFF FHA) tool developed by 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.

5.3.3.1 Site Condition (40%)

Assessing site condition is an integral step in determining specific quantification of impacts, while also determining whether an offset property is suitable to establish a desired capacity to support the prescribed environmental matters being offset. 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 14**.

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 18**.
- 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 19**.

- 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 20**.
- 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 GHFFs 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 21.**
- 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 GHFFs 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 22**.
- 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 23**.

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.

5.3.3.2 Site Context (30%)

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

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

- Threats to the species.

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 24**.
- 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 25.**
- 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 26.**
- 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 27.**
- Threats to species – This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site. Refer to **Table 28**.
- 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 29.**

5.3.3.3 Species Stocking Rate (30%)

The GHFF FHA incorporates SSR as an attribute not discussed under the traditional terrestrial habitat assessment methodology. As discussed above, SSR 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 30** for benchmark scoring values for species stocking rate.

5.3.4 Grey-headed Flying-fox Discussion

Refer to **Table 31** for a summary of the impact site GHFF FHA results.

Table 18: GHFF FHA Vegetation Condition Scoring

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

Table 19: 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 20: 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 21: 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 22: 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 23: 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 24: 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 25: 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 26: 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 27: 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 28: GHFF FHA Threats to Species Scoring

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

Table 29: GHFF FHA Role of Site Location to Species Overall Population 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 30: GHFF Species Stocking Rate Scoring

Score	RE12.3.11	RE12.9-10.2	RE12.9-10.3
2	0-106	0-30	0-35
4	107-458	31-130	36-152
6	459-776	131-220	153-257
8	777-828	221-235	258-274
10	829-864	236-245	275-286
8	865-916	246-260	287-303
6	917-1234	261-350	304-408
4	1235-1586	351-450	409-525
2	>1586	>450	>525

Table 31: Impact area grey-headed flying-fox – FHA assessment summary

MHQA Final Weighting - GHFF	AU 1	AU 2	AU 4	AU 5	AU 6
Site Condition (/4)	2.40	2.51	2.40	2.40	1.89
Site Context (/3)	2.05	2.05	2.05	2.05	2.05
Species Stocking Rate (/3)	1.20	1.80	1.20	1.80	1.80
Assessment Unit Area (Impact) (ha)	7.46	76.82	2.21	8.06	92.54
Total Impact Area (ha)	187.09	187.09	187.09	187.09	187.09
Size Weighting	0.040	0.411	0.012	0.043	0.495
AU Weighted Score	0.23	2.61	0.07	0.27	2.84
Total Weighted Score	**6.01**				

5.3.5 Greater Glider – Modified Habitat Quality Assessment Methodology

All trees over 300 mm Diameter at Breast Height (DBH) were plotted throughout the impact area with a handheld GPS device (Trimble) to record locations (accuracy ±1 m), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree measured using the standard method of Diameter at Breast Height (DBH);
- height of the tree estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

The entire tree trunk and branches are visually surveyed from ground for habitat values including hollows. The spread of trees over 300 mm DBH was mapped to indicate foraging habitat for the species as per the conservation advice. Hollow bearing trees were plotted across the entire site as part of earlier assessments for this species.

Notably, retained corridors that were not tree plotted for trees over 300 mm DBH are considered functionally lost to the Greater Glider due to their susceptibility to disturbance that will arise as a result of the action. The proportion of foliage cover in impact portions of each assessment unit were therefore attributed to retained conservation areas to estimate total foraging habitat potentially impacted.

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

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

For the spatial analysis, the modified habitat quality assessment (MHQA) combines the three (3) key indicators from the Queensland State Government guide into two (2) (site condition and site context) with each being weighted 30% of the final score. The balance of the weighting, 40%, has been attributed to the third indicator (species stocking rate), that is independent of the Queensland State Government habitat quality assessment. The species stocking rate has been added to the MHQA to better incorporate MNES, and specifically the endangered Greater Glider. The following subsections detail the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

The features based assessment to cater for Greater Glider denning and breeding habitat relies on hollow counts plus an error margin of 20% for field surveys based on relevant literature.

5.3.5.1 Site Condition (30%)

The site condition assessment under the MHQA is assessed using 15 condition characteristics being:
recruitment of woody perennial species in EDL;

- native plant species richness – trees;
- native plant species richness – shrubs;

- native plant species richness – grasses;
- native plant species richness – forbs;
- tree canopy height;
- sub-canopy cover;
- tree canopy cover;
- native grass cover;
- organic litter;
- large trees;
- coarse woody debris;
- non-native plant cover;
- quality and availability of food and foraging habitat; and
- quality and availability of shelters.

Assessment of the above condition characteristics do not differ from the traditional habitat quality assessment. Scoring tables for the site condition attributes follows the scoring tables within the BioCondition manual (refer above). In developing the MHQA to better incorporate MNES, two (2) species habitat index characteristics, being, (1) quality and availability of food and foraging habitat, and (2) quality and availability of shelters have been added to the site condition indicator. The two habitat index attributes are based on the site condition attributes that relate to the presence of canopy and hollows, where food and foraging habitat is scored as a proportion against the T1 canopy cover benchmark where <33% of the benchmark scores 1, 33% to 66% scores 5, and >66% scores 10, and shelter habitat is scored based on hollow counts per hectare plus an error margin of 20% based on relevant literature relative to conservation advice expectations, where <1 hollow estimate per ha scores 1, 1 to 2 hollows per ha scores 5, and greater than 2 hollows per ha scores 10. Refer Plan A14 for hollow counts per AU.

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

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

5.3.5.2 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 State mapped ecological corridors. Under the MHQA, site context is measured using the following seven characteristics:

- size of patch (refer Plan A15);
- connectedness (refer Plan A15)
- context (refer Plan A15)
- State mapped ecological corridors (refer Plan A15);

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

Unlike the traditional habitat quality assessment methodology where site connectedness is assessed against the surrounding remnant vegetation only, the MHQA site connectedness is assessed against the surrounding MNES habitat, in this instance, Greater Glider habitat as per Eyre et al. 2022.

Assessment methodology for site context assessment for Greater Glider is outlined below:

1. Patch size – The calculation of the area of the patch size uses the method outlined in the Biocondition assessment manual v2.2 that considers the patch to be areas connected by corridors greater than 200 m wide within a 1 km radius of the site. This methodology includes use of a “segmentation” process that removes areas connected to the assessment area by narrow corridors.
2. Connectedness – Connectedness relates to the capacity that the species have to disperse through the landscape. The attribute is calculated using GIS by measuring the length of habitat that is along the boundary of the site.
3. Context – The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. The attribute is measure of the percentage of habitat within a 1 km buffer of the site.
4. State mapped ecological corridors – This attribute is as per the methods of the Guide to determining terrestrial habitat quality V1.2 and is used to determine if a site is located within or shares a boundary with an ecological corridor that facilitates long term ecosystem function by connecting large patches of remnant vegetation with sufficient tract size (corridor width in relation to the fragmentation of the landscape) (EHP 2014). These corridors support the habitat of MNES by providing opportunity for long term dispersal of habitat species following landscape level changes in climate. Although the ecological corridors allow for the dispersal of MNES themselves, this is not their primary function when assessing the attribute. The ecological corridors have been mapped by the Queensland State Government under the ‘CORR_TYPE’ attribute table. The mapping can also be viewed on Queensland Globe in the ‘Statewide Biodiversity Corridors’ layer.
5. Role of site location to species overall population in the state – This attribute is based on the observed role of the site in relation to the overall population of the species. The scoring table considers the species’ use of the site – such as whether it is used for feeding and/or nesting and the effect that damage to or removal of the site would have to the likelihood of the species’ overall population survival.
6. Threats to species – Threats to Greater Glider are predominantly habitat loss, feral predator attack, barbed wire and uncontrolled bushfire. Threats are scored as per the relevant State guideline.
7. Species mobility capacity – This attribute is a measure of the presence and severity of factors that would contribute to a reduction in mobility of Greater Glider and is scored on the presence of roads or cleared areas.

In developing the MHQA, three (3) species habitat index characteristics were nominated — role of site location to overall species population in the state, threats to the species and species mobility capacity.
Species Stocking Rate (40%)

5.3.5.3 Species Stocking Rate (40%)

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

Species stocking rate is calculated using the following parameters:

- Species presence on or adjacent to the assessment unit – evidence of Greater Glider on or adjacent to the assessment unit.
- Species usage (habitat type and evidenced usage) – evidence of Greater Glider usage of the assessment unit.
- Approximate density of the species – evidence of Greater Glider records in the assessment unit.
- Role/importance of species population on site – considers whether the site is a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range.

5.3.6 Greater Glider Discussion

The Greater Glider was not recorded on site despite multiple targeted surveys, including additional detailed work carried out by a third party Greater Glider expert. Additionally, there have been no records of the Greater Glider within 5 km of the impact site within the last 20 years. Pre 2000 records occur within 5 km of the impact site. There are multiple records between 5 and 20 km from the site within the last 5 years, especially to the east.

Despite the relatively poor quality of site habitat, historical logging and absence of records for the species, all Assessment Units with potential to support site hollows were applied as potential habitat impacted for the species on site. Of note all historical pastoral fences surrounding and spanning the entire site contain barbed wire strands that are a physical threat to dispersing Greater Glider.

Of note, the impact site maintains Greater Glider foraging habitat potentially lost due to the action that totals 246.8 ha.

AU1 to AU 6 scored 68.84%, 63.40%, 101.25%, 66.70%, 50.23% and 23.20% for canopy coverage against the benchmark, therefore scoring 10, 5, 10, 10, 5 and 1 for quality and availability of food and foraging habitat. Based on hollow counts, the Assessment Units scored 5, 5, 1, 10, 10, 5 for quality and availability of shelter habitat, respectively.

Given the relative canopy cover in all layers and stages of growth, but presence of relatively high disturbance and proximity to residences, threats and species mobility for these were scored moderate at 7.

The final component of the MHQA technique is species stocking rate. Species stocking rates are estimates of the Greater Glider carrying capacity of each assessment unit at the time of undertaking the survey. A species stocking rate score of 10 out of 70 was attributed to all assessment units. This was largely attributed to the fact that evidence of Greater Glider does not occur onsite nor in the vicinity given their inability to disperse long distances.

Taking into account the Site Condition, Site Context and SSR scores, the impact site spatial MHQA scores a 4 (4.06) out of 10 for potential Greater Glider habitat.

The impact site maintains a total of 300 hollows representing denning and breeding habitat (or shelter) that, taking into consideration the 20% error margin, suggests a total of 360 hollow features will potentially be lost to the species.

Refer **Table 32** for s summary of the impact site greater glider MHQA results.

Table 32: Impact area greater glider MHQA results summary

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

5.3.7 Swift Parrot – Features-based Assessment Methodology

All key foraging species were plotted throughout the impact area with a handheld GPS device (Trimble) to record locations (accuracy ±1 m), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree measured using the standard method of DBH;
- height of the tree estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

Foraging species over 300 mm DBH are considered suitable to provide preferred foraging habitat for the life of the approval, in this case *Eucalyptus tereticornis* and *Corymbia citriodora*.

5.3.8 Swift Parrot Discussion

The Swift Parrot was not recorded on site despite targeted surveys. There have been no records of the Swift Parrot within 5 km of the impact site. There are limited records between 5 and 20 km from the site to the north of the subject site. A total of 2,894 key foraging trees for the swift parrot will be removed under the proposal (refer **Table 33**).

Table 33: Impact site swift parrot summary

Key Foraging Species	Count Impacted
Corymbia citriodora	1,570
Eucalyptus tereticornis	1,324
Total	2,894

5.3.9 Regent Honeyeater – Features-based Assessment Methodology

All key foraging species were plotted throughout the impact area with a handheld GPS device (Trimble) to record locations (accuracy ±1 m), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree measured using the standard method of DBH;
- height of the tree estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

Foraging species over 300 mm DBH are considered suitable to provide preferred foraging habitat for the life of the approval, in this case *Corymbia citriodora*.

5.3.10 Regent Honeyeater Discussion

The regent honeyeater was not recorded on site despite targeted surveys. There are two records for the regent honeyeater within 5 km of the impact site. There are limited records between 5 and 20 km from the site to the north and west of the subject site. A total of 1,570 key foraging trees for the regent honeyeater will be removed under the proposal (refer **Table 34**).

Table 34: Impact site regent honeyeater MHQA results

Key Foraging Species	Count Impacted
Corymbia citriodora	1,570
Total	1,570

6 Overview of Offset Area

6.1 Offset property description and tenure

The Little Kipper Creek Road Offset area (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, Lot 272 on CA311095, Lot 271 on CA311037 and Lot 11 on CA31764. The offset area is located approximately 86 km north-west of the impact area (refer **Plan 3**).

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 35**.

Table 35: Offset area summary

Address	Little Kipper Creek Road, Biarra, Queensland, 4313
Lot / Plan	Parts of Lot 273 on CA311588, Lot 272 on CA311095, Lot 271 on CA311037 and Lot 11 on CA31764
Area	84.99 ha
Tenure	Freehold
Local Government Area	Somerset Regional Council

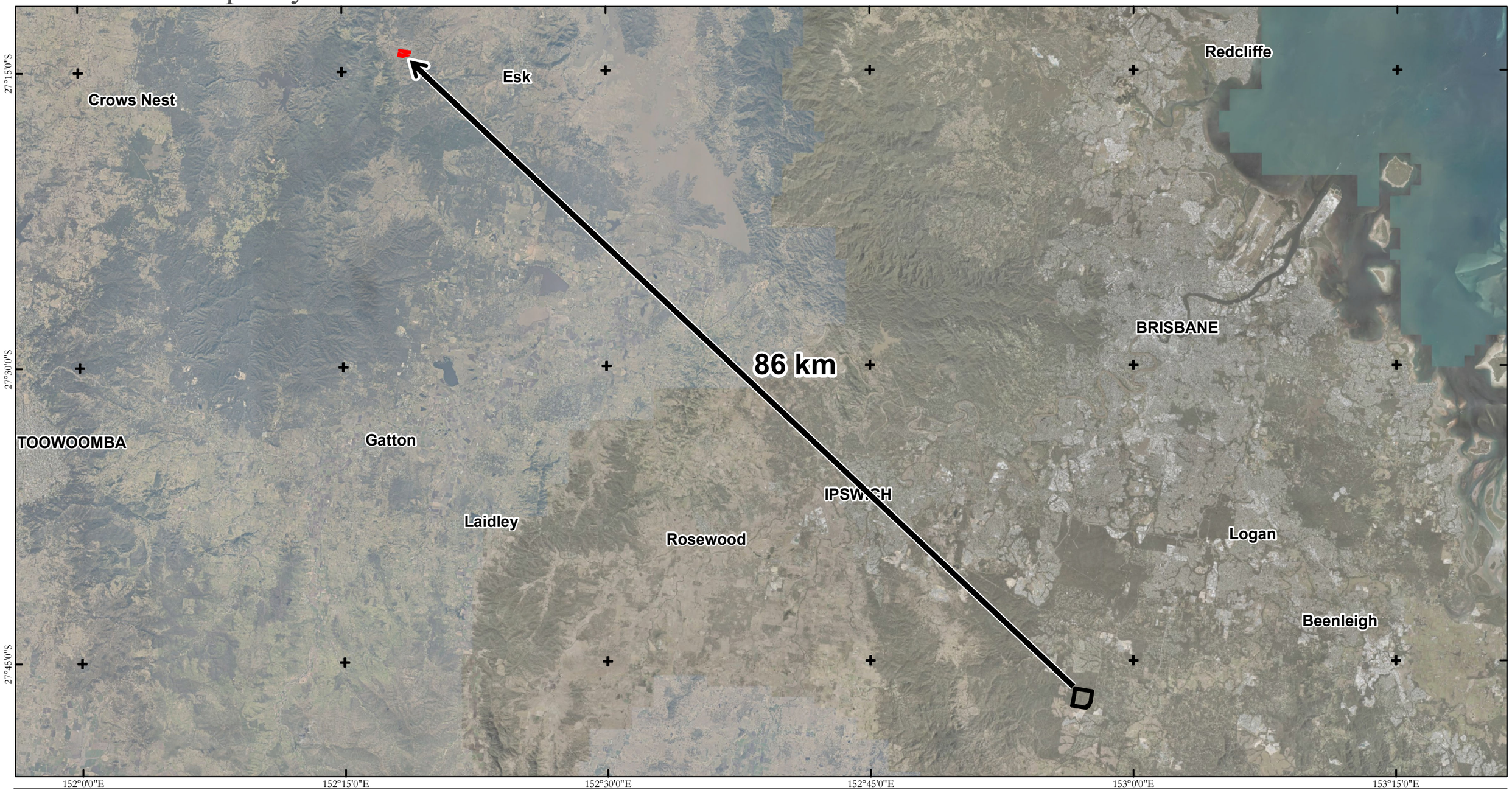
The offset area (refer **Plan 4** forms part of the broader Little Kipper Creek Road Offset Property, which totals to approximately 821.4 hectares). The offset area currently contains two (2) different vegetation communities, including non-remnant vegetation under the VMA.

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 5**).

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. In addition, the location of the offset area within a regional biodiversity corridor and adjacent sub-bioregions as the impact area ensures the land will continue to provide habitat and fauna connectivity within the greater landscape. The closest conservation area and mapped Category A vegetation is located approximately 16 km north of the offset. However, 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, whether it is a Voluntary Declaration under the *Vegetation Management Act 1999* and/or a covenant either under the *Land Act 1994* or *Land Titles Act 1994*, which will provide protection for the duration of the impact. An assessment of the suitability of the offset area is provided in **Section 7**.

3. Offset Property Context Plan



Legend

- Impact Area
- Offset Area

1:350,000

0 1 2 4 6 km

N W E S

Cordinate System: GDA2020 MGA Zone 56

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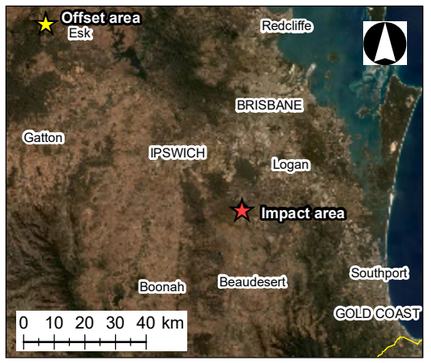
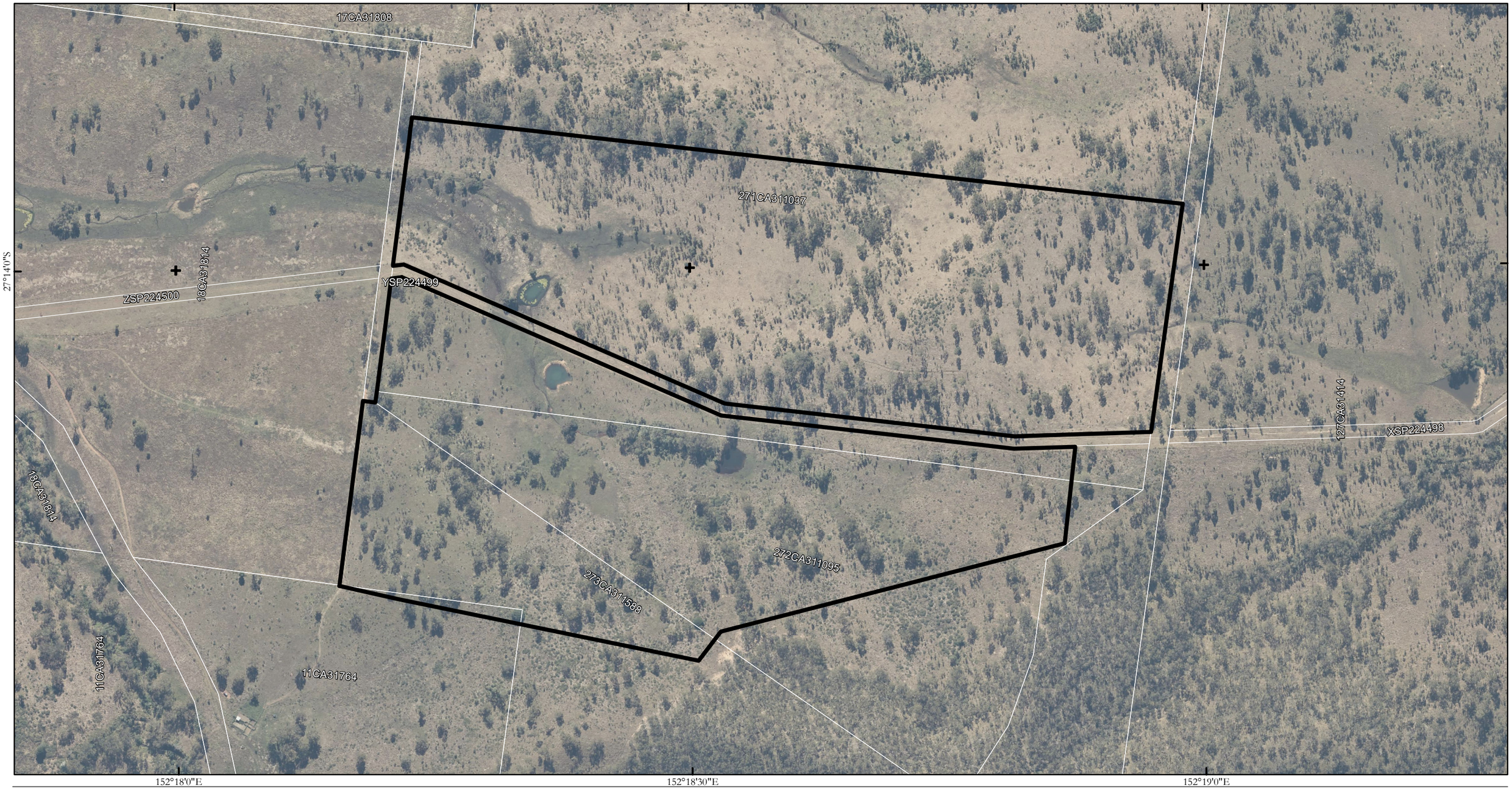
9383 E 03 OMP2 Offset Property Context Plan E



4. Offset Area Aerial



Legend

- Offset Area
- Qld DCDB

1:6,000

0 50 100 150 m

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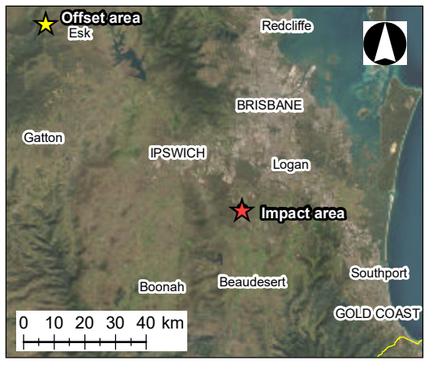
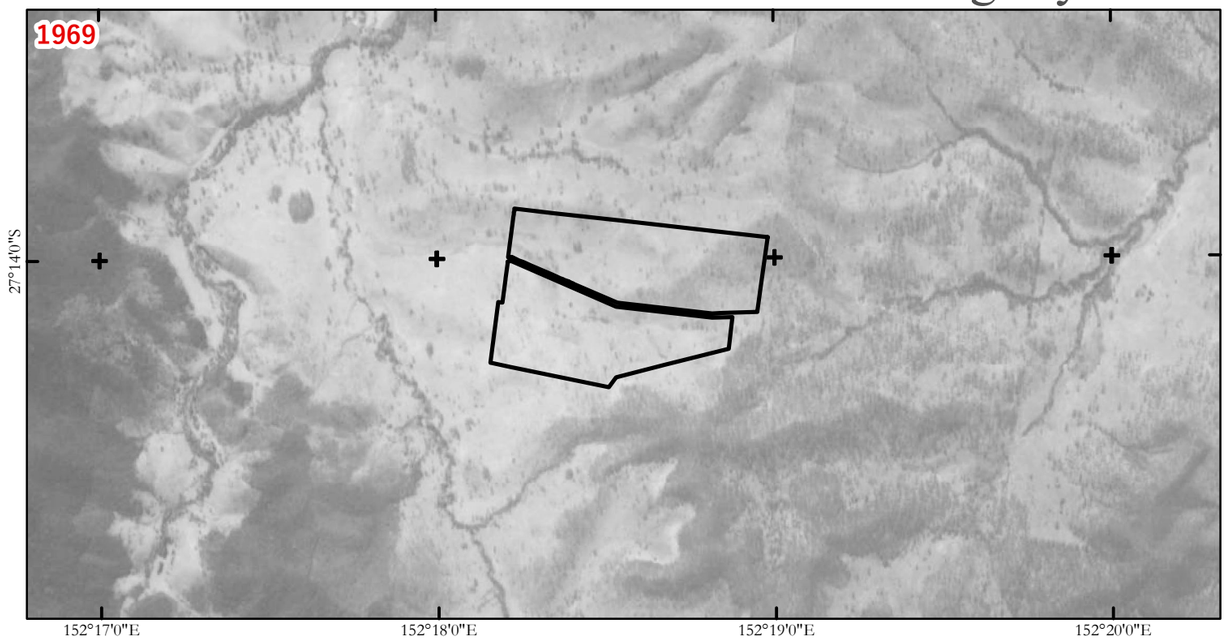
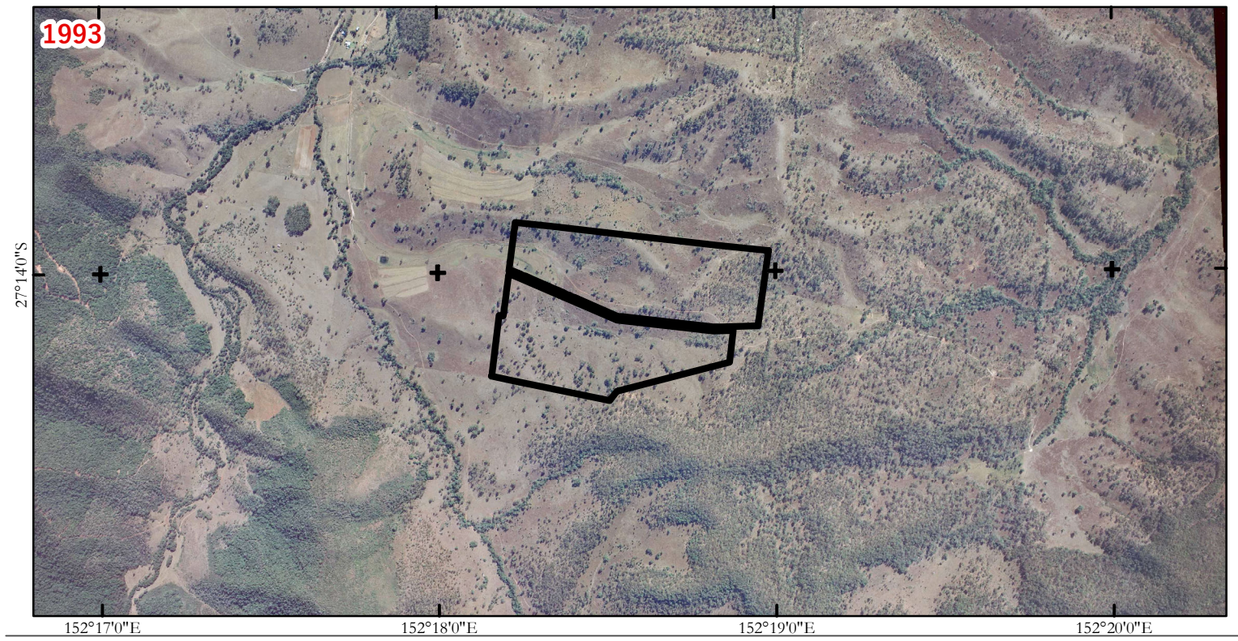
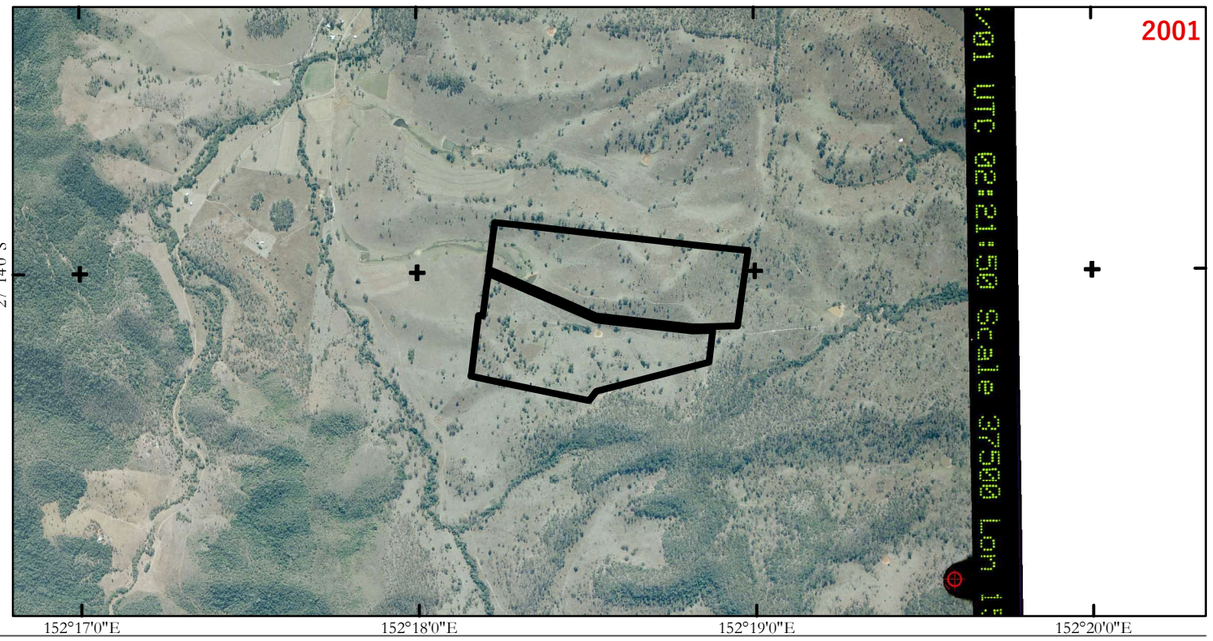
9383 E 04 OMP2 Offset Area Aerial D



5. Offset Area Historical Aerial Imagery







Legend

- Offset Area
- Qld DCDB

1:30,000

0 200 400 600 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

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9383 E 05 OMP2 Offset Area Historical Imagery E

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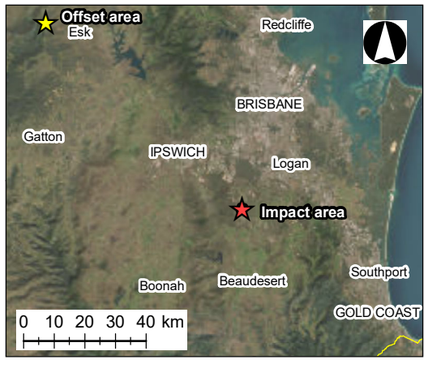


7 Offset Area Suitability

As detailed **Section 1**, one (1) offset area has been selected to be secured to help acquit the impacts to MNES under EPBC 2019/8389 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

7.2.1 Regional and landscape context

The offset area sits 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 6**). The corridor aims to encompass large tracts of vegetation, terrestrial connectivity, aquatic connectivity, species richness, diversity and refugia, ecosystem representation and uniqueness and climate resilience areas (Queensland Government 2017).

The regional biodiversity corridor forms part of the Great Eastern Ranges (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 OMP, the property will provide biodiversity offsets that ensure an ecological gain on the residual impacts resulting from the impact site which aligns with offset principle 1 of the EOP.

7.2.2 Topography

The offset 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 280 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 north of the offset area. Refer to **Plan 7.**

7.2.3 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 7**.

7.2.4 MNES habitat

The offset area comprises moderate to low quality Category X (non-remnant) vegetation. The non-remnant land ranges from cleared grazing and slashed grassy areas through to higher value regrowth patches.

Under the VMA, the non-remnant areas are mapped under pre-clear and formerly Least Concern RE12.9-10.2 and Composite Endangered RE12.3.3/12.3.7, although the latter was rectified on-ground to RE12.3.7. These RE descriptions are presented in **Table 36** and **Plan 8**.

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 36: Regional Ecosystem Descriptions

Regional Ecosystem	Vegetation Structure	Description (Queensland Herbarium)
12.3.7	Sparse	Narrow fringing woodland of *Eucalyptus tereticornis*, *Casuarina cunninghamiana subsp. cunninghamiana* +/- *Melaleuca viminalis*. Other species associated with this RE include *Melaleuca bracteata*, *M. trichostachya, M. linariifolia*. North of Brisbane *Waterhousea floribunda* commonly occurs and may at times dominate this RE. *Melaleuca fluviatilis* occurs in this RE in the north of the bioregion. *Lomandra hystrix* often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. Riverine. (BVG1M: 16a).
12.9-10.2	Mid-dense	*Corymbia citriodora subsp. variegata* open forest or woodland usually with *Eucalyptus crebra*. Other species such as *Eucalyptus tereticornis*, *E. moluccana*, *E. acmenoides* and *E. siderophloia* may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of *Lophostemon confertus* (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. Not a Wetland. (BVG1M: 10b).

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

7.2.5 Current Management Arrangement

Presently, the offset area is utilised for cattle grazing and is managed through regenerative farming practices.

7.2.6 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 Sommerset Regional Council (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.

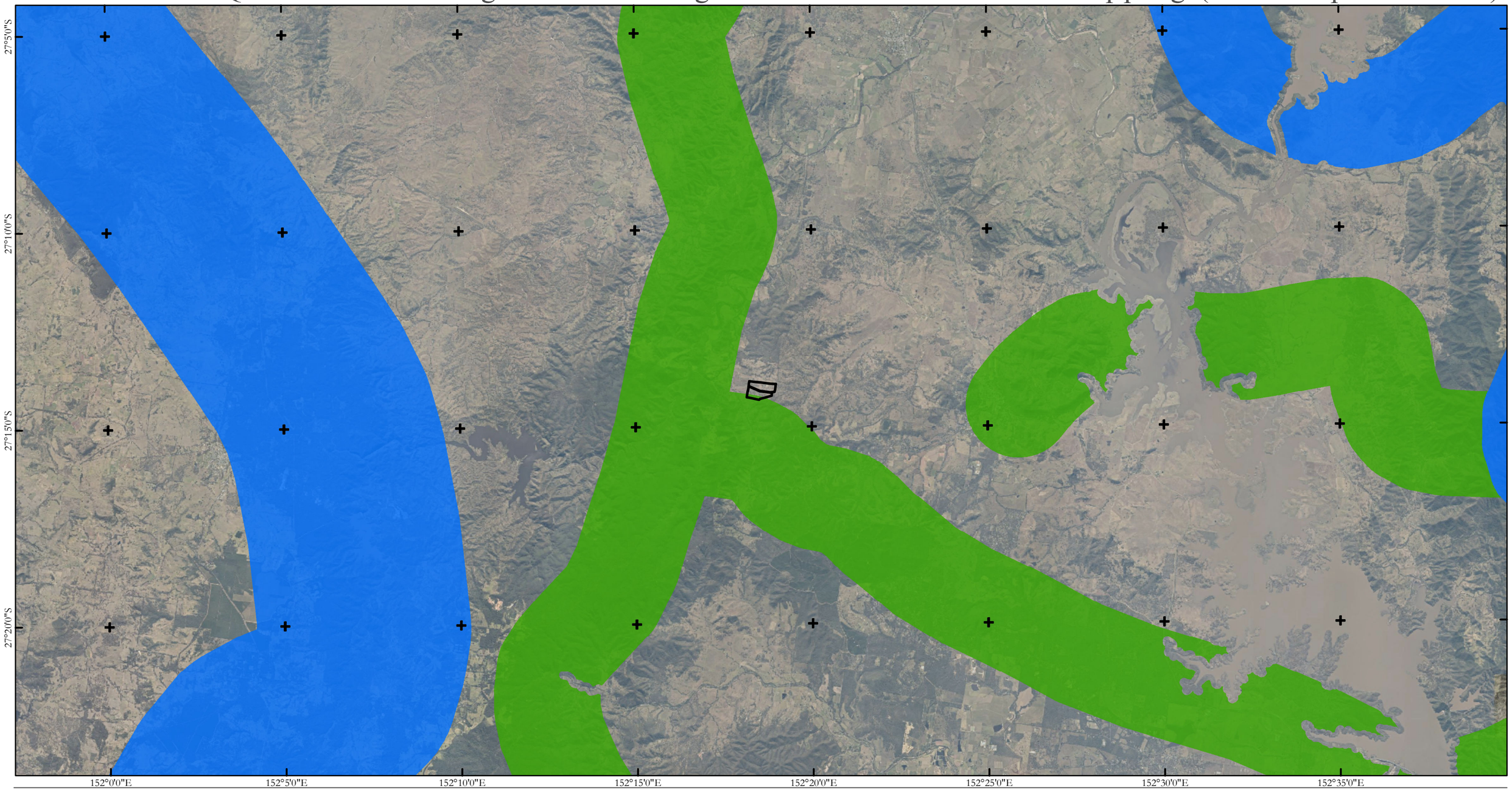
In addition, wild dogs and European foxes are confirmed to occur within the offset property. The Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within 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*.

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



Legend

- Offset Area
- Qld DCDB

Corridor Buffers South East Queensland

- State Corridor Buffer
- Regional Corridor Buffer

1:175,000

0 1 2 3 4 km

N W E S

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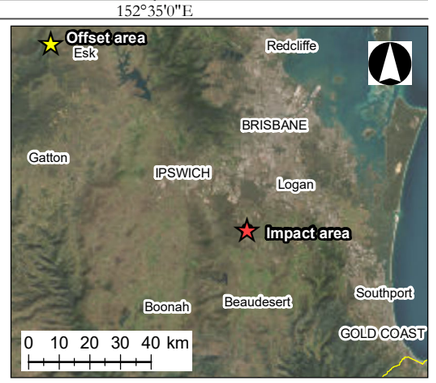
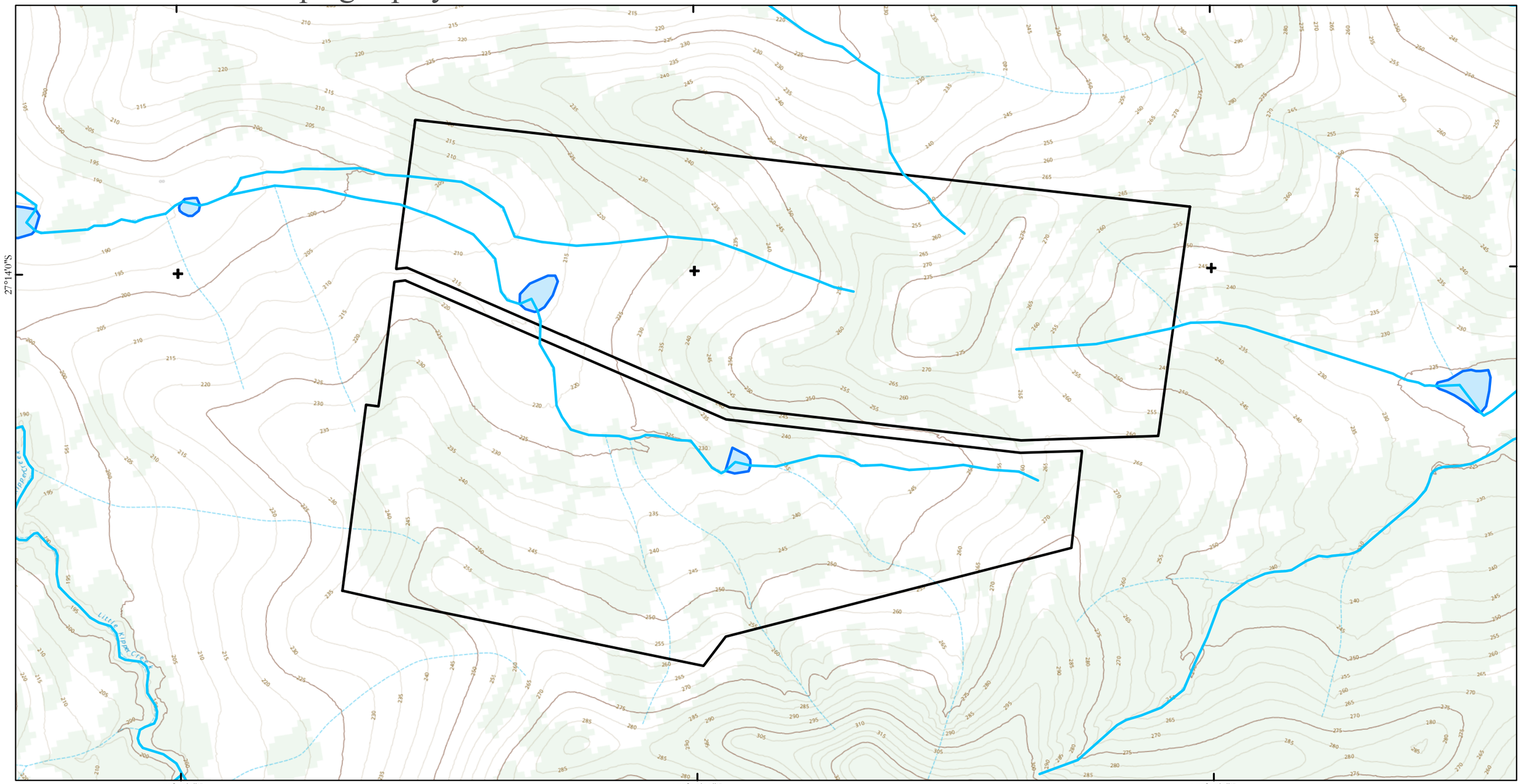
9383 E 06 OMP2 SEQ Bio Corridors D



7. Offset Area Topography and Water Resources



Legend

- Offset Area
- Qld DCDB
- Watercourse / Drainage Feature
- Mapped Reservoir

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

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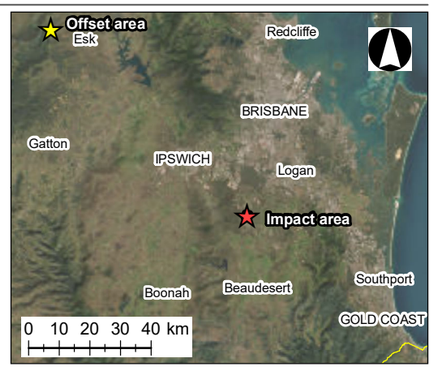
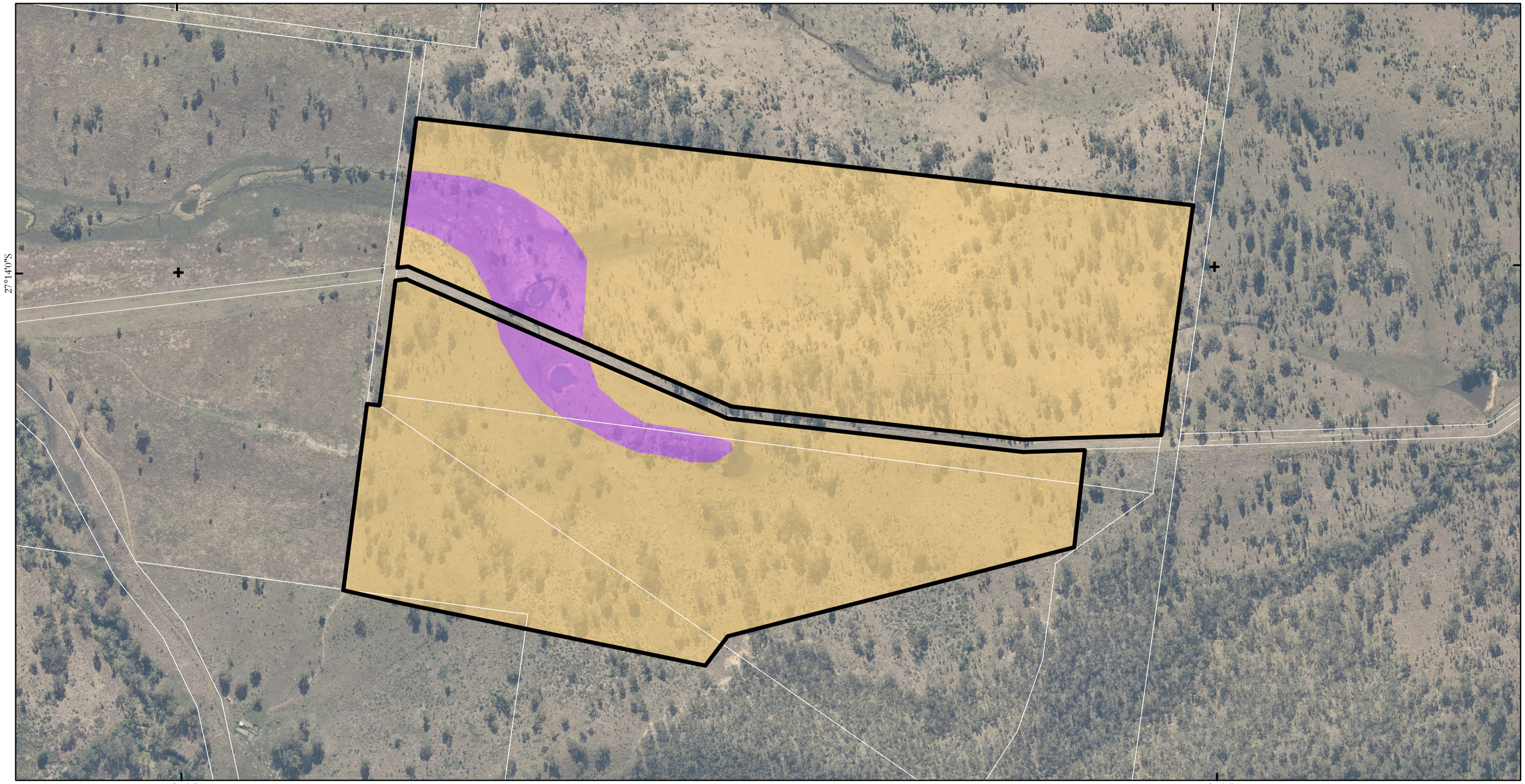
9383 E 07 OMP2 Topography Water E



8. Offset Area Assessment Units



Legend

Offset area

Qld DCDB

Vegetation Assessment Units

AU-1: Non-remnant (12.9-10.2) [78.26 ha]

AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]

1:6,000

0 50 100 150 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

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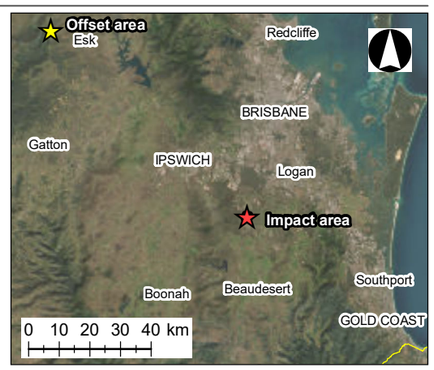
9383 E 08 OMP2 Offset Area Assessment Units E



7.3 Suitability Analysis – Environmental Offset Policy

The objective of this OMP is to outline appropriate management actions to achieve the offset outcomes specified within the EPBC Act and provide an overall improved conservation outcome and net gain in koala and grey-headed flying-fox habitat, thereby ensuring the long-term viability of these species. **Table 37** 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 37: Offset Suitability Analysis – Environmental Offsets Policy

EOP Requirements **Suitable offsets must:**	**Delivery**
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 MNES. Protection and management of the offset area in accordance with this OMP aims to deliver an overall conservation and net gain in MNES habitat. Prior to the impact, the offset area was not protected or managed for conservation outcomes. This OMP and management actions will support regeneration and restoration of habitat, contributing to a connected corridor with reduced threats. In doing so, the OMP aims to encourage the use of restored and new areas of habitat through providing increased numbers and area of MNES food, foraging and shelter trees, removal of weeds and reduction in predators and other threats. The proposed offset aims to contribute to the resilience of the target MNES 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 OMP protects the areas from incompatible land uses and contributes to the viability of the MNES.
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, GHFF and greater glider as 0.2%, and the swift parrot and regent honeyeater as 6.8%. The use of these measurements in the OAG ensures that the appropriate level of statutory protection is applied. All threats to MNES outlined in the DCCEEW's Species Profile and Threats Database (SPRAT) and EPBC Act listing advice and documents have been addressed within this OMP.
Be of a size and scale proportionate to the residual impacts on the protected matter	Permanent protection and management for the lifetime of the approval will deliver a conservation gain adequately compensating for the quantum impact for each matter. The total offset area for protection and management is 84.99 ha, delivering greater than 100% of the offset

EOP Requirements Suitable offsets must:	Delivery
	requirements for each MNES in conjunction with the separate offsets concurrently under assessment. Management actions outlined within this OMP aim to protect and enhance MNES habitat, compensating for and exceeding habitat quality of the impact. The offset and management actions will provide: • Legally secured and long-term protection of 84.99 ha of MNES habitat. • Improvement of habitat through revegetation and natural regeneration of food, foraging and shelter 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 MNES mortality or injury due to vehicle strike. • Reduced risk of MNES mortality or injury due to predators, through control of non-native predators, and removal of other threats such as fencing, • 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	Confidence in the success of the offset is high (≥75%) given the detail and intensity of the management actions outlined within this OMP. 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. 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 MNES habitat to support viable populations.
Be additional to what is already required, determined by law or	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

EOP Requirements Suitable offsets must:	Delivery
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	Efficient and Effective: • The offset area is large and located within a contiguous landscape of connected MNES 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 OMP aims to deliver an overall improved conservation outcome and net gain in MNES habitat. Timely: • The 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 at the project site. • Following the approval and implementation of this OMP, 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. Transparent: • The baseline surveys established the survey methodology to be used for the monitoring and reporting required for the lifetime of the approval. A clear monitoring and reporting framework is established within this OMP (refer **Section 4**). Monitoring and reporting of the offset area will be summarised within the Offset Area Annual Report provided by the Offset Provider which is then included in the Annual Compliance Reports for project. Scientifically robust: • The proposed offset area was assessed by qualified and experienced ecologists. Ongoing management and monitoring actions will be conducted in collaboration with other qualified ecologists and regeneration specialists to achieve the outcomes specified within the EPBC Act approval and this OMP.

EOP Requirements **Suitable offsets must:**	Delivery
	• 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. Reasonable: • The offset is considered reasonable as the offset areas are greater than the significant residual impact on all MNES (using the OAG). • This OMP outlines appropriate management actions to achieve the offset outcomes specified within the EPBC Act approval and an overall improved conservation outcome and net gain in MNES habitat, ensuring the long-term viability of the protected matters.
Have transparent governance arrangements including being able to be readily measures, monitored, audited and enforced	This OMP provides a detailed monitoring and reporting framework, performance criteria and corrective actions (refer **Sections 6 and 7**). These provide minimum requirements for success/failure of management actions and triggers for corrective actions. The approval holder will engage qualified and experienced consultants and specialists periodically throughout the offset delivery to ensure the offset outcomes are achieved. Section 491 of the EPBC Act makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. As such, engaged consultants and specialists are required to complete a declaration of accuracy in reports provided to the Department, acknowledging their responsibility and accountability for information provided to the Department. Annual Compliance Reports must be published on the approval holder's website in accordance with an EPBC Act approval and may be subject to audit by the Department by an independent auditor in accordance with section 458 of the EPBC Act, and/or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.

7.3.1 Recovery Plans and Advice

7.3.1.1 Koala

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 habitat identified as critical for the survival of the koala, the habitat on-site is surrounded by urban values and infrastructure.

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 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.

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 impact area is located within the approved masterplanned development which is located within the urban land-use of the GFPDA. 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 management plans. All contractors and visitors are to undertake site inductions to address threats and risks to MNES.

Improved mapping, monitoring, research and reporting
Not applicable.

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

Partnerships and strategic coordination
Not Applicable.

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 2019/8389. 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.

7.3.1.2 Grey-headed Flying-fox

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 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 Grey-headed Flying-fox was recorded foraging within the referral area and as a fly-over. Habitat critical to the survival of the species is considered important winter and spring flowering vegetation communities. 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, *Corymbia Citriodora, Eucalyptus crebra* and *Eucalyptus tereticornis* were recorded within the referral area. However, as a result of historical clearing mature specimens are concentrated within mapped remnant vegetation within the referral area. The Grey-headed Flying-fox is a highly mobile species and the closest known active Grey-headed Flying-fox camp is approximately 7.9 km away.

Reviewing the above, the referral area vegetation is considered to provide foraging habitat for this species. As such, the proposed action will result in the loss of 187.24 ha of potential foraging habitat for the Grey-headed Flying-fox to facilitate the development and is considered unavoidable. Approximately 59.56 ha of vegetation, comprising of Round Mountain, Greater Flagstone Creek and a central corridor connecting these areas, will be retained as habitat and biodiversity corridors. A further 32.23 ha of the referral area will be used for open space (excluding local parks and district sports park), ensuring this vegetation will remain accessible for highly mobile species including the Grey-headed Flying-fox.

Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps.
No roosts were identified within the comprehensive surveys of the referral area between 2018 and 2021 and the nearest known active roost site located approximately, 7.9 km south of the site. However, this species was observed as a fly over species and foraging within the referral area. Given the site's proximity to a significant roosting site, it is considered likely that the referral area provides and will continue to provide foraging habitat for this 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 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.
There are no observed roosts on-site, with the nearest known roost site located approximately 7.9 km south of the 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.
Mitigation measures, including wildlife awareness signage, speed limits and vehicle slow points, to increase awareness for this species within the community.

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, with the nearest known active roost site located approximately 7.9 km south of the 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.
This species was identified foraging and as fly-overs during field surveys. No roosts were identified on-site and the nearest known roost site located approximately 7.9 km south of the referral area. As such, it is considered that the referral area vegetation provide foraging habitat for this species.

The proposed action will involve the removal of 187.24 ha of potential foraging habitat within the referral area. However, 59.56 ha of vegetation, will be retained as habitat and biodiversity corridors and a further 32.23 ha of the referral area will be used for open space (excluding local parks and district sports park), ensuring this vegetation will remain accessible for highly mobile species including the Grey-headed Flying-fox. Electrocution on powerlines where they occur is a risk, however, entanglement in netting and on barbed-wire is considered highly unlikely and can be managed through the implementation of mitigation measures and procedures outlined within future management documents including the VC&MP and FMP. As such, the proposed action is not considered likely to impact the recovery of this species.

7.3.1.3 Greater Glider

Greater Glider Conservation Advice
The conservation advice for *Petauroides volans* (greater glider (southern and central)) came into effect on 5th July 2022. The document combines the approved conservation advice and listing assessment for the species and provides a foundation for conservation action and further planning.

Key threats to the Greater Glider are frequent and intense bushfires, inappropriate prescribed burning, climate change, land clearing and timber harvesting. The primary conservation objective is that within the next three generations, the population size as well as the extent, quality and connectivity of habitat required to maintain the population will have increased.

Conservation and management priorities
Habitat loss, disturbance and modification (including fire)
In the wake of the recent bushfires, unburnt areas are to be protected to support population recovery. The referral area is not part of the recent bushfire impacts in question, nor was the species recorded on site. The proposal will result in retained habitat areas to be handed over and managed by Council in close proximity to residential development. It is not anticipated that prescribed burns undertaking by Council in this setting would impact on hollow bearing trees.

The proposal will result in the clearing of potential Greater Glider habitat. Notably, substantial offsets are proposed that will include potential foraging and denning habitat to be enhanced including with nest boxes, as well as additional regrowth and re-established future foraging and denning habitat for the species. The proposed offset is considered suitable habitat, being recognised foraging species with denning resources that are suitably connected to external habitat values.

Climate change

The impact site is not considered to be a climate change refuge. Notably, retained habitat areas will be rehabilitated to remove weeds and improve natural microclimate resources.

Invasive species (including threats from predation, grazing, trampling)
The proposed action will not introduce threats from predation that are not already present. Notably, dogs will be excluded from retained habitat areas under Council management.

Ex-situ recovery actions
Translocation is not proposed in the absence of the species. Notably, connected areas of potential foraging habitat for the species will be retained and rehabilitated on site.

Stakeholder and Community Engagement
Not applicable to the proposed action.

Survey and Monitoring Priorities
Not applicable to the proposed action.

Information and Research Priorities
Not applicable to the proposed action.

Recovery Plan
There Is not yet a recovery plan for the species.

7.3.1.4 Swift Parrot

National Recovery Plan for Swift Parrot
The National Recovery Plan for the Swift Parrot considers the conservation requirements of the species across its range, identifies the actions to be taken to ensure its long-term viability in nature and the parties who will undertake these actions.

The overall objective of this plan is to prevent further population decline of the Swift Parrot and to achieve a demonstrable sustained improvement in the quality and quantity of Swift Parrot habitat to increase carrying capacity. The specific recovery objectives of the National Recovery Plan are provided below with responses relevant to the proposed action.

Objective 1: Maintain known Swift Parrot breeding and foraging habitat at the local, regional and landscape scales.
The referral area has not been identified as a priority site or region under the National Recovery Plan. This species was not recorded during field surveys and mature key tree species were relatively limited within the referral area and of sub-optimal foraging status.

Roost-tree requirements in mainland Australia are likely similar to nest-tree requirements in Tasmania. Nest-tree suitability has been shown to increase with increasing height, diameter at breast height, degree of senescence, and number of hollows (Webb et al. 2012). The referral area is compromised due to historical logging and pastoral activities. As a result, large diameter eucalypts and hollows are limited across the referral area. Aggressive competitor species were observed within the referral area during field surveys, reducing the potential for opportunistic use of on-site vegetation by this species.

Further, the closest record for this species is located approximately 10 km north of the referral area. The referral area is not considered to be used by the species.

Plan A5 maps potential habitat by overlaying remnant REs containing preferred Swift Parrot forage trees with recorded areas of Swift Parrots within 20 km of the referral area. The vast majority of potential habitat is located and protected within Regional Biodiversity Corridors under the SEQ Regional Plan.

Objective 2: Reduce impacts from Sugar Gliders at Swift Parrot breeding sites
Not applicable – the site does not support breeding habitat.

Objective 3: Monitor and manage other sources of mortality.
Not applicable. This species was not recorded during field surveys.

Objective 4: Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions

Not applicable. This species was not recorded during field surveys.

Objective 5: Improve understanding of foraging and breeding habitat use at a landscape scale in order to better target protection and restoration measures.

Not applicable.

Objective 6: Engage community and stakeholders in Swift Parrot conservation.

Not applicable.

Objective 7: Coordinate, review and report on recovery progress.

Not applicable

Reviewing the above, the proposed action is not considered to impact the recovery of this species.

7.3.1.5 Regent Honeyeater

National Recovery Plan for the Regent Honeyeater

The National Recovery Plan for the Regent Honeyeater considers the conservation requirements of the species across its range, identifies the actions to be taken to ensure its long-term viability in nature and the parties who will undertake these actions.

The overall objective of this plan is to reverse the long-term population trend of decline and increase the numbers of Regent Honeyeaters to a level where there is a viable, wild breeding population even in poor breeding years and to enhance the condition of habitat across the regent honeyeaters range to maximise survival and reproductive success, and provide refugia during periods of extreme environmental fluctuation. The specific recovery objective strategies of the National Recovery Plan are provided below with responses relevant to the proposed action.

Objective 1: Improve the extent and quality of Regent Honeyeater habitat.

The referral area is not within a key breeding area under the National Recovery Plan. This species was not recorded during field surveys and suitable foraging species and specimens were relatively limited within the referral area and of sub-optimal foraging status where present.

Although there is remnant vegetation within the western portion of the site, the referral area includes non-remnant vegetation and the entire site has been subject to historical logging and pastoral activities. As a result, large diameter foraging trees are relatively limited across the referral area. Also, aggressive competitor species were observed within the referral area during field surveys, potentially reducing opportunistic use of on-site vegetation by this species.

The proposed action will directly impact sub-optimal foraging habitat (mapped remnant vegetation). However, large areas of conservation and corridors will be retained and rehabilitated on-site, providing ongoing potential foraging habitat for the species.

Further, the closest record for this species is located approximately 4.2 km south-west of the referral area. The referral area is not considered to be suitable habitat used by the species.

Objective 2: Bolster the wild population with captive-bred birds until the wild population becomes self-sustaining

Not applicable.

Objective 3: Increase the understanding of the size, structure, trajectory and viability of the wild population.

Not applicable. This species was not recorded during field surveys.

Objective 4: Maintain and increase community awareness, understanding and involvement in the recovery program.

Not applicable. This species was not recorded during field surveys.

Reviewing the above, the proposed action is not considered to impact the recovery of this species.

8 Baseline Surveys

8.1 Offset Area Baseline Surveys – Methodology

Baseline field surveys to determine habitat quality for MNES were completed on 20 April 2022, 2 to 6 and 8 to 9 October 2024, and 16 to 17 April 2025. Refer to **Table 38** and the subsections below for specific details on survey dates for each method applied.

Table 38: Offset area baseline field surveys methods summary

Date	Temperature	Rainfall	Methods implemented
20 April 2022	14.8°C min – 20.3°C max	Not available	MHQA transect, SAT survey
2 September 2024	10.9°C min – 32.7°C max	0 mm	MHQA transect, SAT survey, habitat mapping
3 September 2024	9.8°C min – 26.6°C max	0 mm	MHQA transect, SAT survey, habitat mapping
4 September 2024	4.8°C min – 24.1°C max	0 mm	Habitat mapping and tree plotting
5 September 2024	7.2°C min – 24.8°C max	0 mm	Habitat mapping and tree plotting
6 September 2024	7.6°C min – 27.3°C max	0 mm	Habitat mapping and tree plotting
21 October 2024	19.2°C min – 31.0°C max	0 mm	MHQA transect, SAT survey, habitat mapping
16 April 2025	11.0°C min - 23.4°C max	0.4 mm	Weed mapping
17 April 2025	11.5°C min - 23. °C 7 max	0 mm	Weed mapping

Source: Bureau of Meteorology station 040082 Gatton and 041529 Toowoomba Airport

8.1.1 Habitat

The MNES 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 two (2) AUs identified in the offset area. These are summarised in **Table 39** and shown in **Plan 9**. 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 four (4) MHQA transects within the offset area totalling two (2) in each AU.

Table 39: Summary of assessment units and MHQA transects – offset area

Assessment unit	Vegetation community	Area (ha)	MHQA transect
AU1	Non-remnant RE12.9-10,2	78.26	Transects 1 and 3
AU2	Non-remnant RE12.3.7	6.73	Transects 2 and 4

8.1.2 Spot Assessment Technique surveys

Baseline Koala activity levels were determined through utilising the SAT. 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 four (4) SAT surveys were completed across the offset area in conjunction with the MHQA transects to target presence of koala.

8.1.3 Habitat Mapping

All trees over 300 mm DBH were plotted throughout the offset area with a handheld GPS device (Trimble) to record locations (accuracy ±1 m), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree measured using the standard method of Diameter at Breast Height (DBH);
- height of the tree estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

The entire tree trunk and branches are visually surveyed from ground for habitat values including hollows. The spread of trees over 300 mm DBH was mapped to indicate foraging habitat for the species as per the conservation advice. Hollow bearing trees were plotted across the entire offset site.

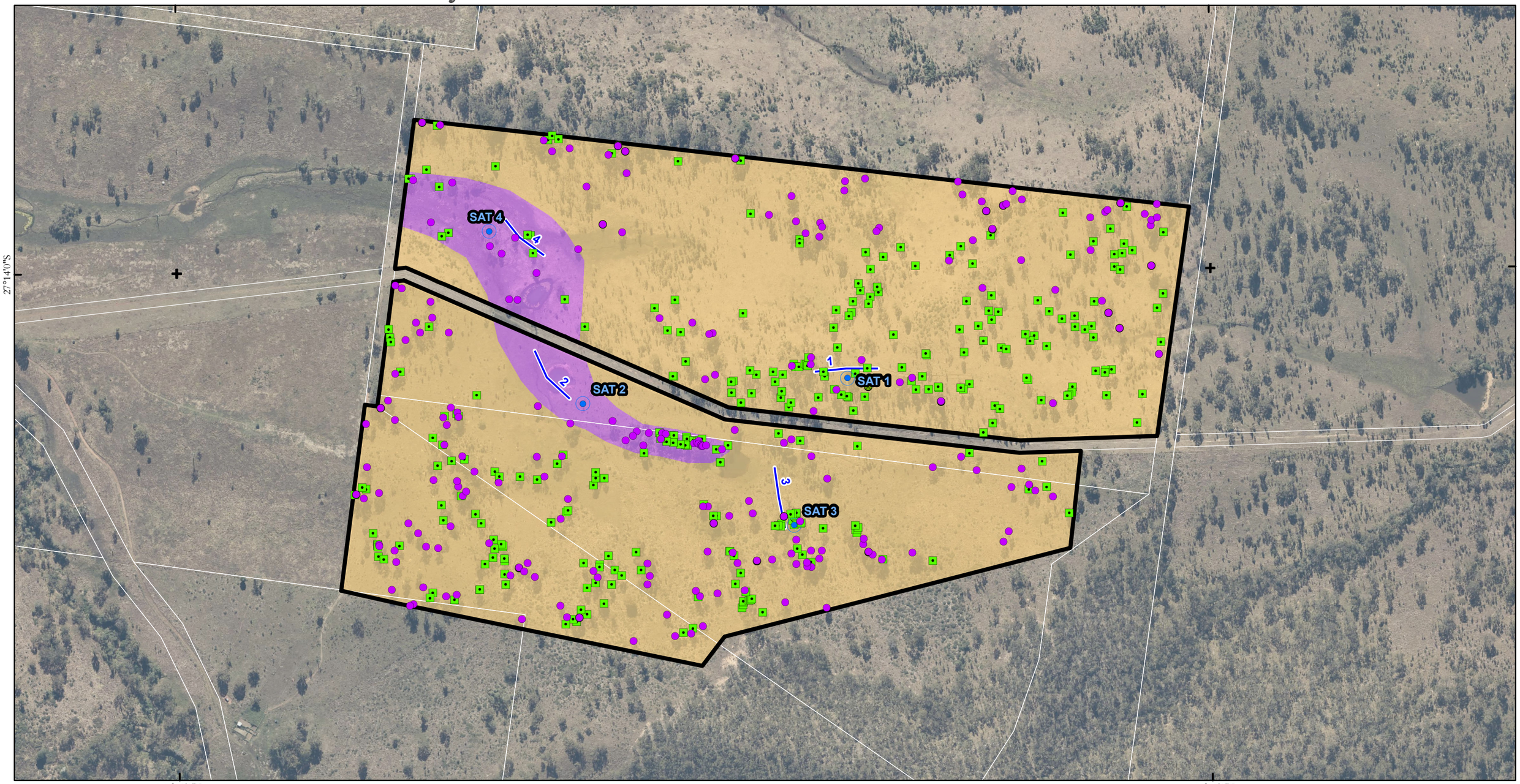
8.1.4 Weed Mapping

Weed mapping assessments of the offset property were conducted across two days with observed WONs and declared species estimated and categorised into percentages. The mapping was undertaken using GPS units with polygons or descriptive points taken to visually represent on-ground invasive values. On ground estimates assigned a percentage to the invasive species observed, with ranges including little to no weeds 0 – 25%, moderate weediness 25 – 50%, and high weed levels > 50% (refer **Plan 10**).

Notably, the Offset Provider is developing a weed management plan for entire South Kipper Offset Property, including this offset area, which ensures consistent and property-wide approaches to weed monitoring and management. It will include a quantitative and repeatable weed cover monitoring method that will enable assessment against the completion criteria “below 5% cover by year 5”. It will also include photo-monitoring requirements as well as management actions to be employed. WONS mapping will include:

- Preparation of a Weed Management Plan by the Offset Provider in Year 1 of the offset including baseline weed cover surveys and photo-monitoring (in accordance with the method outlined in the Weed Management Plan)
- Implementation of the Weed Management Plan by the Offset Provider

9. Offset Area Field Survey



Legend

- Offset area
- Qld DCDB

Vegetation Assessment Units

- AU-1: Non-remnant (12.9-10.2) [78.26 ha]
- AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]

- Modified Habitat Quality Transect
- SAT Survey
- Tree with hollows
- Tree with trunk DBH <460mm & >=300mm
- Tree with trunk DBH >=500mm

1:6,000

0 50 100 150 m

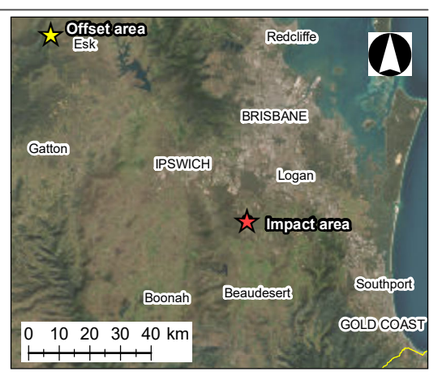
N W E S

Cordinate System: GDA2020 MGA Zone 56

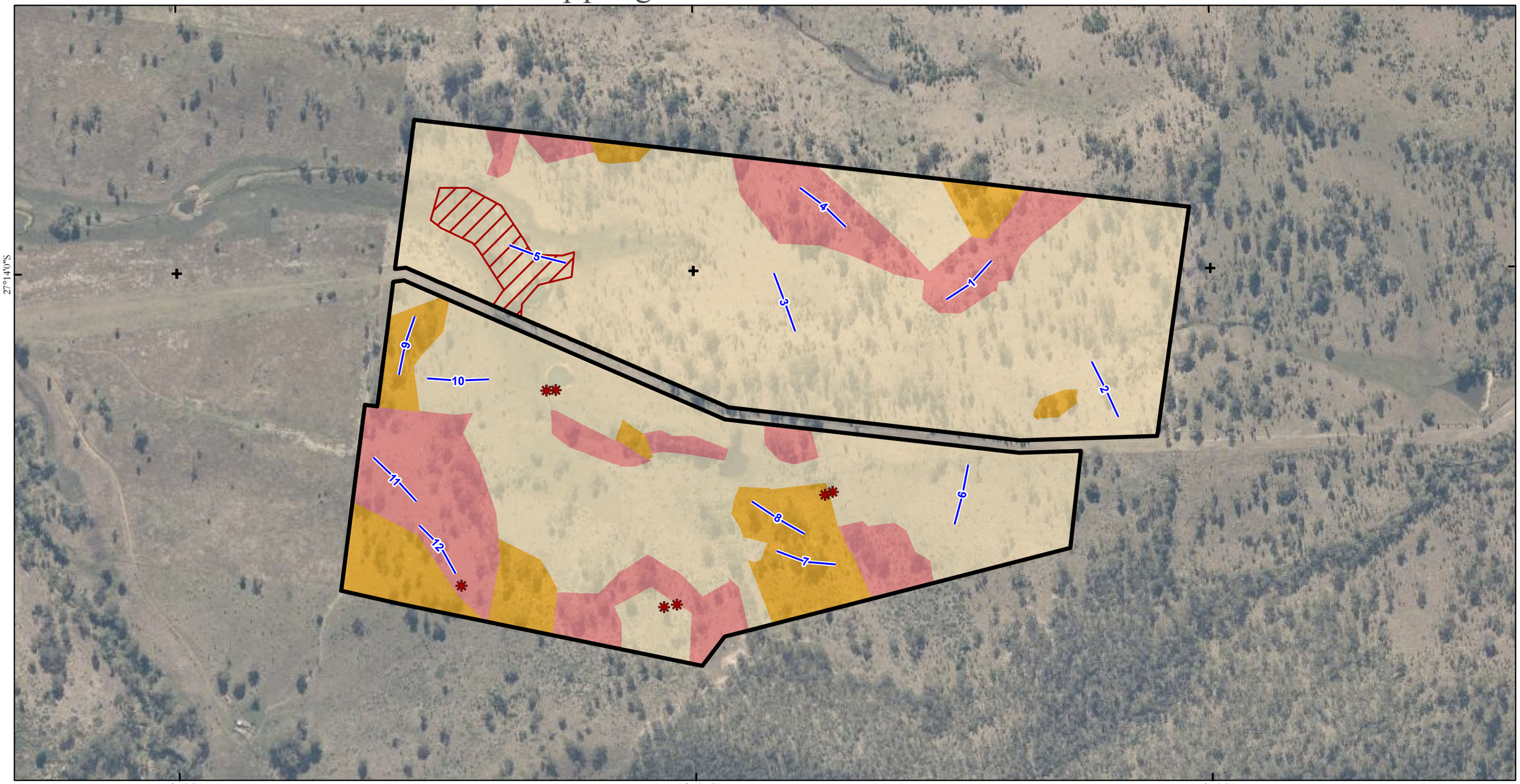
FRASERS PROPERTY

Date: 3/3/2026

9383 E 09 OMP2 Offset Area Field Survey E



10. Baseline Offet Area Weed Mapping



Legend

- Offset Area
- High: >50% weed coverage
- Moderate: 25%-50% weed coverage
- Low: <25% weed coverage
- Biosecurity weed coverage
- Biosecurity weed coverage: small patches less than 15m^2
- Weed transect

1:6,000

0 50 100 150 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

References:
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Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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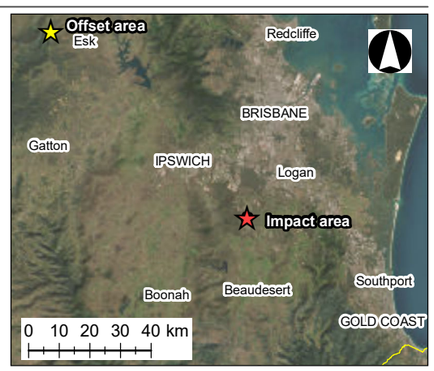
Date: 3/3/2026

9383 E 10 OMP2 Baseline Weed Mapping D



8.2 Offset Area Baseline Assessment Results

8.2.1 Assessment Unit Description

8.2.1.1 Assessment Unit 1

The non-remnant cleared open paddock area that is pre-clear RE12.9-10.2 covers the majority 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.

Habitat quality transects 1 and 3 were completed within AU1.

Photo plate 1: Vegetation representative of Assessment Unit 1 – open grazing paddock in the offset area (transect 1 = left and transect 3 = right).

8.2.1.2 Assessment Unit 2

The non-remnant cleared open paddock area that is pre-clear RE12.3.7 covers the lower lying portions of the offset area. As shown in **Photo plate 2**, 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.

Photo plate 2: Vegetation representative of Assessment Unit 2 – remnant vegetation on the offset area (transect 2 = left and transect 4 = right).

8.2.2 Non-native vertebrate pest records – broader offset site

Wild dogs and foxes have been reported to occur within the broader offset property and public database records indicate records are present in the surrounding landscape. Baseline vertebrate pest abundance surveys will be completed in Year 1 of the offset.

8.2.3 WONS Mapping

Based on MHQA transects, general observations during MNES surveys and weed mapping, broad areas of uncontrolled Lantana infestation are present across the offset area including within the gully lines and paddock areas. Refer to **Photo plate 3** for photos of Lantana infestations.

Photo plate 3: Paddocks with Lantana and pastoral weeds

Notably, the Offset Provider is developing a weed management plan for entire South Kipper Offset below Property, including this offset area, which ensures consistent and property-wide approaches to weed monitoring and management. It will include a quantitative and repeatable weed cover monitoring method that will enable assessment against the completion criteria “below 5% weed cover by year 5. It will also include photo-monitoring requirements as well as management actions to be employed. WONS mapping will include:

- Preparation of a Weed Management Plan by the Offset Provider in Year 1 of the offset

- Implementation of the Weed Management Plan by the Offset Provider including baseline weed cover surveys and photo-monitoring in Year 1 of the offset (in accordance with the method outlined in the Weed Management Plan)

8.2.4 Koala MHQA

8.2.4.1 Site Condition (30%)

The site condition scoring for the offset area is summarised in **Table 40**. Refer to **Appendix E** for detailed baseline koala MHQA scoring and **Appendix F** for the raw data.

Table 40: Site condition scores for offset area assessment units - Koala

	AU1	**AU2**
Regional Ecosystem	12.9-10.2	12.3.7
Rem/NR/Reg	NR	NR
Recruitment of woody perennial species in EDL	5	5
Native plant species richness - trees	2.5	2.5
Native plant species richness - shrubs	2.5	0
Native plant species richness - grasses	2.5	2.5
Native plant species richness - forbs	5	0
Average tree canopy height*	5	3
Average tree canopy cover*	5	2.5
Shrub canopy cover	3	0
Native grass cover	5	5
Organic litter	5	3
Large trees	5	5
Coarse woody debris	2	0
Non-native plant cover	5	5
Quality and availability of food and foraging habitat	5	5
Quality and availability of shelter	5	5
Total (Out of 100)	**62.5**	**43.5**
Score out of 3	**1.88**	**1.31**

Quality and availability of food and foraging habitat and shelter habitat

The site condition values for AU1 and AU2 scored 62.5 and 43.5, respectively, both scoring 5/10 for quality and availability of food and foraging habitat and shelter habitat.

8.2.4.2 Site Context (30%)

The site context characteristics for koala are shown on **Plan 11** with scores summarised in **Table 41.**

Table 41: Koala site context scores for offset area

	AU1 (non-remnant RE12.12.5)	AU2 (remnant RE12.3.7)
Size of patch	10	10
Connectedness	2	2
Context	4	4
Ecological corridors	6	6
Role of the site location to species overall population in the state	5	5
Threats to species	7	7
Species mobility capacity	7	7
Total (out of 56)	**41**	**41**
Score out of 3	**2.20**	**2.20**

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 27% of its boundary with koala habitat therefore achieves a score of **2 out of 5**.

Context

The offset area includes habitat coverage of 40% within 1 km of the offset area and scores **4 out of 5**.

Ecological corridors

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

Role of Site

The offset area is a suitable offset so scores **5 out of 5**.

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

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

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

Species mobility capacity

Species mobility capacity is considered consistent across all AUs, 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.

8.2.4.3 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 A summary of the SAT survey results completed at each MHQA transect are provided in **Table 42** with raw data provided at **Appendix F**.

Table 42: Baseline SAT survey results

SAT ID (MHQA transect)	Number of scats	Evidence of koala activity (%)	Koala use (East Coast med-high)
AU1			
SAT 1	0	0	No activity
SAT 3	4	13.33	Low
AU2			
SAT 2	0	0	No activity
SAT 4	0	0	No activity

The SAT surveys demonstrate that koalas utilise AU1 and that the offset area has the capacity to support ecological gain for the koala.

The species stocking rate for koala scored **40 out of 70** for AU1 and **20 out of 70** for AU2, (refer **Table 43**). Further details on the assessment are provided below:

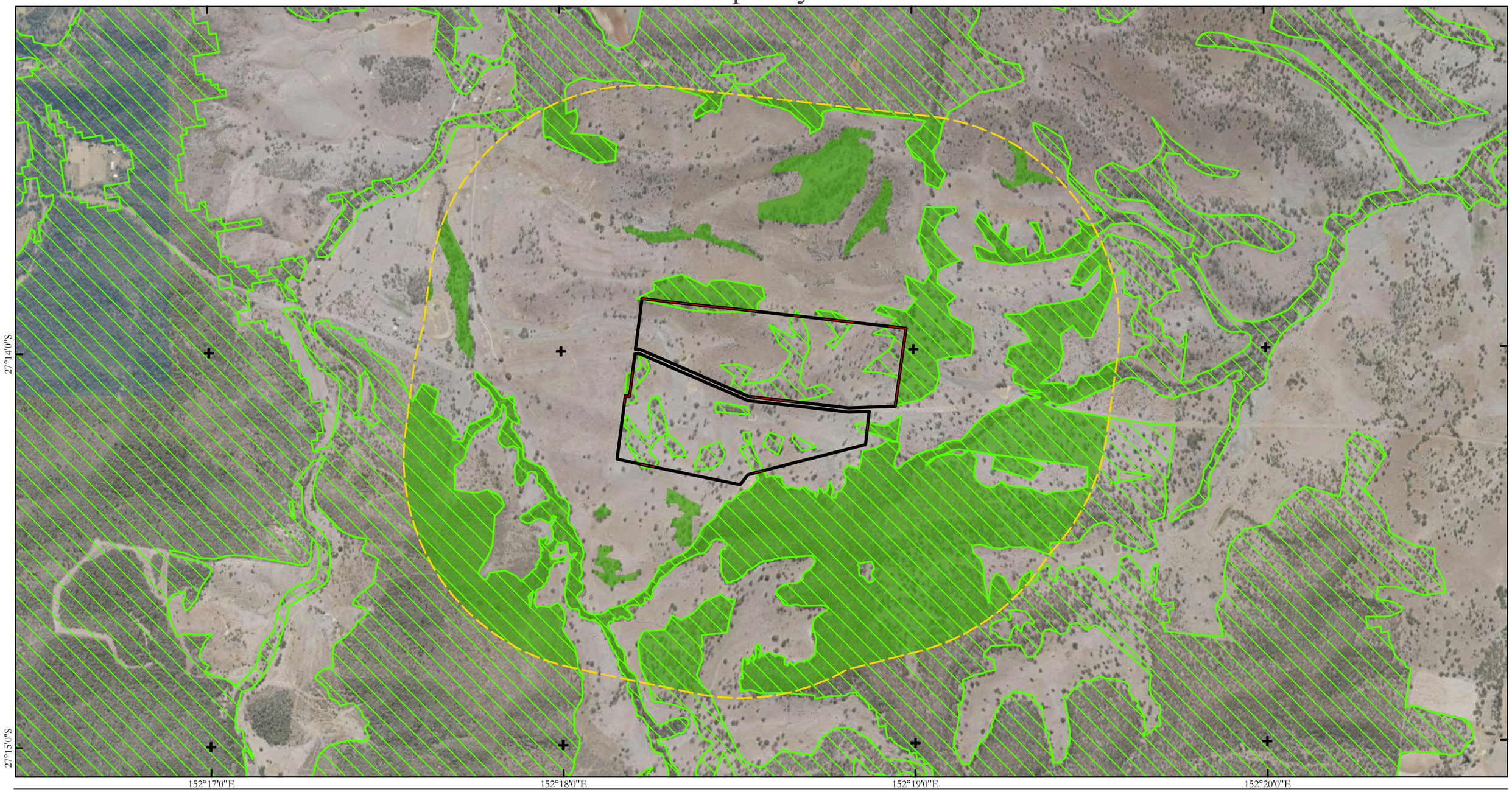
- A koala was observed within the broader offset area therefore 'presence detected on or adjacent to site' was assigned a score of **10 out of 10** for all assessment units.
- Due to the general lack of habitat values and absence of evidence of koalas within AU2, this assessment units scored as **5 out 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. AU2 scored a **15 out of 15** for evidence of use indicating foraging/breeding habitat.
- The 'approximate density' for AU2 was scored as **0 out of 30** due to the absence of evidence of utilisation within this assessment unit. 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.AU2 scored **10 out of 30** for low use.
- 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 43: Koala species stocking rate scores within offset area assessment units

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

	AU1	AU2
Key source population for breeding (/5)	0	0
Key source population for dispersal (/5)	5	5
Necessary for maintaining genetic diversity (/15)	0	0
Near the limit of the species range (/15)	0	0

11a. Koala Context Assessment - Offset Property



Legend

- Offset Area
- 1km buffer
- Percentage of Offset Area boundary length supporting a koala critical habitat connection off and on site - 27%
- Percentage of Koala Critical habitat within 1km of Offset Area (40%)
- Size of Koala critical habitat patch >200m corridor connectivity (>500 ha)

1:17,500

0 100 200 300 m

N W E S

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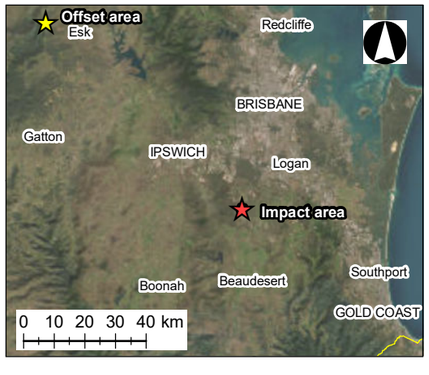
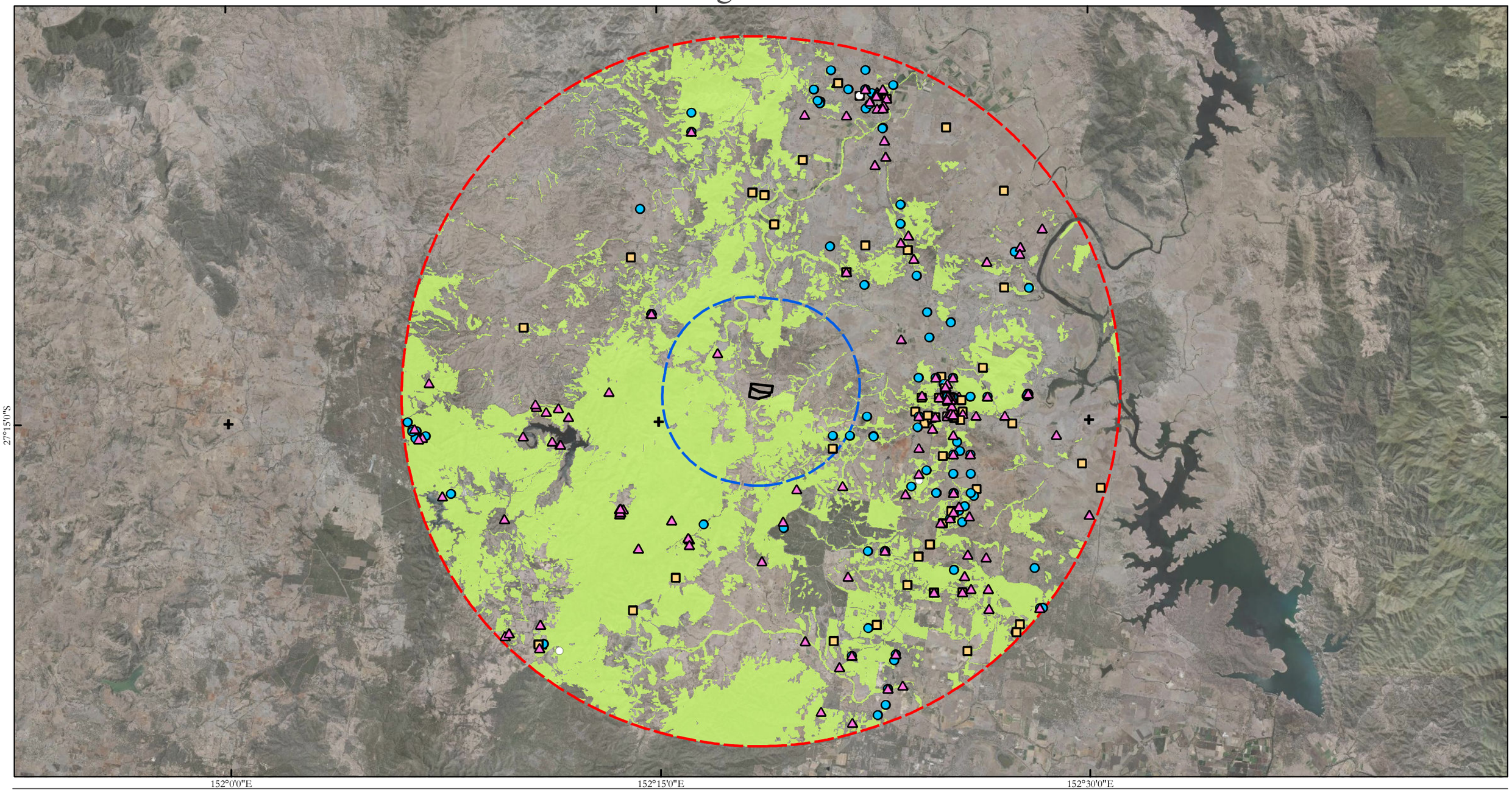
9383 E 11a OMP2 Offset Koala Context Assessment D



11b. Koala Context Assessment - Wider Region



Legend

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

Koala Records within 20km of Site (ALA, 2024)

- Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded within the last 5 years - 148
- Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded between 5 and 20 years ago - 149
- Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded without a sighting date - 15
- Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded over 20 years ago - 66

1:215,000

0 1 2 3 4 km

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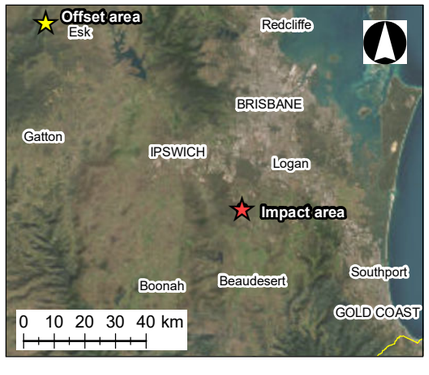
9383 E 11b OMP Koala Regional Context Assessment D



8.2.5 Grey-headed flying-fox FHA

8.2.5.1 Site Condition (40%)

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

8.2.5.2 Site Context (30%)

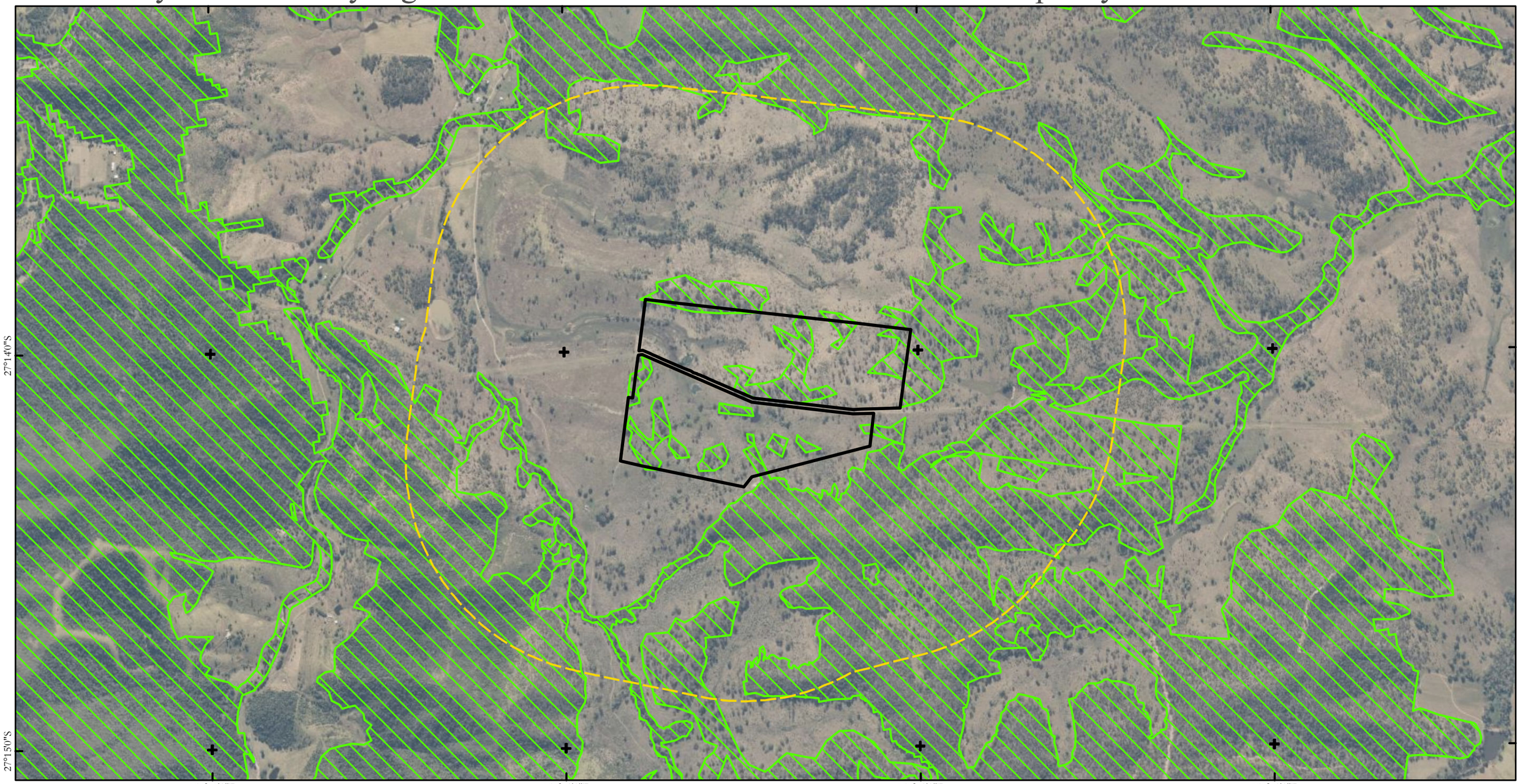
The baseline site context characteristics for grey-headed flying-fox are shown on **Plan 12** with results summarised in **Appendix G.**

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

8.2.5.3 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.**

12a. Grey-headed Flying-fox Context Assessment - Offset Property



Legend

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

1:17,500

0 100 200 300 m

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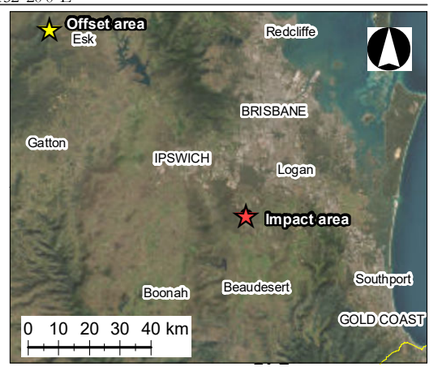
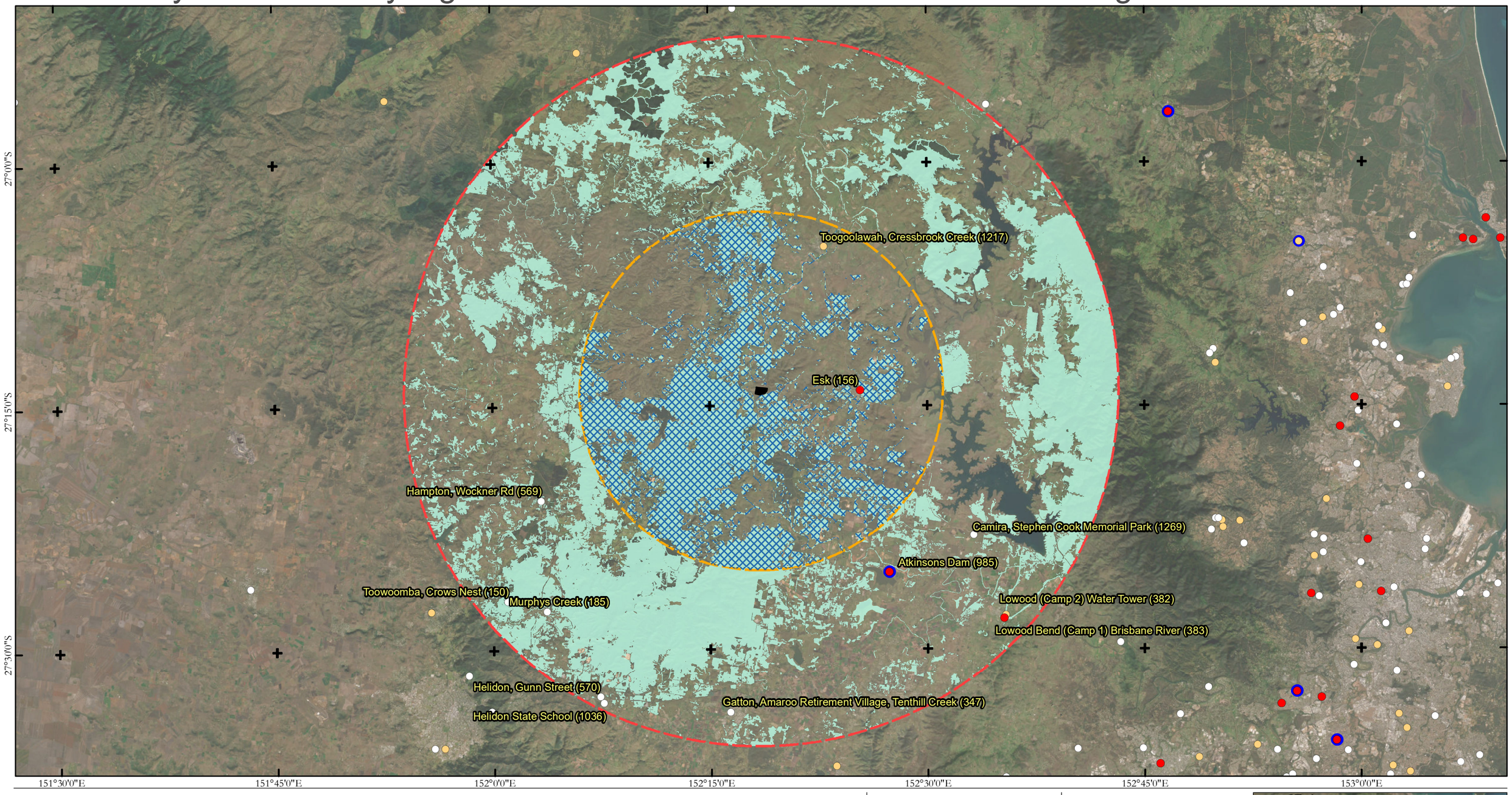
Date: 03/03/2026

9383 E 12a OMP2 GHFF Context Assessment C



12b. Grey-headed Flying-fox Context Assessment - Wider Region



Legend

- Offset Area
- Offset Area 40km Buffer
- Referral Area 20km Buffer
- Potential and Known Grey-headed Flying-fox Foraging Habitat Within 20km of Offset Site [39%]
- Offset site 40km buffer area - Potential and Known Grey-headed Flying-fox Foraging Habitat
- Grey-headed Flying Fox roost inactive within recent surveys [3]
- Grey-headed Flying Fox roost active within recent surveys [2]
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [4]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [1]

1:425,000

0 2 4 6 8 km

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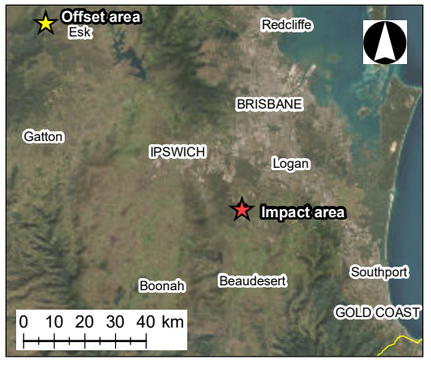
9383 E 12b OMP GHFF Regional Context Assessment E



8.2.6 Greater Glider MHQA

8.2.6.1 Features

There are 20 and 0 hollow features identified in AU1 and AU2, with more than 136 and 14 trees over 300 mm DBH identified as available for hollow carving in the 20 year OAG period, respectively (refer **Plan 13**).

8.2.6.2 Site Condition (30%)

The site condition scoring for the offset area is summarised in **Table 44**. Refer to **Appendix H** for detailed baseline greater glider MHQA scoring and **Appendix F** for the raw data. Please note 40:20:40 relative weighting.

Table 44: Site condition scores for offset area assessment units – Greater Glider

	AU1	**AU2**
Regional Ecosystem	12.9-10.2	12.3.7
Rem/NR/Reg	NR	NR
Recruitment of woody perennial species in EDL	5	5
Native plant species richness - trees	2.5	2.5
Native plant species richness - shrubs	2.5	0
Native plant species richness - grasses	2.5	2.5
Native plant species richness - forbs	5	0
Average tree canopy height*	5	3
Average tree canopy cover*	5	2.5
Shrub canopy cover	3	0
Native grass cover	5	5
Organic litter	5	3
Large trees	5	5
Coarse woody debris	2	0
Non-native plant cover	5	5
Quality and availability of food and foraging habitat	5	5
Quality and availability of shelter	1	1
Total (Out of 100)	**40.3**	**30.75**
Score out of 3	**1.21**	**0.92**

Quality and availability of food and foraging habitat

Canopy cover for AU1 and AU2 scored 53.44% and 55.97% of the benchmark, respectively, both scoring 5/10 for quality and availability of food and foraging habitat.

Quality and availability of shelter habitat

A total of 0.25 and 0.00 hollows per hectare were recorded in AU1 and AU2, respectively, both scoring 1/10 for shelter habitat quality.

8.2.6.3 Site Context (30%)

The site context characteristics for greater glider are shown on **Plan 13** with scores summarised in **Table 45.**

Table 45: Greater Glider context scores for the offset area

	AU1 (non-remnant RE12.12.5)	**AU2 (remnant RE12.3.7)**
Size of patch	10	10
Connectedness	2	2
Context	4	4
Ecological corridors	6	6
Role of the site location to species overall population in the state	5	5
Threats to species	7	7
Species mobility capacity	4	4
Total (out of 56)	**38**	**38**
Score out of 3	**2.04**	**2.04**

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 27% of its boundary with koala habitat therefore achieves a score of **2 out of 5**.

Context

The offset area includes habitat coverage of 40% within 1 km of the offset area and scores **4 out of 5**.

Ecological corridors

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

Role of Site

The offset area is a suitable offset so scores **5 out of 5**.

Threats to species

Threats to greater glider 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 fencing. 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 greater glider habitat by reducing the potential for natural regeneration of habitat. While wild dogs are known to occur within the locality and have been reported within the broader offset property. Additionally, the Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of individuals likely to overlap with the offset area.

Given the general lack of safe shelter in trees and presence of multiple threats across the offset area, a score of **7** or 'moderate' was considered appropriate.

Species mobility capacity

Species mobility capacity is considered consistent across all AUs, being 'highly restricted' (score **4**) due to the scattered state of vegetation and absence of connected canopy for greater glider dispersal.

8.2.6.4 Species Stocking Rate (40%)

The species stocking rate for greater glider scored **10 out of 70** for AU1 and AU2 (refer **Table 46**). Further details on the assessment are provided below:

- No greater glider were observed within the broader offset area therefore 'presence detected on or adjacent to site' was assigned a score of **0 out of 10** for all assessment units.
- Due to the general lack of habitat values and absence of evidence of greater glider, the assessment units 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 each assessment unit was scored as **0 out of 30** due to the absence of evidence of utilisation within this assessment unit.
- 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 46: Greater glider species stocking rate scores within offset area assessment units

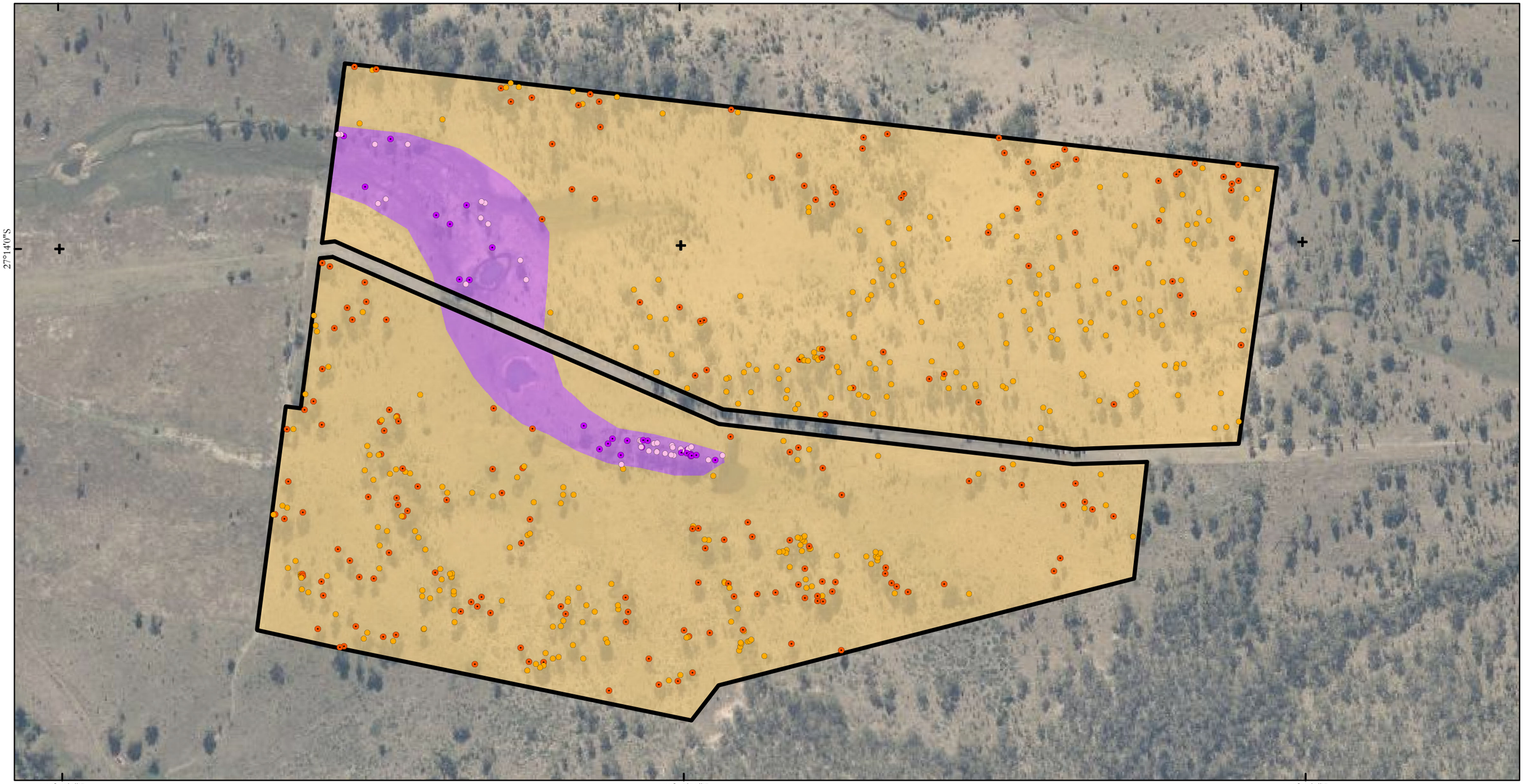
	AU1	**AU2**
Presence detected on or adjacent to site (neighbouring property with connecting habitat) (/10)	0	0
Species usage of the site (habitat type and evidenced usage) (/15)	5	5
Approximate density (per ha) (/30)	0	0
Role/importance of species population on site* (/15)	5	5
Total Species Stocking Rate Score (/70)	**10**	**10**
Species Stocking Rate Score – out of 4	**0.57**	**0.57**

	AU1	**AU2**
Key source population for breeding (/5)	0	0
Key source population for dispersal (/5)	5	5
Necessary for maintaining genetic diversity (/15)	0	0

	AU1	AU2
Near the limit of the species range (/15)	0	0

Greater glider have been recorded in the vicinity of the proposed offset area with confirmed connectivity as per existing greater glider offsets approved on the broader offset land holding (refer **Plan 13**).

13a. Greater Glider Habitat



Legend

- Offset Area
- AU-1: Non-remnant (12.9-10.2) [78.26 ha]
- Tree with trunk DBH >= 500mm within AU-1 [count: 194]
- Tree with trunk DBH < 500mm & >=300mm within AU-1 [count: 331]
- AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]
- Tree with trunk DBH >= 500mm within AU-2 [count: 28]
- Tree with trunk DBH < 500mm & >=300mm within AU-2 [count: 33]

1:54,073

0 400 800 1,200 m

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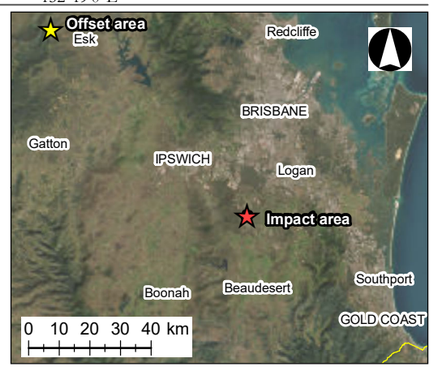
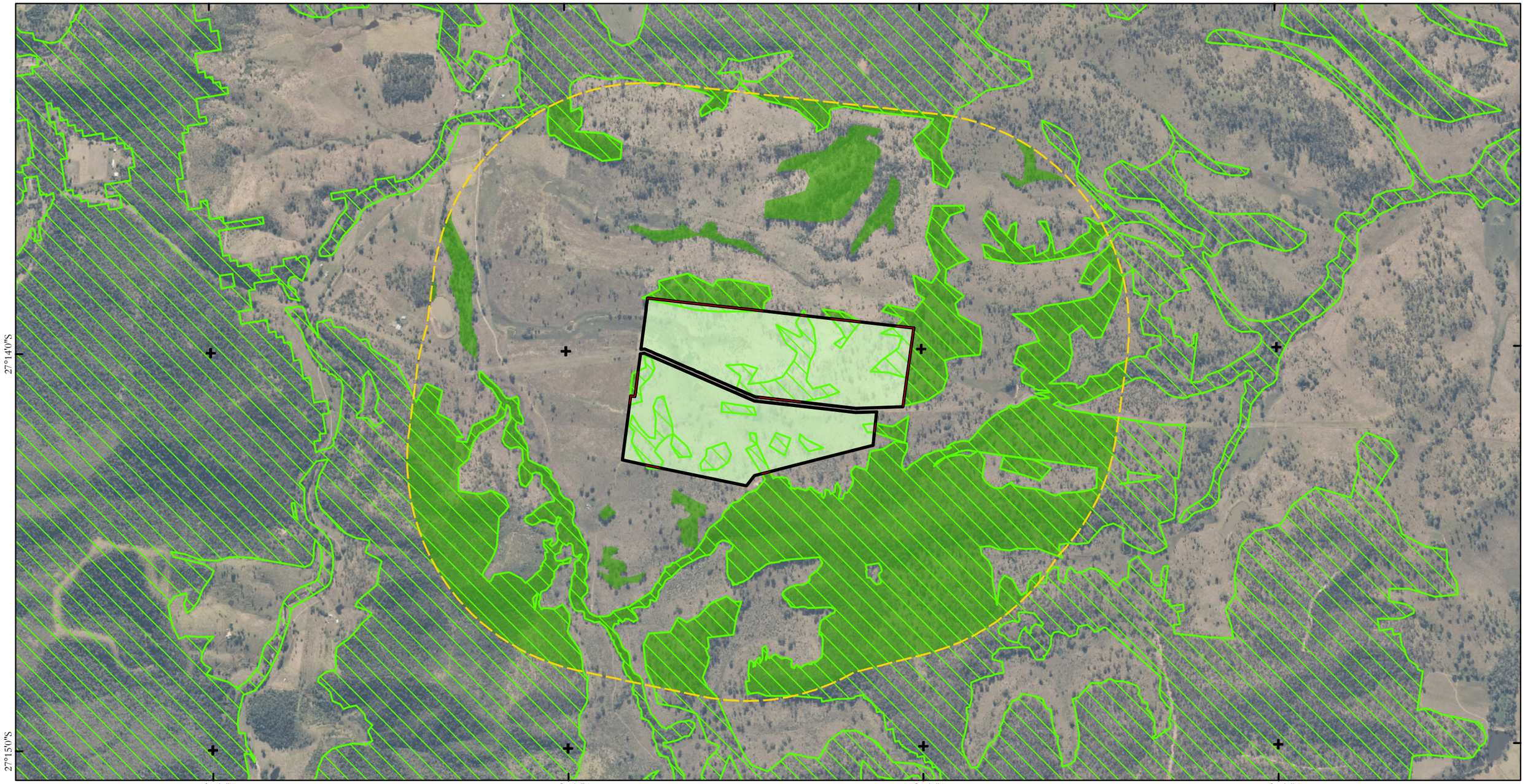
9383 E 13a OMP2 GG AU Habitat E



13b. Greater Glider Context Assessment - Offset Area



Legend

- Offset Area
- 1km buffer
- Potential Greater Glider habitat onsite [85.0 ha]
- Percentage of Offset Area boundary length supporting a Greater Glider habitat connection off and on site - 27%
- Percentage of Greater Glider habitat within 1km of Offset Area (40%)
- Size of Greater Glider habitat patch >200m corridor connectivity (>500 ha)

1:17,500

0 100 200 300 m

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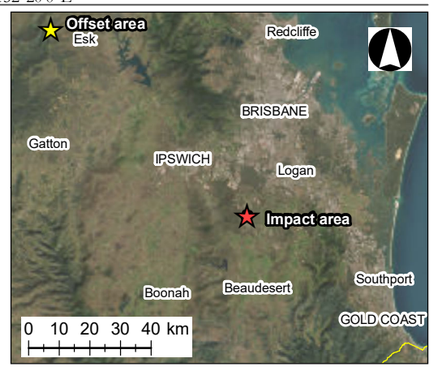
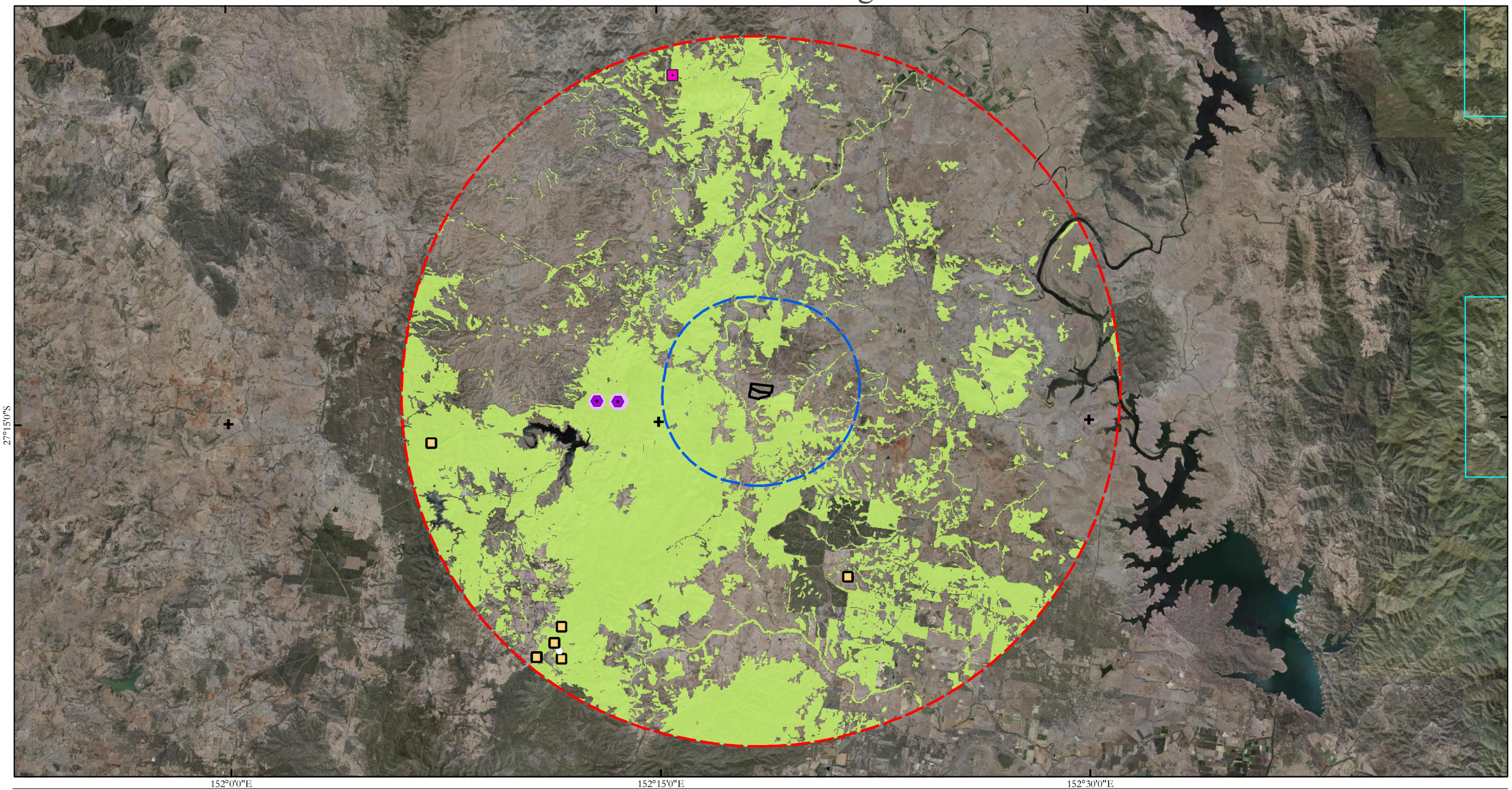
9383 E 13b OMP2 GG Context Assessment D



13c. Greater Glider Context Assessment - Wider Region



Legend

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

Central Greater Glider Records within 20km of Site (ALA, 2024)

- Greater Glider (*Petauroides minor*) Records within 20km of Offset Area without a record date [1]
- Greater Glider (*Petauroides minor*) Records within 20km of Offset Area recorded over 20 years ago [22]
- Greater Glider (*Petauroides volans*) SHG record in 2023 within 20km of offset site
- Greater Glider (*Petauroides volans*) record from Big T Pumped Hydropower Energy Storage Referral - 4 records (DPM Envirosciences, 2021)

1:215,000

0 1 2 3 4 km

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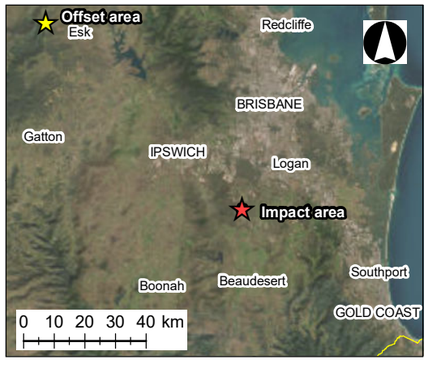
9383 E 13c OMP2 GG Regional Context Assessment D



8.2.7 Swift Parrot MHQA

8.2.7.1 Features

There are 45 and 448 key foraging tree features (493 *E. tereticornis* and *C. citriodora*) identified in AU1 and AU2 (refer **Plan 14**).

Swift parrot have not been recorded in the vicinity of the proposed offset area due largely to their rarity but are highly mobile (**Plan 14**).

14a. Swift Parrot Foraging Habitat

Legend

- Offset Area
- AU-1: Non-remnant (12.9-10.2) [78.26 ha]
- AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]
- AU-1: Corymbia citriodora (count: 431)
- AU-1: Eucalyptus tereticornis (count: 29)
- AU-2: Corymbia citriodora (count: 17)
- AU-2: Eucalyptus tereticornis (count: 16)

1:5,000

0 50 100 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

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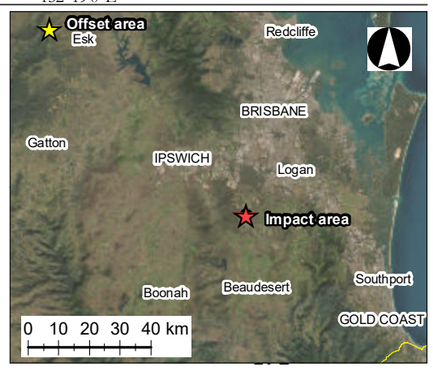
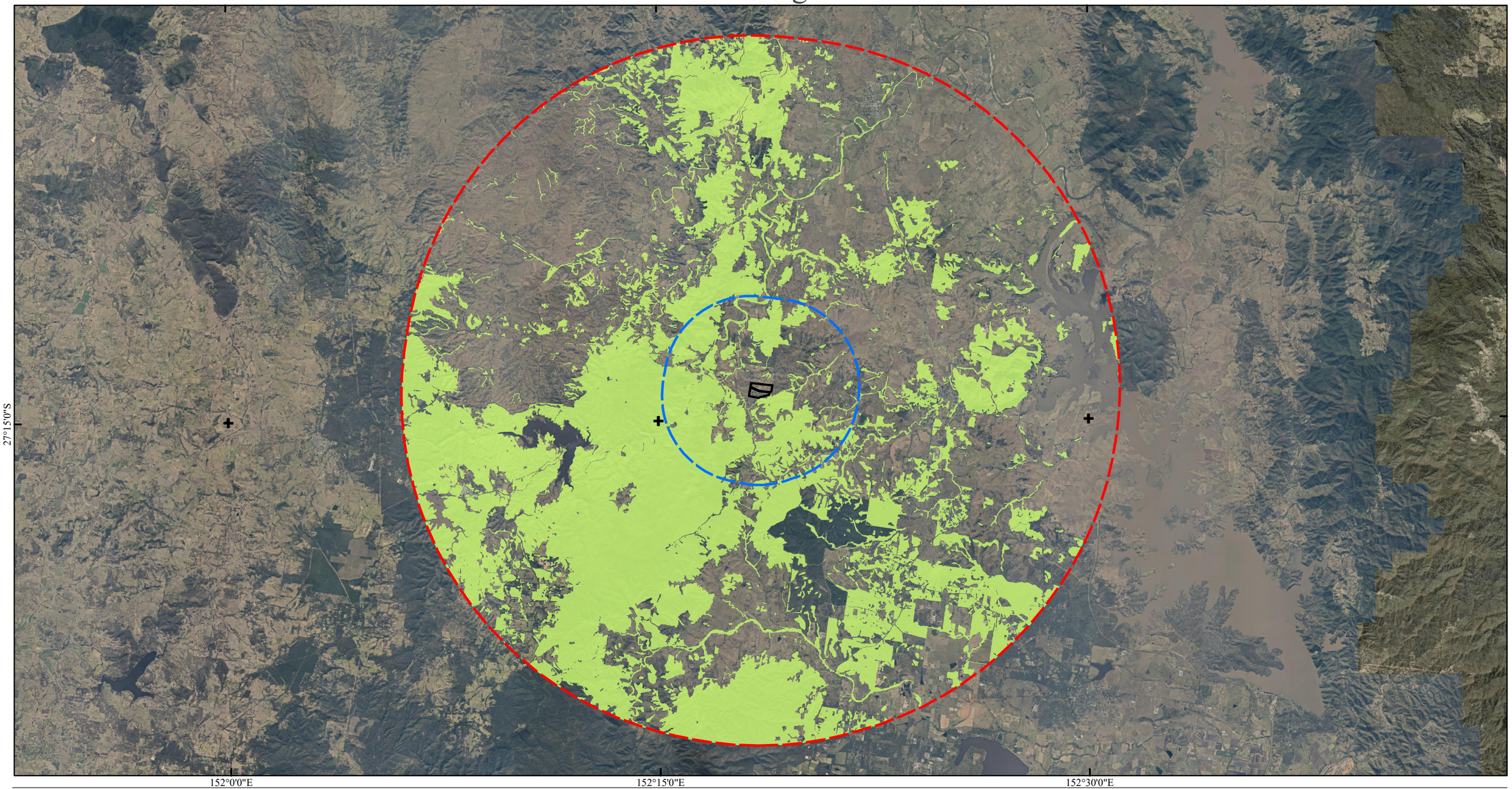
Date: 03/03/2026

9383 E 14a OMP2 SP AU Habitat C



14b. Swift Parrot Context Assessment - Wider Region



Legend

- Offset Area
- 5km Offset Area Buffer
- 20km Offset Area Buffer
- Potential Swift Parrot (*Lathamus discolors*) habitat within 20km of offset site
- Swift Parrot (*Lathamus discolors*) Records within 20km of Offset Area [0]

1:215,000

0 1 2 3 4 km

N W E S

Cordinate System: GDA2020 MGA Zone 56

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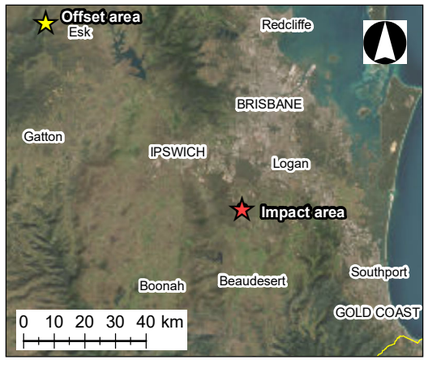
Date: 3/3/2026

9383 E 14b OMP2 SP Regional Context Assessment D



8.2.8 Regent Honeyeater MHQA

8.2.8.1 Features

There are 431 and 17 key foraging tree features (448 *C. citriodora*) identified in AU1 and AU2 (refer **Plan 15**).

Regent honeyeater have not been recorded in the vicinity of the proposed offset area due largely to their rarity but are highly mobile (**Plan 15**).

15a. Regent Honeyeater Foraging Habitat

Legend

- Offset Area
- AU-1: Non-remnant (12.9-10.2) [78.26 ha]
- AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]
- AU-1 corymbia citriodoria (count: 431)
- AU-2 corymbia citriodoria (count: 17)

1:5,000

0 50 100 m

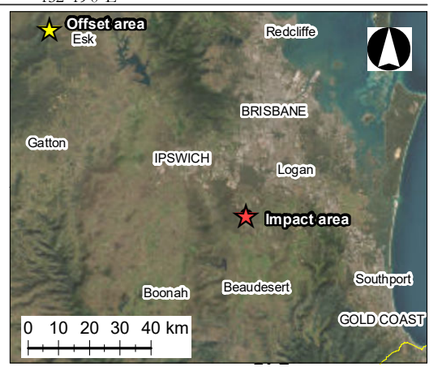
N W E S

Cordinate System: GDA2020 MGA Zone 56

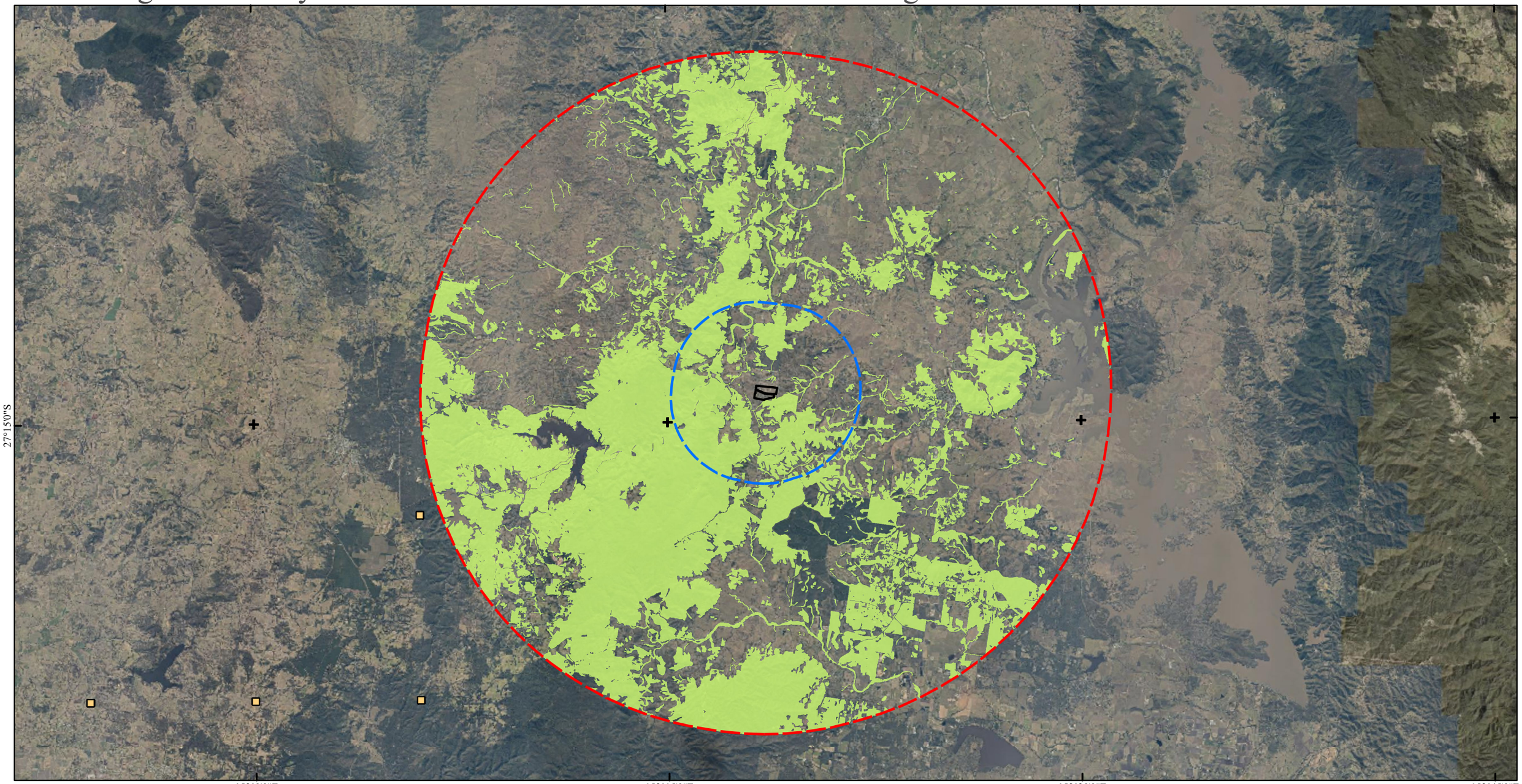
FRASERS PROPERTY

Date: 03/03/2026

9383 E 15a OMP2 RHE AU Habitat C



15b. Regent Honeyeater Context Assessment - Wider Region



Legend

- Offset Area
- 5km Offset Area Buffer
- 20km Offset Area Buffer
- Potential Regent Honeyeater (*Anthochaera phrygia*) habitat within 20km of offset site
- Regent Honeyeater (*Anthochaera phrygia*) Records within 20km of Offset Area [0]

*Records have been generalised to a 10x10km grid to protect actual record location

1:225,000

0 1 2 3 4 km

N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

References:
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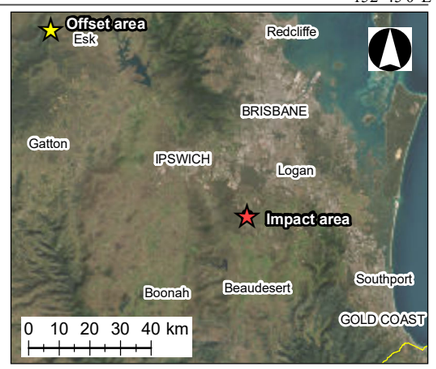
Date: 3/3/2026

9383 E 15b OMP2 RHE Regional Context Assessment D



8.2.9 Summary of baseline scores for offset area

The overall baseline habitat quality scores for MNES at the offset area are presented in **Tables 47 to 49**.

Table 47: Offset Area MHQA score summary - koala

	AU1	AU2
Site Condition (/3)	1.88	1.31
Site Context (/3)	2.20	2.20
Species Stocking Rate (/4)	2.29	1.14
MHQA Score	**6.36 (6)**	**4.64 (5)**

NB: number in parentheses is rounded score

Table 48: Offset area FHA score summary – grey-headed flying-fox

	AU1	AU2
Site Condition (/3)	1.89	1.49
Site Context (/3)	1.75	1.75
Species Stocking Rate (/4)	1.20	1.20
MHQA Score	**4.84 (5)**	**4.44 (4)**

NB: number in parentheses is rounded score

Table 49: Offset area MHQA score summary – greater glider

	AU1	AU2
Site Condition (/3)	1.21	0.92
Site Context (/3)	2.04	2.04
Species Stocking Rate (/4)	0.57	0.57
MHQA Score	**3.81 (4)**	**3.53 (4)**

NB: number in parentheses is rounded score

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, appointed contractor, or the Proponent, 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 MNES 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 MNES 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:

- *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 poliocephalus)*
- *Conservation advice for Petauroides volans (greater glider (southern and central))*
- *National Recovery Plan for the Swift Parrot Lathamus discolor*
- *Conservation Advice for Anthochaera phrygia (Regent Honeyeater)*

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 50**.

Table 50: Offset Area Operational Management Units

OMU	Assessment Unit	VMA Status	Regional Ecosystem	Area (ha)
OMU1	AU1	Category X	Non-remnant RE12.9-10.2	78.26
OMU2	AU2	Category X	Non-remnant RE12.3.7	6.73

9.3 Management Action 1 – Legally Secure Offset Area

The offset area must be protected and managed against known and potential threats for the MNES in perpetuity, to attain a conservation gain. As such, the offset area is to be legally secured for conservation via a suitable method such as a covenant under the Land Act 1994 and / or the Voluntary Declaration (VDEC) process administered under the Queensland VMA.

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. Koala Farmland Fund, as the offset provider, will continue to manage the offset area for the life of the offset, whilst reporting required milestones and data to the proponent annually. Legally securing the offset area is listed in the Conservation Advice as a Priority Management Action, under “Habitat Loss, Disturbance and Modification”.

Demonstration of compliance will be provided in the Annual Compliance Report.

9.4 Management Action 2 – Non-native Vertebrate Pest Management

9.4.1 Justification

Feral or unwanted domestic dogs have been identified as a key threatening process under the EPBC Act and are confirmed as a direct predation risk to MNES. 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 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 MNES and indirectly stress them making them more susceptible to disease. 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 51.**

Table 51: 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)	*Canis familiaris* (Wild Dog) *Canis familiaris* 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 (high)	*Felis catus* (Feral Cat)	Class 2	Actual impacts on native fauna – HIGH	Widespread occurrence in low to medium densities	Control
3 (high)	*Vulpes vulpes* (Red Fox)	Class 2	Actual impacts on native fauna – MEDIUM Actual impacts on agricultural production values – LOW	Widespread occurrence in low to medium densities	Control

9.4.2 Baseline surveys

Wild dog presence has been documented across the broader offset property. Baseline vertebrate pest surveys specific to the offset area will be completed and documented in Year 1 of the offset with monitoring to continue in 5 year intervals for the offset management period.

9.4.3 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 for the control of the pest species identified in **Table 52** 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.
- 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 52.** 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 52: 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 defence 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 OMP 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, MNES 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.

9.4.4 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 5 year intervals from Year 1. 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

9.5.1 Justification

Weed control is fundamental to improving biodiversity and the ecological condition of the habitat within the offset area. Historical land uses across the offset area have resulted in the introduction, spread and persistence of a variety of environmental weeds. Whilst there have been a wide variety of environmental weeds recorded across the site, the key species to be controlled in the offset area is *Lantana camara* (Lantana), a Weed of National Significance (WONS).

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 fauna, *L. camara* also changes the structure and health of the ecosystem, which can lead to a decline in the health and quality of koala food and habitat. *L. camara* is a transformer weed, altering wildfire behaviour, potentially resulting in destruction of native trees on a larger scale (Berry et al 2011, DAF 2016). *L. camara* also supresses eucalypt recruitment, both through its allelopathic properties and its capacity to shade out other species. 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.

9.5.2 Proposed action

Weed management measures targeting WONS and predominantly Lantana will target the mapped extents and priority areas 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 fauna mobility, with supplementary weed management completed on a priority system. Weed management strategies for Lantana specifically are listed in **Table 53** and other weeds in **Table 54**.

The management actions must reduce the extent of or maintain WONS weed cover below 5% by Year 5 of the offset as detailed in the environmental outcomes. The timing for the implementation of management measures includes:

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

Notably, the Offset Provider is developing a weed management plan for entire South Kipper Offset Property, including this offset area, which ensures consistent and property-wide approaches to weed monitoring and management. It will include a quantitative and repeatable weed cover monitoring method that will enable assessment against the completion criteria "below 5% weed cover by year 5". It will also include photo-monitoring requirements as well as management actions to be employed. WONS mapping will include:

- Preparation of a Weed Management Plan by the Offset Provider in Year 1 of the offset
- Implementation of the Weed Management Plan by the Offset Provider including baseline weed cover surveys and photo-monitoring in Year 1 of the offset (in accordance with the method outlined in the Weed Management Plan)

Table 53: 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 54: Weed treatment and removal methods

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

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

Weed Notes

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

Weed Management 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 **Table 55** for a summary of contemporary weed management techniques extracted from the SEQERF.

Table 55: Weed Treatment Schedules (source: SEQERF)

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

Method	Description
Oil-hang	Vines such as mile-a-minute (*Ipomoea cairica*) which produce long stolons extending many metres along the surface of the ground, are suited to the oil- hang method. Locate the base of the plant and carefully pull up the runners and roll them up. The resulting roll of vine is then hung in the fork of a tree to dry out as if it is left on the ground it is likely to re-shoot. Where runners are climbing up into a tree they are cut off at head height prior to the runner being rolled up - there is no need to pull cut vines down from trees as this action is likely to damage the tree. The base of the vine is treated using the cut scrape- paint method.
Gouge-paint	This method applies to plant species that have a fleshy underground storage organ, such as the large tuber that is often found at the base of madeira vine. It is also particularly appropriate for the treatment of climbing asparagus (*Protasparagus plumosus*). If using this technique on climbing asparagus, first cut the stems that are growing into the canopy at head height and also at the base. The fleshy rhizome can then be gouged, or alternatively in the case of climbing asparagus, it may be struck several times firmly with the head of a pair of loppers, allowing the brown outer covering of the crown to peel away exposing the white fleshy inner section of the rhizome for application of herbicide. Gouge out sections of the fleshy base with a knife and apply herbicide using a paint pot and brush or dripper bottle within 10 seconds
Basal Barking	This method involves mixing an oil soluble herbicide in diesel/kerosene and painting or spraying the full circumference of the trunk or stem of the plant from ground level to a height of approximately 45cm. Basal bark application is suitable for thin-barked woody weeds including saplings, regrowth and multi- stemmed shrubs. The method will usually result in the mortality of difficult-to- control woody weeds at any time of the year, provided the bark is not wet or too thick to enable the herbicide to penetrate. The method 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 (Erythrina spp, Privet Ligustrum spp) and umbrella trees are generally treated by stem-injection. Holes are drilled at regular intervals around the base of the tree and exposed roots using a drill. A tree injection syringe attached to a small capacity knapsack is used to fill the holes with the herbicide. Stem-injection of trees can also be undertaken using a hatchet to create cuts in a brickwork pattern in trunks of trees for the application of herbicide (known as tree filling). Frilling is more labour intensive than drilling. The greatest benefit of stem injection is that the trees can be left standing in situ as they die, provided there is no risk to humans or infrastructure from falling limbs. This creates convenient roosts for birds and other animals, and prevents the formation of large amounts of debris on the ground and damage to understorey plants which would result if the trees were to be cut down using a chainsaw.
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

Method	Description
	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 water courses, when frogs are breeding, or presence of threatened species).
General Mechanical	May involve use of machinery (e.g., brushcutter, chainsaw, slasher, dozer, excavator). Suitable for large infestations and weed trees. Initially cost-effective, but requires immediate revegetation of site or matting/ mulch application and extensive maintenance periods, Generates excessive soil and vegetation disturbance

9.5.4 Weed Control Monitoring

Photo monitoring is to be undertaken annually for the first five years to ensure progression to the year 5 milestone of less than 5% weed cover.

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 for five years 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 weed suppression. 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.

9.5.5 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. Detailed surveys are also recommended at Year 3 to ensure WONS cover are on track to be reduced below 5% weed cover under the environmental outcomes.

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 Year 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

9.6.1 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 OMP will be used to assess baseline fuel loads and indicate management techniques and planning, specific to the offset area in the context of the surrounding landscape. The overall objective is to prevent fire-induced koala mortality via targeted fuel hazard reduction and prescribed fire management. 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.

9.6.2 Proposed action and management measures

9.6.2.1 Bushfire Management Plan

A specific Bushfire Management Plan (BMP) will be developed by qualified bushfire consultants in Year 1 of the offset. The purpose of the BMP will be to guide fire management on the Offset Property to manage the risk of high intensity fire impacting vegetation communities and associated fauna species including koala, greater glider and grey-headed flying fox. The BMP principles will aim to enhance bushfire resilience and vegetation community health through fuel load management, risk-reduction measures and appropriate fire regimes. The BMP will combine information from a variety of sources including land manager discussions, industry best practice, This OMP, as well as the following technical documents:

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

The BMP will include the following components, with further initial detail on some of these components in the below sections:

- Fire management for MNES: Description of fire management considerations for koala, grey-headed flying fox and greater glider, including threats from inappropriate fire regimes.
- Bushfire hazards: A comprehensive landscape-scale assessment and historical review of the key factors characterising the area’s bushfire risk, including fire weather, topography and fire history. Site fuel load assessment. A brief description of hazards on the Offset Property is provided in Section 9.6.2.2 below.
- Operation Fire Management Units (FMUs): outlining site fire management activities including but not limited to weed management, stock grazing and planned burning for fuel reduction and ecological management, access and fire break maintenance and habitat protection measures (further detailed in Section 9.6.2.3 below).
- Fire management plan: Provides a land management plan that outlines Fire Management Units, including land management zones (including operational and site information).
- Monitoring and maintenance schedule: Describing an approach for adaptive management and monitoring to evaluate the effectiveness of fire management regimes and land management activities (monitoring methods outlined in Section 9.6.2.4 below).

9.6.2.2 Bushfire risk areas and potential ignition sources

External bushfire risk areas

The Offset Area is bordered to the north, east, west and south-west by rural pastoral land and to the south-east by regrowth vegetation. Land to the north, east and south is part of the broader Offset Property and will also be managed under BMPs. Regardless, surrounding land uses present potential pathways for bushfire to originate outside the Offset Area and enter the site, particularly under elevated fire weather conditions. Higher external bushfire risk is associated with:

- South-eastern boundaries where regrowth native vegetation occurs.
- The western boundary where fire may originate from neighbouring rural properties due to pasture management activities, machinery use or escaped planned burns; and
- Roadside corridors and access tracks adjoining or entering the Offset Property, which may act as ignition sources during periods of high fire danger.

Internal bushfire ignition sources
Potential sources of bushfire ignition within the Offset Property include:

- Escaped planned fire management activities, including ecological or hazard reduction burning.
- Operational activities, such as use of farm machinery and vehicle movements along internal tracks.
- Natural ignition sources, including lightning strikes, particularly along ridgelines and elevated areas; and
- Accumulated fine fuels, including grasslands, regrowth areas and edge interfaces between cleared land and remnant vegetation.

Bushfire hazard characteristics
Bushfire behaviour across the Offset Property is influenced by fuel, weather and topography. Fuel loads vary spatially and include heavily grazed areas and regenerating vegetation. Areas of woody vegetation, particularly along vegetated creek lines, present a higher potential bushfire intensity.

Notably, the BMP will review and address relevant bushfire risk overlays and criteria specified within the State Planning Policy.

Existing access tracks and cleared areas provide opportunities for fire containment and suppression, subject to prevailing fire weather conditions and fire behaviour.

Fire management across the Offset Property will prioritise asset protection and prevention, with the offset values and restoration areas treated as critical assets requiring protection from high-intensity or unplanned fire.

9.6.2.3 Fire access, breaks and water resources

Site access and fire management lines
The Offset Property contains an established network of internal access tracks and entry points that provide access for land managers and emergency services (refer **Plan 17**). These tracks also function as fire management lines, enabling fire suppression access and assisting in fire containment during bushfire events.

Existing internal tracks and boundary access routes will be maintained to support safe and effective fire management and may be utilised as fire breaks where appropriate.

Boundary fire breaks
Fire breaks are located along portions of the property boundaries and internal interfaces and will be maintained to reduce the risk of fire entering or exiting the Offset Property. Boundary fire breaks may comprise cleared lines, managed grazing areas or existing tracks and will be managed in a manner that balances bushfire risk reduction with protection of environmental values (**Plan 17**).
Water resources and fire management infrastructure

Several farm dams, water bores and water storage tanks are located across and adjoining the Offset Property and are shown on **Plan 17**. These water sources may provide suitable access points for fire management vehicles and emergency services during bushfire suppression activities.

The approximate locations of existing water resources are identified to support fire response planning. Locations for temporary or permanent fire management infrastructure, including additional water tanks or equipment storage areas, will be further assessed and refined through the development of the BMP.

Protection of revegetation and rehabilitation areas

Fire management will specifically address the heightened vulnerability of developing revegetation and rehabilitation areas, which are at increased risk of damage from unplanned or high intensity fire, particularly during early establishment phases. Fire regimes will be designed to minimise the likelihood of fire impacting these areas until vegetation communities have sufficiently matured.

Protection of restoration areas is critical to achieving offset objectives and will be a key consideration in fire management planning, prioritisation of suppression response and selection of fuel management techniques.

9.6.2.4 Fuel management

Various techniques may be used to reduce and manage the fuel load within the landscape or modify the connectivity between fuel layers (Queensland Fire and Emergency Services, 2020). Fuel management techniques include the following (to be further detailed in the BMP):

- Stock grazing to manage near surface fuel loads (only to be undertaken under an approved Livestock Management Plan).
- Appropriate planned burn regimes to reduce fuel loads, control fire susceptible weeds and/or maintain ecological processes, and
- Targeted chemical or mechanical weed management and removal.

It is acknowledged that the primary aim of the Offset Property is to manage habitat and food resources for MNES, therefore fuel management should be implemented as part of an integrated land management approach that aims to appropriately manage the offset site values and risk profile.

9.6.3 Monitoring and reporting

Monitoring and adaptive site management will be incorporated into the management of bushfire risk within the Offset Property to assess the effectiveness of management activities. Specifically, monitoring will occur prior to and after implementing planned burns, as well as ongoing monitoring vegetation and fuel condition during rotational grazing. The adaptive management program may pose simple questions such as those provided below, or more complexed assessment. For example:

- Was the fuel hazard reduced to the targeted level for the FMU?
- Did the management activity contribute to a fire regime that is maintaining offset targets and environmental values?
- Did target regrowth or planted canopy species of a specific size survive the management activity?

If the answer to these questions is no, then adjustments to the land management actions or schedule may need to be made. The fuel hazard, vegetation condition and fire management tracks will be comprehensively assessed annually, as well as periodically as part of regular property activity, and especially before the start of the bushfire season (August – November).

9.6.3.1 Fuel hazard monitoring

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

9.7 Management Action 5 – Habitat creation and regeneration

9.7.1 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 the relevant conservation advices and recovery plans. Rehabilitation aims to enhance degraded areas through Management Action 3 (Weed removal) and reconstruction with 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.

9.7.2 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 56** 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 will be applied within the non-remnant and historically cleared areas to assist in vegetation coverage and composition.

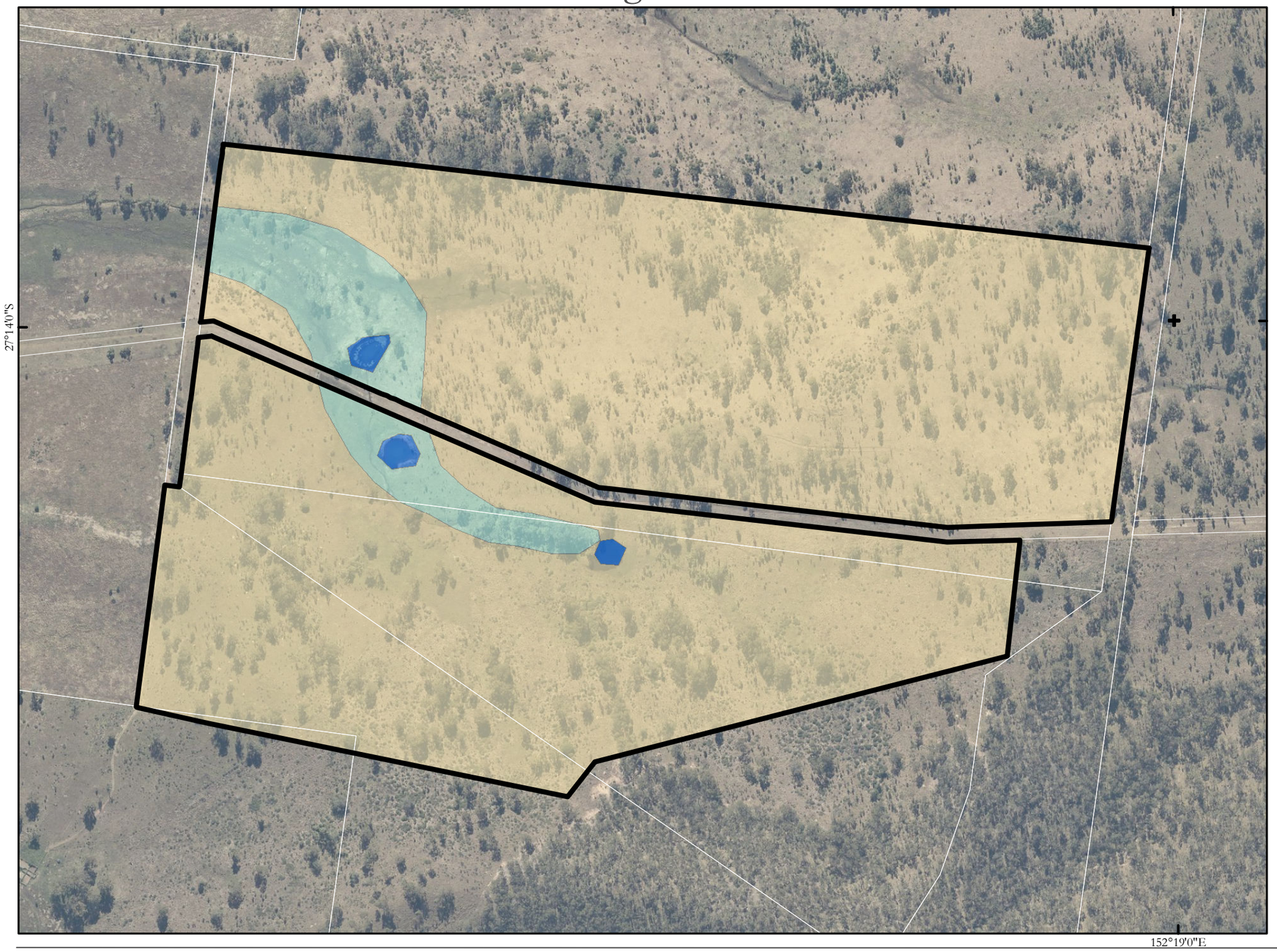
OMUs refined into Environmental Management Zones areas are shown on **Plan 16.**

Table 56: Operational Management Unit Rehabilitation Method Summary

OMU	Description	Rehabilitation Method
Non-remnant vegetation area (OMU 1)	Discontinuous canopy vegetation	• Reconstruction • Weed removal/control • Bushfire management • Planting as required
Non-remnant vegetation area (OMU 2)	Discontinuous canopy vegetation	• Reconstruction

OMU	Description	Rehabilitation Method
		• Weed removal/control • Bushfire management • Planting as required

16. Rehabilitation Plan - *Management and Treatment Areas*



Environmental Management Zones (EMZ)

EMZ 1 (Open paddocks) – Predominantly Restoration Planting

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

Appropriate weed management methodology within this zone initially to encourage natural regeneration. The management methodology must utilise sensitive techniques that will stabilise soil and minimise damage to existing native vegetation.

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

EMZ 2 (Open paddocks – drainage feature) – Predominantly Restoration Planting

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

Appropriate weed management methodology within this zone initially to encourage natural regeneration. The management methodology must utilise sensitive techniques that will stabilise soil and minimise damage to existing native vegetation, drainage feature banks and minimise impacts to aquatic / semi-aquatic fauna.

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

Legend

- Offset area
- Qld DCDB
- Existing dams [0.50 ha]
- EMZ 1 Open paddock [78.16 ha]
- EMZ 2 Open paddock (drainage feature) [6.34 ha]

1:6,000

0 50 100 m

N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

Date: 03/03/2026

9383 E 16 OMP2 Rehab B

On-ground works proposed within the OMUs and defined EMZs are detailed below.

Non-remnant Vegetation Areas (OMU 1 and OMU 2)

- 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 MNES movement and safety 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 (20 years from the legal securement/implementation of the offset area), including direct monitoring of MNES usage.

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

9.7.3 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 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

9.7.3.1 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.

9.7.3.2 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).

9.7.3.3 Maintenance Works

By the maintenance stage, the vegetation community supports germination and establishment of native plant species and canopy formation. Weed density decreases as the native plants which have been supported through restoration works are able to out-compete the 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.

9.7.3.4 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.

9.7.3.5 Planting Notes

Areas subjected to weed removal and control will 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.

9.7.3.6 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.

The proposed conservation gain and acquittal of impacts for the swift parrot and regent honeyeater is to be achieved through the planting of the preferred foraging tree species *Eucalyptus tereticornis* (Forest Red Gum) and *Corymbia citriodora* (Spotted Gum) at the offset site. Notably, the anticipated planting rates are derived from the expected coverage from the regional ecosystem technical descriptions. As the regional ecosystems provide suitable habitat for the other MNES, the proposal to regenerate these regional ecosystems is considered amenable to both the koala, swift parrot and regent honeyeater species.

9.7.3.7 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.

9.7.3.8 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.

9.7.3.9 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.

9.7.3.10 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.

9.7.3.11 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.

9.7.3.12 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 for three years 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.

Where natural regeneration fails, 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.

9.7.4 Monitoring and reporting

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

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

9.7.4.1 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.

9.7.4.2 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.

9.7.4.3 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.

9.7.5 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.

This will include:

- MHQA transects at baseline sampling locations; and
- direct and indirect surveys to target MNES presence, including SAT surveys, motion triggered camera trapping and spotlighting.

Monitoring will also need to include specific transects targeting establishment of key foraging species for swift parrot and regent honeyeater in non-remnant assessment units to ensure that target numbers are being achieved.

This monitoring will occur quarterly for the first 12 months then annually for years 3 and 4 and then at years 5, 10, 15 and 20.

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 cattle grazing. Gates leading to the subject offset area will have signage installed for added protection.

In addition, cattle will be managed as specified in this OMP via a combination of temporary and existing paddock fencing and, in time, 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 are not removed include barbed wire will also be retrofitted to further reduce threats to the grey-headed flying-fox, greater glider, swift parrot and regent honeyeater. 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 17** 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.

17. Offset Area Proposed Fencing, Signage & Fire Trails

27°14'0"S

152°18'0"E

152°19'0"E

Legend

- Offset area
- Qld DCDB
- Currently managed under EPBC approved BMP
- Proposed Offset Signage / Fire Trail Access Points
- Proposed New Fauna Friendly Fencing
- Existing Fencing to be Retrofit to Fauna Friendly Design
- Offset area access tracks/fire trails

Water resources

- Bore
- Dam
- Tank

1:6,000

0 50 100 150 m

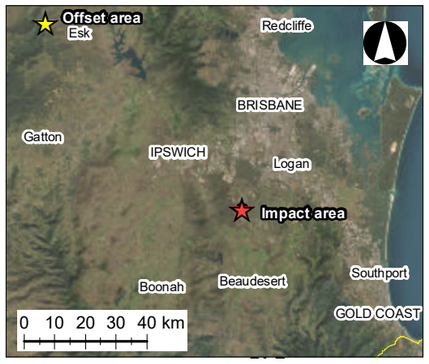
N W E S

Cordinate System: GDA2020 MGA Zone 56

FRASERS PROPERTY

Date: 03/03/2026

9383 E 17 OMP2 Offset Area Fencing E



9.9 Management Action 7 – Hollow Monitoring and Management

9.9.1 Justification

Greater Glider rely on specific hollows for denning and breeding as per the conservation advice. Monitoring the development of hollows and creating hollows in suitable trees that will be connected via recreated habitat will ensure denning and breeding resources for the Greater Glider are provided.

9.9.2 Proposed Management Measures

A Hollow Monitoring and Management Plan (HMMP) has been developed to monitor the utility of existing site hollows and creation of new hollows via Arborist / Contractor carving and nest box installation for the greater glider over the 20 year management period. The compilation and implementation of the HMMP is the responsibility of the Proponent.

Ample existing trees that are suitable for the creation of hollows have been identified (refer **Appendix I**). Detailed mapping and monitoring of hollow features and the creation of additional features by carving and nest boxes where required will ensure that enough features to acquit the OAG requirements under the features based assessment will be provided across the relevant assessment units, targeting a minimum of 1.5 hollows per hectare as per the conservation advice and reflected at the impact site.

The following completion criteria under the HMMP are proposed:

- Hollow Monitoring and Management Plan implemented in year 1.

9.9.3 Monitoring and Reporting

A detailed monitoring program as per the HMMP will ensure enough hollows (features) are present to acquit the minimum OAG requirements by the end of the management period. Monitoring will occur quarterly for the first 12 months then annually to year 20 as per the HMMP.

Reporting on hollow monitoring and creation will be included in Annual Compliance Reports.

9.10 Reporting requirements

An **Offset Area Annual Report** (OAAR) will be prepared by the Offset Provider for each year of the offset detailing management activities undertaken in accordance with the Management Framework and provides clear details on how performance targets are being addressed and any adaptive management measures implemented. It is anticipated that 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 or as specified on approval.

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. This will include an assessment of whether or not each environmental outcome has 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) will be required to be prepared under the approval. The OAAR and Milestone Reports will be included as part of the Annual Compliance Reports. 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 MNES (including their habitat) and any monitoring and management milestones achieved during the previous 12 months, including progress on key management measures, attainment of performance targets and completion criteria, and adaptive implementation outcomes. The compliance report will also address the effectiveness of the management measures and how the offset area is progressing against performance and completion criteria.

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

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

9.11 Data Management

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

10Adaptive Management

An adaptive implementation program will be used to ensure uncertainty is reduced over time, and that completion criteria are attained and maintained for the life of the offset. As more information becomes available following ongoing performance monitoring, the management and monitoring regime will be reviewed and revised to maximise the likelihood of attaining and maintaining the outcomes to be achieved by implementing the OMP. Any updates to the Additional Offset Management Plan which do not result in a material change to the environmental outcomes, performance and completion criteria will be made by **KFF1 and/or The Proponent** without the requirement of informing DCCEEW. If material amendments likely to alter the environmental outcomes, or performance and completion criteria are proposed to the OMP, the amendments and justification for the contingency measures will be provided to DCCEEW in writing.

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

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

An audit of OMP completed every five (5) years with consideration to the areas identified above and 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 OMP used regulatory and policy context to formulate the plan, listed below.

10.1.1 Regulatory and policy context

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

- 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)
- Conservation Advice for *Petauroides volans* (greater glider (southern and central) (DCCEEW 2022)
- National Recovery Plan for the Swift Parrot *Lathamus discolor* (DCCEEW 2024)
- National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*)
- *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*
- Queensland *Environmental Offsets Regulation 2014*.

10.2 Corrective Actions

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 57** states the management action, completion criteria, corrective action triggers and corrective actions. In addition, a risk assessment has been completed in **Appendix J.**

Table 57: Corrective Actions

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
Legally secure the offset area	• The offset area is legally secured for conservation via a suitable method such as a covenant or the Voluntary Declaration (VDEC) process administered under the Queensland *Vegetation Management Action 1999* or a covenant under the *Land Act 1994* or *Land Titles Act 1994* prior to the impacts occurring. • The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP. • 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 impacts occurring.
Non Native Vertebrate Pest Management	• Mitigated risk of injury or death of MNES non-native predator attacks within the offset area. • Non-native vertebrate pests and evidence of pests are controlled within the offset area.	Pest management is not implemented and/or evidence of predation on MNES is observed. Monitoring actions and OAARs identify ongoing presence of predator and non-native herbivorous or non-predator vertebrates that impact on habitat quality and condition. Monitoring actions and OAARs detect increase in non-native predator and herbivore detection from previous survey or relative to the baseline. Control of non-native predators and herbivores has not been maintained from the time that it is first achieved for the remainder of the life of the offset.	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 non-native predator or herbivore detection occurred. Where there is evidence of non-native predator or herbivore activity trapping or baiting program by a suitably qualified contractor will be conducted. Risk management, corrective actions and adaptive management are to be integrated as required throughout the

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
			offset management period in response to changes or natural events. If key milestones and performance criteria are not achieved by the timeframes outlined, the corrective actions will continue until achieved, extending the management period.
Weed management	• The management actions must reduce the extent of or maintain WONS weed cover below 5% by the end of Year 5 and be maintained for the life of the offset (20 years).	Weed cover has increased or remained constant, relative to the previous monitoring event, or new weeds are detected. The extent of weed cover has not been reduced as required to reach the environmental outcome as identified in the OAARs and Milestone Reports.	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. Source of any new weeds is identified and mitigated. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events. If key milestones and performance criteria are not achieved by the timeframes outlined, the corrective actions will continue until achieved, extending the management period.
Bushfire management	• Mitigated risk of high intensity fires in the offset area. • Mitigated risk of MNES injury or death from fire.	Bushfire management measures not implemented and/or a high intensity bushfires impact the offset area. Unexpected bushfire event and resurgence of weeds/decrease habitat.	Undertake audit to inspect impacts within 2 weeks following an event (if deemed safe). Following annual monitoring of fuel loads, implement actions as directed by the local authority including prescribed burning or other techniques undertaken in

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
	• Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes.	Reduced habitat quality, vegetation dieback or MNES mortality due to failure of prescribed burns.	consultation with the Queensland Rural Fire Brigade to manage fuel loads within 6 months or as soon as appropriate (*i.e.,* consider weather conditions). If required, recovery actions including weed control and management and/or infill planting may be undertaken to ensure the habitat quality performance criteria are achieved within the management period within 6 months following an audit if favourable weather conditions. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes, prescribed burns or natural events.
Habitat creation and regeneration management	• Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland's VMA successor legislation by year 20 which requires 70% of canopy height and 50% of expected cover according to the relevant Regional Ecosystem benchmark to be reached. • Site condition metrics for MNES improves in accordance with environmental outcomes. • Include targeted assessment of key foraging species for swift parrot and regent honeyeater.	Regeneration measures not implemented as proposed; site condition metrics do not improve according to proposed environmental outcomes. Habitat does not achieve performance criteria as identified in Milestone Reports within the management period, implement corrective actions.	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. Monitoring will be undertaken regularly by the appointed suitably qualified regeneration contractor or Ecologist after planting in accordance with watering schedules (depending on rainfall) of infill planting and supplementary direct seeding, planting, weed control, fertilizer, amelioration or other management actions will be implemented as required

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
			to enhance success rate and stimulate tree growth and establishment. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events. The management period may be extended to ensure environmental outcomes are able to be achieved.
Fencing and Signage	• Mitigated risk of mortalities or injury to MNES recorded as a result of barbed-wire fencing. • Mitigated risk of stock breaches or unauthorised access recorded.	Fencing or signage not installed or retrofitted as proposed causing entanglement or stock breaches. Fencing disrepair causes stock breaches or other unauthorised access including people and feral animals.	Fencing is repaired and alternative signage and fencing solutions are considered if needed.
Hollow Monitoring and Management	• Hollow Monitoring and Management Plan implemented in year 1. • Hollows and nest boxes installed as per the HMMP.	Hollow Monitoring and Management Plan not implemented. Where monitoring records hollow or nest box failure, corrective actions are to include repair or replacement as necessary	Corrective actions are taken to ensure milestones are rectified, including recovery actions to ensure milestones are implemented prior to the timeline completion as per the HMMP, such as additional specialist resourcing where necessary. Repair or replacement of hollows to occur within 3 months of reporting.

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., MNES) 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 OMP, 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 anticipated 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.

11 References

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12Appendices

Appendix A – Offset Area Milestone Framework
Appendix B – Features OAG Reference Tables
Appendix C – EPBC Information Request 2019/8389
Appendix D – Offset Assessment Guide Calculator Results
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 – Offset area – greater glider MHQA baseline scoring
Appendix I – Hollow Monitoring and Management Plan
Appendix J – Risk Assessment

Appendix A

Offset area – Milestone Framework

Koala Environmental Outcomes – AU1

Attribute	Current Score	Year 5 score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of EDL dominant species will be maintained >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 100% of the benchmark. If recruitment falls to less than 75% 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 10**.	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 67% 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 15 years will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	2.5	2.5	2.5	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 35.71% of the benchmark. If the shrub 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.
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 10**.	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 57.14% of the benchmark. If the grass 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.
Native plant species richness - Forbs	5	5	5	5	5	Immediate	Native forb species richness between 25% and 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 will be maintained above 70% of the benchmark. If the forb species falls to less than 70% at 10 years then remedial actions to improve the prospect of achieving between 25% and 90% in 15 years will be applied. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	A median tree height greater than 70% of the benchmark will be maintained as a result of 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If tree height is not maintained above 70% at 15 years, then the prospect of extending the management period may be investigated. By Year 15 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	5	5	5	5	5	Immediate	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 10.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained above 50% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 years will be applied. These include remedial plantings of advanced stock.
Shrub canopy cover	3	3	3	3	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10.**	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 40.83% of the benchmark. If the shrub canopy cover has not improved to greater than 50% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 years will be applied. These include remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native grass cover to maintained at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years..	If the native perennial grass cover is not maintained at greater than 90% in 10 years then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	5	5	5	5	5	Immediate	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter is not maintained to greater than 50% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 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 10**.	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	5	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 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20years.	Coarse woody debris is currently 21.25% 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% (reached 40% by Year 10) then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	5	10	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 5 years by specific management actions 3 & 5 outlined in **Table 10**.	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 3 to track progress to the Year 5 milestone objective.	Weed cover is currently 23.8% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 5 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	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 & 6 outlined in **Table 10**.	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, & 6 outlined in **Table 10**.	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 20years.	Quality and availability of shelter is currently moderate. All site condition remedial actions also apply to this criterium achieving a high rating.
Site Condition Score	**62.5**	**67.5**	**70.0**	**73**	**90**				
Overall Site Condition Score out of 3	**1.88**	**2.03**	**2.10**	**2.19**	**2.70**				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	7	7	7	7	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 8.**	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 10**.	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**	**41**	**41**	**41**	**44**				
Overall Site Context Score (out of 3)	**2.20**	**2.20**	**2.20**	**2.20**	**2.36**				
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	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in **Table 10** Koala usage of the site will be maintained.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If usage levels are not maintained at the 10 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala usage has not improved to breeding level by 15 years then the management period may be extended and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala 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
Approximate Density	10	10	10	10	10	Immediate	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 10** at least low level Koala activity (<22.52% scats recorded using the East Coast med-high population category) will be maintained.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If density levels are not maintained at 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 15 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	**40**	**40**	**40**	**40**	**40**				
SSR Score out of 4	**2.29**	**2.29**	**2.29**	**2.29**	**2.29**				
Total Habitat Quality Scores	**6.36**	**6.51**	**6.43**	**6.67**	**7.34**				

Koala Environmental Outcomes – AU2

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of EDL dominant species will be maintained >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 100% of the benchmark. If recruitment falls to less than 75% 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	Native tree species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 20 years as specified above. If the sub-canopy layer species richness has not improved to greater than 95% at 15 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	0	0	0	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 12.5% of the benchmark. If the shrub species richness has not improved to greater than 25% at 15 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	5	20 years	Native grasses species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 41.67% of the benchmark. If the grass 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.
Native plant species richness - Forbs	0	0	0	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 10**.	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 11.67% of the benchmark. If monitoring indicates that forb species richness is not transitioning to over 90% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy height	3	3	3	3	5	20 years	Tree canopy height greater than 70% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 56.82% (EDL) and 62.50% (sub-canopy. It is anticipated that the tree canopy height will be achieved over 70% by year 20. If monitoring indicates that tree height is not transitioning to over 70% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy cover	2.5	2.5	2.5	2.5	5	20 years	Tree canopy cover between 50% and 200% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 55.97% (EDL) and 08% (sub-canopy). It is anticipated that the tree canopy cover will be achieved between 50% and 200% by year 20. If monitoring indicates that tree cover is not transitioning to over 50% at Year 15 then remedial actions will be

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
									applied. These include remedial plantings.
Shrub canopy cover	0	0	0	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 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10 15, and 20 years.	Shrub canopy cover is currently at 0% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. 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 10**.	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	3	3	3	3	5	20 years	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 10**.	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 achieved between 50% and 200% by year 20. If monitoring indicates that litter cover is not transitioning to between 50 and 200% by year 15 then remedial actions will be applied. These include reviewing fire management controls and weed cover achievements.
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 10**.	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	0	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 10**.	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 0% 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% (reached 8% by Year 10) then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	5	10	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 5 years by specific management actions 3 & 5 outlined in **Table 10**.	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 3 to track progress to the Year 5 milestone objective.	Weed cover is currently 20% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 5 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	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 & 6 outlined in **Table 10**.	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 20years.	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 & 6 outlined in **Table 10**.	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 criterium achieving a high rating.
Site Condition Score	**43.5**	**48.5**	**48.5**	**58.5**	**90**				
Overall Site Condition Score out of 3	**1.31**	**1.46**	**1.46**	**1.78**	**2.70**				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	7	7	7	7	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 10.**	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 10**.	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**	**41**	**41**	**41**	**44**				
Overall Site Context Score (out of 3)	**2.20**	**2.20**	**2.20**	**2.20**	**2.36**				
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	15	15	15 Years	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in **Table 10** Koala usage of the assessment unit 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.	If evidence of use is not recorded at the 15 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala usage 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	15 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 10** 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.	If density levels are not recorded at low level at the 15 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not improved to

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
									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	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score (out of 70	**20**	**20**	**20**	**40**	**40**				
SSR Score out of 4	**1.14**	**1.14**	**1.14**	**2.29**	**2.29**				
Total Habitat Quality Scores	**4.64**	**4.79**	**4.79**	**6.24**	**7.34**				

GHFF Environmental Outcomes – AU1

Assessment Unit - Regional Ecosystem - GHFF	AU 1 - Non-Remnant RE12.9-10.2										
Site Reference	**Transect 1**	**Transect 3**	**Average Score**	**AU Score**	**Year 5 Score**	**Year 10 Score**	**Year 15 Score**	**Year 20 Score**	**Justification / Management Actions / Timing**	**Monitoring**	**KPIs and Adaptive Management**
	Raw Data	**Raw Data**									
Vegetation Condition	Cat X	Cat X	**5**	**5**	**5**	**10**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 10 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 10 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	3	4	**3.50**	**10**	**10**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** 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 10. 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	0.6275	0.5075	**0.57**	**8**	**8**	**8**	**8**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Flower Score' will improve to at least 0.76 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.	Flower score within the assessment unit is to achieve at least 0.76 by Year 20. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	All biological shortages covered by the species on-site (8.5/10)	All biological shortages covered by the species on-site (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 10** 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	3	2	**2.5**	**5**	**5**	**5**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Quality of Foraging Habitat' will improve to at least >6 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.	Foraging habitat within the assessment unit is to achieve at least 4 species by Year 15. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.

Non-native Plant Cover	23.8%	23.8%	**23.80%**	**10**	**20**	**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 10** will steadily improve 'Non-native Plant Cover' to below 5% in AU1 within 5 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 below 5% has not been achieved by the end of Year 5 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score				**47.25**	**57.25**	**62.25**	**78**	**100**			
MAX Site Condition Score				***100***	***100***	***100***	***100***	***100***			
Site Condition Score - out of 4				**1.49**	**2.29**	**2.49**	**3.12**	**4.00**			
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Inside	Inside	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 camp within 20km	1 active Level 3 camp within 20km	**1**	**1**	**1**	**1**	**1**	**1**	NA	NA	NA
Threats to the species	5	5	**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 7 outlined in **Table 10** 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				**35**	**40**	**40**	**40**	**40**			
MAX Site Context Score				***60***	***60***	***60***	***60***	***60***			
Site Context Score - out of 3				**1.75**	**2.00**	**2.00**	**2.00**	**2.00**			
GHFF Foraging Tree Density	145	100	**122.5**	**4**	**4**	**6**	**6**	**6**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 10** will improve stem densities of foraging trees within AU1 to greater than 131 per hectare by year 10.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 131 per hectare by Year 10. If the stem density does not achieve 131 by year 5, 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				**1.20**	**1.20**	**1.20**	**1.80**	**1.80**			
Total				**4.84**	**5.49**	**5.69**	**6.92**	**7.80**			

GHFF Environmental Outcomes – AU2

Assessment Unit - Regional Ecosystem - GHFF	AU 2 - Non-remnant RE12.3.7										
Site Reference	**Transect 2**	**Transect 4**	**Average Score**	**AU Score**	**Year 5 Score**	**Year 10 Score**	**Year 15 Score**	**Year 20 Score**	**Justification / Management Actions / Timing**	**Monitoring**	**KPIs and Adaptive Management**
	Raw Data	**Raw Data**									
Vegetation Condition	Cat X	Cat X	**5**	**5**	**5**	**10**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 10 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 10 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	1	2	**1.50**	**5**	**5**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** 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 10. 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	0.4	0.515	**0.46**	**5**	**5**	**5**	**8**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Flower Score' will improve to at least 0.76 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.	Flower score within the assessment unit is to achieve at least 0.76 by Year 20. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	Not all biological shortages covered by the species on-site (4.5/10)	All biological shortages covered by the species on-site (10/10)	**7.25**	**7.25**	**7.25**	**7.25**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** 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	0	1	**1.5**	**5**	**5**	**5**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 10** the assessment unit 'Quality of Foraging Habitat' will improve to at least >6 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.	Foraging habitat within the assessment unit is to achieve at least 4 species by Year 15. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.

Non-native Plant Cover	20%	20%	**20.00%**	**10**	**20**	**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 10** will steadily improve 'Non-native Plant Cover' to below 5% in AU2 within 5 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 below 5% has not been achieved by the end of Year 5 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score				**37.25**	**47.25**	**57.25**	**78**	**100**			
MAX Site Condition Score				***100***	***100***	***100***	***100***	***100***			
Site Condition Score - out of 4				**1.49**	**1.89**	**2.29**	**3.12**	**4.00**			
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Inside	Inside	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 camp within 20km	1 active Level 3 camp within 20km	**1**	**1**	**1**	**1**	**1**	**1**	NA	NA	NA
Threats to the species	5	5	**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 7 outlined in **Table 10** 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				**35**	**40**	**40**	**40**	**40**			
MAX Site Context Score				***60***	***60***	***60***	***60***	***60***			
Site Context Score - out of 3				**1.75**	**2.00**	**2.00**	**2.00**	**2.00**			
GHFF Foraging Tree Density	5	15	**6.5**	**2**	**2**	**4**	**6**	**6**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 10** will improve stem densities of foraging trees within AU2 to greater than 221 per hectare by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 221 per hectare by Year 15. If the stem density does not achieve 52 by year 10, 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				**1.20**	**1.20**	**1.20**	**1.80**	**1.80**			
Total				**4.44**	**5.09**	**5.49**	**6.92**	**7.80**			

Greater Glider Environmental Outcomes – AU1

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of EDL dominant species will be maintained >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 100% of the benchmark. If recruitment falls to less than 75% 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 10**.	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 67% 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 15 years will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	2.5	2.5	2.5	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 35.71% of the benchmark. If the shrub 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.
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 10**.	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 57.14% of the benchmark. If the grass 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.
Native plant species richness - Forbs	5	5	5	5	5	Immediate	Native forb species richness between 25% and 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 will be maintained above 70% of the benchmark. If the forb species falls to less than 70% at 10 years then remedial actions to improve the prospect of achieving between 25% and 90% in 15 years will be applied. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	A median tree height greater than 70% of the benchmark will be maintained as a result of 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If tree height is not maintained above 70% at 15 years, then the prospect of extending the management period may be investigated. By Year 15 species plantings to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy cover	5	5	5	5	5	Immediate	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 10.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained above 50% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 years will be applied. These include remedial plantings of advanced stock.

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	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 10.**	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 40.83% of the benchmark. If the shrub canopy cover 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 remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native grass cover to maintained at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years..	If the native perennial grass cover is not maintained at greater than 90% in 10 years then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	5	5	5	5	5	Immediate	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter is not maintained to greater than 50% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 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 10**.	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	5	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 10**.	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 21.25% 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% (reached 40% by Year 10) then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	5	10	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 5 years by specific management actions 3 & 5 outlined in **Table 10**.	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 3 to track progress to the Year 5 milestone objective.	Weed cover is currently 26.5% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 5 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	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 & 6 outlined in **Table 10**.	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.
Quality and availability of shelter	1	1	1	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 7 outlined in **Table 10**.	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. The provisions of hollows will ensure greater than 1.5 hollows per hectare are achieved. Remedial actions are not anticipated.
Site Condition Score	**40.3**	**42.8**	**44.0**	**61.5**	**95.0**				

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
Overall Site Condition Score out of 3	**1.21**	**1.28**	**1.32**	**1.85**	**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 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 10.**	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 and removal of barbed wire 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	4	4	4	7	10	20 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in **Table 10**.	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 restricted by the absence of habitat and presence of weeds and pests and fences. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score	**38**	**46**	**46**	**49**	**52**				
Overall Site Context Score (out of 3)	**2.04**	**2.46**	**2.46**	**2.63**	**2.79**				
Presence	0	0	0	0	0	Immediate	NA - Not anticipated to change	Greater Glider 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	5	Immediate	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in **Table 10** Greater Glider usage of the site will be maintained.	Greater Glider surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Approximate Density	0	0	0	0	0	Immediate	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 10** Greater Glider density will be maintained.	Greater Glider 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	**10**	**10**	**10**	**10**	**10**				
SSR Score out of 4	**0.57**	**0.57**	**0.57**	**0.57**	**0.57**				
Total Habitat Quality Scores	**3.81**	**4.32**	**4.36**	**5.04**	**6.21**				

Greater Glider Environmental Outcomes – AU2

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of EDL dominant species will be maintained >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 100% of the benchmark. If recruitment falls to less than 75% 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	Native tree species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 20 years as specified above. If the sub-canopy layer species richness has not improved to greater than 95% at 15 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	0	0	0	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 12.5% of the benchmark. If the shrub species richness has not improved to greater than 25% at 15 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	5	20 years	Native grasses species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 41.67% of the benchmark. If the grass 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.
Native plant species richness - Forbs	0	0	0	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 10**.	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 11.67% of the benchmark. If monitoring indicates that forb species richness is not transitioning to over 90% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy height	3	3	3	3	5	20 years	Tree canopy height greater than 70% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 56.82% (EDL) and 62.50% (sub-canopy. It is anticipated that the tree canopy height will be achieved over 70% by year 20. If monitoring indicates that tree height is not transitioning to over 70% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy cover	2.5	2.5	2.5	2.5	5	20 years	Tree canopy cover between 50% and 200% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 10**.	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 55.97% (EDL) and 08% (sub-canopy). It is anticipated that the tree canopy cover will be achieved between 50% and 200% by year 20. If monitoring indicates that tree cover is not transitioning to over 50% at Year 15 then remedial actions will be

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
									applied. These include remedial plantings.
Shrub canopy cover	0	0	0	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 10**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 0% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% by year 15 then remedial actions will be applied. 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 10**.	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	3	3	3	3	5	20 years	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 10**.	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 achieved between 50% and 200% by year 20. If monitoring indicates that litter cover is not transitioning to between 50 and 200% by year 15 then remedial actions will be applied. These include reviewing fire management controls and weed cover achievements.
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 10**.	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	0	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 10**.	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 0% 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% (reached 8% by Year 10) then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	5	10	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 5 years by specific management actions 3 & 5 outlined in **Table 10**.	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 3 to track progress to the Year 5 milestone objective.	Weed cover is currently 20% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 5 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	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 & 6 outlined in **Table 10**.	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	1	1	1	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 7 outlined in **Table 10**.	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. The provision of hollows will ensure greater than 1.5 hollows per hectare are achieved. Remedial actions are not anticipated.
Site Condition Score	**30.8**	**33.3**	**33.3**	**54.3**	**95**				
Overall Site Condition Score out of 3	**0.92**	**1.00**	**1.00**	**1.63**	**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 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 10.**	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 and removal of barbed wire 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	4	4	4	7	10	20 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in **Table 10**.	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 restricted by the absence of habitat and presence of weeds and pests and fences. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score	**38**	**46**	**49**	**49**	**52**				
Overall Site Context Score (out of 3)	**2.04**	**2.46**	**2.63**	**2.63**	**2.79**				
Presence	0	0	0	0	0	Immediate	NA - Not anticipated to change	Greater Glider 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	5	Immediate	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in **Table 10** Greater Glider usage of the site will be maintained.	Greater Glider surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Approximate Density	0	0	0	0	0	Immediate	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 10** Greater Glider density will be maintained.	Greater Glider 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	**10**	**10**	**10**	**10**	**10**				
SSR Score out of 4	**0.57**	**0.57**	**0.57**	**0.57**	**0.57**				
Total Habitat Quality Scores	**3.53**	**4.03**	**4.03**	**4.82**	**6.21**				

Swift Parrot Features													
Year 2	**Justification / Actions**	**Year 3**	**Justification / Actions**	**Year 4**	**Justification / Actions**	**Year 5**	**Justification / Actions**	**Year 10**	**Justification / Actions**	**Year 15**	**Justification / Actions**	**Year 20**	**Justification / Actions**
Plant at least 1,904 features (E. tereticornis and C. citriodora at proportions of 0.03 and 0.10 of total plantings, rspectively) to achieve 130% of the OAG requirement.	Monitor quarterly for first 12 months to ensure a 90% survival rate (at least 1,714 stems surviving). If survival rate falls below 90% on a monitoring occasion, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 1,714 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 1,714 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 1,714 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of advanced stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 1,714 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of mature stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 1,714 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 1,714 stems surviving). NB: minimum OAG requirement on Little Kipper is 1,465 stems to achieve 100% offset acquittal.	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings. Consider extending the management period to ensure OAG requirement is met.

Regent Honeyeater Features													
Year 2	**Justification / Actions**	**Year 3**	**Justification / Actions**	**Year 4**	**Justification / Actions**	**Year 5**	**Justification / Actions**	**Year 10**	**Justification / Actions**	**Year 15**	**Justification / Actions**	**Year 20**	**Justification / Actions**
Plant at least 1,033 features (C. citriodora at proportions of 0.10 of total plantings) to achieve 130% of the OAG requirement.	Monitor quarterly for first 12 months to ensure a 90% survival rate (at least 930 stems surviving). If survival rate falls below 90% on a monitoring occasion, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 930 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 930 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 930 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of advanced stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 930 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of mature stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 930 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 930 stems surviving). NB: minimum OAG requirement for Montauban is 795 stems to achieve 100% offset acquittal.	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings. Consider extending the management period to ensure OAG requirement is met.

Appendix B

Features OAG Reference Tables

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Swift Parrot
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	2894		Count	Tree Plot
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	No				**Time over which loss is averted (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**	**0**	**Future quality without offset (scale of 0-10)**	**0**	**Future quality with offset (scale of 0-10)**	**0**								
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	2894	Count		20		0		0		14390		14390	75%	10792.50	2895.32	100.05%	Yes		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	2894	2895.32	100.05%	**Yes**	$0.00	N/A	$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0				$0.00		$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Regent Honeyeater
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	1570		Count	Tree Plot
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	No				**Time over which loss is averted (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**	**0**	**Future quality without offset (scale of 0-10)**	**0**	**Future quality with offset (scale of 0-10)**	**0**								
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	1570	Count		20		0		0		7805		7805	75%	5853.75	1570.40	100.03%	Yes		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	1570	1570.40	100.03%	**Yes**	$0.00	N/A	$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0				$0.00		$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Appendix C

EPBC Information Request 2019/8389

Australian Government

Department of Agriculture, Water and the Environment

EPBC Ref: 2019/8398

Michael Stone
General Manager
PLV Pty Limited
GPO Box 1114
BRISBANE QLD 4001

Dear Mr Stone

Additional information required for preliminary documentation
Residential Development, Lot 4 RP45728, New Beith, Queensland

I am writing to you in relation to your proposal to construct a residential community development at New Beith, approximately 35 km southwest of Brisbane, Queensland.

On 8 October 2019, it was decided that the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information will be required to be able to assess the relevant impacts of the proposed action.

Details outlining the further information required are at Attachment A. Details outlining the information requirements for offset proposals required under the EPBC Environmental Offsets Policy are at Attachment B.

Details on the assessment process and the responsibilities of the proponent are set out in the enclosed fact sheet. Further information is available from the Department's website at http://www.environment.gov.au/epbc.

If you have any questions about the assessment process or the further information required, please contact Amanda Roberts, by email to amanda.roberts@awe.gov.au, or telephone (02) 6274 2789 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Anu Datta
Director
Queensland South and Sea Dumping Section
10 August 2020

ATTACHMENT A
REQUEST FOR ADDITIONAL INFORMATION REQUIRED FOR ASSESSMENT BY PRELIMINARY DOCUMENTATION

Residential Development, Lot 4 RP45728, New Beith, Queensland (EPBC 2019/8398)

1. General content, format and style

The preliminary documentation must:

1.1	Include: a) The information contained in your original referral b) All additional information submitted to the Department in support of the referral c) The further information you provide on the impacts of the proposed action and the strategies you propose to avoid, mitigate, and/or offset those impacts (as described below), and d) Other relevant information on the matters protected by the EPBC Act.
1.2	Follow the structure of this information request.
1.3	Include a copy of these guidelines and a reference table indicating where to find the information fulfilling this request.
1.4	Contain sufficient information to enable interested stakeholders and the Minister (or delegate) to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES). Specifically, it must contain sufficient information to allow the Minister (or delegate) to make an informed decision on whether or not to approve, under Part 9 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), the undertaking of the action for the purposes of each controlling provision. *Please note that the Department may require further information, in addition to the information required below, should new information come to light during the assessment stage (e.g. an additional species has been identified onsite).*
1.5	Ensure all work and conclusions: a) Are evidence-based and the evidence is provided. b) Use scientifically robust methodologies appropriate to the purpose, detail why the methodology/s was selected, and are described and referenced. c) Consider and state any limitations in the chosen approach. d) Are supported by peer reviewed literature, with references provided, or expert opinion.

	e) Are presented clearly, unambiguously, succinctly and objectively. f) Are where appropriate, supported by maps, plans, diagrams or other descriptive detail. g) Demonstrate consideration of relevant Approved Listing Advice(s), Approved Conservation Advice(s), Recovery Plan(s), Threat Abatement Plan(s) or comparable policy guidelines, and approved survey methods.
1.6	Be able to be read as a stand-alone document and must include summaries of all relevant information. Detailed technical information, studies or investigations necessary to support the main text should be attached as appendices to the main document.

2. Description of the action

The preliminary documentation must include a description of the action:

2.1	Including: a) The location, boundaries, and size (in hectares) of the disturbance footprint, and of adjoining areas and vegetation, which may be indirectly impacted by the proposal, including from material stockpiles, vehicle access and associated activities. b) A description of all components of the proposed action, including the anticipated timing and duration, (including start and completion dates) of each component of the proposed action. This should include a detailed outline of the expected timing of any staged clearing over the construction period. c) A description of the construction and operation of the residential development and associated works (i.e. activities that comprise its operation). d) An indicative layout plan for the proposed action area, including the location and type of land use, key infrastructure, and the number and location of dwellings, other buildings, open space, and conservation areas.

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

Listed threatened species and ecological communities

From the information provided to date, the Department considers that the matters that may or are likely to be significantly impacted by the proposed action include, but are not limited to:

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

The Department also considers that there is a real chance or possibility that significant impacts may arise in relation to the following:

- Swift Parrot (*Lathamus discolour*) – critically endangered
- Spotted-tail Quoll (*Dasyurus maculatus maculatus* – south-eastern mainland population) – endangered
- Greater Glider (*Petauroides volans*) – vulnerable
- Regent Honeyeater (*Anthochaera phrygia*) – critically endangered
- Red Goshawk (*Erythrotriorchis radiatus*) – vulnerable.

Note that this may not be a complete list and it is your responsibility, as the proponent, to ensure that any species or ecological communities listed under the EPBC Act at the time of the controlled action decision, which will or are likely to be significantly impacted by the proposed action, are assessed for the Minister's consideration. Any listing events (i.e. new listings or up-listing of a species or ecological community, e.g. from vulnerable to endangered category) that occur after the controlled action decision was made do not affect the approval process decision, as set out in s158A of the EPBC Act.

Furthermore, it is also the responsibility of the proponent to maintain awareness of any changes to species distributions. Please ensure that a recent Protected Matters Search Tool has been generated and used during the assessment stage before finalising the draft preliminary documentation.

Habitat quality

In accordance with the Koala habitat assessment tool in the EPBC Act Referral Guidelines for the listed Koala, the referral notes that the site contains habitat critical to the survival of the Koala with a score of 7. The Department disagrees with this score and considers that a score of 8 is more appropriate for the following reasons:

- Koala occurrence (+2) – There is evidence of one or more koalas within the last two years.
- Vegetation composition (+2) – The proposed action site has forest or woodland with 2 or more known Koala food tree species.

- Habitat connectivity (+2) – The proposed action site is part of a contiguous landscape of greater than 500 ha.
- Key existing threats (+1) – There is evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present.
- Recovery value (+1) – It is uncertain whether the habitat is important for achieving the interim recovery objectives detailed in the referral guidelines:
    - The proposed developments immediately to the west and north of the proposed site have not been granted approval under the EPBC Act to date or commenced construction, and therefore consideration of the impact of these proposals on connectivity of the proposed site is speculative.
    - The Brisbane-Sydney Interstate Rail Line is not likely to be a barrier to Koala movement and that it is likely that Koala will follow the riparian corridor and cross the rail line to access areas of contiguous habitat to the south-east.
    - Koalas can access large areas of contiguous habitat to the north and west of the proposed site, as well as accessing habitat to the south-east of the proposed site via the riparian corridor, the Department considers that the proposed site maintains corridors and connective habitat that allow movement of Koalas between large areas of habitat.

The preliminary documentation must provide a description of the environment affected by and surrounding the proposed action area, over both the short and long term. Specific matters this section must address include, but are not limited to:

3.1	A description of any potential matters of national environmental significance (MNES) (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas.
3.2	A description and map of the current land use/s, land topography, surface and ground water bodies, waterways and vegetation communities (habitat types as they relate to potentially impacted listed threatened species) on the proposed action site and adjoining areas.
3.3	For listed threatened species and ecological communities that have the potential, or are likely, to be present at and in the vicinity of the project site, including but not limited to those listed in this request for information, this section must provide the following: a) Information on the abundance, distribution, ecology and habitat preference of the species or communities. b) Quantification of the extent of habitat and (if known) the number of individuals present or historical patterns of use on and surrounding the proposed action site (including maps identifying known or potential habitat).

	c) Assessment of the quality and importance of known or potential habitat for the species or communities within the proposed action site and surrounding areas. d) Information detailing known populations or records within at least five kilometres of the proposed action site and (if known) the size of these populations. e) Information on the survey methodology used, including a map/s of survey points or transects, how the survey points or transects were selected, when surveys were conducted (e.g. dates, time of day, season, etc) and search effort (e.g. 20 hours over 8 days). f) An assessment of the adequacy of any surveys. In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines. g) Results of any surveys undertaken.
3.4	Information about the methods, data and scientific literature used to identify and assess the environmental values on the proposed action site and surrounding areas, including survey data and historical records. Survey data for the proposed action site must be provided for the above listed threatened species, should be as recent as possible, and must not have been collected more than five years before the date of this letter.

4. Quantification of impacts

Based on the information provided in the referral, additional information provided in support of the referral, information provided in the Species and Profile and Threats Database, and observation records provided in the Atlas of Living Australia, the Department considers that:

- Due to the presence of Koala food trees across the proposed action area and as there are few barriers to movement, the proposed action is likely to result in the clearance of approximately 158 ha of habitat critical to the survival of the Koala and have indirect impacts on a further 87 ha of habitat retained within the proposed action area. General guidance for determining Koala habitat in open/cleared areas is provided at Attachment C.

- Due to the presence of spring and winter foraging resources for the Grey-headed Flying-fox, the known presence of the species in the area and the proximity of two Nationally Significant Grey-headed Flying-fox camps (within foraging distance), the proposed action is likely to result in the clearance of up to 158 ha of habitat critical to the survival of the Grey-headed Flying-fox and have indirect impacts on the balance of habitat retained within the proposed action area as well as habitat adjacent to the proposed action area.

- Due to the presence of potential foraging habitat and/or movement corridors, the location of the proposed site within the migration range of certain species, and the known or likely presence of the species in the area, the Department considered that there was a real chance or possibility that the project may significantly impact the Swift Parrot, Spotted-tail Quoll, Greater Glider, Regent Honeyeater, and the Red Goshawk.

- Further information regarding the presence the Swift Parrot, Spotted-tail Quoll, Greater Glider, Regent Honeyeater and Red Goshawk at the proposed offset site, the extent of habitat that occurs and potential impacts from the proposed action are required to determine whether or not the proposed action is likely to have a significant impact on these species.

- The Department notes that the action may also result in indirect impacts on MNES and habitat adjacent to the proposed action site. Indirect impacts may result from edge effects; isolation/fragmentation of habitat; mortality or injury to MNES from increased traffic; and/or predation from domestic dogs. Direct and indirect impacts on adjacent habitat areas may also render this habitat to be functionally lost.

To clarify the extent and nature of impact on listed threatened species and ecological communities as a result of the proposed action, the preliminary documentation must:

4.1	Provide a description of the intended land uses proposed as part of the completed development, including any proposed conservation areas or retained movement corridors, and associated ongoing activities, and details of the intended party that would be responsible for future management activities.
4.2	Include current maps and coordinates/shapefile of the proposed impact area and areas of habitat for MNES proposed to be retained. Maps must clearly identify development footprints, buffer zones, and any conservation areas where impacts will be avoided, and areas of adjacent habitat that would be subject to indirect impacts, including areas that are to be retained within and adjacent to the site.
4.3	Confirm the area of habitat that will be directly and indirectly impacted by the proposed action, including areas where: a) Connectivity to surrounding habitat will be retained or removed. b) Adjacent habitat will be subject to intensification of ongoing impacts (for example, through increased levels of dust or polluted runoff).
4.4	Confirm the quantity and quality of suitable habitat to be impacted within the proposed action area.
4.5	Provide an assessment of the direct, indirect, consequential and cumulative impacts, including: a) The nature and extent of impacts (including direct, indirect and facilitated impacts*), including timing and whether the impact is temporary or permanent. b) Details of any policy guidelines, relevant studies, surveys or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral. c) A local and regional scale analysis of likely impacts, with reference to the project's potential contribution to cumulative impacts in the context of development patterns in the locality and region.

	d) A risk assessment of potential impacts from the action that are likely to be unpredictable, severe, or irreversible. **Note: Facilitated impacts may include (but are not limited to) the risk of injury or mortality to MNES as a result of the introduction of domestic dogs in a residential area, vehicle strike as a result of increased residential car use and/or the development of domestic pools.*

5. Avoidance and mitigation

The Department notes that the proposed action includes retention and rehabilitation of 87 ha as conservation areas and habitat for MNES. Further information regarding the proposed retained habitat for MNES is required, including (but not limited to) suitability of the areas for MNES at the proposed action site, details of the dimensions and location of the retained area, proposed measures for rehabilitation and maintenance, vegetation composition and uses.

To clarify the proposed measures to avoid and mitigate impacts, the preliminary documentation must:

5.1	Provide a consolidated description of all proposed measures to avoid and mitigate impacts, including any additional to those described in the referral. This should include: a) Discussion of consideration and assessment of alternative strategies, plans and measures to avoid and mitigate impacts (e.g. alternative project plans, retention of habitat/movement corridors/buffers, and fauna-friendly development and road design). b) Details about pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease. c) A description (including maps and imagery) of the location, boundaries and size of buffer areas or proposed exclusion zones, and details on how these areas will be enhanced, protected and maintained. Also include a description of any fences or barriers which may be installed around areas where impacts will be avoided. d) Details of any rehabilitation measures to be implemented for disturbed areas, including rehabilitation objectives, target species, timing of rehabilitation stages, methodology, maintenance measures, schedules, and monitoring. e) Details of any ongoing mitigation and management measures during the operation of the facility.
5.2	For each measure proposed, indicate the:

	a) Responsible party b) Environmental outcomes to be achieved c) Milestones / performance / completion criteria d) Proposed monitoring and evaluation program.
5.3	Provide an assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the ability of the measure to reduce the risk of a threat. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.

6. Proposed offsets

Based on the referral information and additional information submitted in support of the referral, the Department considers the proposed action is likely to have a residual significant impact on the Koala and the Grey-headed Flying-fox, and may have a residual significant impact on the Swift Parrot, Spotted-tail Quoll, Greater Glider, Regent Honeyeater and Red Goshawk.

Where residual significant impacts remain after consideration of avoidance and mitigation measures, an environmental offset will be required to compensate for the impacts in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Offsets must be specific to the species or ecological community being impacted and must improve or maintain the viability of the species.

If a residual significant impact is identified, the preliminary documentation must include an offset proposal, which must:

6.1	Demonstrate how the offset proposal: a) Meets the principles outlined in the EPBC Offsets Policy. b) Addresses the considerations and requirements outlined in the EPBC Offsets Policy, including but not limited to sections 6 and 7 of the EPBC Offsets Policy. c) Directly contributes to the ongoing viability of the EPBC listed species or ecological community and will deliver an overall conservation outcome that improves or maintains the viability of the protected matter, as compared to what is likely to have occurred under the status quo, i.e. if neither the action nor the offset had taken place. d) Compensates for the impact over the entire duration of the impact (i.e. should impacts be in perpetuity, the offsets must also be delivered in perpetuity). Note: while the offsets do not need to be secured before the decision on whether to approve the proposed action, should the proposed action be approved,

	conditions of an approval are likely to require that offsets are secured, and management measures are in place, before commencement of the proposed action.
6.2	For further details regarding offset requirements, see Attachment B.

Habitat quality assessment methodology

The Department notes that a suitable methodology must be used to determine habitat quality at the offset site for input into the EPBC Act Offsets Assessment Guide (i.e. the 'calculator').

In the past, the Koala habitat assessment tool at Table 4 (p. 27) of the *EPBC Act referral guidelines for the listed Koala* has been used by proponents to assess habitat quality for that species at proposed offset sites, however the Department notes that this methodology may not accurately account for potential habitat quality improvements as a result of management measures over time.

The Department notes that:

- The methodology chosen to assess habitat quality must be evidence-based, quantitative, robust and repeatable.
- The same methodology to assess habitat quality must be used at both impact and offset sites for input into the EPBC Act Offsets Assessment Calculator.
- The quality score for an area of habitat must relate directly to habitat requirements of the species (e.g. number of Koala feed trees). Note that this may inform outcome-based conditions if the Minister decides to approve the proposed action.
- There are three components that need to be considered when calculating habitat quality: site condition, site context, and species stocking rates.

The Department encourages all proponents to initially consult the Department on appropriate methodology to calculate a habitat quality score, before conducting their assessment.

7. Economic and Social Matters

The preliminary documentation must:

7.1	Provide details on the social and economic costs and/or benefits of undertaking the proposed action, including the basis for any estimations of costs and/or benefits. Where possible, please include the total economic capital investment and economic ongoing value of the project.
7.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place
7.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.

7.4	Provide details of any consultation with Indigenous stakeholders.

8. Ecologically sustainable development

The preliminary documentation must:

8.1	Provide a description of how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act.

ATTACHMENT B
INFORMATION REQUIREMENTS FOR EPBC ACT OFFSET PROPOSALS

The offset proposal must include, but not be limited to, the following:

Details in relation to the proposed offset package, including:

a) A description of the proposed offset site(s) including location, size, condition, and relevant ecological/species habitat features, landscape context and cadastre boundaries of the offset site(s) (supported by mapping).

b) Evidence of the presence of, or usage by, relevant protected matter(s) on, or adjacent to the proposed offset site(s), and the presence and quality of habitat for protected matter(s) on the proposed offset site.

c) Current and likely future tenure of the proposed offset site and details of how the offset site will be legally secured for the full duration of the impact.

Details and justification demonstrating how the proposed offset package will maintain or improve the viability of the protected matter(s) consistent with the EPBC Environmental Offsets Policy and *EPBC Act Offsets Assessment Guide*. This includes:

a) Offset completion criteria (i.e. environmental outcomes) to be achieved, and reasoning for these in reference to relevant statutory recovery plans, conservation advices, and threat abatement plans (e.g. within 15 years of commencement of the action, 85 per cent of the offset site contains X number of Koala habitat trees).

b) Milestones to demonstrate adequate progress towards achieving the offset completion criteria (e.g. within 10 years of commencement of the action the proponent must increase, by at least 20 per cent, the number of available Koala food trees at the offset site).

c) Specific environmental management activities and mitigation that will attain and maintain the completion criteria, including the management of threats to relevant species and the timing of actions (e.g. complete the planting, and ensure a survival rate of 90 per cent, of at least 15,000 seed, sapling, or tube stock (or equivalent) Koala food tree species within five years following commencement of the action; reduce the invasive weed coverage on the offset site to 5 per cent within five years following commencement of the action; implement an annual non-native feral pest control program over a 10 year period).

d) Baseline survey information to determine the presence of relevant protected matters and the extent and quality of the respective habitat(s) at the proposed offset site(s) in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

e) A monitoring and corrective action program to measure the success of the environmental outcomes, which must include performance indicators, milestone outcomes, monitoring requirements, trigger values, corrective measures, and identified roles and responsibilities in accordance with the requirements in section 3 of the Departments Environmental Management Plan Guidelines:

https://www.environment.gov.au/epbc/publications/environmental-management-plan%ADguidelines

e) Evidence of how the proposed offset completion criteria for the offset will be maintained over the duration of the impact (including any registered interest on the land, conditions of the

legal security mechanism, how these conditions will be met, and how achievement of legal security will be demonstrated to the Department). Note: The EPBC Offsets Policy states that the offset should secure and manage the offset site for the life of the impact.

f) Justification of how the offset package meets the *EPBC Act Offsets Assessment Guide*, in particular:

- Evidence of the likely effectiveness of any proposed management actions (i.e. rehabilitation / restoration / re-creation of habitat) to support quality improvement and/or maintenance of the proposed offset site(s) for the relevant protected matter(s).
- The time over which management actions will deliver the proposed improvement or maintenance of habitat quality for the relevant protected matter(s).
- The risk of damage, degradation or destruction to any proposed offset site(s), in the absence of any formal protection and/or management, over a foreseeable time period (20 years). This information is important in determining the comparative benefit of a proposed offset.
- Evidence to support 'confidence in results' for averted loss and quality scores.

Note: where increases in habitat quality of the offset site are being proposed by the proponent to meet the direct offset requirements, the Department will require specific details of site condition, site context or stocking rate measures to be implemented commensurate to the expected level of habitat improvement.

ATTACHMENT C
Determining Koala habitat in open/cleared areas

Koala (*Phascolarctos cinereus*)

The Department's *EPBC Act Referral guidelines* defines the Koala habitat as:

> ***Koala habitat:*** 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. Koala habitat is defined by the vegetation community present and the vegetation structure; koalas do not necessarily have to be present.
>
> ***Forest:*** A vegetation community which conforms to the structural form of tall or low forest (including all sub-forms) in Australia, as defined by Specht (1970) (see Attachment 1 of the Guidelines).
>
> ***Woodland:*** A vegetation community which conforms to the structural form of woodland (including all sub-forms) in Australia, as defined by Specht (1970) (Attachment 1 of the Guidelines).
>
> ***Shrubland:*** A vegetation community which conforms to the structural form of shrubland (including all sub-forms) in Australia, as defined by Specht (1970) (Attachment 1 of the Guidelines).

Attachment 1 of the Guidelines provides guidance on the structural forms of vegetation in Australia. For example, areas with trees <10 m and <10% foliage cover of tallest plant layer, fall within the category of 'low open-woodland').

Please note that above definitions and Attachment 1 of the Guidelines should be used to determine the extent and availability of Koala habitat at a site. The extent of habitat should be considered at its broadest context.

The Department notes that whilst cleared areas may not provide key foraging or shelter habitat for the Koala, these areas may be traversed by Koalas moving between adjacent areas of Koala habitat. Additionally, if scattered trees are present, these areas may provide potential feed and shelter trees across very sparse tall open woodlands.

Therefore, areas of cleared land should be considered in the context of habitat values/habitat requirements for the Koala. If you can demonstrate part or parts of the site hold no habitat value for the Koala, based on scientific evidence, then it can be delineated to reflect this.

As noted above however, the site should be considered at its broadest context and that the definitions of Koala habitat (i.e. woodlands, shrublands etc) must be considered. The Department considers that small areas of cleared land located between vegetated areas falls within the category of low open woodland as it is part of a larger contiguous patch of habitat, and there is no barrier that is likely to prevent the movement of Koalas. Therefore, it should be considered as Koala habitat and scored accordingly.

The referral guidelines also define barrier as "*A feature (natural or artificial) that is likely to prevent the movement of koalas. Natural barriers may include steep mountain ranges (cliffs), unsuitable habitats, major rivers / water bodies or treeless areas more than 2 km wide. Artificial barriers may include infrastructure (such as roads, rail, mines, large fences etc.) without effective koala passage measures, or developments that create treeless areas more than 2 km wide*".

Appendix D

Offset Assessment Guide Calculator Results

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	187.1	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	112.25	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	112.25	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	78.26	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	5.64	5.02%	No		
									Future area without offset (adjusted hectares)	78.3	**Future area with offset (adjusted hectares)**	78.3								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**7**	1.00	75%	0.75	0.72				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	112.254	5.64	5.02%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	187.1	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	112.25	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	112.25	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	6.37	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	0.92	0.82%	No	
									Future area without offset (adjusted hectares)	6.4	**Future area with offset (adjusted hectares)**	6.4								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	75%	1.50	1.44				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	112.254	0.92	0.82%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	187.1	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	112.25	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	112.25	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	78.26	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	16.92	15.07%	No		
									Future area without offset (adjusted hectares)	78.3	**Future area with offset (adjusted hectares)**	78.3								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**8**	3.00	75%	2.25	2.16				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	112.254	16.92	15.07%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	187.1	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	112.25	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	112.25	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	6.73	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	1.94	1.73%	No	
									Future area without offset (adjusted hectares)	6.7	**Future area with offset (adjusted hectares)**	6.7								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**8**	4.00	75%	3.00	2.88				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	112.254	1.94	1.73%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	246.8	Hectares	
			Quality	**4**	Scale 0-10	
			Total quantum of impact	98.72	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Hollows	360		Count	Field Survey
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	98.72	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	78.26	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	11.28	11.43%	No		
									Future area without offset (adjusted hectares)	78.3	**Future area with offset (adjusted hectares)**	78.3								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**6**	2.00	75%	1.50	1.44				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	360	Count		20		20		20		156		136	75%	102.00	98.00	27.22%	No		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	360	98.00	27.22%	**No**	$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0				$0.00		$0.00
Area of habitat	98.72	11.28	11.43%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	246.8	Hectares	
			Quality	**4**	Scale 0-10	
			Total quantum of impact	98.72	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Hollows	360		Count	Field Survey
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	98.72	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	6.73	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	95%	0.00	0.00	0.97	0.98%	No		
									Future area without offset (adjusted hectares)	6.7	**Future area with offset (adjusted hectares)**	6.7								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**6**	2.00	75%	1.50	1.44				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	360	Count		20		0		0		14		14	75%	10.50	10.09	2.80%	No		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	360	10.09	2.80%	**No**	$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0				$0.00		$0.00
Area of habitat	98.72	0.97	0.98%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Swift Parrot
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	2894		Count	Tree Plot
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
					Future area without offset (adjusted hectares)					0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	No				**Time over which loss is averted (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**	**0**	**Future quality without offset (scale of 0-10)**	**0**	**Future quality with offset (scale of 0-10)**	**0**								
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	2894	Count		20		493		493		2397		1904	75%	1428.00	383.09	13.24%	No		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	2894	383.09	13.24%	**No**	$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0				$0.00		$0.00
Area of habitat	0				$0.00		$0.00
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Regent Honeyeater
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	1570		Count	Tree Plot
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	No				**Time over which loss is averted (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**	**0**	**Future quality without offset (scale of 0-10)**	**0**	**Future quality with offset (scale of 0-10)**	**0**								
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes	1570	Count		20		448		448		1481		1033	75%	774.75	207.84	13.24%	No		
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	1570	207.84	13.24%	**No**	$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0				$0.00		$0.00
Area of habitat	0				$0.00		$0.00
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Appendix E

Offset area – Koala MHQA baseline scoring

Assessment Unit - Regional Ecosystem - Koala	AU 1 - Cat X (non-remnant) - (pre-clear RE12.9-10.2)							
	RE12.9-10.2 Benchmark	Transect 1	Transect 3	Average of Transect(s)	% Benchmark	Score		
SITE CONDITION								
Recruitment of woody perennial species in EDL	100	100	100	100	100	5	5	
Native plant species richness - trees	6	4	4	4	66.67	2.5	2.5	
Native plant species richness - shrubs	7	3	2	2.5	35.71	2.5	2.5	
Native plant species richness - grasses	7	5	3	4	57.14	2.5	2.5	
Native plant species richness - forbs	13	12	12	12	92.31	5	5	
Tree canopy height (Canopy)*	21	18	20	19	90.48	5		
Tree canopy height (Sub-canopy)*	12	12	14	13	108.33	5		
					*Average tree canopy height	5	5	
Tree canopy cover (Canopy)**	64	40.7	27.7	34.2	53.44	5		
Tree canopy cover (Sub-canopy)**	20	7.1	18.1	12.6	63.00	5		
					**Average tree canopy cover	5	5	
Shrub canopy cover	6	2.7	2.2	2.45	40.83	3	3	
Native grass cover*	21	29	38	33.5	159.52	5	5	
Organic litter*	48	33	18	25.5	53.13	5	5	
Large trees (euc plus non-euc) (per ha)	38	12	8	10	26.32	5	5	
Coarse woody debris (per ha)	506	110	105	107.5	21.25	2	2	
Non-native plant cover	0	23.8	23.8	23.8	23.80	5	5	52.5
Quality and availability of food and foraging habitat	10	5	5	5	-	5	5	65.625
Quality and availability of shelter	10	5	5	5	-	5	5	
							62.5	
					Site Condition Score (/100)		62.5	
					Overall Site Condition Score - out of 3		1.88	
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							6.36	

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

*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 - Koala	AU 2 - Cat X non-remnant - (pre-clear RE12.3.7)						
	RE12.3.7 Benchmark	Transect 2	Transect 4	Average of Transect(s)	% Benchmark	Score	
SITE CONDITION							
Recruitment of woody perennial species in EDL	100	100	100	100	100	5	5
Native plant species richness - trees	6	1	2	1.5	25.00	2.5	2.5
Native plant species richness - shrubs	8	0	2	1	12.50	0	0
Native plant species richness - grasses	6	2	3	2.5	41.67	2.5	2.5
Native plant species richness - forbs	17	2	2	2	11.76	0	0
Tree canopy height (Canopy)*	22	5	20	12.5	56.82	3	
Tree canopy height (Sub-canopy)*	12	0	15	7.5	62.50	3	
					*Average tree canopy height	3	3
Tree canopy cover (Canopy)**	31	0	34.7	17.35	55.97	5	
Tree canopy cover (Sub-canopy)**	23	0	0	0	0.00	0	
					**Average tree canopy cover	2.5	2.5
Shrub canopy cover	22	0	0	0	0.00	0	0
Native grass cover*	8	65	81	73	912.50	5	5
Organic litter*	27	23	0	11.5	42.59	3	3
Large trees (euc plus non-euc) (per ha)	20	0	6	3	15.00	5	5
Coarse woody debris (per ha)	667	0	0	0	0.00	0	0
Non-native plant cover	0	23.8	23.8	23.8	23.80	5	5
Quality and availability of food and foraging habitat	NA	5	5	5	-	5	5
Quality and availability of shelter	NA	5	5	5	-	5	5
						43.5	
					Site Condition Score (/100)		43.5
					Overall Site Condition Score - out of 3		1.31
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							4.64

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

***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	

10	SAT surveys detected koala use on site
5	Dispersal
0	SAT surveys showed no usage
5	See below

Appendix F

Offset area – MHQA baseline raw data

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	1	Job Number / Property	9383 Little Kipper

Part B - Site Data

Recorders	CM & XGJ	Date	2/09/2024

Assessment Unit:	AU Area (ha)	RE	Bioregion Number
na		12.9-10.2	

Site description and Location
non-remnant pre-clear 12.9-10.2. Scattered mature trees with some eucalypt tregrowht. Ground cover a mix of native and invasives.

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

Tree species richness:				
Number of species	4			EDL / Dom / R
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum	EDL / Dom / R
Scientific Name	*Angophora leiocarpa*	Common Name	Smooth-barked Apple	R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved	R
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	
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:			
Number of species	3		
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Eucalyptus crebra*	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	
Scientific Name		Common Name	

Grass species richness:			
Number of species	5		
Scientific Name	*Entolasia stricta*	Common Name	Wiry Panic
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Number of species	12		
Scientific Name	*Glycine clandestina*	Common Name	Glycine
Scientific Name	*Dichondra repens*	Common Name	Kidney Weed
Scientific Name	*Hydrocotyle acutiloba*	Common Name	Pennywort
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Wahlenbergia stricta*	Common Name	Australian Blue Bell
Scientific Name	*Ranunculus lappaceus*	Common Name	Native Buttercup
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Lomandra multiflora*	Common Name	Many-flowered Mat Rush
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax Lily
Scientific Name	*Evolvulus alsinoides*	Common Name	Dwarf Morning Glory
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsaparilla

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

Non-native Coverage	3.00%		
Scientific Name	*Hypochaeris glabra*	Common Name	Flatweed
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Urochloa decumbens*	Common Name	Signal grass
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sida cordifolia*	Common Name	Common Sida
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name	*Lantan monteviensis*	Common Name	Creeping Lantana
Scientific Name	*Ambrosia artemisifolia*	Common Name	Annual Ragweed

Scientific Name	*Chamaecrista rotundifolia*	Common Name	Round Leaf Cassia

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

Total Length of Course	110.00		
1	5.00	26	
2	1.00	27	
3	3.00	28	
4	2.00	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	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	35%	30%	20%	30%	30%	29%
Native other grass						
Native forbs and other species	20%	5%			20%	15%
Native shrubs						
Non-native grass	10%	20%		50%	20%	25%
Non native forbs and shrubs	5%					5%
Litter	30%	40%	75%	5%		38%
Rock						
Bare Ground		5%	5%	10%	20%	10%
Cryptogram						
Total	**100%**	**100%**	**100%**	**95%**	**90%**	122%

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:	6: E. crebra (400), C citriodora (520, 490, 465, 570, 605)
Non- Eucalypt Large tree DBH benchmark used:	N/A	Number of large non eucalypt trees:	0
Total number of large	6		
Total Number Large Trees	12		

Median Tree Canopy Height Measurements	Canopy:	18	Sub-canopy:	12	Emergent:	NA

Percentage of ecologically dominant layer species	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	40.7%	Sub-canopy:	7.10%	Emergent:	N/A
Shrub canopy cover %	2.70%					

T1 Layer					T2 Layer				
Species	Height (m)	Start	End	Interval	Species	Height (m)	Start	End	Interval
A. leiocarpa		11.2	27.1	15.9	C. citriodora		48.7	50.0	1.3
C. citriodora		36.8	50.0	13.2	C. citriodora		77.0	80.2	3.2
C. citriodora		78.3	89.9	11.6	C citriodora		89.5	92.1	2.6
				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
Shrub Layer									
Species	**Height (m)**	**Start**	**End**	**Interval**	**Species**	**Height (m)**	**Start**	**End**	**Interval**
E. crebra		35.4	35.6	0.2					0.0
C. citriodora		88.5	89.6	1.1					0.0
E. crebra		89.6	91.0	1.4					0.0
				0.0					0.0
				0.0					0.0

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia citriodora (Spotted Gum)	25
Eucalyptus crebra (Narrow-leaved Ironbark)	3
Corymbia intermedia (Pink Bloodwood)	1
Total	29
Total per hectare	145

Part J: SAT Survey Results

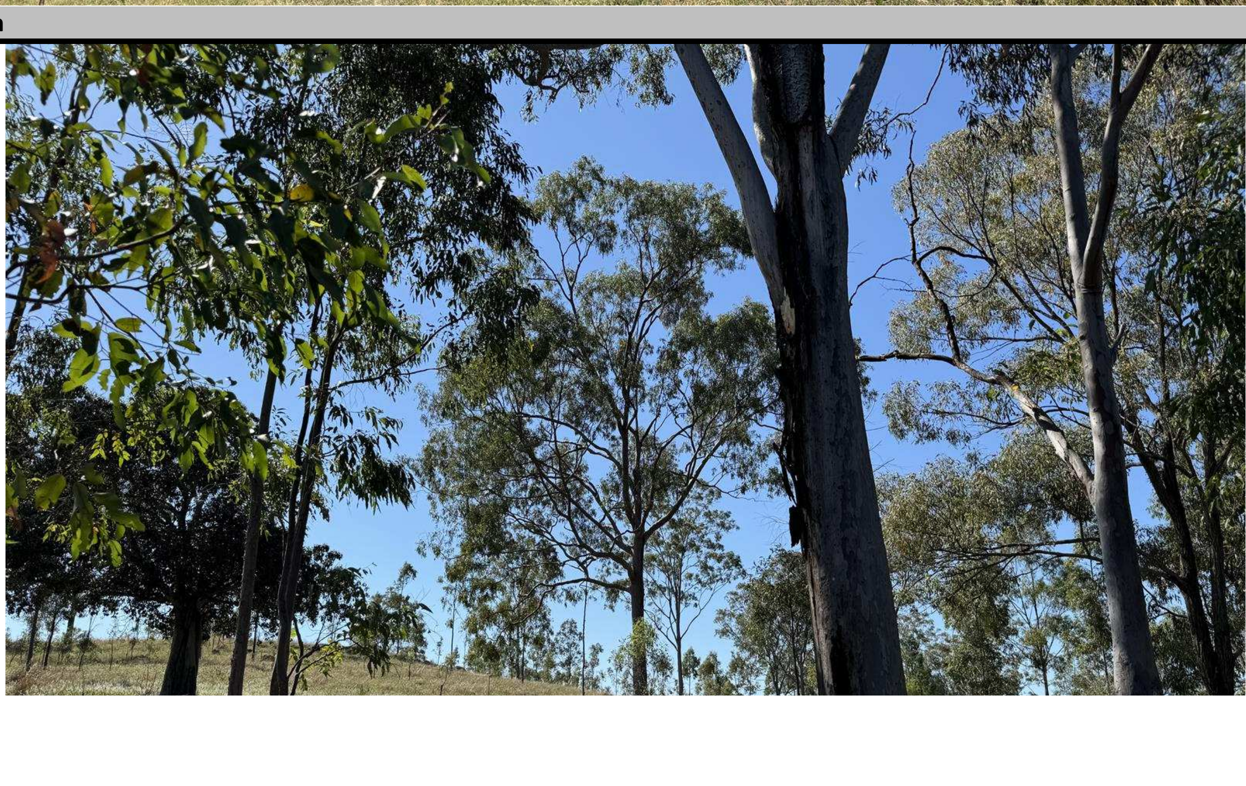
SAT Survey ID				
Tree Number	**Scientific Name**	**Common Name**	**DBH**	**Scat (Y/N)**
1	Corymbia citriodora	Spotted Gum	490	N
2	Corymbia citriodora	Spotted Gum	450	N
3	Corymbia citriodora	Spotted Gum	200	N
4	Corymbia citriodora	Spotted Gum	140	N
5	Corymbia citriodora	Spotted Gum	130	N
6	Ecalyptus crebra	Narrow-leaved Ironbark	270	N
7	Corymbia intermedia	Pink Bloodwood	100	N
8	Corymbia citriodora	Spotted Gum	430	N
9	Corymbia citriodora	Spotted Gum	450	N
10	Corymbia citriodora	Spotted Gum	385	N
11	Corymbia citriodora	Spotted Gum	210	N
12	Corymbia citriodora	Spotted Gum	265	N
13	Corymbia citriodora	Spotted Gum	230	N
14	Corymbia citriodora	Spotted Gum	170	N
15	Corymbia citriodora	Spotted Gum	210	N
16	Corymbia citriodora	Spotted Gum	160	N
17	Corymbia citriodora	Spotted Gum	485	N
18	Corymbia citriodora	Spotted Gum	120	N
19	Corymbia citriodora	Spotted Gum	140	N
20	Corymbia citriodora	Spotted Gum	420	N
21	Corymbia citriodora	Spotted Gum	265	N
22	Corymbia citriodora	Spotted Gum	150	N
23	Corymbia citriodora	Spotted Gum	130	N
24	Angophera leiocarpa	Smooth-barked Apple	490	N
25	Corymbia citriodora	Spotted Gum	135	N
26	Corymbia citriodora	Spotted Gum	165	N
27	Corymbia citriodora	Spotted Gum	100	N
28	Corymbia citriodora	Spotted Gum	460	N
29	Corymbia citriodora	Spotted Gum	150	N
30	Corymbia citriodora	Spotted Gum	520	N
			Total	**0**
			East Coast (med-high) Activity Category	**Low**

Part K: Greater Glider Survey Results

Greater Glider					
Scientific Name	**Common Name**	**DBH**	**Hollows**		
			Small	**Medium**	**Large**

North

South



East

West

Site Condition Assessment Field Sheet			

Part A - Administrative

Transect ID	2	Job Number	9383

Part B - Site Data

Assessment Unit:	AU Area (ha)	RE	Bioregion Number
na		12.3.7	

Recorders:	AR & XGJ	Date:	3/09/2024	Plot Bearing:	

0m Mark	Zone:	56	Easting:		Northing:	

50m Mark	Zone:	56	Easting:		Northing:	

100m Mark	Zone:	56	Easting:		Northing:	

Site description and Location
pre clear 12.3.7 Open grass land area, limited trees within the area. Evidence area has been cleared fro grazng. Evidence of aluvial path with soil degredation. No canopy trees in transect.

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

Tree species richness:				
Number of species	1			EDL / Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
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:			
Number of species	2		
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cynodon dactylon*	Common Name	QLD Couch
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	

Forbs and others (non grass ground) species richness:			
Number of species	2		
Scientific Name	*Ranunculus lappaceus*	Common Name	Native buttercup
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
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)

Non-native Coverage	20.00%		
Scientific Name	*Ambrosia artemisifolia*	Common Name	Annual Ragweed
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Chamaecrista rotundifolia*	Common Name	Round Leaf Cassia
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Andropogon virginicus*	Common Name	Whiskey Grass
Scientific Name	*Heliotropium amplexicaule*	Common Name	Blue heliotrope

Scientific Name	*Sporobolus natalensis*	Common Name	Giants Rat's tail
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters per hectare)			
1	0.00	26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	100%	70%	50%		40%	65%
Native other grass						
Native forbs and other species						
Native shrubs						
Non-native grass			40%	5%	15%	20%
Non native forbs and shrubs		20%	10%			15%
Litter		5%			40%	23%
Rock						
Bare Ground		5%		95%	5%	35%
Cryptogram						
Total	100%	100%	100%	100%	100%	158%

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

Eucalypt Large tree DBH benchmark used :	540	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	N/A	Number of large non eucalypt trees:	
Total number of large trees recorded:	0		
Total Number Large Trees per ha:	0		

Median Tree Canopy Height Measurements	Canopy:	5	Sub-canopy:		Emergent:	NA

Percentage of ecologically dominant layer species	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	N/A
Shrub canopy cover %	0.00%					

T1 Layer					T2 Layer				
Species	Height (m)	Start	End	Interval	Species	Height (m)	Start	End	Interval
0				0.0	0.00%				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
				0.0					0.0
				0.0					0.0
Shrub Layer									
Species	**Height (m)**	**Start**	**End**	**Interval**	**Species**	**Height (m)**	**Start**	**End**	**Interval**
0				0.0					0.0
				0.0					0.0
				0.0					0.0
				0.0					0.0
				0.0					0.0

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia tessellaris	Moreton Bay Ash
Total	1
Total per hectare	5

Part J: SAT Survey Results

SAT Survey ID				
Tree Number	**Scientific Name**	**Common Name**	**DBH**	**Scat (Y/N)**
1	Eucalyptus tereticornis	Forest Red Gum	200	N
2	Eucalyptus tereticornis	Forest Red Gum	140	N
3	Corymbia intermedia	Pink Bloodwood	100	N
4	Corymbia tessellaris	Moreton Bay Ash	120	N
5	Corymbia tessellaris	Moreton Bay Ash	110	N
6	Corymbia tessellaris	Moreton Bay Ash	100, 100	N
7	Corymbia tessellaris	Moreton Bay Ash	130	N
8	Eucalyptus tereticornis	Forest Red Gum	140	N
9	Eucalyptus tereticornis	Forest Red Gum	100	N
10	Corymbia tessellaris	Moreton Bay Ash	150	N
11	Eucalyptus tereticornis	Forest Red Gum	130, 110	N
12	Eucalyptus tereticornis	Forest Red Gum	100	N
13	Eucalyptus tereticornis	Forest Red Gum	640	N
14	Corymbia tessellaris	Moreton Bay Ash	165	N
15	Corymbia tessellaris	Moreton Bay Ash	110	N
16	Corymbia tessellaris	Moreton Bay Ash	110	N
17	Corymbia tessellaris	Moreton Bay Ash	120	N
18	Corymbia tessellaris	Moreton Bay Ash	100	N
19	Corymbia tessellaris	Moreton Bay Ash	100	N
20	Corymbia tessellaris	Moreton Bay Ash	150	N
21	Corymbia tessellaris	Moreton Bay Ash	130	N
22	Eucalyptus tereticornis	Forest Red Gum	680	N
23	Eucalyptus tereticornis	Forest Red Gum	720	N
24	Corymbia tessellaris	Moreton Bay Ash	100	N
25	Eucalyptus tereticornis	Forest Red Gum	130	N
26	Eucalyptus tereticornis	Forest Red Gum	670	N
27	Eucalyptus tereticornis	Forest Red Gum	860	N
28	Corymbia tessellaris	Moreton Bay Ash	570	N
29	Corymbia tessellaris	Moreton Bay Ash	140	N
30	Alphitonia excelsa	Soap Tree	240	N
			Total	**0**
			East Coast (med-high) Activity Category	

Part K: Greater Glider Survey Results

Greater Glider					
Scientific Name	**Common Name**	**DBH**	**Hollows**		
			Small	**Medium**	**Large**

North

South

East

West

Site Condition Assessment Field Sheet

Part A - Administrative

Transect ID	3	Job Number	9383

Part B - Site Data

Assessment Unit:	AU Area (ha)	RE	Bioregion Number
na		12.9-10.2	

Recorders:	CM & KR	Date:	21/10/2024	Plot Bearing:	

0m Mark	Zone:	56	Easting:		Northing:	

50m Mark	Zone:	56	Easting:		Northing:	

100m Mark	Zone:	56	Easting:		Northing:	

Site description and Location
non remnant historically closed paddock with some mature eucalypts and some regrowth specimens

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

Tree species richness:				
Number of species	4			EDL / Dom / R
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth Barked Apple	Dom / R
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum	R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Number of species	4		
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
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:			
Number of species	2		
Scientific Name	*Entolasia stricta*	Common Name	Wiry Panic
Scientific Name	*Cymbopogon refractus*	Common Name	QLD Couch
Scientific Name	*Eragrostis brownii*	Common Name	Browns Lovegrass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Number of species	12		
Scientific Name	*Ranunculus lappaceus*	Common Name	Native buttercup
Scientific Name	*Dichondra repens*	Common Name	Kidney Weed
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Wahlenbergia*	Common Name	Australian Bluebell
Scientific Name	*Dichondra repens*	Common Name	Kidneyweed
Scientific Name	*Lobelia purpurascens*	Common Name	white root
Scientific Name	*Westringia fruticosa*	Common Name	native rosemary
Scientific Name	*Goodenia rotundifolia*	Common Name	star goodenia
Scientific Name	*Nymphoides indica*	Common Name	fringed lilly
Scientific Name	*Glycine clandestina*	Common Name	twining glycine
Scientific Name	*Murdannia graminea*	Common Name	slug herb
Scientific Name	*Evolvulus alsinoides*	Common Name	Dwarf Morning Glory

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

Non-native Coverage	10.00%		
Scientific Name	*Urochloa decumbens*	Common Name	Signal Grass
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Chamaecrista rotundifolia*	Common Name	Round Leaf Cassia
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sida cordifolia*	Common Name	Flannelweed
Scientific Name	*Sporobolus pyramidalis*	Common Name	Rats Tail Grass
Scientific Name	*Ageratum houstonianum*	Common Name	Blue Billy Goat
Scientific Name	*Paspalum dilatatum*	Common Name	Paspalum

Scientific Name	*Oxalis stricta*	**Common Name**	Creeping Woodsorrel
Scientific Name	*Verbena bonariensis*	**Common Name**	Purple Top Verbena
Scientific Name	*Sphagneticola trilobata*	**Common Name**	Singapore Daisy
Scientific Name	*Chamaecrista rotundifolia*	**Common Name**	Round Leaf Cassia
Scientific Name	*Senecio madagascariensis*	**Common Name**	Fireweed
Scientific Name	*Solanum seaforthianum*	**Common Name**	brazilian nightshade
Scientific Name	*Gnaphalium calviceps*	**Common Name**	Cudweed
Scientific Name	*Onopordum acanthium*	**Common Name**	Scotch Thistle
Scientific Name	*Citrullus colocynthis*	**Common Name**	Bitter Apple
Scientific Name	*Heliotropium amplexicaule*	**Common Name**	Blue Heliotrope
Scientific Name	*Emilia sonchifolia*	**Common Name**	Emilia
Scientific Name	*Hypochaeris glabra*	**Common Name**	Flatweed

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

Total Length of Course Woody Debris (Meters per hectare)	**105.00**		
1	2.50	**26**	
2	3.00	**27**	
3	3.50	**28**	
4	1.50	**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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	7%	33%	21%	60%	67%	38%
Native other grass						
Native forbs and other species	3%	5%			6%	5%
Native shrubs						
Non-native grass	6%	40%	40%	8%	5%	20%
Non native forbs and shrubs	13%	10%	12%	18%	18%	14%
Litter	66%	2%	12%	10%	2%	18%
Rock						
Bare Ground	5%	10%	15%	4%	2%	7%
Cryptogram						
Total	**100%**	**100%**	**100%**	**100%**	**100%**	102%

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:**	Angophera leiocarpa (480, 580, 390), Eucalyptus tereticornis (680)
Non- Eucalypt Large tree DBH benchmark used:	N/A	**Number of large non eucalypt trees:**	4
Total number of large trees recorded:	4		
Total Number Large Trees per ha:	8		

Median Tree Canopy Height Measurements	**Canopy:**	20	**Sub-canopy:**	14	**Emergent:**	7.00

Percentage of ecologically dominant layer	**100**

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	**Canopy:**	27.7%	**Sub-canopy:**	18.10%	**Emergent:**	N/A
Shrub canopy cover %	2.20%					

T1 Layer					**T2 Layer**				
Species	**Height (m)**	**Start**	**End**	**Interval**	**Species**	**Height (m)**	**Start**	**End**	**Interval**

C. citriodora	20	0.0	10.0	10.0	C. citriodora	6.00	0.0	14.0	14.0
C. citriodora	22	10.0	27.7	17.7	C. tessellaris	7.00	3.4	6.2	2.8
				0.0	C. tessellaris	7.00	91.0	92.3	1.3
				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
Shrub Layer									
Species	Height (m)	Start	End	Interval	Species	Height (m)	Start	End	Interval
C. tessellaris		32.6	33.6	1.0					0.0
C. citriodora		41.3	42.0	0.7					0.0
C. tessellaris		46.8	47.3	0.5					0.0
				0.0					0.0
				0.0					0.0

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia tessellaris	4
Angophera leiocarpa	11
Eucalyptus tereticornis	1
Corymbia citriodora	4
Total	20
Total per hectare	100

Part J: SAT Survey Results

SAT Survey ID				
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	Angophera leiocarpa	Smooth Barked Apple	260,170	N
2	Corymbia citriodora	Spotted Gum	270	N
3	Corymbia citriodora	Spotted Gum	170	N
4	Corymbia citriodora	Spotted Gum	120	N
5	Corymbia citriodora	Spotted Gum	330	Y
6	Corymbia citriodora	Spotted Gum	100, 100	N
7	Corymbia citriodora	Spotted Gum	320	N
8	Corymbia citriodora	Spotted Gum	100	N
9	Angophera leiocarpa	Smooth Barked Apple	240	N
10	Angophera leiocarpa	Smooth Barked Apple	370	N
11	Eucalyptus tereticornis	Forest Red Gum	680	N
12	Corymbia citriodora	Spotted Gum	300	N
13	Angophera leiocarpa	Smooth Barked Apple	320	N
14	Angophera leiocarpa	Smooth Barked Apple	340	Y
15	Angophera leiocarpa	Smooth Barked Apple	480	N
16	Angophera leiocarpa	Smooth Barked Apple	380	N
17	Angophera leiocarpa	Smooth Barked Apple	390	N
18	Angophera leiocarpa	Smooth Barked Apple	120	N
19	Angophera leiocarpa	Smooth Barked Apple	370	N
20	Angophera leiocarpa	Smooth Barked Apple	340	N
21	Angophera leiocarpa	Smooth Barked Apple	130	N
22	Angophera leiocarpa	Smooth Barked Apple	440	N
23	Corymbia citriodora	Spotted Gum	350	Y
24	Corymbia citriodora	Spotted Gum	110	N
25	Corymbia citriodora	Spotted Gum	200	N
26	Corymbia citriodora	Spotted Gum	250	N
27	Angophera leiocarpa	Smooth Barked Apple	440	Y
28	Angophera leiocarpa	Smooth Barked Apple	110	N
29	Angophera leiocarpa	Smooth Barked Apple	240	N
30	Angophera leiocarpa	Smooth Barked Apple	320	N
			Total	4
			East Coast (med-high) Activity Category	13.33

Part K: Greater Glider Survey Results

Greater Glider					
Scientific Name	Common Name	DBH	Hollows		
			Small	Medium	Large

North

South

East

West

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	Transect 4	Job Number / Property	11146

Part B - Site Data

Recorders	NT AR	Date	20.04.2022

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)
Non-remnant - pre-clear 12.3.7 Overland flow flood-plain - dam to south of transect. Patches of *Eucalyptus* and *Lophostemon* regrowth throughout.

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

Tree species richness:				
Total number of species	2			EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	EDL / R
Scientific Name	*Lophostemon suaveolens*	Common Name	Swamp Box	EDL / Dom /R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	2		
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Lophostemon suaveolens*	Common Name	Swamp Box
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed-wire Grass
Scientific Name	*Digitaria didactyla*	Common Name	Queensland Couch
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	2		
Scientific Name	*Dichondra repens*	Common Name	Kidney Weed
Scientific Name	*Eleocharis dulcis*	Common Name	Water Chestnut
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	20.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Sporobolus natalensis*	Common Name	Giant Rat's Tail Grass
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Heliotropium amplexicaule*	Common Name	Blue Heliotrope
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name	*Solanum carolinense*	Common Name	Devil's Tomato
Scientific Name	*Ludwigia peploides*	Common Name	Water Primrose
Scientific Name	*Chamaecrista rotundifolia*	Common Name	Round-leaf Cassia
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)	0.00		
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	90%	90%	60%	70%	95%	81%
Native other grass						
Native forbs and other species						
Native shrubs						
Non-native grass						
Non native forbs and shrubs						
Litter	0%	0%	0%	0%	0%	
Rock						
Bare Ground	10%	10%	40%	30%	5%	19%
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 :	510	Number of large eucalypt trees:	L.suaveolens: 790, 640, 560
Non- Eucalypt Large tree DBH benchmark used:	360	Number of large non eucalypt trees:	0
Total Number Large Trees: per ha	6		

Median Tree Canopy Height Measurements	Canopy:	20	Sub-canopy:	15	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	34.7%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	27.6	27.6	T2			0.0
T1	27.6	30.5	2.9	T2			0.0
T1	50.9	55.1	4.2	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

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

Part I: GHFF Stem Count

Species Name	Stem Count
Lophostemon suaveolens	3

Part J: SAT Survey Results

SAT Survey ID	1			
Tree Number	**Scientific Name**	**Common Name**	**DBH**	**Scat (Y/N)**
1	*Lophostemon suaveolens*	Swamp Box	790	N
2	*Lophostemon suaveolens*	Swamp Box	640	N
3	*Lophostemon suaveolens*	Swamp Box	560	N
4	*Eucalyptus tereticornis*	Forest Red Gum	115	N
5	*Eucalyptus tereticornis*	Forest Red Gum	130	N
6	*Eucalyptus tereticornis*	Forest Red Gum	140	N
7	*Eucalyptus tereticornis*	Forest Red Gum	100	N
8	*Eucalyptus tereticornis*	Forest Red Gum	100	N
9	*Eucalyptus tereticornis*	Forest Red Gum	130	N
10	*Eucalyptus tereticornis*	Forest Red Gum	120	N
11	*Eucalyptus tereticornis*	Forest Red Gum	890	N
12	*Eucalyptus tereticornis*	Forest Red Gum	110	N
13	*Eucalyptus tereticornis*	Forest Red Gum	100	N
14	*Lophostemon suaveolens*	Swamp Box	430	N
15	*Eucalyptus tereticornis*	Forest Red Gum	130	N
16	*Eucalyptus tereticornis*	Forest Red Gum	240	N
17	*Eucalyptus tereticornis*	Forest Red Gum	140	N
18	*Eucalyptus tereticornis*	Forest Red Gum	160	N
19	*Corymbia tessellaris*	Moreton Bay Ash	340	N
20	*Corymbia tessellaris*	Moreton Bay Ash	130	N
21	*Corymbia tessellaris*	Moreton Bay Ash	170	N
22	*Corymbia tessellaris*	Moreton Bay Ash	150	N
23	*Corymbia tessellaris*	Moreton Bay Ash	100	N
24	*Corymbia tessellaris*	Moreton Bay Ash	140	N
25	*Corymbia tessellaris*	Moreton Bay Ash	200	N
26	*Corymbia tessellaris*	Moreton Bay Ash	230	N
27	*Corymbia tessellaris*	Moreton Bay Ash	150	N
28	*Eucalyptus tereticornis*	Forest Red Gum	430	N
29	*Eucalyptus tereticornis*	Forest Red Gum	200	N
30	*Eucalyptus tereticornis*	Forest Red Gum	270	N
Total				**0/30**

North

South

East

West

Appendix G

Offset area – grey-headed flying-fox FHA baseline scoring

Assessment Unit - Regional Ecosystem - GHFF	AU 1 - Non-Remnant RE12.9-10.2										
Site Reference	Transect 1	Transect 3	Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data									
Vegetation Condition	Cat X	Cat X	**5**	**5**	**5**	**10**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 10 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 10 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	3	4	**3.50**	**10**	**10**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** 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 10. 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	0.6275	0.5075	**0.57**	**8**	**8**	**8**	**8**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Flower Score' will improve to at least 0.76 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.	Flower score within the assessment unit is to achieve at least 0.76 by Year 20. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	All biological shortages covered by the species on-site (8.5/10)	All biological shortages covered by the species on-site (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 8** 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	3	2	**2.5**	**5**	**5**	**5**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Quality of Foraging Habitat' will improve to at least >6 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.	Foraging habitat within the assessment unit is to achieve at least 4 species by Year 15. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Non-native Plant Cover	23.8%	23.8%	**23.80%**	**10**	**20**	**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 8** will steadily improve 'Non-native Plant Cover' to below 5% in AU1 within 5 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 below 5% has not been achieved by the end of Year 5 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score				**47.25**	**57.25**	**62.25**	**78**	**100**			
MAX Site Condition Score				***100***	***100***	***100***	***100***	***100***			
Site Condition Score - out of 4				**1.89**	**2.29**	**2.49**	**3.12**	**4.00**			
Size of patch	Patch size is greater than	Patch size is greater than	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Inside	Inside	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 camp within	1 active Level 3 camp	**1**	**1**	**1**	**1**	**1**	**1**	NA	NA	NA
Threats to the species	5	5	**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 7 outlined in **Table 8** 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				**35**	**40**	**40**	**40**	**40**			
MAX Site Context Score				***60***	***60***	***60***	***60***	***60***			
Site Context Score - out of 3				**1.75**	**2.00**	**2.00**	**2.00**	**2.00**			
GHFF Foraging Tree Density	145	100	**122.5**	**4**	**4**	**6**	**6**	**6**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 8** will improve stem densities of foraging trees within AU1 to greater than 131 per hectare by year 10.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 131 per hectare by Year 10. If the stem density does not achieve 131 by year 5, 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				**1.20**	**1.20**	**1.20**	**1.80**	**1.80**			
Total				**4.84**	**5.49**	**5.69**	**6.92**	**7.80**			

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	
	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)	
		2.5	1.5	1.5	1.5	1.5	1.5		8.5
T1									
Eucalyputs crebra	0.65	x	x					1	
Corymbia citriodora	0.65	x	x					1	
Corymbia intermedia	0.86			x	x		x	1	
Angophora leiocarpa	0.35			x			x		
Average	**0.628**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**3**	
Total Species:									
GHFF Species:	4								
Important Species:	3								

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	
	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)	
		2.5	1.5	1.5	1.5	1.5	1.5		10
T3									
Eucalyptus tereticornis	0.63	x	x	x		x	x	1	
Corymbia citriodora	0.65	x	x					1	
Angophora leiocarpa	0.35			x			x		
Corymbia tesselaris	0.4			x	x		x		
Average	**0.508**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**2**	
Total Species:									
GHFF Species:	4								
Important Species:	2								

Assessment Unit - Regional Ecosystem - GHFF	AU 2 - Non-remnant RE12.3.7										
Site Reference	Transect 2	Transect 4	Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data									
Vegetation Condition	Cat X	Cat X	**5**	**5**	**5**	**10**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 10 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 10 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	1	2	**1.50**	**5**	**5**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** 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 10. 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	0.4	0.515	**0.46**	**5**	**5**	**5**	**8**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Flower Score' will improve to at least 0.76 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.	Flower score within the assessment unit is to achieve at least 0.76 by Year 20. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	Not all biological shortages covered by the species on-site (4.5/10)	All biological shortages covered by the species on-site (10/10)	**7.25**	**7.25**	**7.25**	**7.25**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** 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	0	1	**1.5**	**5**	**5**	**5**	**10**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 8** the assessment unit 'Quality of Foraging Habitat' will improve to at least >6 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.	Foraging habitat within the assessment unit is to achieve at least 4 species by Year 15. If the species diversity does not reflect this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Non-native Plant Cover	20%	20%	**20.00%**	**10**	**20**	**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 8** will steadily improve 'Non-native Plant Cover' to below 5% in AU2 within 5 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 below 5% has not been achieved by the end of Year 5 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score				**37.25**	**47.25**	**57.25**	**78**	**100**			
MAX Site Condition Score				***100***	***100***	***100***	***100***	***100***			
Site Condition Score - out of 4				**1.49**	**1.89**	**2.29**	**3.12**	**4.00**			
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Inside	Inside	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 camp within 20km	1 active Level 3 camp within 20km	**1**	**1**	**1**	**1**	**1**	**1**	NA	NA	NA
Threats to the species	5	5	**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 7 outlined in **Table 8** 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				**35**	**40**	**40**	**40**	**40**			
MAX Site Context Score				***60***	***60***	***60***	***60***	***60***			
Site Context Score - out of 3				**1.75**	**2.00**	**2.00**	**2.00**	**2.00**			
GHFF Foraging Tree Density	5	15	**6.5**	**2**	**2**	**4**	**6**	**6**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 8** will improve stem densities of foraging trees within AU2 to greater than 221 per hectare by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 221 per hectare by Year 15. If the stem density does not achieve 52 by year 10, 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				**1.20**	**1.20**	**1.20**	**1.80**	**1.80**			
Total				**4.44**	**5.09**	**5.49**	**6.92**	**7.80**			

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	
	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)	
		2.5	1.5	1.5	1.5	1.5	1.5		4.5
T1									
Corymbia tesselaris	0.4			x	x		x		
Average	**0.400**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**0**	
Total Species:									
GHFF Species:	1								
Important Species:	0								

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	
	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)	
		2.5	1.5	1.5	1.5	1.5	1.5		10
T3									
Eucalyptus tereticornis	0.63	x	x	x		x	x	1	
Lophostemon suaveolens	0.4				x		x		
Average	**0.515**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**1**	
Total Species:									
GHFF Species:	4								
Important Species:	2								

Appendix H

Offset area – Greater Glider MHQA baseline scoring

Assessment Unit - Regional Ecosystem - Greater Glider	AU 1 - Cat X (non-remnant) - (pre-clear RE12.9-10.2)					
	RE12.9-10.2 Benchmark	Transect 1	Transect 3	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100	100	5
Native plant species richness - trees	6	4	4	4	66.67	2.5
Native plant species richness - shrubs	7	3	2	2.5	35.71	2.5
Native plant species richness - grasses	7	5	3	4	57.14	2.5
Native plant species richness - forbs	13	12	12	12	92.31	5
Tree canopy height (Canopy)*	21	18	20	19	90.48	5
Tree canopy height (Sub-canopy)*	12	12	14	13	108.33	5
					*Average tree canopy height	5
Tree canopy cover (Canopy)**	64	40.7	27.7	34.2	53.44	5
Tree canopy cover (Sub-canopy)**	20	7.1	18.1	12.6	63.00	5
					**Average tree canopy cover	5
Shrub canopy cover	6	2.7	2.2	2.45	40.83	3
Native grass cover*	21	29	38	33.5	159.52	5
Organic litter*	48	33	18	25.5	53.13	5
Large trees (euc plus non-euc) (per ha)	38	12	8	10	26.32	5
Coarse woody debris (per ha)	506	110	105	107.5	21.25	2
Non-native plant cover	0	23.8	23.8	23.8	23.80	5
Quality and availability of food and foraging habitat	10	5	5	5	-	5
Quality and availability of shelter	10	1	1	1	-	1
					Site Condition Score (/100)	40.3
					Overall Site Condition Score - out of 3	1.21
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	4	4	4		4
					Site Context Score (/56)	38
					Overall Site Context Score - out of 3	2.04
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	70	10	10	10		10
					Species Stocking Rate Score (/70)	10.00
					Overall Species Stocking Rate Score - out of 4	0.57
Overall Assessment Unit Score						3.81

5							
2.5							
2.5							
2.5							
5							
5							
5							
3							
5							
5							
5							
2							
5							26.25
5	53.44						10
1	0.25 h/ha						4
58.5							40.25

Species Stocking Rate (SSR)						
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5		10	
		No	Yes - adjacent		Yes - On-site	
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15	
		Not habitat	Dispersal	Foraging	Breeding	
Approximate density (per ha)	Score	0	10	20	30	
		0%	low	med	high	
Role/importance of species population on site*	Score (*Total from supplementary table below)*	0	5	10		15
		0	5 - 15	20-35		40-45
Total SRR score (out of 70)		10				
SRR Score (out of 4)	**0.571428571**					

0	None detected
5	Dispersal
0	None detected
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 - Greater Glider	AU 2 - Cat X non-remnant - (pre-clear RE12.3.7)					
	RE12.3.7 Benchmark	Transect 2	Transect 4	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100	100	5
Native plant species richness - trees	6	1	2	1.5	25.00	2.5
Native plant species richness - shrubs	8	0	2	1	12.50	0
Native plant species richness - grasses	6	2	3	2.5	41.67	2.5
Native plant species richness - forbs	17	2	2	2	11.76	0
Tree canopy height (Canopy)*	22	5	20	12.5	56.82	3
Tree canopy height (Sub-canopy)*	12	0	15	7.5	62.50	3
					*Average tree canopy height	3
Tree canopy cover (Canopy)**	31	0	34.7	17.35	55.97	5
Tree canopy cover (Sub-canopy)**	23	0	0	0	0.00	0
					**Average tree canopy cover	2.5
Shrub canopy cover	22	0	0	0	0.00	0
Native grass cover*	8	65	81	73	912.50	5
Organic litter*	27	23	0	11.5	42.59	3
Large trees (euc plus non-euc) (per ha)	20	0	6	3	15.00	5
Coarse woody debris (per ha)	667	0	0	0	0.00	0
Non-native plant cover	0	23.8	23.8	23.8	23.80	5
Quality and availability of food and foraging habitat	NA	5	5	5	-	5
Quality and availability of shelter	NA	1	1	1	-	1
					Site Condition Score (/100)	30.75
					Overall Site Condition Score - out of 3	0.92
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	4	4	4		4
					Site Context Score (/56)	38
					Overall Site Context Score - out of 3	2.04
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	70	10	10	10		10
					Species Stocking Rate Score (/70)	10.00
					Overall Species Stocking Rate Score - out of 4	0.57
Overall Assessment Unit Score						3.53

5							
2.5							
0							
2.5							
0							
3							
2.5							
0							
5							
3							
5							
0							
5							16.75
5	55.97						10
1	0	h/ha					4
39.5							30.75

Species Stocking Rate (SSR)						
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5		10	
		No	Yes - adjacent		Yes - on site	
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15	
		Not habitat	Dispersal	Foraging	Breeding	
Approximate density (per ha)	Score	0	10	20	30	
		0%	low	med	high	
Role/importance of species population on site*	Score (*Total from supplementary table below)*	0	5	10		15
		0	5 - 15	20 - 35		40 - 45
Total SRR score (out of 70)		10				
SRR Score (out of 4)	**0.571428571**					

0	None detected
5	Dispersal
0	None detected
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 I

Hollow Monitoring and Management Plan

KFF1 LITTLE KIPPER OFFSET SITE

Hollow Monitoring and Management Plan

DWG NO.	DRAWING TITLE	ISSUE	DATE
9383 E 01 LK HMMP B	COVER SHEET	B	12/02/2026
9383 E 02 LK HMMP B	INTRODUCTION AND NOTES	B	12/02/2026
9383 E 03 LK HMMP B	OFFSET SITE ARTIFICIAL HOLLOW SUITABILITY	B	12/02/2026
9383 E 04 LK HMMP B	MAINTENANCE AND MONITORING	B	12/02/2026
9383 E A01 LK HMMP B	APPENDIX A - ARTIFICIAL HOLLOW OPPORTUNITY ASSESSMENT	B	12/02/2026

Saunders Havill

PATHWAYS TO SUCCESS

KFF1 LITTLE KIPPER OFFSET SITE

Hollow Monitoring and Management Plan - *Introduction and Notes*

INTRODUCTION & OBJECTIVES

This Hollow Monitoring and Management Plan (HMMP) has been prepared by **Saunders Havill (SH)** for **Frasers Property New Beith Pty Ltd** for the proposed KFF1 Little Kipper Offset Site located at Little Kipper Creek Road, Biarra, parts of Lot 273 on CA311588, Lot 272 on CA311095, Lot 271 on CA311037 and Lot 11 on CA31764.

The primary objective of this HMMP is to monitor the utility of existing site hollows and outline creation of new hollows via Arborist carving in trees over 500 mm DBH for the Greater Glider over the 20 year management period.

Hollow creation is to occur at densities of at least 1.5 hollows per hectare to reflect the hollows removed at the impact site. Created hollows will be mapped and subsequently monitored and maintained over the 20 year management period.

BACKGROUND

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

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

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

METHODOLOGY – ARTIFICIAL HOLLOW CARVING

Hollows are to be installed and monitored by AQF Level 5 Arborist (or equivalent). There are five types of artificial hollow carving (summarised below) further details are provided in Appendix A.

Artificial Hollow Types	
Branch End Hollows	
Description	Branch End Hollows are carved at the end of a large branch, imitating where a branch has snapped off naturally. The entrance is often on the branch's cut or broken face, leading inward into a cavity denning chamber.
Suitable Trees	• 900+mm DBH • Mature Tree • Wide spread crown
Branch Middle Hollows	
Description	Branch Middle Hollows are carved in the middle section of a branch, imitating hollows formed when decay enters through side cracks or wounds. The Entrance hole on the side of the branch.
Suitable Trees	• 900+mm DBH • Mature Trees • Wide spread crown with large diameter (400+mm) lateral branches
Branch Stub Hollows	
Description	Branch Stub Hollows are carved where a branch has broken but left behind a short stub sticking out of the trunk, imitating hollows that form when fungi and decay invade at the break point. The entrance is often at the stub or broken branch entrance.
Suitable Trees	• 600+mm DBH • Early Mature Tree • 400+mm branch diameter at or above minimum installation height
Trunk Middle Hollows	
Description	Trunk Middle Hollows are carved directly into the trunk of the tree, below the crown of the tree, imitating hollows formed when old wounds, lightning strikes, or decay in the trunk create cavities. The entrance hole is on the side of the trunk with the denning chamber below the entrance.
Suitable Trees	• 600+mm DBH • Early Mature Tree • 400+mm branch diameter at or above minimum installation height
Trunk Top Hollows	
Description	Trunk Top Hollows are carved at the top of a trunk often just below the crown or where the main stem ends, imitating hollows with vertical shafts caused by crown failure. The entrance is downward facing, leading to a denning chamber directly below.
Suitable Trees	• 600+mm DBH • Early Mature Tree • 300+mm branch diameter at minimum installation height

Arbor Australis Consulting was engaged to provide assessment and advice on the potential of artificial hollows for Greater Gliders on the offset site.

General guidelines for Greater Glider suitable Artificial Hollow Carving from Arbor Australis Consulting are summarised below. Installation is to follow the full specifications listed in Appendix A.

Greater Glider Artificial Hollow Requirements Summary	
Location in Tree	Branch-end hollows are preferred. Vertical trunk hollows and Brank stub hollows where installation opportunities are limited by tree size and form.
Orientation	North facing hollows are the most preferred. Followed by east, south, and west. Vertical hollows least are the least utilised.
Height Above Ground	Minimum of 8m. Hollows higher in the crown of show more use than lower ones.
Thermal Qualities	Dead trees (stags) are not to be used due to their limited thermal qualities. Seasonal variation may mean multiple hollows are used by Greater Gliders for thermoregulation.
Structure	For branch end hollows the denning chamber within the branch needs to be a minimum of 300mm in branch diameter where there is no load or branch weight beyond the Artificial Hollow site. For branch stub hollows the entrance chamber needs to be carved into the branch stub, requiring a minimum size of 180mm in diameter. Artificial hollows must not create structural weakness or excessive risk of tree failure.
Crown Pruning Limits	Pruning should not exceed 5% of live foliage by volume. Minimise loss of photosynthetic material; tree health/vigour must be considered before cutting.
Existing Hollow Modifications	Existing hollows can be adapted if undersized or too deep (e.g. installing a floor, enlarging). However the benefit must be weighed against current use by other species.
Risk & Safety	Hollows must not significantly compromise structural integrity. Minimum part sizes and chamber/entrance specifications (Appendix A) have been specified to ensure tree strength is retained.

The specific details of installation specifications for each type of artificial hollow including Hollow Location, Opening, Branch Size & Minimum Wall Thickness, Hollow Chamber Depth and Methodology are provided in Appendix A.

METHODOLOGY – HOLLOW CREATION TOTALS AND LOCATIONS

Arbor Australis Consulting was engaged to provide assessment and advice on the potential of artificial hollows for Greater Gliders on the offset site (Appendix A). It has been estimated that there are 83 hollow opportunities across 64 trees suitable trees for greater glider artificial hollow carving alongside existing hollows (refer SHEET 03 and Appendix A for locations and details). Of the 64 trees 80% are suitable for Trunk Middle Hollows, 15% Branch Stub Hollows and 5% Branch End (refer Appendix A for full details).

In order to meet the optimal target at least 1.5 hollows per hectare a minimum of 103 hollows will need to be present across the 85ha Offset Site (alongside existing hollows). Where Artificial Hollows are unable to be installed the arborist is to install nest boxes to make up the balance of hollows. Nest Boxes are to follow the specifications listed on this sheet to ensure they are both suitable for greater glider habitat and will act as a replacement until new hollows form within the offset site.

Hollows are to be installed so that there are a minimum of 1.5 hollows per hectare located across each Assessment Units (AUs) as per the table below, with 76 artificial hollows to be installed across 60 suitable trees in AU1 and 7 artificial hollows to be installed across 4 suitable trees im AU2. The qualified Artificial Hollow Installer is to assess the benefits and possibilities of both installing more than one hollow per suitable tree and the modification of existing hollows to meet Greater Glider requirements. Where this is not possible, additional nest boxes should be installed. Assessment unit locations are shown on SHEET 03.

Hollow Creation Totals per Assessment Unti (AU)			
	AU 1	**AU 2**	**Total**
Area (ha)	78.26	6.73	84.99
Number of Existing Hollows (including a +20% margin)	24	0	24
Existing Hollows per ha	0.31	0	0.28
Estimated Hollow Carving Opportunities	76	7	83
Hollow Carving Opportunities per ha	1.28	1.04	1.26
Proposed Artificial Hollow Carving	**76**	**7**	**83**
Proposed Nest Box Installation	**17**	**3**	**20**
Final Proposed Hollows per Hectare	**1.5**	**1.5**	**1.5**

METHODOLOGY – GREATER GLIDER NEST BOXES

Nest boxes are to be installed by a AQF Level 5 Arborist (or equivalent) or a suitably experienced nest box installer. The following specifications for design and installation are recommended for Greater Gliders:

Dimensions and Materials

Standard construction dimensions for nest boxes are H: 535mm, W: 360mm & L: 360mm. An entrance size of 130mm is recommended to reduce non-target intake (Gracanin et al. 2025). Other designs such as the 3 Unit Nest Box from *Habitat Innovation* and Cyplas® Greater Glider from *Hollow Log Homes* have seen success with Greater Glider intake.

Non-degradable plastic is recommended for nest box construction. Double-walled plastic boxes with timber inserts have shown to be effective in thermal buffering and will likely last longer than timber ones, allowing more time for additional natural hollows to form within the offset site during their lifespan (Callan, Johnson, and Watson 2023).

Insulation and Thermoregulation

Insulation such as 20-40mm foilboard wall insulation with air gaps has been shown to support thermoregulation (Howard et al. 2022). Absence of insulation on the wall side of the nest box that is in contact with the tree may help with heat dissipation (Gracanin et al. 2025). Reflective white, fire-retardant paint can be effective to reduce radiant heat absorption (Larson et al. 2018). Internal surfaces should not be painted. Any finishes used be free of Volatile organic compounds (VOCs).

Installation

Nest Boxes are to be installed in healthy trees with a minimum DBH of 300mm. The Height of boxes are best positioned as close to the tree canopy as possible, at a minimum of 8m from the ground. Where possible, place boxes in locations that are least vulnerable to branch fall. Boxes are to be firmly mounted, Franks (2006) recommend the Habisure system to mount boxes. South to Southeast orientation is recommended where possible to reduce solar exposure (Howard et al. 2022).

METHODOLOGY – TIMING OF INSTALLATION

Artificial hollow carving and nest box installation will be completed as soon as possible (anticipated within the first year) subject to site conditions. Where nest boxes are required in areas where habitat is still to be created, the timing of installation must be at the point where canopy approaches closing or at 15 years, whichever comes first.

REFERENCES

Callan, M. N., A. Johnson, and D. M. Watson. 2023. "Influence of Nest Box Design on Internal Microclimate: Comparisons of Plastic Prototypes." Austral Ecology 48: 374–387

Franks A & S 2006 'Nest boxes for wildlife: A practical guide'

Gracanin, A., Hofman, M., Willson, S., Clough, J. B., Brown, T., and Mikac, K. M. (2025). Rapid Uptake of Nest Boxes by the Endangered Greater Glider (*Petauroides volans*). *Ecological Management & Restoration* **26**(2)

Howard, I., J. C. H. Ridley, W. Blanchard, et al. 2022. "Helping Wildlife Beat the Heat: Testing Strategies to Improve the Thermal Performance of Nest Boxes." Australian Zoologist 42: 534–560

Larson, E.R., Eastwood, J.R., Buchanan, K.L., Bennett, A.T.D. and Berg, M.L. 2018. "Nest box design for a changing climate: The value of improved insulation". Ecological Management & Restoration 19: 39-48

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REFERENCES

Callan, M. N., A. Johnson, and D. M. Watson. 2023. "Influence of Nest Box Design on Internal Microclimate: Comparisons of Plastic Prototypes." Austral Ecology 48: 374–387
Franks A & S 2006 'Nest boxes for wildlife: A practical guide'
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Howard, I., J. C. H. Ridley, W. Blanchard, et al. 2022. "Helping Wildlife Beat the Heat: Testing Strategies to Improve the Thermal Performance of Nest Boxes." Australian Zoologist 42: 534–560
Larson, E.R., Eastwood, J.R., Buchanan, K.L., Bennett, A.T.D. and Berg, M.L. 2018. "Nest box design for a changing climate: The value of improved insulation". Ecological Management & Restoration 19: 39-48

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	25/11/06	CLIENT DRAFT	LS	AD
B	26/02/12	RFI	LS	AD

CLIENT: FRASERS PROPERTY NEW BEITH PTY LTD

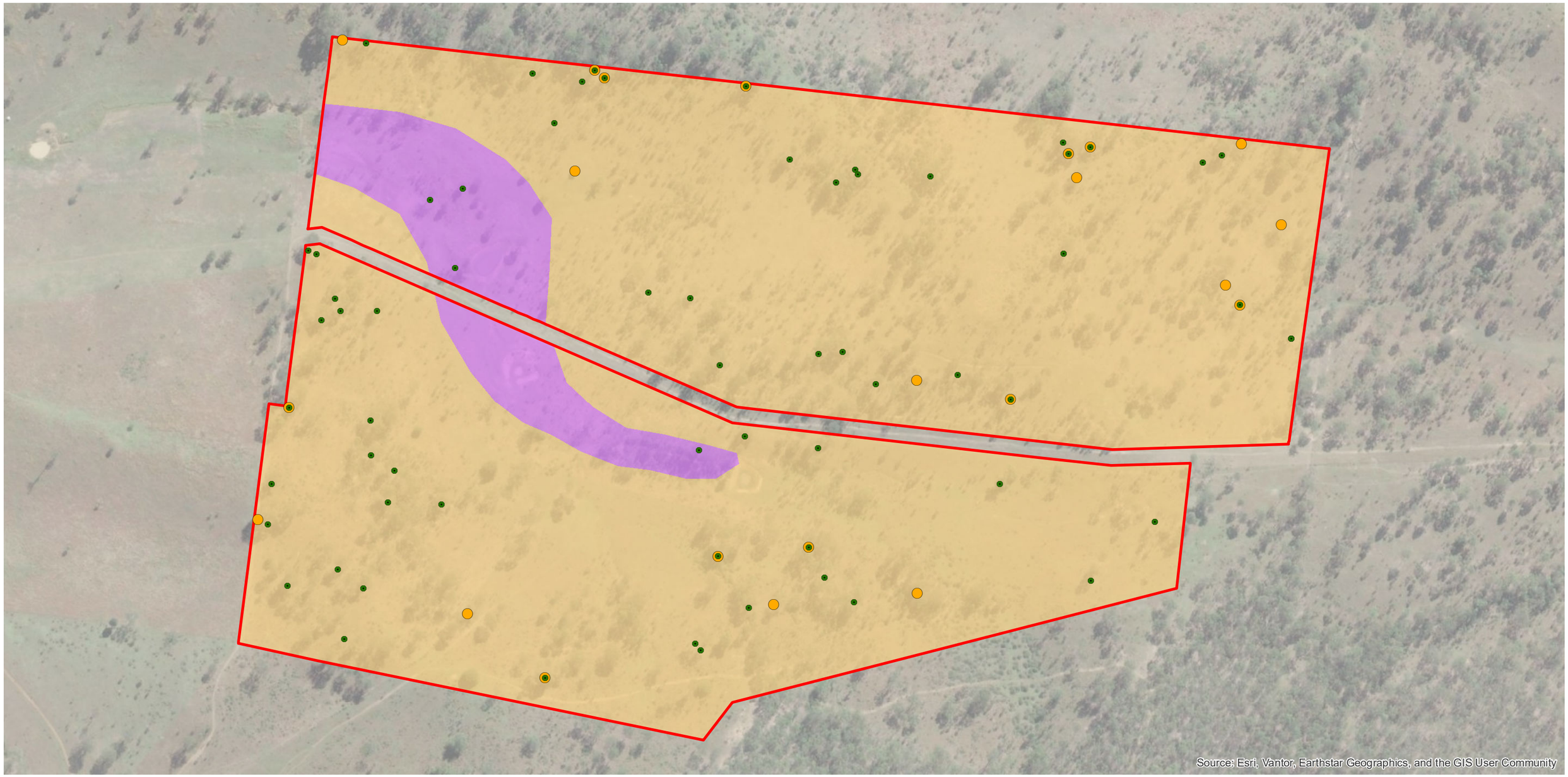
PROJECT: KFF1 LITTLE KIPPER OFFSET SITE

DRAWING TITLE: HOLLOW MONITORING AND MANAGEMENT PLAN

DRAWING NO.: **9383 E 02 LK HMMP B**

KFF1 LITTLE KIPPER OFFSET SITE

Hollow Monitoring and Management Plan - *Offset Site Artificial Hollow Suitability*



LEGEND

- QLD DCDB
- Offset Area
- Trees Suitable for Artifical Hollow Installation [64]
- Trees with existing hollows
- AU-1: Non-remnant (12.9-10.2) [78.26 ha]
- AU-2: Non-remnant (12.3.3/12.3.7) [6.73 ha]

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N

SCALE (A3)
1:4,800

References:

0 50 100 200 m

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	25/11/06	CLIENT DRAFT	LS	AD
B	26/02/12	RFI	LS	AD

CLIENT
FRASERS PROPERTY NEW BEITH PTY LTD

PROJECT
KFF1 LITTLE KIPPER OFFSET SITE

DRAWING TITLE
HOLLOW MONITORING AND MANAGEMENT PLAN

DRAWING NO.
9383 E 03 LK HMMP B

KFF1 LITTLE KIPPER OFFSET SITE

Hollow Monitoring and Management Plan - *Maintenance and Monitoring*

MONITORING AND REPORTING

The utility of existing site hollows, creation of new hollow carvings and Nest Boxes (if required) for the Greater Glider will be monitored via Arborist or Ecologist over the 20 year management period.

Following hollow carving or nest box installation, a single page memo or email outlining installed hollows/nest box, host tree particulars and location coordinates with supporting map is to be provided to relevant parties for use in the *Offset Area Annual Report* and *Annual Compliance Report*. A monitoring template should be completed during each inspection. An example template for the monitoring of greater glider nest boxes has been provided on this sheet.

At a minimum the monitoring should include:

- Fauna use including target and/or non-target species.
- Rectification procedures for introduced species.
- The condition of the tree including any damage, dieback, or risk to the hollow.
- Condition of the hollow / nest box host tree noting any health issues such as rot, cracks, splits, fungal infection, wood decay, insect damage.
- Maintenance actions required.

Timing of Monitoring

Artificial hollow carving and nest box installation will be completed as soon as practicable (anticipated within the first year), subject to site conditions.

First 12 months after completion: Monitoring of carved hollows and nest boxes is to occur every three months during the first 12-month period following the completion of hollow carving. Each monitoring event will include a visual assessment of trees where hollow carving has occurred, noting tree condition (e.g. dieback, damage) and, where possible, hollow condition and use.

Annually from Year 2 to Year 20: Following the initial 12-month quarterly monitoring period, annual monitoring is to be undertaken for the remainder of the 20-year Offset Site Maintenance Period. Each annual assessment will include a visual inspection of trees where hollow carving has occurred, noting tree condition (dieback, damage) and, where possible, hollow condition and use.

Spotlighting is to be undertaken as part of milestone monitoring during years 5, 10, 15 and 20. The spotlighting is to identify fauna usage of hollows and nest boxes where possible. Results are to be reported in the milestone monitoring report.

REPORTING

Following each inspection, a report is to be prepared within 14 days by the Arborist or Ecologist and issued to the relevant parties for inclusion in the Offset Area Annual Report and Annual Compliance Report. The report will summarise the inspection results and outline any additional measures recommended to improve the beneficial outcomes of the fauna strategy (e.g. removal of pest species, minor repairs or replacement).

MAINTENANCE

Damaged or lost hollows/nest boxes are to be repaired or replaced within three weeks of monitoring activities and details of all maintenance work should be submitted to relevant parties for use in the *Offset Area Annual Report* and *Annual Compliance Report*. Hollows will be maintained over the 20-year management period.

Nest Box Monitoring Sheet 1

Observer's name:					
Date:				Time:	
Location:				Weather conditions:	
Box No.	Box type	Date installed	External observations	Species observed	Comments

Nest Box Monitoring Sheet 2

Checklist For Nest Box No:		
Annual maintenance	Yes	No
1. Box is not occupied by pest species		
2. Box is not vandalised or missing		
3. Box is securely attached		
4. Box in not damaged or rotten		
5. Entrance hole is free of obstruction and not damaged or worn		
6. Box is aligned away from prevailing winds, rain and excessive heat		
7. Host tree is of a healthy and undamaged		
COMMENTS:		

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REFERENCES
Callan, M. N., A. Johnson, and D. M. Watson. 2023. "Influence of Nest Box Design on Internal Microclimate: Comparisons of Plastic Prototypes." Austral Ecology 48: 374–387.
Franks A & S 2008 'Nest boxes for wildlife: A practical guide'
Gracanin, A., Hofman, M., Wilson, S., Clough, J. B., Brown, T., and Mikac, K. M. (2025). Rapid Uptake of Nest Boxes by the Endangered Greater Glider (Petauroides volans). Ecological Management & Restoration, 26(2).
Howard, I. J. C. H. Ridley, W. Blanchard, et al. 2022. "Helping Wildlife Beat the Heat: Testing Strategies to Improve the Thermal Performance of Nest Boxes." Australian Zoologist 42: 534–560.
Larson, E.R., Eastwood, J.R., Buchanan, K.L., Bennett, A.T.D. and Berg, M.L. 2018. "Nest box design for a changing climate: The value of improved insulation". Ecological Management & Restoration 19: 39-48

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B	26/02/12	RFI	LS	AD

CLIENT
FRASERS PROPERTY NEW BEITH PTY LTD

PROJECT
KFF1 LITTLE KIPPER OFFSET SITE

DRAWING TITLE
HOLLOW MONITORING AND MANAGEMENT PLAN

DRAWING NO.
9383 E 04 LK HMMP B

ARBOR AUSTRALIS
CONSULTING

Artificial Hollow Opportunity Assessment

Little Kipper KFF1
October 2025

17th October 2025

Attention: Andrew Davies
Manager Environmental Divisoion

Saunders Havill Group
9 Thompson Street
Bowen Hills
QLD 4006

Dear Andrew,

Re: Artificial Hollow Opportunity Assessment for KFF1 'Little Kipper', Biarra.

I am pleased to submit our assessment and advice on the potential of artificial hollows within the offset site. Hollows have been assessed to meet the requirements for *Petauroides spp,* (Greater Gliders) within the offset site.

I trust that you find this assessment both satisfactory and helpful. Should you wish to discuss any of its recommendations or arrange for them to be implemented, please contact me on 07 3379 7793.

Yours sincerely,

Yours sincerely,

Jeremy Young
Principal Arboricultural Consultant
BSc (Hons) Arboriculture and Urban Forestry, First Class
Cert Arb (UK) | Adv Dip Hort (Arb) | Dip Arb
Certified Arborist AU-0011A
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Contents

Document Control

Document

Project Name:	KFF1 Little Kipper
Report Title:	Artificial Hollow Opportunity Assessment
Report Name:	2025-054_AHOA_SHG-LittleKipper

Client

Company:	Sanders Havill Group
Contact:	Andrew Davis
Contact Position:	Manager, Environmental Division

Site Owner

Company:	Koala Farmland Fund
Contact:	Robert Martyn
Contact Position:	General Manager

This document has been prepared by: Arbor Australis Consulting (AAC)

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Revision History:

Version	Date	Details	Author	Reviewed	Authorised
Issue A	17/10/2025	2025-054_AHOA_SHG-LittleKipper	Jeremy Young	JB	JY

Author Qualification and Experience Summary:

Jeremy Young
BSc (Hons) Arboriculture and Urban Forestry (First Class)
AQF level 6 (Arboriculture).
More than 35 years of industry experience.
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Queensland Arboricultural Association, Approved Consultant.
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Arboricultural Impact Assessment. Experience in over 1400 projects in the past eight years, ranging from small developments to significant infrastructure development.

Artificial Hollow Opportunity Assessment– KFF1 Little Kipper.

Scope:

Assessment of existing trees within the offset site to identify opportunities to develop or introduce habitat hollows artificially. The habitat hollows proposed will be a combination of chainsaw cut and Hollow Hog/Arborgrub carved hollows. The target fauna species for which the hollows are to be developed is the *Petauroides spp*, Greater Glider.

Offset Site Description: Little Kipper

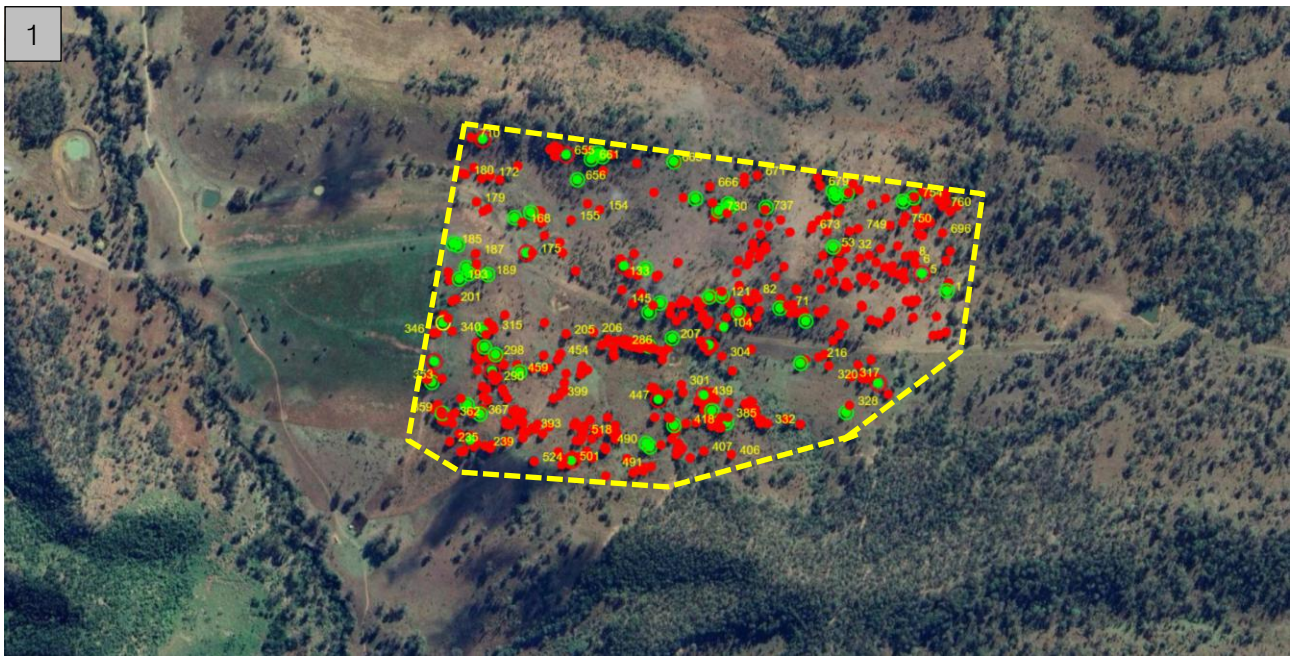


Image 1: The Offset site is indicated approximately by the yellow dated line.

It is highly likely that the area was previously cleared of most good timber trees as part of the immigrant settlement from the 1840's onward. The offset site is an open woodland area that appears to have been grazed by cattle in the past. This grazing has impeded tree regrowth. The trees onsite are predominantly of semi-mature age, with a few mature trees.

The site is generally a south-facing slope with a small area of north-facing slope located towards the northeast of the site. The current tree regrowth and current tree vitality suggest growing conditions suitable for further tree establishment. Water availability will be the primary limiting factor in tree growth.

The young age of the current trees on sites is the reason for the limited number of natural hollows present, as documented in the base tree data provided by Saunders Havill Group (SHG), and this was confirmed during the review of Artificial Hollow (AH) suitability.

The site is suitable for AH development for Greater Glider habitat; however, the age of the trees limits the number that can currently be installed for the target species.

Image 2: A typical young semi-mature tree example with limited branch spread and insufficient size of parts above 8m. This tree is not suitable for an artificial hollow. (Arbor Australis, 2025)

Image 3: An older semi-mature tree example with an opportunity to create a trunk hollow. The branch structure arising from the trunk is of an insufficient size to create a Branch End Hollow (Arbor Australis, 2025)

Methodology:

Following the initial request for an assessment and advice regarding the creation of artificial hollows to achieve denning opportunities for the Greater Glider species, a tree assessment and data collection were conducted. This assessment aimed to identify opportunities for creating new artificial habitats without compromising existing tree habitat features or tree structure.

Base tree data provided by SHG was sorted and imported into a GIS field system so as to display trees greater than 500mm DBH (trunk diameter). Each of these trees has been assessed onsite to determine the suitability for artificial hollows and to document the established hollow height, size and depth.

The electronic collection of data eliminates issues of transcribing errors and is set up to allow for and record the installation and subsequent inspection of the hollows into the future. This Data is available through the Konect App and can be viewed with a Konect User license. Alternatively, the data and photos can be exported to Excel at any stage, for ease of sharing information outside the app.

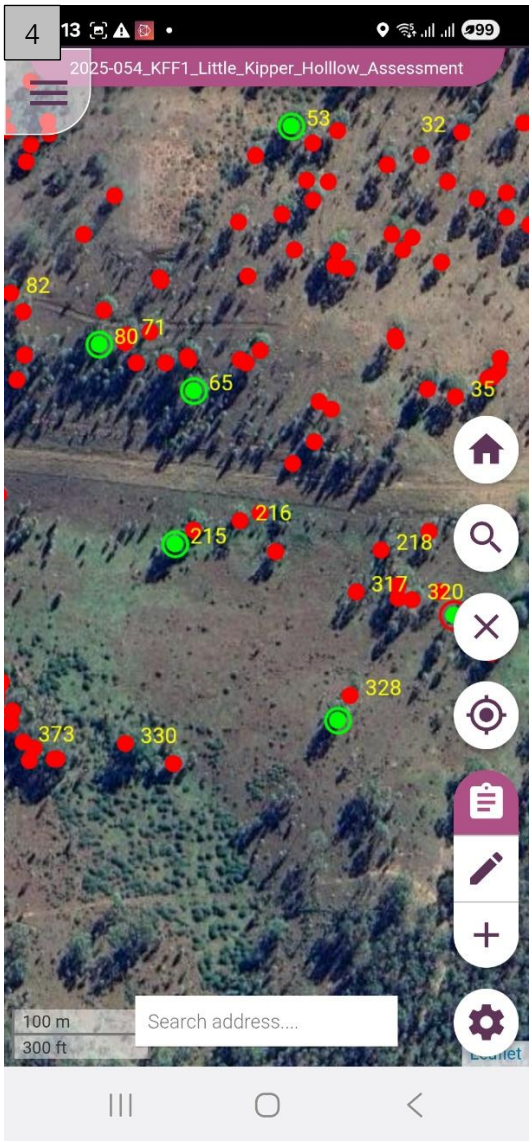


Image 4: Field map display used for site navigation. Trees that are green with circles are greater than 500mm DBH and are suitable for Artificial Hollow installation (Arbor Australis, 2025).

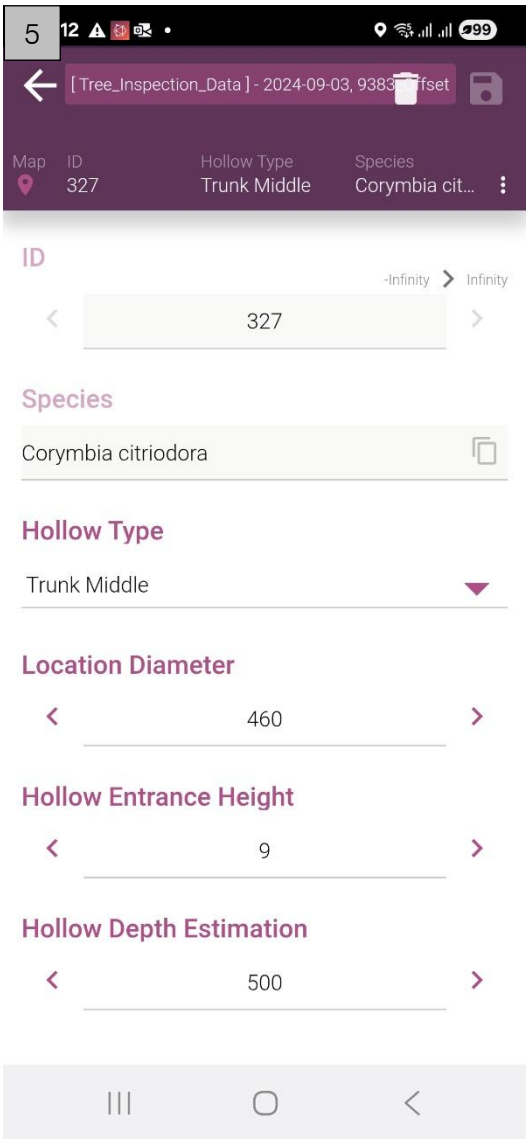


Image 5: The field form that is linked to each of the trees. Data collected in this manner removes the risk of transcription errors (Arbour Australis 2025).

All measurements have been estimated, and the assessment of hollow opportunities has been conducted from the ground only. Tree location and numbering have been plotted using the GPS coordinates provided by SHG, and all tree numbering has been retained to ensure continuity between reports.

The requirements for the Greater Glider hollows have been based on our previous experience of assessing and implementing AH for Greater Gliders, along with a literature review of the subject.

There is no specific literature that documents the implementation of AH for this species. However, recent research studies have demonstrated positive results.

Due to the limited information available, this advice aims to propose selection criteria and considerations required to determine trees that may be suitable candidates for AH implementation.

Natural Hollow Development:

The tree life stage is an essential indicator of the likelihood of natural hollow development, with hollows typically not present until trees reach the late-mature to over-mature stages of life, which can be 100 years or more. Natural hollow development is usually associated with tree veteranisation. Early veteranisation of trees and natural hollow development can occur sooner than this, depending on the severity of previous storm events and tree exposure; however, typically these hollows are too small to support large fauna.

The development of natural hollows of a size suitable for the Greater Glider can take much longer and typically occurs only in trees that are in an over-mature stage with veteran characteristics. This typically refers to trees that are 200 years old or older (Warmington & Lamb, 1999).

An understanding of hollow development and the tree's natural response to wounding and decay is necessary to determine opportunities for imposing AH on trees. A comprehensive understanding of tree physiology and biological function must complement this understanding. Hollow specialisation development needs to ensure that the tree's structure is not compromised, along with maintaining sufficient biological function for carbohydrate production to sustain growth and natural decay defence.

Natural hollow development is primarily a result of heartwood decay in mature to over-mature trees that have experienced branch, branch union or stem failures, often (but not always) initiated as a result of failures in storm events.

These failures expose the dysfunctional heartwood to the air. Decay can enter the tree through fungal spores and microbes colonising the wound site; however, recent research indicates this is less likely or impactful, than latent decay fungi and microbes already present in the wood structure (Boddy & Rayner, 1983; Boddy, 2021). Wounding results in exposure to the air reducing the moisture content and increasing the exchange of gases in the cells, stimulating latent fungal propagules and microbial activity in the wood.

Decay progresses relatively slowly as fugal hyphae exude enzymes that break down cellulose and lignin. At the same time, the tree is actively try to compartmentalise (resist) the decay fungi through chemical alteration of cells to create barrier zones. (Schwarze, *et.al.* 2013)

Compartmentalisation occurs in the living tissue of the trees sapwood (symplast), not the heartwood (apoplast). The basic principle of compartmentalisation is the forming of internal chemical walls or barriers, increasing in effectiveness from 1-4 : (Shigo, 1984)

Barrier Zone 1 is the longitudinal zone parallel to tree growth, on a trunk, which is above and below the wounding site. At the time of wounding, the border pits are altered through a process called tylosis. Barrier zone 1 is the weakest of the barrier zones due to the large sap vessels, which limit passive defence and allow fungal hyphae to move.

Barrier Zone 2 is the marginal axial parenchyma (growth rings). At the time of wounding, the tree chemically alters the cells and creates a barrier at the current growth ring. The barrier resists the spread of decay inwards from the wounding site.

Barrier Zone 3 is the medullary or parenchyma rays, which radiate like spokes of a bike wheel from the trunk centre. This chemical barrier resists and limits the lateral spread of decay.

Barrier Zone 4 is laid down at the time of wounding by the area of the cambium that is still functioning at the edge of the wound site. This barrier resists the spread of decay into the new wound wood that develops around the wound site and is the most vigorous defence against decay.

The rate of decay and speed of hollow development is highly variable. Tree species, microbial populations, tree physiology, vigour[1], and vitality[2] all play significant roles in the rate of decay that results in hollow development.

Images 6 & 7: Examples of natural formed hollows indicated by the yellow and red arrows. (Arbor Australis, 2025)

Some examples of hollow development variations:

Growing Location, Trunk Size Variation:

A Queensland Blue Gum *(Eucalyptus tereticornis)* growing in an alluvial loam, close to a water supply is unlikely to reach over maturity or veteran status until the age of 250 years. It may be 1.5m+ in trunk diameter before hollows start to develop. Trees in this growing environment typically have higher vitality and energy reserves that can be utilised in defence against decay.

[1] Tree's genetic capacity to resist strain, vigour can not be increased

[2] Tree growth response to external stimuli in current climatic conditions

Whereas a Queensland Blue Gum *(Eucalyptus tereticornis)* growing in poor soil with limited water supply will age quicker and put on less annual incremental growth, so over-maturity or veteran status may be reached in 100 - 150 years. Trees in this growing environment have reduced vitality and, as a result, have less energy reserves that can be utilised for active defence against decay.

Species, Decay Rate Variation:

A Narrow-leaved Red Ironbark *(Eucalyptus crebra)* has a dense wood structure, a slow growth rate, and produces smaller wood cells with a high lignin content. This provides a physical barrier to the movement of fungal hyphae through the timber, impeding decay and slowing the development of hollows.

A Scribbly Gum (*Eucalyptus racemosa*) has a low timber durability rating due to its faster growth rate with larger wood cell structure and a lower lignin content in the heartwood. This species will typically begin to develop hollows within 30 years.

The examples above are only a snapshot of the variability of hollow development. The tree's trunk diameter/DBH (diameter at breast height) or the tree's height does not guarantee the presence or absesne of hollows. The tree's life stage, because of its growing environment, is by far a better indicator (Wormington *et,al*. 2003). Tyically, we acknowledge that the larger the trees trunk diameter the more likely the potential for the presence of hollows.

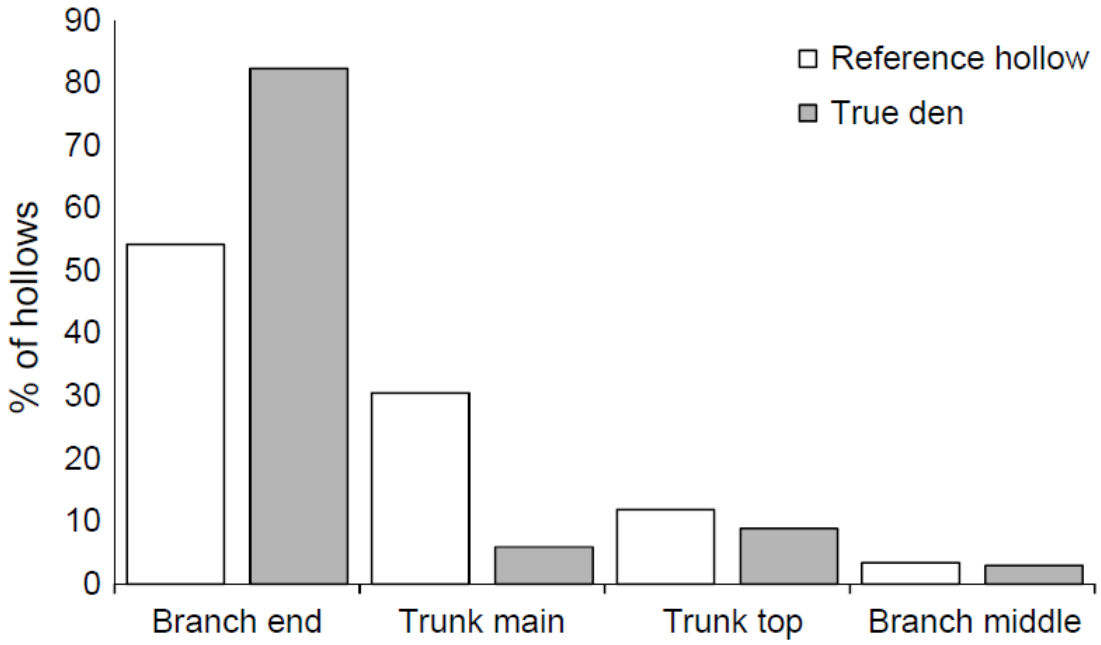
Image 8: *Examples of over-mature trees that a beginning to develop veteran characteristics of hollow development. These trees were most likely spared from the original land clearing due to reduced wood quality. The tree on the right appears to be older, based on the larger hollows and trunk girth (Arbor Australis, 2025).*

Greater Glider Hollow Requirements:

A review of the literature regarding the Greater Glider's denning and breeding hollow requirements revealed significant variation in the data. It is hypothesised that this variation in data is a result of the variation in climatic zones altering the use of hollows at the time data was collected. This information has been summarised below to inform the AH installation recommendations.

Most hollows occupied by the Greater Glider are typically found in branches, often with dead wood at the entrance (Goldingay 2011; Hofman *et al.* 2022). Past sutdies have shown the hollows are generally located in the crown at heights ranging from 6 – 56 m (Kehl and Borsboom 1984; Lindenmayer *et al*. 1991; Hofman *et al*. 2022).

Hoffman *et al.* (2022) identify that the most significant utilisation occurs in branch end hollows, with approximately 80% of utilisation in these types. Trunk hollows are utilised at a higher rate when positioned higher in the crown and trunk top; they are used at a considerably greater rate than those in the main stem, and comparable rates in terms of availability to branch middle hollows.



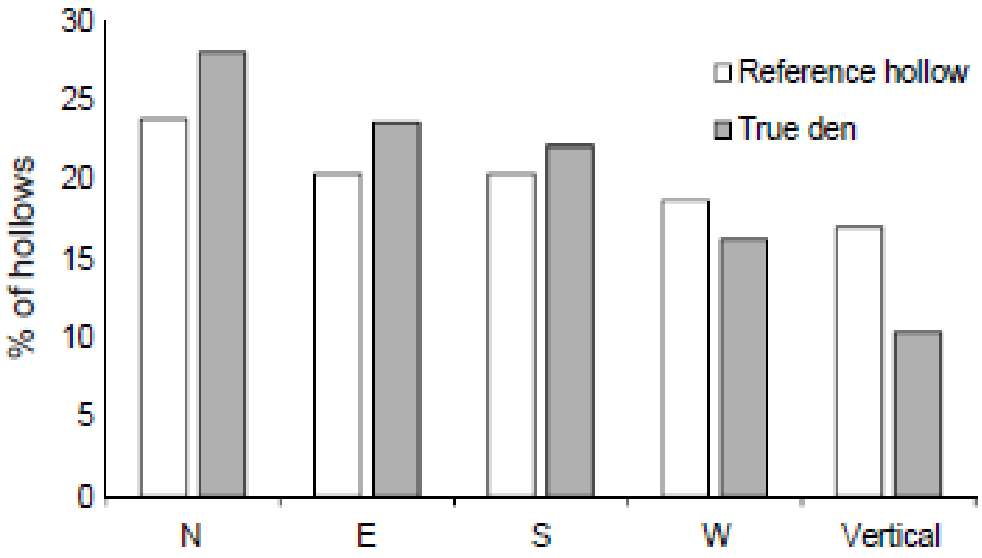
Graph 1: Extract from Hoffman et al (2022) showing utilisation of hollow type

Hollow Orientation

Hoffman *et al.* (2022) provide some analysis of hollow orientation. Utilisation was highest in hollows with a northerly aspect, followed by east, south, and west, with vertical hollows least utilised (*Extract 2).*

This research was conducted in southern coastal NSW, approximately 250 km south of Sydney (latitude: 34° South). The climate is temperate, with cold, wet winters and warm, dry summers. The preference for entrances facing north may have been to take advantage of the thermal gain, warming aspects of such an orientation, which is likely more critical given the cooler climate of the locality. In the subtropics, a northerly aspect is presumed to be less critical due to higher ambient air temperatures and solar gain, which can lead to potential overheating of hollows.

Greater Glider has relatively narrow thermal tolerance, with temperatures above and below 20^{0}C increasing basal metabolic rate (Rübsamen *et al*. 1984). The thermal properties of hollows are believed to be a significant influence on their selection. Moreover, the need to use different hollows in different seasons may be required for optimal thermoregulation (Hofman *et al*. 2022).



Graph 2: Proportional orientation of occupied hollows (Hofman et al, 2022)

Artificial Hollows, Assessment and Guidelines

Based on this research and understanding of tree physiology and its response to wounding, along with experience in habitat hollow installation, a set of guidelines and specification sheets has been developed to guide the assessment and installation process.

While branch-end hollows are the preferred hollow type, the tree size is a significant limiting factor in achieving this hollow type. A hollow with the denning chamber within the branch needs to be a minimum of 300mm in branch diameter where there is no load or branch weight beyond the AH site. Typically this is an existing branch stub, broken or pruned branch.

Trees with suitable parts are often limited to being large, mature, or over-mature trees. They are not a common occurrence, and to be suitable, they must not require pruning that removes a significant portion of branch and crown foliage in order to create a hollow. Excessive pruning will have an adverse impact on tree health.

A Branch Stub Hollow has been described as an alternative to achieve the required hollow entrance through an existing branch end, as shown to be desirable in past studies. However, as the denning chamber is cut into the trunk of the tree rather than the branch, the size requirement for the branch is reduced. The entrance chamber needs to be carved into the branch stub, requiring a minimum size of 180mm in diameter.

The development of artificial hollows needs to consider the requirements of the fauna it is intended for, the tree structure, the presence of other habitat features, and the biological function of the tree. The following is a summary of conditions and criteria that collectively need to be met in order to create artificial habitat hollows for Greater Gliders (Best, et. Al. 2022)

Existing Hollows: Trees with existing hollows that do not meet the Greater Glider size criteria can, in some cases, be altered to be suitable for the Greater Glider. This can include installing a floor where hollows are too deep or increasing the size where hollows have started to develop but are not large enough for the Greater Glider.

Any alteration to an existing hollow will need to be weighed against the benefit they currently provide to other species.

Thermal Qualities: Dead trees (stags) have been excluded from the assessment due to their limited thermal qualities, as they are not suitable or preferred by the Greater Gliders. Mimicking natural hollows by carving them into living trees provides better thermal qualities. (Griffith, et al. 2018)

Hollow Location: Greater Gliders prefer branch-end hollows over vertical trunk hollows. The assessment has focused on the opportunity for branch-end hollow development; however, as described above the the opportunities are limited by the tree size and tree form. Opportunities for AH have also been listed where a good opportunity exists to position a habitat hollow in a tree trunk.

The installation height has been set as a minimum of 8m based a previous studies and the ovbservaion made in these studies that the hollws higher in the crown are ustelies more then the lower hollows.

Structure: Hollows should not create a significant structural weakness or significantly increase the probability of failure of a living tree part, at the site of the artificial hollow.

Risk: In considering the Risk of Harm (RoH) artificial hollows may pose, the risk is acceptable for this site as there is a low probability of people (target) being present should a tree failure occur. However, maintaining acceptable levels of structure at the site of hollow generation is essential to avoid failures that would compromise the habitat created. For this reason, minimum part sizes have been specified for each of the hollow types. The required habitat chambers, hollow entrance point and the load above the AH site dictate this size.

Crown Pruning: While the removal of branch structure can provide opportunity to install branch end hollows thare is an adverse impact to tree health with the removal of photosythetic material. The pruning to remove a brach needs to be weighed against the trees ability to tolorate this damage. Tree health, vigour and vitality will influence the pruning descisions. As such a general guideline has been established that crown pruning should not exceed 5% of live foliage by volume.

General Artifical Hollow Guildines:

The points below outline the geneal guidelines used oto assess a tree for sutability to install AH. More specific guidelines are for each hollow type are outlined in the the Holow Specificaion Sheets.

Opening

- Between 80mm and 350mm
- Opening Orientation is east and south preferred but not critical
- Only one entrance per hollow

Minimum Wall Thickness

- 50mm for thermal qualities. However, the wall thickness needs to consider the load beyond the hollow for the tree structure.

Hollow Chamber Depth (Bottom of hollow opening to bottom of chamber)

- Between .5m (500mm) and 5m (5000mm)

Hollow Entrance Heigh

- Minimum 8m above ground

Hollow Location

- Branch ends are preferred, but the opportunities will dictate what can be achieved
- Multiple hollows in one tree are acceptable, however divcersity of hollow types is more desirable.
- Avoid situating hollows in positions above one another.

General Amended Hollow Guidelines:

The aim is to alter existing hollows to meet the parameters above. This may range from shortening the the hollow chamber depth through a false floor or reducing and reorientating the opening through the installation of a carved/hollow log. The amendment of smaller hollows to increase the entrance size to the chamber follows the sme methodologies outlined in the specification sheets.

Where existing hollows are amended, it is desirable to retain the response wood growth as this provides increased structural load capacity around the existing hollow.

Image 9: An example of a larger tree with a DBH >800mm where four artificial hollows suitable for a greater glider have been installed. Thess consist of 1 x Branch End, 2 x Branch Stub and 1 x Trunk Hollow (Arbor Australis, 2025)

Artificial Hollow Types

According to the specification outlined above, five AH types have been documented. Each of these hollow types has a specification sheet in Appendix 1 that also provides installation notes for clarity.

Branch End Hollows:

Branch End Hollows are carved in a branch with the entrance through the end of the branch and the denning chamber within the branch. Trees suitable for branch end hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown. Where possible, existing large stubs from past branch failures are utilised. Pruning of live wood to create the branch end opportunity is acceptable in some situations (refer to installation notes).

Branch Middle Hollows:

Branch Middle Hollows are carved in a branch with the entrance through the side of the branch and the denning chamber within the branch. Trees suitable for Branch Middle Hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown of lateral large diameter branches (refer to installation notes).

Branch Stub Hollows:

Branch Stub Hollows are carved in a branch stub close to the branch union with the entrance through the end of the cut or broken branch and the denning chamber within the trunk of the tree. Trees suitable for branch stub hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).

Trunk Middle Hollows:

Trunk Middle Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Middle Hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).

Trunk Top Hollows:

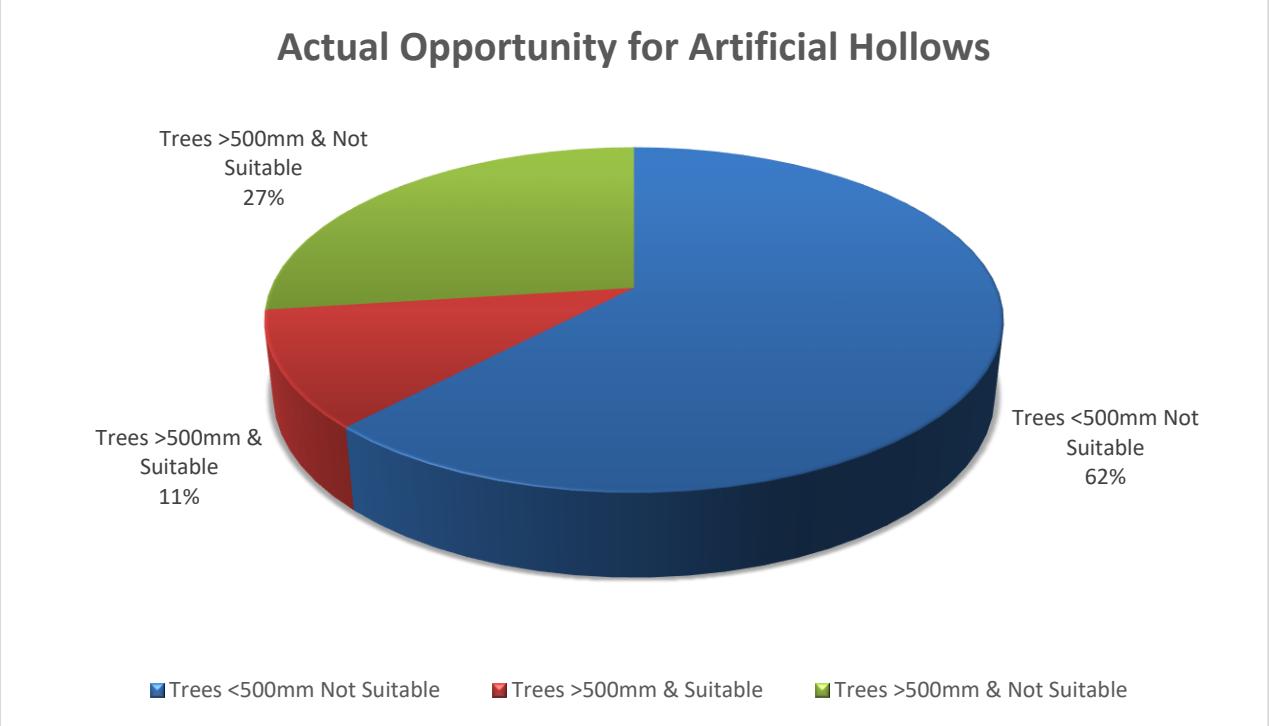
Trunk Top Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Top Hollows are typically greater than 600mm in trunk diameter and have a history of past crown failure. They are early mature and have a stem diameter of 300mm or greater at the minimum installation height (refer to installation notes).

Artificial Hollow Opportunities at the Little Kipper site:

Of the 588 trees onsite, 38% (223) are of a size that may be suitable for artificial hollows based on trunk diameter as an indicator of tree size. However, it was found that only 11% of the trees on the site are candidates for artificial hollows.

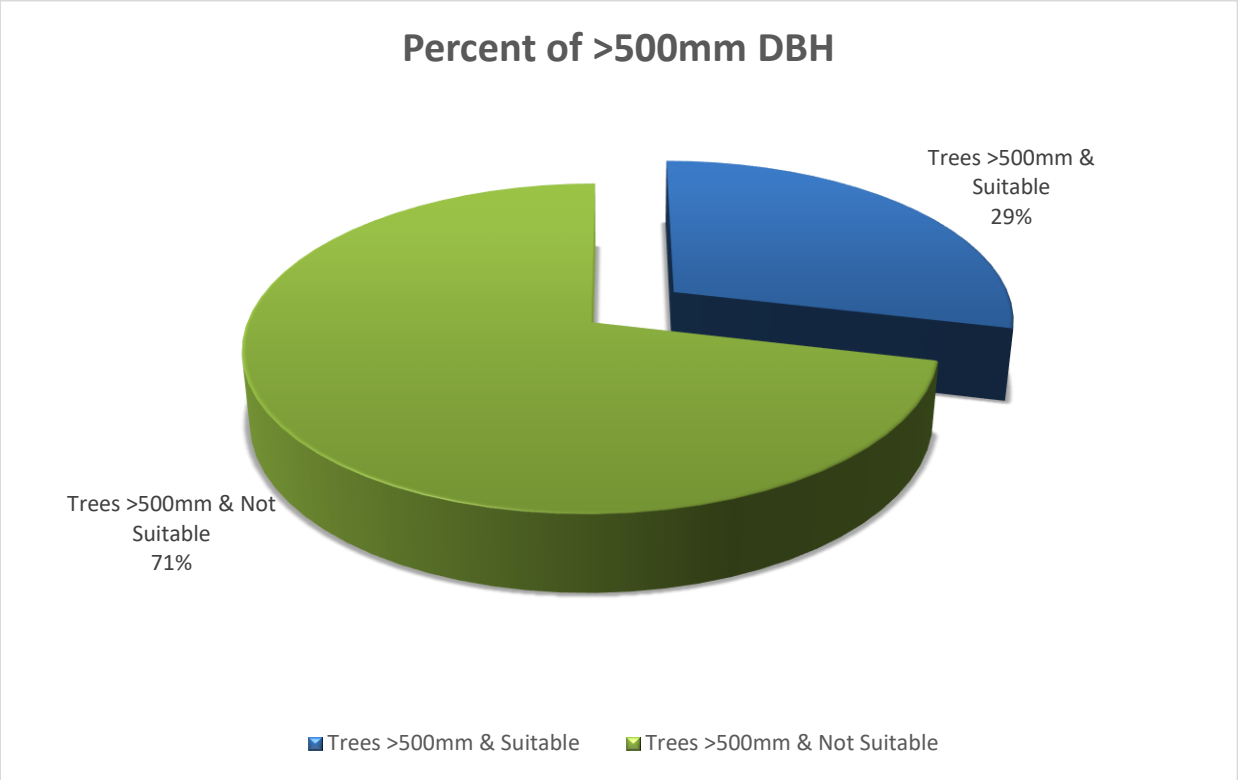
Trees	Total	Percent of Total Trees	Percent of >500mm DBH
Al Trees	588	100%	
Trees <500mm Not Suitable	365	62%	
Trees >500mm	223	38%	100%
Trees >500mm & Suitable	64	11%	29%
Trees >500mm & Not Suitable	159	27%	71%

Table 1: Summary of the total number of trees on site and the suitable hollows in relation to the diameter of a tree with a 500mm Diameter at Breast Height.



Graph 3: Proposed opportunities based on all trees on site.

All 223 trees greater than 500mm were assessed on site to determine if AH could be achieved. The guidelines developed and outlined above were applied, and trees that did not meet the parameters were excluded. This results in 62% of the trees being assessed, as excluded. Tree part size was the primary factor that excluded them. The size of the part above the minimum 8m height was not sufficient to sustain a chamber meeting the requirements for Greater Gliders.



Graph 4: Proportional suitability of trees onsite greater than 500mm DBH.

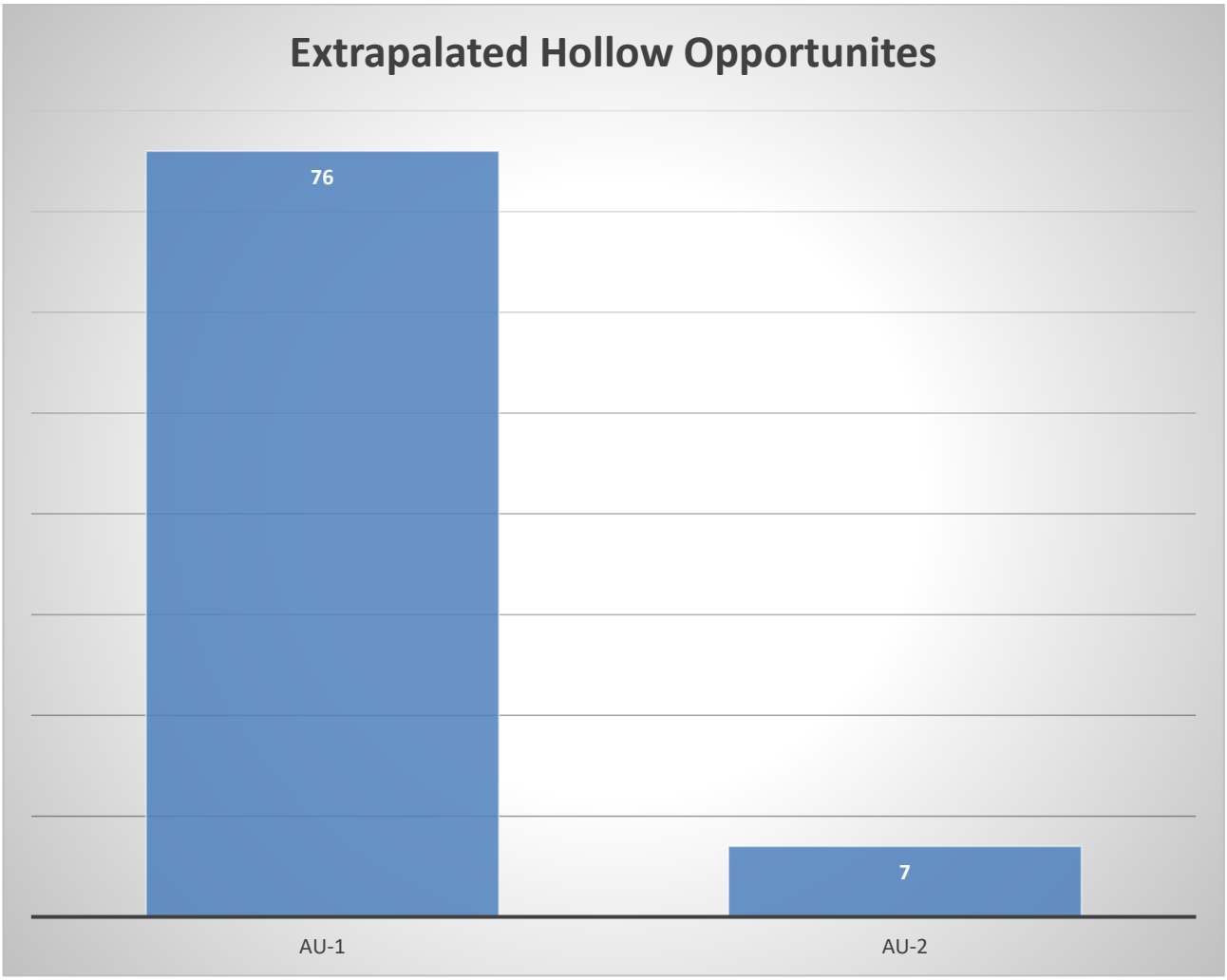
Assessment Unit	Area Name	Number of Hollows Opportunitues Found	Total Tree of >700mm Mapped	Total Tree >900mm Mapped	Extrapalated Hollow Opportunites
AU-1		60	13	3	**76**
AU-2		4	2	1	**7**
					83

Table 2: Summary of the total number of trees on site and the suitable hollows in relation to the diameter of a tree with a 500mm Diameter at Breast Height and size modifier applied for trees greater than 700mm and 900mm DBH.

Applying the extrapolation of the AH opportunity results in an estimated 83 Artificial Hollow Opportunities. The primary reason for excluding trees from suitability is where the part above the minimum 8m height is insufficient to sustain a chamber meeting the requirements for Greater Gliders. However, in larger trees, multiple hollows can be achieved. A size modifier has been applied in Table 2 for trees greater than 700mm to achieve two hollows per tree and three hollows per tree for trees greater than 900mm DBH.

Extrapolated Hollow Opportunity Formula For AU-1, AU-2:
(Total Tree >500mm DBH x Percentage Suitable) + (Total Trees >699mm x 80%) + (Total Trees >899mm x 80%) = Extrapolated Hollow Opportunity

This formula takes into consideration the multiple hollows that can be achieved in larger trees and applies a 20% reduction as a confidence margin.



Graph 4: Total extrapolated numbers of Artificial Hollows by vegetation units.

Conclusion:

Relatively young and semi-mature trees populate the Little Kipper offset site, and this age has a direct impact on the suitability of the trees for installing artificial hollows suitable for the Greater Glider.

Primarily, the size of the part at and above the minimum height of 8m from the ground is not sufficient to achieve a chamber of the required specifications without compromising tree structure or achieving the habitat thermal qualities required.

It is probable that, within 15–25 years, the number outlined in this report could be significantly increased as the current trees continue to grow and increase in size.

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Appendix 1: Data Table – Artificial Hollow Opportunity

HOLLOW DATA TABLE

Hollow Number	Tree ID	Species	DBH	Hollow Type	Location Diameter	Hollow Orientation	Hollow Entrance Height	Hollow Entrance Position	Hollow Depth Estimation	Wood Type	Hollow Opportunity Note
LK-1	1	Eucalyptus tereticornis	695	Trunk Middle	375	South 136 -225 Deg	9	25% - 50%	750	Live	Main stem
LK-2	5	Eucalyptus tereticornis	800	Branch Stub	430	South 136 -225 Deg	13	25% - 50%	1000	Live	Use existing branch stub on southern side. Hollow depth may already be suitable.
LK-3	53	Corymbia citriodora	720	Trunk Middle	400	East 46 - 135 Deg	9	25% - 50%	750	Live	On eastern stem. Possibility for another two trunk hollows
LK-4	65	Eucalyptus crebra	520	Trunk Middle	420	South 136 -225 Deg	11	25% - 50%	1000	Live	Main stem below branch. May have an internal hollow.
LK-5	80	Corymbia citriodora	520	Trunk Middle	450	South 136 -225 Deg	13	25% - 50%	1000	Live	Below main union
LK-6	91	Corymbia citriodora	500	Trunk Middle	375	East 46 - 135 Deg	10	25% - 50%	750	Live	Main stem. Size is borderline acceptable.
LK-7	113	Corymbia citriodora	550	Trunk Middle	400	West 226 - 315 Deg	8	25% - 50%	750	Live	Around the main union.
LK-8	121	Corymbia citriodora	510	Trunk Middle	450	East 46 - 135 Deg	12	51% - 75%	1000	Live	Main stem
LK-9	145	Corymbia citriodora	540	Trunk Middle	400	South 136 -225 Deg	12	25% - 50%	1000	Live	Main stem
LK-10	147	Corymbia citriodora	470	Trunk Middle	500	East 46 - 135 Deg	11	25% - 50%	1000	Live	Main stem
LK-11	151	Corymbia citriodora	530	Trunk Middle	375	East 46 - 135 Deg	8	25% - 50%	700	Live	Below main union
LK-12	160	Corymbia citriodora	600	Branch Stub	450	North 316 - 45 Deg	12	25% - 50%	1000	Both	Prune declining branch to the north to create entrance.
LK-13	167	Lophostemon suaveolens	680	Trunk Middle	375	East 46 - 135 Deg	10	25% - 50%	750	Live	Below the upper union
LK-14	169	Eucalyptus tereticornis	1160	Trunk Middle	400	North 316 - 45 Deg	15	51% - 75%	1000	Live	Below main union. Options for 2 other hollows. Area around the tree very boggy
LK-15	177	Eucalyptus tereticornis	700	Branch Stub	375	South 136 -225 Deg	12	25% - 50%	1000	Live	Through dead branch chamber in trunk
LK-16	185	Corymbia citriodora	550	Trunk Middle	480	North 316 - 45 Deg	8	25% - 50%	750	Live	Small branch stub potential for entrance
LK-17	186	Corymbia citriodora	500	Trunk Middle	470	East 46 - 135 Deg	9	25% - 50%	1000	Live	Trunk, below fork
LK-18	189	Corymbia citriodora	590	Trunk Middle	450	South 136 -225 Deg	12	51% - 75%	1000	Live	Above eastern first order branch
LK-19	191	Corymbia citriodora	660	Trunk Middle	450	East 46 - 135 Deg	8	25% - 50%	1200	Live	Main apical stem
LK-20	192	Corymbia citriodora	560	Trunk Middle	470	South 136 -225 Deg	10	25% - 50%	1500	Live	Southern stem below fork
LK-21	193	Corymbia citriodora	690	Trunk Middle	380	East 46 - 135 Deg	9	25% - 50%	700	Live	Northern stem above fork
LK-22	207	Corymbia citriodora	590	Trunk Middle	470	South 136 -225 Deg	12	51% - 75%	500	Live	Southern stem above fork
LK-23	209	Corymbia citriodora	760	Branch End	380	South 136 -225 Deg	15	51% - 75%	500	Live	Two locations on southern aspect potential BEH Also potential front trunk hollow
LK-24	215	Corymbia intermedia	560	Trunk Middle	470	East 46 - 135 Deg	11	51% - 75%	1000	Live	Main stem below fork
LK-25	236	Angophora leiocarpa	640	Branch End	450	South 136 -225 Deg	8	25% - 50%	1500	Live	Dead branch potential entrance
LK-26	260	Corymbia citriodora	610	Trunk Middle	460	North 316 - 45 Deg	9	25% - 50%	1000	Live	Main stem
LK-27	294	Corymbia citriodora	600	Branch Stub	470	East 46 - 135 Deg	11	25% - 50%	700	Live	Deadwood branch on trunk potential entrance
LK-28	298	Corymbia citriodora	540	Trunk Middle	470	East 46 - 135 Deg	8	25% - 50%	750	Live	Main stem
LK-29	306	Corymbia citriodora	580	Trunk Middle	450	East 46 - 135 Deg	12	51% - 75%	1500	Live	Main stem
LK-30	309	Corymbia citriodora	540	Trunk Middle	440	South 136 -225 Deg	12	51% - 75%	1600	Live	Main stem above southern branch
LK-31	325	Corymbia citriodora	620	Branch Stub	460	East 46 - 135 Deg	15	51% - 75%	500	Live	Eastern upright dead branch potential entrance
LK-32	327	Corymbia citriodora	670	Trunk Middle	460	South 136 -225 Deg	9	25% - 50%	500	Live	Main stem below fork
LK-33	342	Corymbia citriodora	675	Trunk Middle	450	East 46 - 135 Deg	13	25% - 50%	1500	Live	Trunk below upper crown fork
LK-34	347	Corymbia citriodora	525	Branch End	375	South 136 -225 Deg	12	25% - 50%	700	Dead	Through dead branch
LK-35	352	Corymbia citriodora	585	Trunk Middle	470	East 46 - 135 Deg	9	25% - 50%	1000	Live	Eastern face of northern stem
LK-36	360	Corymbia citriodora	810	Trunk Middle	420	East 46 - 135 Deg	9	25% - 50%	1000	Live	Entrance below fork
LK-37	365	Corymbia citriodora	615	Trunk Middle	460	West 226 - 315 Deg	9	25% - 50%	1500	Live	Main stem below fork
LK-38	367	Corymbia citriodora	505	Trunk Middle	440	East 46 - 135 Deg	9	25% - 50%	800	Live	Northern stem below western fork
LK-39	386	Corymbia citriodora	670	Trunk Middle	460	East 46 - 135 Deg	11	25% - 50%	750	Live	Main stem between branch whorls
LK-40	426	Corymbia citriodora	580	Trunk Middle	450	East 46 - 135 Deg	11	25% - 50%	500	Live	Main stem below fork
LK-41	439	Corymbia citriodora	1050	Branch Stub	480	East 46 - 135 Deg	8	25% - 50%	700	Live	Eastern stem Dead branch potential entrance Aliso potential trunk hollow on western stem
LK-42	447	Corymbia citriodora	980	Branch Stub	400	South 136 -225 Deg	13	51% - 75%	600	Live	Existing deadwood stubs potential hollow Multiple potential hollows Inaccessible due to lantana
LK-43	459	Corymbia citriodora	755	Trunk Middle	520	East 46 - 135 Deg	10	25% - 50%	1000	Live	Main stem
LK-44	483	Corymbia citriodora	600	Trunk Middle	460	West 226 - 315 Deg	8	25% - 50%	600	Live	Main stem
LK-45	487	Corymbia citriodora	560	Trunk Middle	460	South 136 -225 Deg	11	25% - 50%	1000	Live	Main stem
LK-46	490	Corymbia citriodora	630	Trunk Middle	460	South 136 -225 Deg	14	51% - 75%	2000	Live	Main stem
LK-47	501	Corymbia citriodora	580	Branch Stub	390	North 316 - 45 Deg	12	51% - 75%	600	Live	Dead branch stub potential entrance
LK-48	642	Corymbia citriodora	600	Branch Stub	500	West 226 - 315 Deg	9	25% - 50%	1000	Live	Prune lowest branch to the west to create a stun
LK-49	655	Corymbia citriodora	510	Branch Stub	375	South 136 -225 Deg	9	25% - 50%	750	Live	Prune 2nd lowest branch to the south to create a stub.
LK-50	656	Eucalyptus tereticornis	750	Trunk Middle	600	East 46 - 135 Deg	11	25% - 50%	1000	Live	Entrance on eastern side above main union. Potential for another lower down on the trunk with entrance south.
LK-51	659	Corymbia citriodora	540	Trunk Middle	450	South 136 -225 Deg	9	25% - 50%	1000	Live	Southern side of main union.
LK-52	661	Corymbia citriodora	690	Trunk Middle	380	East 46 - 135 Deg	8	25% - 50%	1000	Live	Through or near small dead stub on eastern side
LK-53	663	Corymbia citriodora	710	Trunk Middle	500	East 46 - 135 Deg	9	25% - 50%	750	Live	Trunk eastern side of main union
LK-54	667	Corymbia citriodora	660	Trunk Middle	450	West 226 - 315 Deg	10	25% - 50%	1000	Live	Below second main union
LK-55	668	Corymbia citriodora	570	Trunk Middle	400	South 136 -225 Deg	11	25% - 50%	750	Live	Below main union
LK-56	677	Corymbia citriodora	940	Trunk Middle	500	South 136 -225 Deg	10	25% - 50%	1000	Live	Western stem. Possible for one more trunk hollow on eastern stem.
LK-57	678	Corymbia citriodora	760	Trunk Middle	400	South 136 -225 Deg	10	25% - 50%	1000	Live	Main eastern stem
LK-58	688	Corymbia citriodora	660	Trunk Middle	375	East 46 - 135 Deg	10	25% - 50%	750	Live	On main stem between branch unions.
LK-59	722	Corymbia citriodora	690	Trunk Middle	390	East 46 - 135 Deg	8	25% - 50%	1500	Live	Below second branch that is on the southern side.
LK-60	728	Corymbia citriodora	570	Trunk Middle	480	East 46 - 135 Deg	12	25% - 50%	1500	Live	On main trunk
LK-61	730	Corymbia citriodora	780	Trunk Middle	450	East 46 - 135 Deg	9	25% - 50%	1000	Live	Below main union on eastern side
LK-62	736	Corymbia citriodora	890	Trunk Middle	400	North 316 - 45 Deg	12	25% - 50%	750	Live	Stem to the north
LK-63	742	Corymbia citriodora	680	Trunk Middle	400	South 136 -225 Deg	9	25% - 50%	1000	Live	On main stem
LK-64	753	Corymbia citriodora	690	Trunk Middle	450	South 136 -225 Deg	10	25% - 50%	1000	Live	Main stem between unions

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PROJECT: LITTLE KIPPER HOLLOW ASSESSMENT 2025-054

TITLE: HOLLOW DATA TABLE

DRAWN: DL	DATE: 22/07/2025	AUTHORISED FOR ISSUE: Jeremy Young	
DRAWING CHECK: JY	DATE: 22/07/2025		
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ASSESSED BY: -	DATE: -	SCALE: NTS	ORIG. SIZE: A3
PROJECT NUMBER / SHEET: 2025-054 | TD1			ISSUE: PR1

HOLLOW DATA DESCRIPTORS

Proposed Artificial Hollows

x	y	Hollow Number	Tree ID	Hollow Type	Location Diameter	Hollow Entrance Height	Hollow Depth Estimation	Hollow Orientation	Hollow Entrance Position	Wood Type	Hollow Opportunity Note	Whole Tree Photo	Hollow Position Photo
Taken form Tree	Taken form tree	Unique ID to be post proposed	Taken from SH Data	***Trunk Top***	Estimated size of part in diameter where the hollow is proposed (mm)	Estimated distance form the ground to the entrance)m)	Estimated depth form the entrance to the bottom of the proposed hollow (mm)	***North***	***25% - 50%***	***Dead***	Note with further information	Photo of whole tree for future reference and ID	Zoomed in photo marked up with the location of the proposed hollow for future reference
				Trunk Middle				***South***	***51% - 75%***	***Live***			
				Branch End				***East***	***76% - 90%***	***Both***			
				Branch Middle				***West***	***91% - 100%***	Drop down list of wood conditions at the proposed entrance			
				Branch Stub				***Vertical***	Drop Down List of estimates position in relation to the height of the tree				

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PROJECT
LITTLE KIPPER
HOLLOW ASSESSMENT
2025-054

TITLE
HOLLOW DATA DESCRIPTORS

DRAWN DL	DATE 22/07/2025	AUTHORISED FOR ISSUE Jeremy Young	
DRAWING CHECK JY	DATE 22/07/2025		
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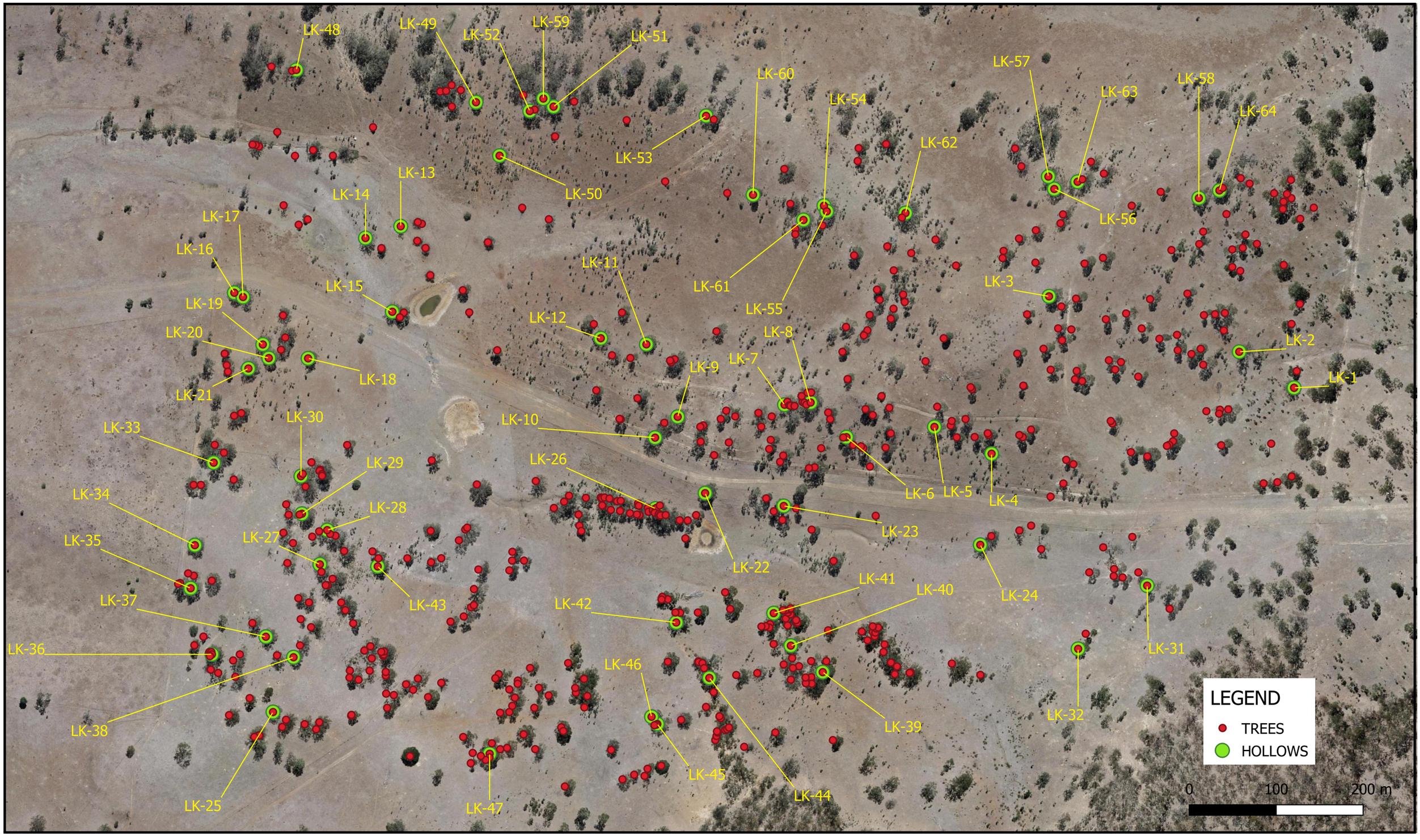
Appendix 2: Tree Location Map



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Disclaimer:
While every reasonable effort has been made to ensure that this document is correct at the time of assessment, Arbor Australis and its agents disclaim any and all liability to any person in respect of anything or the consequences of

Background imagery is not to be used for measurments. It is for visualisation only.

TITLE
HOLLOW ASSESSMENT

SITE:
LITTLE KIPPER

CLIENT:
SHG

DATE:
JULY 22, 2025

SHEET NUMBER:
TLM 1

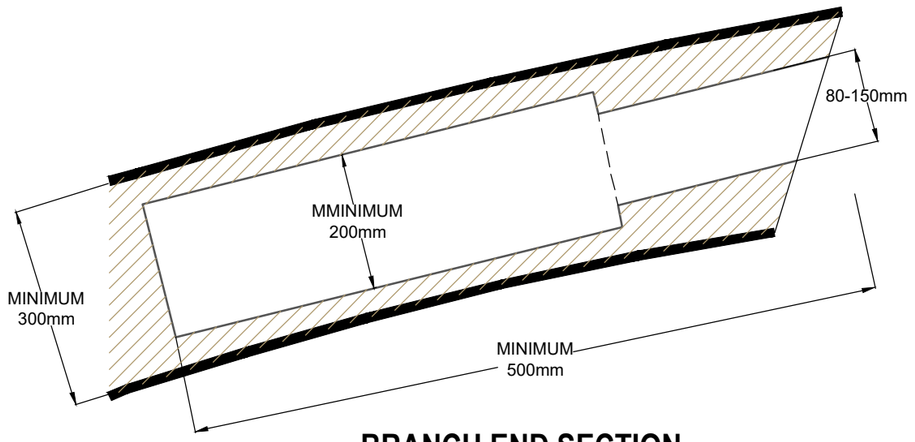
Appendix 3: Artificial Hollow Specification Sheets

HOLLOW SPECIFICATION

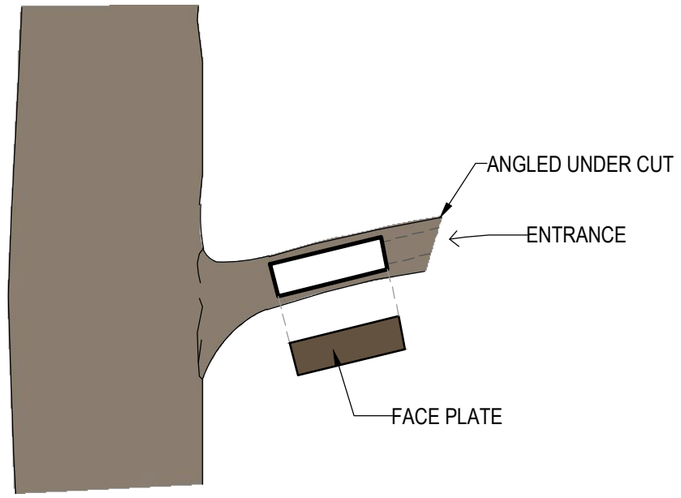
BRANCH END HOLLOWS

DESCRIPTION

Branch End Hollows are carved in a branch with the entrance through the end of the branch and the denning chamber within the branch. Trees suitable for branch end hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown. Where possible, existing large stubs from past branch failures are utilised. Pruning of live wood to create the branch end opportunity is acceptable in some situations (refer to installation notes).



BRANCH END SECTION



BLOW - UP ELEVATIONS

INSTALLATION NOTES

Hollow Location
- Minimum 8m above ground in a branch that is of greater pith angle than 45^{o} from vertical.
- Old branch failure points to be utilised where possible.
- Pruning to generate a suitable branch end must not remove more than 5% of live crown foliage.

Opening
- Between 80mm and 150mm diameter when carved; however, if amending an existing hollow, the opening can be as large as 350mm diameter.
- **Preferred** hollow opening orientation is **east and south.**
- Hollow entrance should not face upward.
- Only one entrance per hollow.

Branch Size & Minimum Wall Thickness
- Minimum branch size should be 300mm diameter.
- Wood wall thickness of the hollow must not be less than by 50mm depth for thermal qualities. However, the wood wall thickness needs to consider the load above the hollow for the tree structure.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section unless all load is remove from above the hollows.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)
- Between .5m (500mm) and 5m (5000mm)

Methodology
- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces & shape hollow and entrance.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

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PROJECT: GREATER GLIDER HOLLOW CREATION

TITLE: BRANCH END HOLLOW

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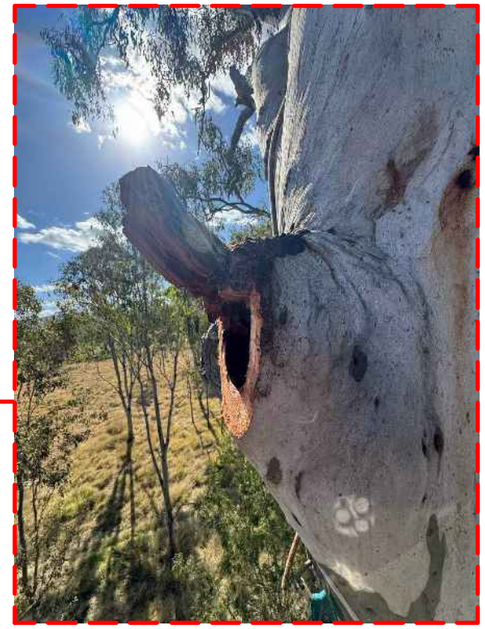
-	-	NTS / A3
PROJECT NUMBER / SHEET		ISSUE
2025-000 | SP		PR1

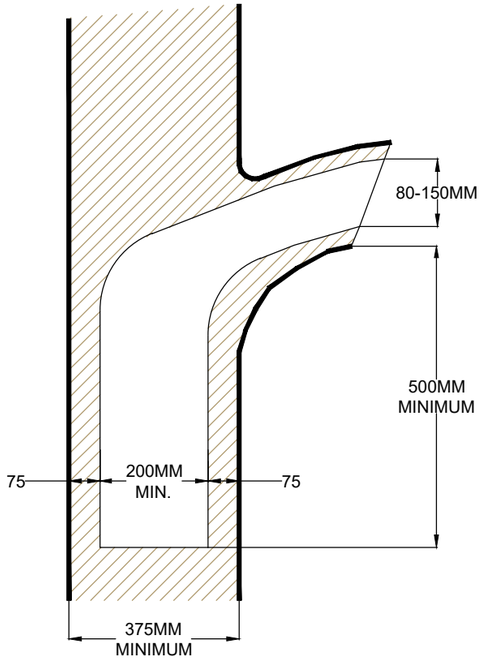
HOLLOW SPECIFICATION

BRANCH STUB HOLLOWS

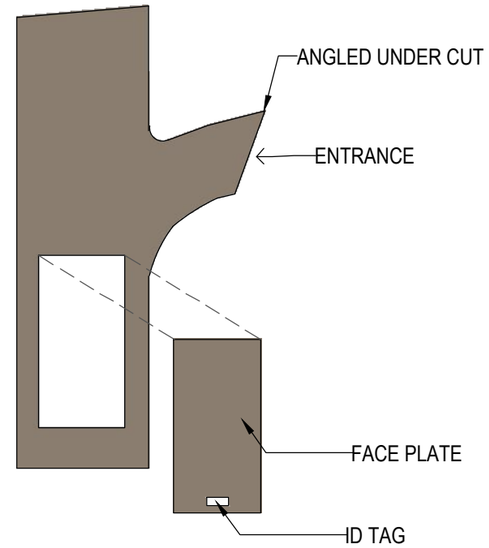
DESCRIPTION

Branch Stub Hollows are carved in a branch stub close to the branch union with the entrance through the end of the cut or broken branch and the denning chamber within the trunk of the tree. Trees suitable for branch stub hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).





BRANCH STUB SECTION



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location
- Minimum 8m above ground in stub form of a first-order branch.
- Old branch failure points and existing deadwood branches of suitably sized diameter are to be utilised where possible.
- Pruning of live wood to generate a suitable branch end must not remove more than 5% of crown foliage.

Opening
- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- **Preferred** hollow opening orientation is **east and south.**
- Hollow entrance should not face upward.
- Only one entrance per hollow

Branch Size & Minimum Wall Thickness
- Minimum branch size should be 200mm diameter.
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section of the trunk.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)
- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology
- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

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PROJECT: GREATER GLIDER HOLLOW CREATION

TITLE: BRANCH STUB HOLLOW

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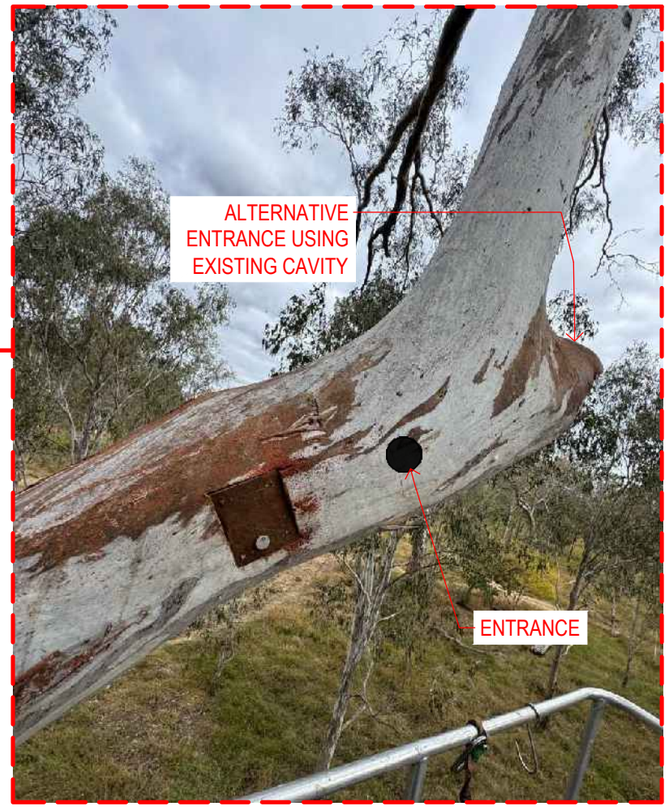
PROJECT NUMBER / SHEET: 2025-000 | SP			ISSUE: PR1

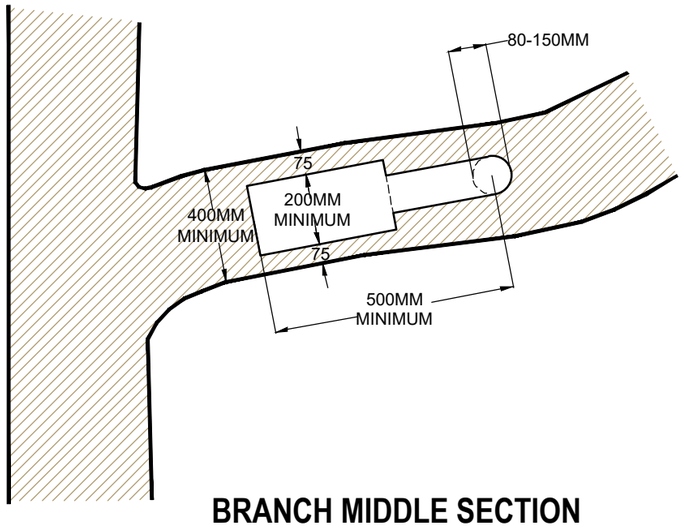
HOLLOW SPECIFICATION

BRANCH MIDDLE HOLLOWS

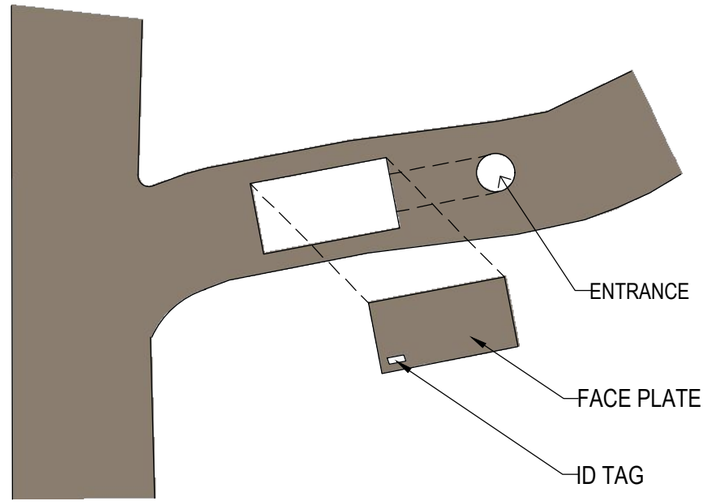
DESCRIPTION

Branch Middle Hollows are carved in a branch with the entrance through the side of the branch and the denning chamber within the branch. Trees suitable for Branch Middle Hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown of lateral large diameter branches.





BRANCH MIDDLE SECTION



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location
- Minimum 8m above ground in a branch that is of greater pith angle than 45^{o} from vertical.
- No pruning is required to carve a Branch Middle Hollow.

Opening
- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- **Preferred** hollow opening orientation is **east and south** on the horizontal plane**.**
- Hollow entrance should not face upward.
- Only one entrance per hollow.

Branch Size & Minimum Wall Thickness
- Minimum branch size should be 400mm diameter,
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure. Greater wood wall thickness is required on the upper side of the branch.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)
- Between .5m (500mm) and 5m (5000mm).

Methodology
- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 75mm thick, and screw into place with stainless steel crews of sufficient securing length.

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PROJECT: GREATER GLIDER HOLLOW CREATION

TITLE: BRANCH MIDDLE HOLLOW

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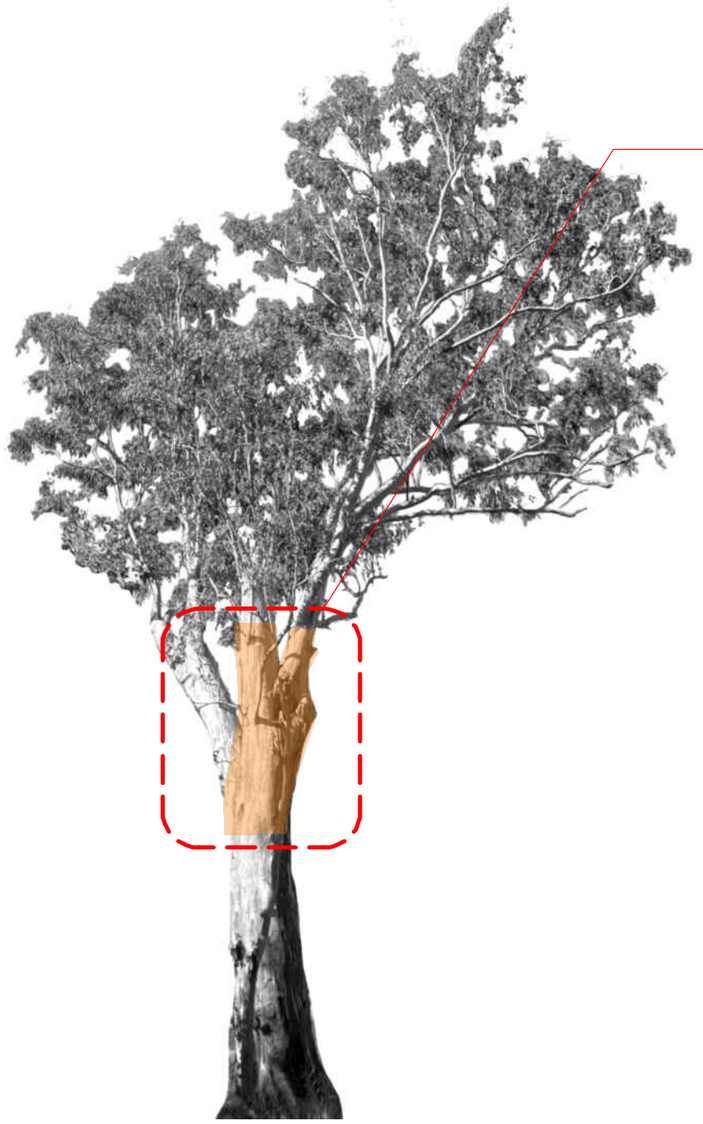
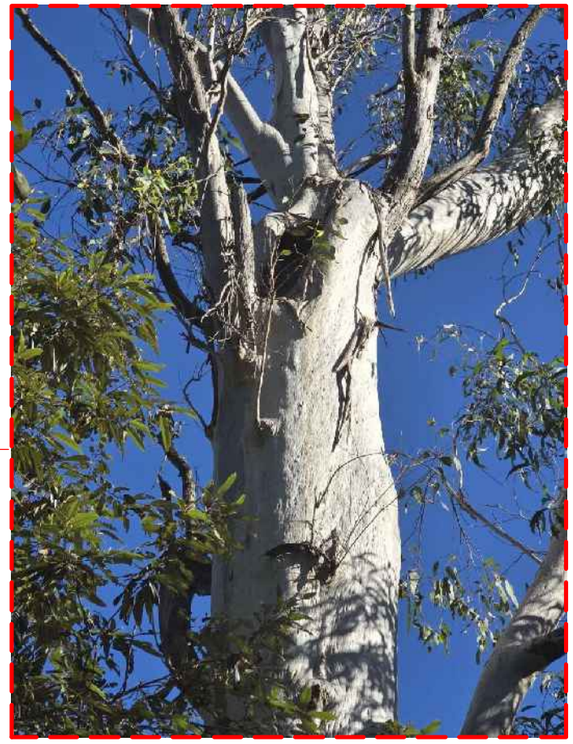
HOLLOW SPECIFICATION

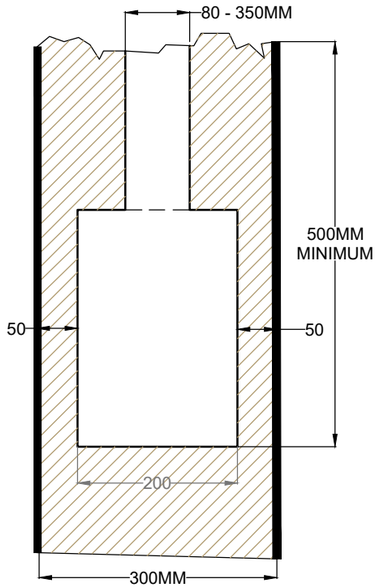
TRUNK TOP HOLLOWS

DESCRIPTION

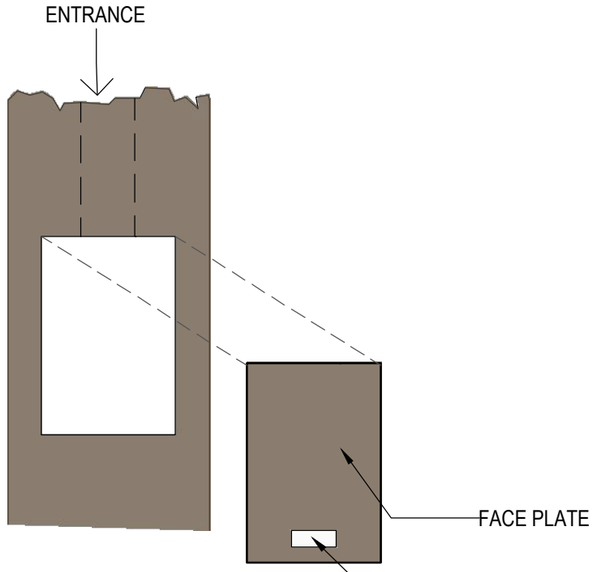
Trunk Top Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Top Hollows are typically greater than 600mm in trunk diameter and have a history of past crown failure. They are early mature and have a stem diameter of 300mm or greater at or above the minimum installation height (refer to installation notes).







TRUNK TOP SECTION



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location
- Minimum 8m above ground in a vertical trunk.
- Typically located where a past crown failure has occurred
- No crown pruning is required to carve a Trunk Top Hollow.

Opening
- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- **Preferred** hollow opening orientation is **east and south.**
- Only one entrance per hollow

Trunk Size & Minimum Wall Thickness
- Minimum truck size should be 300mm
- Wall thickness must be not less than 50mm for thermal qualities. Trunk Top Hollows do not need to consider the load above the hollow for the tree structure due to their position.
- The installation should aim to remove no more than 60% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)
- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology
- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

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PROJECT: GREATER GLIDER HOLLOW CREATION

TITLE: TRUNK TOP HOLLOW

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-	-	NTS / A3
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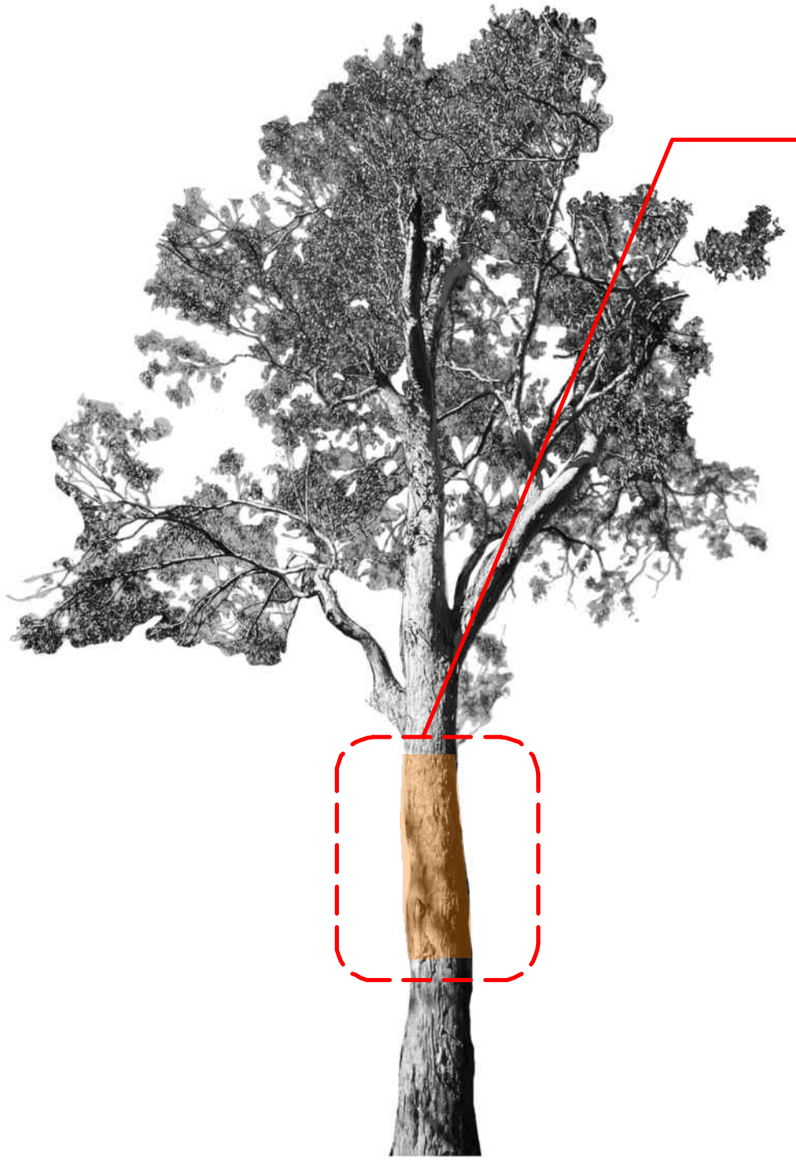
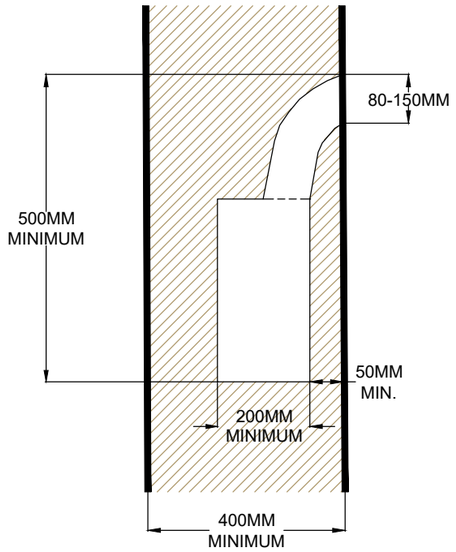
HOLLOW SPECIFICATION

TRUNK MIDDLE HOLLOWS

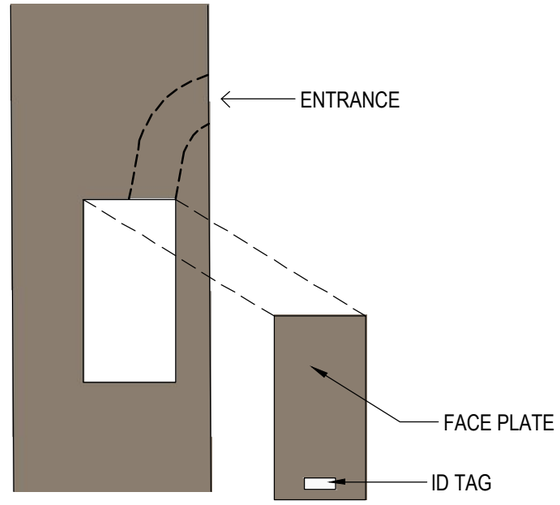
DESCRIPTION

Trunk Middle Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Middle Hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).





TRUNK MIDDLE SECTION



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location
- Minimum 8m above ground in a vertical trunk.
- No crown pruning is required to carve a Trunk Middle Hollow.

Opening
- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- **Preferred** hollow opening orientation is **east and south.**
- Only one entrance per hollow

Trunk Size & Minimum Wall Thickness
- Minimum trunk size should be 400mm diameter.
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure
- The installation should aim to remove no more than 55% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)
- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology
- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

ARBOR AUSTRALIS CONSULTING

Arbor Australis Consulting
2/17 Bluestone Cct
Seventeen Mile Rocks
QLD 4073

ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
PR1	PRELIMINARY ISSUE	22/07/2025	DL	JY

NOTES: This tree assessment has been done by Arbor Australis Consulting. Verify the location of all services and easements prior to the commencement of works. Any aerial imagery utilised has been provided by nearmap.com.

PROJECT: GREATER GLIDER HOLLOW CREATION

TITLE: TRUNK MIDDLE HOLLOW

DRAWN	DATE	AUTHORISED FOR ISSUE
DL	22/07/2025	Jeremy Young
DRAWING CHECK	DATE	
JY	22/07/2025	
CLIENT		CONTACT
-		-
ASSESSED BY	DATE	SCALE / ORG. SIZE
-	-	NTS / A3
PROJECT NUMBER / SHEET		ISSUE
2025-000 | SP		PR1

EXAMPLE ARTIFICIAL HOLLOWS











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2/17 Bluestone Cct
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PROJECT

GREATER GLIDER HOLLOW CREATION

TITLE

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Author's Statement of Experience

Jeremy Young Principal Consulting Arborist

Experience

With 35+ years of experience in all aspects of the Arboricultural Industry, I can provide a well-rounded, experienced, and educated approach to arboricultural-related issues in most environments. A commitment to continual professional development has ensured I can provide up-to-date information that will add value and resolve tree issues for most sites.

Memberships

Arboriculture Australia (AA)	Approved Consultant
Arboricultural Association UK (AAUK)	Member
Queensland Arboricultural Association (QAA)	Approved Consultant
International Society of Arboriculture (ISA)	Member

Educational History:

2024 BSc. Hons. Arboriculture & Urban Forestry, First Class (AQF Level 8)
2014 Diploma Arboriculture Upgrade (AQF Level 5 ACH 50510)
2004 Certified Arborist AU 0011-A
2004 Diploma Horticulture (Arb) (AQF 5)
2004 Advanced Diploma of Horticulture (Arb) (AQF level 6)
2003 Timber Pest Certificate
2001 Certificate II Pest control
2001 Certificate IV Work Site Assessor
1992 Certificate of Arboriculture Merrist Wood UK
Various OH&S operational tickets
CPD: Ongoing attendance of National Arboricultural Conferences and training courses.

Licences and Certifications

Australian Arborist Industry Licence AL1204
ISA Certified Arborist AU-0011A
Quantified Tree Risk Assessment (QTRA)
Tree Risk Assessment Qualification (TRAQ)
Cert IV in Workplace Trainer
Timber Pest Inspector
Construction Safety Blue / White Card

Appendix J

Risk Assessment

Risk assessment for offset area

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the offset area is presented in the table below. The risk assessment is completed in accordance with the EPBC Act Environmental Management Plan Guidelines (2014) and characterises risk as low, medium, high or severe, as derived from the likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical) risk matrix.

The risk analysis assesses the risk of failure to achieve the OMP management objectives. It is necessary to re-evaluate and modify the risk analysis and contingency measures throughout the period of EPBC Act approval, particularly if any unforeseen risks emerge or any negative outcomes identified are greater than expected.

During the first five (5) years of monitoring and Annual Compliance Reporting, **KFF1 and/or The Proponent** will review management commitments in this Offset Management Framework, and if the review results in the need to revise the framework it will be revised and submitted for approval. It is noted that events are only addressed once in the risk assessment under the most relevant management objective, however, some events are likely to impact on multiple management objectives.

Note, potential impacts from the occurrence of cyclones have been included within the risk analysis table. Cyclones, if to occur proximal to the offset area, are likely to result in indirect impacts only, including increased rainfall and wind events. Whilst the pathway of and occurrence of cyclones can change easily, becoming difficult to determine, an assessment of the potential associated risks has been completed. According to BoM (2019), cyclones have not traversed inland SEQ for at least the last 20 years, with the exception of Cyclone Debbie in 2017. While the risk of cyclones occurring south of 25°S has increased in more recent years, it is unlikely a formed cyclone would occur at 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 generation[1].

[1] Bureau of Meteorology 2019, *Past Tropical Cyclones*, BoM, Australian Government, accessed at http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/history/past-tropical-cyclones/

Risk framework

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

Likelihood and consequence

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented)	
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)	
Minor	Minor risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing low cost, well characterised corrective actions.
Moderate	Moderate risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing well characterised, high cost/effort corrective actions.
High	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: • Legally secure the offset area via a suitable method such as a voluntary declaration under the *Vegetation Management Act 1999* or a covenant under the *Land Act 1994* or *Land Titles Act 1994*.	R	Mod	Low	Clearing of the impact area cannot occur without legally securing the offset area.	N/A
Pest management	Failure to reduce the threat of introduced predators.	Management Action 2: • Conduct baseline surveys and determine relative abundance index. • Implement predator control program. • Conduct follow-up monitoring and implement further control.	U	Mod	Low	Monitoring of the presence of introduced predators through the use of remote motion-activated cameras; Survey the site to record the presence / absence of signs of introduced predator (sightings, killings and/or scats and tracks).	• Should the initial and ongoing introduced predator control measures not result in a reduction of introduced predator numbers (compared to baseline survey), introduced predator program to be expanded/adapted to improve outcomes. • Any incidence of injury/mortality resulting from introduced predator attack will initiate supplementary monitoring and control measures. In the event that an offset species is found injured, transport immediately to a local vet, or suitably

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.	Management Action 3: • Develop and implement a weed strategy, with a particular focus on weeds listed with particularly ability to impact on movement and structural vegetation composition (predominantly *Lantana camara*), and under the *Biosecurity Act 2014*, to reduce weed cover to target thresholds. • Undertake weed management in accordance with the OMP.	U	Mod	Low	Annual (photo monitoring and mapping of weed infestations) and 5-year Targeted transects and MHQA) surveys of non-native plant cover to ensure reduction across offset area. Surveys in-line with weed management strategy. Repeated surveys of baseline data including 5 yearly habitat monitoring data as part of the framework.	If weed survey indicates weed cover is not reduced since previous survey, 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.	Management Action 4: Actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade and controlled grazing to manage fuel loads.	P	Mod	Med	Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques.	If a wildfire occurs in the offset area, the following actions will be undertaken: • Implement fire control • Repair any fire breaks and access tracks. • Stay informed through the Rural Fire Service.

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
							• Assess damage caused by the wild fire and monitor for natural regeneration. • Monitoring to occur 3-6 months post event or after the next wet weather event (whichever is sooner). • Where natural regeneration is failing to thrive, assist natural regeneration through direct seeding and planting
Achieve performance targets and completion criteria for habitat	Landowner-approval holder agreements fail to adequately address management commitments in the offset plan.	Management Action 1-5: • The offset area has been legally secured for conservation purposes. The development of this framework outlines specific management actions to achieve performance criteria.	U	Mod	Low	Scheduled monitoring/surveys and Annual Compliance Reports	• Review Offset Management Framework • Implement adaptive management and corrective actions

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.	Management Action 3: • Remove incompatible land uses. • WONS management (refer Management Action 3). • Sufficient rest period.	U	Mod	Low	After a sufficient rest period the repeat MHQA will indicate progress towards performance criteria.	• infill planting/ revegetation to be implemented after sufficient rest period.
	Failure to increase habitat for offset species.	Management Action 1: • legally secure offset area and remove incompatible land uses. Management Action 3: • Reduce the extent of weed as per criteria; and • Implement infill planting if required.	U	Mod	Low	Annual surveys (photo monitoring & audit of revegetation works) of revegetation area to ensure plant survival. Repeated surveys of baseline data including 5 yearly MHQA habitat monitoring data and annual observational data as part of the OMP.	If MHQA transects indicate habitat less than performance indicators, implement infill planting in weed control areas. Should plant stock fail supplementary planting, direct seeding, weed control, fertiliser, amelioration or other management actions necessary to stimulate tree growth.

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: • Adhere to planting method and watering schedule.				Plant stock audits (first 3 years). Planting and monitoring event schedules.	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.
Hollow installation	Hollow failure	Management Acton 7: • Install hollows to ensure at least 1.5 hollows per hectare	U	Mod	Low	Hollow Monitoring and Management Plan. Monitoring of installed hollows shows failure	Install replacement hollows in adjoining suitable trees.