Offset Management Framework

Park Ridge Residential Development, Park Ridge, Queensland
(Burnett Creek and Lyons offset sites)

Prepared for: EnviroCapital the offset provider for Pointcorp Heritage Park Pty Ltd

22 April 2022

EPBC 2017/8090
Job No. 9694

Document control

Document: Offset Management Plan, prepared by Saunders Havill Group for EnviroCapital as the offset provider for Pointcorp Heritage Park Pty Ltd dated 22 April 2022.

Document Issue

Issue	Date	Prepared By	Checked By
A	1.04.2022	LT	AR
B	22.04.2022	LT	AR

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Acronyms and abbreviations

ACR	Annual Compliance Report
DAWE	Department of Agriculture, Water and Environment (Commonwealth)
DEHP	Department of Heritage and Protection (Qld)
DNRME	Department of Natural Resources, Mines and Energy (Qld)
DOR	Department of Resources (Qld)
DoEE	Department of the Environment and Energy (Commonwealth)
EDL	Ecologically Dominant Layer
EOP	EPBC Act Environmental Offset Policy (2012)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FHA	Foraging Habitat Assessment
GHFF	Grey-headed Flying-fox
GPS	Global Positioning System
ha	hectare
km	kilometre
LGA	Local Government Area
m	metre
MHQA	Modified Habitat Quality Assessment
mm	millimetre
MNES	Matters of National Environmental Significance
NJKHT	Non-juvenile Koala Habitat Tree
PMAV	Property Map of Assessable Vegetation
RAI	Relative Abundance Index
RE	Regional Ecosystem
SAT	Spot Assessment Technique
SEQ	South East Queensland
SEQERF	Southeast Queensland Ecological Restoration Framework
SHG	Saunders Havill Group
VDEC	Voluntary Declaration
WONS	Weeds of National Significance

1. Introduction

The *Environmental Management Division* of Saunders Havill Group (SHG) was engaged by EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd (the Proponent) to prepare an Offset Management Framework for the approved 'Park Ridge Residential Development' located at Clarke Road, Park Ridge, Queensland (EPBC Act reference 2017/8090). The approval pertains to the construction of a residential development comprising of industrial, mixed use and residential development covering 116.35 hectare (ha) incorporating a 12.96 ha area for environmental management and conservation.

The Park Ridge Residential Development was referred under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC 2017/8090) on the 19th March 2017. The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*) and the Grey-headed Flying-fox (GHFF) (*Pteropus poliocephalus*), which are both listed as 'vulnerable' under the EPBC Act.

As part of the Preliminary Documentation requirements, a proposal was developed to compensate for the impacts from clearing of up to 89.93 ha and functional loss of 28.01 ha of Koala habitat and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC Act Approval for 2017/8090. The offset includes the dedication and rehabilitation of a total of 401.7 ha of land across two (2) offset sites referred to as the Burnett Creek Offset Site and Lyons Offset site. This report documents the Offset Management Framework for both of the Offset Sites.

The project was approved under the EPBC Act subject to conditions on 23 November 2020 with effect until 30 June 2045. Condition 8 of the approval requires that the approval holder to must submit an Offset Monitoring and Reporting Framework for approval by the Minister. The framework must include (but not limited to):

i. the ecological outcomes specified in conditions 9-11 (including key milestones and baseline survey results);

ii. management measures proposed to achieve the ecological outcomes specified in conditions 9-11;

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 milestones in conditions 9-11 are not achieved.

Refer to **Section 1.2** for outcomes to be achieved are specified in Condition 9-11.

Post-approval, the two (2) offset sites, Burnett Creek and Lyons, were legally secured and evidence was provided to DAWE. Additionally, DAWE were notified of the Action commencement on 4 March 2021. The

baseline survey report for each site have been finalised and published on the project website in accordance with Condition 8(a). Any non-compliances will be addressed within the relevant Annual Compliance Report.

This framework has been developed to satisfy the requirements of the conditions of approval accompanying the controlled action determination and the EPBC Environmental Offset Policy (EOP) to guide the implementation and management of offset activities. Survey methodologies to ensure the approval conditions are achieved were agreed upon by the Department during the Preliminary Documentation phase of the project.

Table 1: Approval Details

Commonwealth Reference	**EPBC 2017/8090**
Approval Holder	Pointcorp Heritage Park Pty Ltd
ABN	12 631 998 377
Project Name on the Approval	Park Ridge residential, mixed use and medium impact industry precinct, Park Ridge, Queensland
Approved Action	To develop a residential, mixed use and medium impact industry precinct in Park Ridge, Queensland. [See EPBC Act referral 2017/8090 on 19 March 2018, variation of the action decision made under section 1568 of the EPBC Act on 30 January 2020, and change of designation of proponent made under s78(5) of the EPBC Act on 23 September 2020].
Controlling Provision(s)	Listed threated species and communities (sections 18 & 18A)
Approval Date	23 November 2020
Expiry Date of the Approval	30 June 2045
Date of Commencement of the Action	4 March 2021
Address	Clarke Road and Green Road, Park Ridge, Queensland
Local Government Area	Logan City Council

1.1. Offset site summary

Two (2) offset sites were identified and secured to achieve the offset required under the EPBC Act approval. The Burnett Creek site is located in the Scenic Rim Regional Local Government Area (LGA), approximately 6 km from the Queensland-New South Wales state border. The Lyons offset site is also located in the Scenic Rim Regional Council LGA and approximately 20 km south of the City of Ipswich.

The Burnett Creek site is zoned while the Lyons offset site is zoned Environmental Management and Conservation under the local government planning scheme. The context and aerial of each offset site is

provided in **Figures 1-4**. Key details relating to Burnett Creek and Lyons offset sites are in **Table 3** and **Table 2**, respectively.

Table 2: Burnett Creek offset site summary

Address	Burnett Creek Road, Burnett Creek
Lot / Plan	Part Lot 100 on WD682
Area	150.497 ha
Tenure	Freehold
Local government area	Scenic Rim Regional Council
Declared	11 March 2021

Table 3: Lyons offset site summary

Address	Mount Flinders Road, Lyons
Lot / Plan	Part Lot 7 on S312785
Area	250.843 ha
Tenure	Freehold
Local government area	Scenic Rim Regional Council
Declared	15 March 2021 (248.68 ha) & 29 July 2021 (2.163 ha)

1.2. Environmental outcomes and objectives

The object of this framework is to summarise existing habitat quality for the Koala (*Phascolarctos cinereus*) and GHFF (*Pteropus policephalus*) within the offset areas and to provide management actions designed to achieve the targets stipulated in the EPBC Act approval. In accordance with the EPBC Act approval, the ecological outcomes to be achieved are:

Offset site pest and weed management

9. The approval holder must apply relevant Offset site management activities at both the Burnett Creek Offset site and Lyons Offset site to:
    a. Relative to baseline survey results, achieve a 95% reduction in the numbers of non-native predators by the end of year 5; and
    b. Reduce the extent of weed cover to less than 20% of baseline survey results by the end of year 5; and to less than 5% of baseline survey results by the end of year 10.

Baseline surveys were undertaken for the above metrics between April and May 2021 (refer **Appendix B**). A summary of these findings and key milestones required under approval condition 9 are provided below.

Table 4: Non-native predator key milestones

Offset site	Baseline Predator Detection	Year 5 Target
Burnett Creek	1	<1
Lyons	8	<1

Table 5: Weed cover key milestones

Offset site	Baseline Cover	Year 5 Target	Year 10 Target
Burnett Creek	5.96%	<1.2%	<0.3%
Lyons	33.75%	<6.8%	<1.7%

Burnett Creek Offset site

10. The approval holder must apply assisted natural regeneration to achieve the following outcomes in all operational management units at the Burnett Creek Offset site:

    a. Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and to an average greater than 75% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

    b. Average native tree species richness must be >50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and be >90% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

    c. Average tree canopy cover must be greater than 30% of the benchmark for relevant Regional Ecosystems present by the end of year 5, and between 50% and 200% of the benchmark for relevant Regional Ecosystems by year 15.

    d. The number of large trees must be greater than 30% of the benchmark for relevant Regional Ecosystems present by the end of year 5, and between 50% and 100% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

    e. An increase in Koala density above average Koala density by the end of year 15.

    f. An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.

The relevant benchmarks, baseline survey results and outcomes for approval condition 10 are provided in **Table 6**, **Table 7** and **Table 8**.

Table 6: Burnett Creek Regional Ecosystem outcomes

AU	RE	RE Benchmark	Baseline	Year 5 Target	Year 15 Target
Average recruitment of wood perennial species in the EDL					
AU1	12.8.20	100	71	>50	>75
AU2	12.9-10.2	100	44	>50	>75
AU3	12.11.3	100	0	>50	>75
Average native tree species richness					
AU1	12.8.20	7	5	>3.5	>5.25
AU2	12.9-10.2	6	5	>3	>4.5
AU3	12.11.3	6	5.5	>3	>4.5
Average tree canopy cover					
AU1	12.8.20	44	57.9	>13.2	22-88
AU2	12.9-10.2	64	41.4	>19.2	32-128
AU3	12.11.3	72	80.3	>21.6	36-144
Number of large trees					
AU1	12.8.20	20	2.3	>6	10-20
AU2	12.9-10.2	38	4.7	>12.7	19-38
AU3	12.11.3	63	28	>21	31.5-63

Table 7: Burnett Creek Koala density outcomes

SAT sites	Baseline average activity level	Year 15 Target
11	7.88%	22.5%

Table 8: Burnett Creek Average winter/spring flower species

AU	Transect ID	Baseline	Year 15 Target
AU1	T1	7	6
	T2	5	6
	T1 (2020)	3	6
AU2	T3	7	6
	T4	4	6
	T7	5	6
AU3	T5	5	6
	T6	7	6

Lyons Offset site

11. The approval holder must apply assisted natural regeneration to achieve the following outcomes in all operational management units at the Lyons Offset site:

    a. Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and to an average greater than 75% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

    b. Average native tree species richness must be greater than 90% of the benchmark for relevant Regional Ecosystems by the end of year 10.

    c. Average tree canopy cover must be between 50% and 200% of the benchmark for relevant Regional Ecosystems by year 10.

    d. The number of large trees must be greater than 25% of the benchmark for relevant Regional Ecosystems present by the end of year 10, and between 50% and 100% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

    e. An increase in Koala density above in average Koala density by the end of year 15.

    f. An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.

The relevant benchmarks, baseline survey results and required outcomes for approval condition 11 are provided in **Table 9**, **Table 10** and **Table 11**.

Table 9: Lyons Regional Ecosystem outcomes

AU	RE	RE Benchmark	Baseline	Year 5 Target	Year 10 Target	Year 15 Target
Average recruitment of wood perennial species in the EDL						
AU1	12.8.20	100	71	>50	-	>75
AU2	12.9-10.17	100	67.5	>50	-	>75
AU3	12.9-10.3	100	62.5	>50	-	>75
AU4	12.9-10.7	100	0	>50	-	>75
AU5	12.9-10.2	100	62.75	>50	-	>75
AU6	12.9.10.2	100	65	>50	-	>75
Average native tree species richness						
AU1	12.8.20	7	6	-	>6.3	-
AU2	12.9-10.17	3	12	-	>2.7	-
AU3	12.9-10.3	5	7.5	-	>4.5	-
AU4	12.9-10.7	3	6	-	>2.7	-

AU	RE	RE Benchmark	Baseline	Year 5 Target	Year 10 Target	Year 15 Target
AU5	12.9-10.2	6	5	-	>5.4	-
AU6	12.9.10.2	6	6	-	>5.4	-
Average tree canopy cover						
AU1	12.8.20	44	56.35	-	22-88	-
AU2	12.9-10.17	40	63	-	20-80	-
AU3	12.9-10.3	50	62.65	-	25-100	-
AU4	12.9-10.7	40	63.6	-	20-80	-
AU5	12.9-10.2	64	69.625	-	32-128	-
AU6	12.9.10.2	64	60.5	-	32-128	-
Number of large trees						
AU1	12.8.20	20	2	-	>5	10-20
AU2	12.9-10.17	37	8	-	>9.25	18.5-37
AU3	12.9-10.3	26	12	-	>6.5	13-26
AU4	12.9-10.7	18	4	-	>4.5	9-18
AU5	12.9-10.2	38	6.25	-	>9.5	19-38
AU6	12.9.10.2	38	9	-	>9.5	19-38

Table 10: Lyons Koala density outcomes

SAT sites	Average Baseline activity level	Year 15 Target
17	2.74%	22.5%

Table 11: Lyons Average winter/spring flower species

AU	Transect ID	Baseline	Year 15 Target
AU1	T7	6	6
	T2 (2020)	6	6
AU2	T2	14	6
	T5 (2020)	9	6
AU3	T6	8	6
	T3 (2020)	7	6
AU4	T8	6	6
	T9	6	6

AU	Transect ID	Baseline	Year 15 Target
AU5	T1	4	6
	T3	5	6
	T4	6	6
	T5	5	6
AU6	T1 (2020)	9	6
	T4 (2020)	3	6

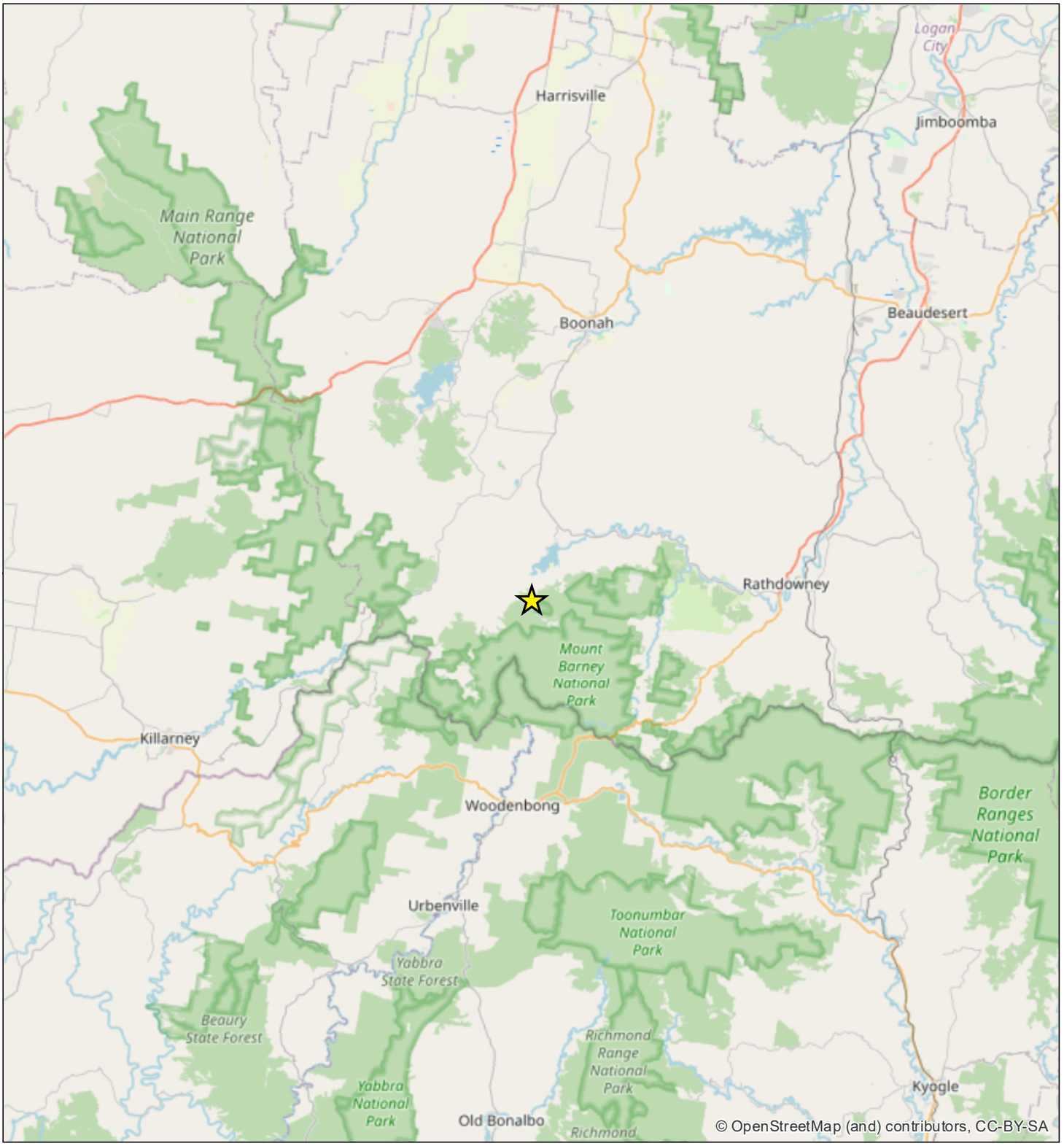
This framework identifies outcomes focused management actions pursuant the EPBC Act, for the provision of Koala (*Phascolarctos cinereus*) and GHFF (*Pteropus poliocephalus*) habitat offset. The management objectives for the offset area, in alignment with the EOP will:

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

The achievement of environmental outcomes within the offset area will be measured using methodologies, monitoring and maintenance detailed in **Sections 4 and 5**. The management actions detailed in this Offset Management Framework aim to achieve the offset targets conditioned in the EPBC Act approval that endeavour to protect, restore and reconnect areas of Koala and GHFF habitat. The offset areas have been selected to represent populations that are genetically diverse and distinct and are free of disease of have very low incidence of disease.

1.3. Structure of the Framework

Section 1: Introduction
Section 2: Management Framework
Section 3: Management Actions and Performance Criteria Summary
Section 3: Monitoring Actions



Legend

☆ Offset site location

Figure 2

Site Context - Burnett Creek

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

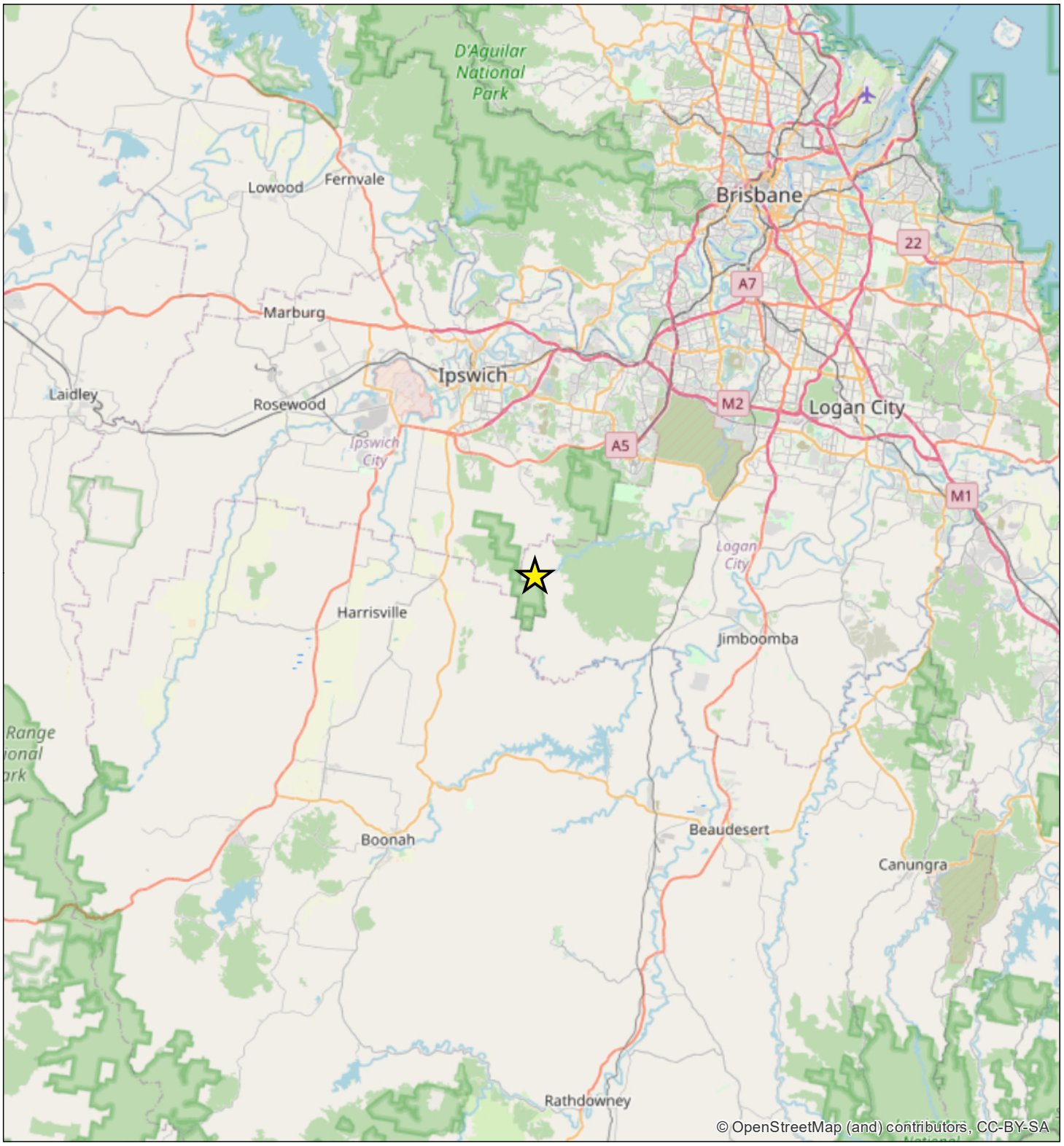
File ref. 9694 E Figure 1 BL2021 Site Context BC B
Date *27/07/2021*
Project *Burnett Creek Road, Burnett Creek*

0 1 2 4 6 8 10 12 14 16 *km*

N

Scale (A4): 1:500,000 [GDA 1994 MGA Z56]

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021.



Legend

☆ Offset Site Location

Figure 1

Site Context

File ref. 9694 E Figure 1 Site Context Lyons A
Date *3/08/2021*
Project *Lot 7 on S312785*

0 5 10 20 *km*

Scale (A4): 1:500,000 [GDA 2020 MGA Z56]

N

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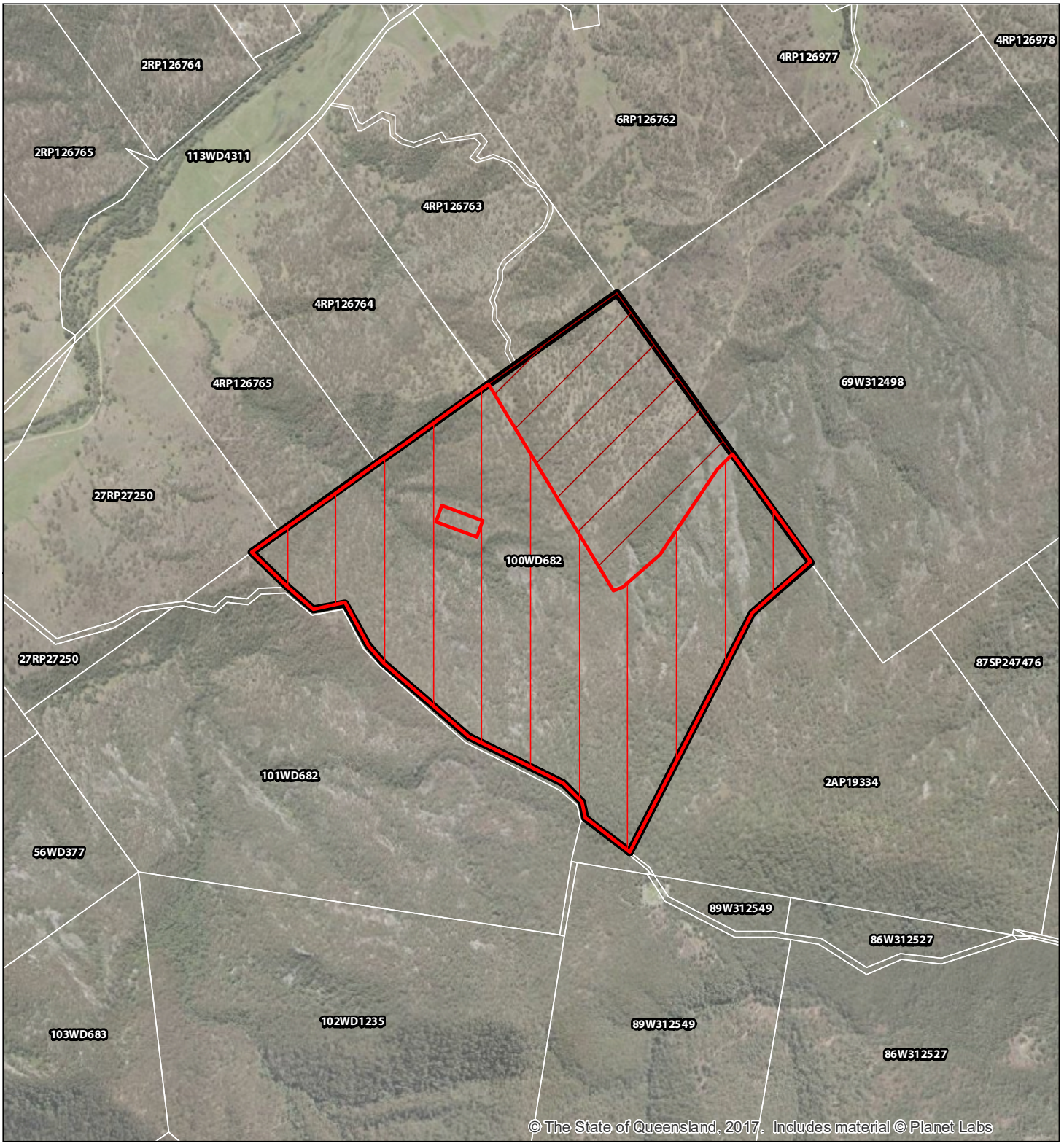
on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

Layer Source: *© State of Queensland 2021*



Legend

- Offset site DCDB
- Existing legally secured offset area (2019/000446)
- Offset area (150.497 ha)
- Qld DCDB

Figure 2

Site Aerial - Burnett Creek

File ref. 9694 E Figure 2 BL2021 Site Aerial BC B
Date *27/07/2021*
Project *Burnett Creek Road, Burnett Creek*

0 100 200 400 600 800 *m*

Scale (A4): 1:20,000 [GDA 1994 MGA Z56]

N

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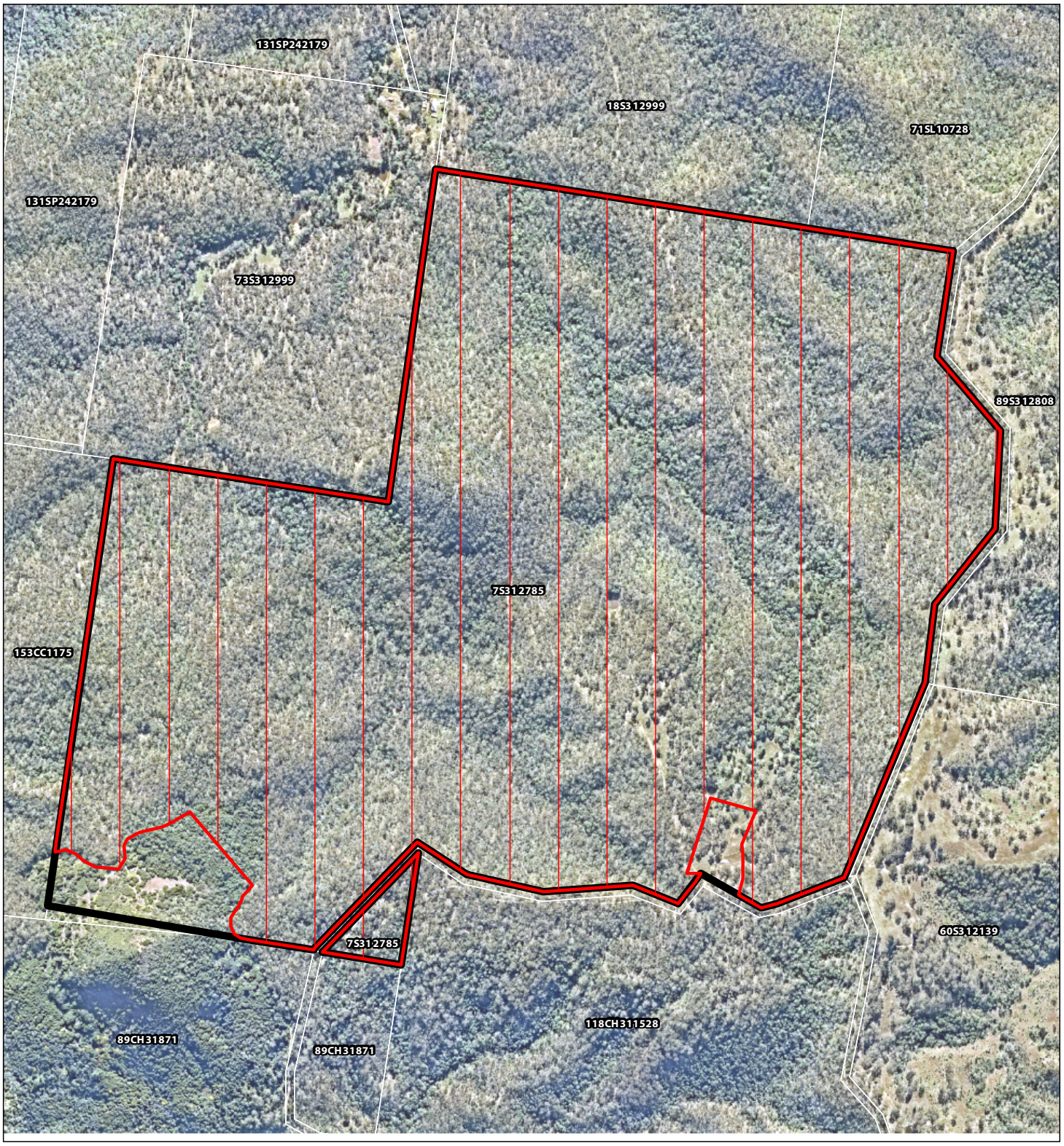
on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021



Legend

- Site DCDB
- Qld DCDB
- Offset Area (250.84 ha)

Figure 2

Site Aerial

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

File ref. 9694 E Figure 2 Site Aerial Lyons A
Date *5/08/2021*
Project *Lot 7 on S312785*

0 50 100 200 300 400 *m*

N

Scale (A4): 1:12,500 [GDA 2020 MGA Z56]

Layer Source: © State of Queensland 2021,Nearmap 2021

1.4. 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	Andrew Davies
Position	Principal Environmental Scientist
Organisation	Saunders Havill Group (ABN 24 144 972 949)
Date	22 April 2022

1.5. Regulatory and policy context

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

- EPBC Act referral guidelines for the vulnerable Koala (combine populations of Queensland, New South Wales and the Australian Capital Territory) (DoEE, 2014);
- Draft recovery plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (DoEE, 2017);
- *EPBC Act Survey guidelines for Australia's threatened bats* (Department of the Environment, Water, Heritage and the Arts, 2010)
- EPBC Act environmental offsets policy (Department of Sustainability, Environment, Water, Population and Communities, 2012);
- EPBC Act Environmental Management Plan Guidelines (DoEE, 2014)
- Policy Statement: Advanced environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999;
- *Vegetation Management Act 1999* (legally securing the offset through a Voluntary Declaration under Section 19F);
- Queensland Environmental Offsets Act 2014; and
- Queensland Environmental Offsets Regulation 2014.

1.6. Conditions of Approval

Table 12 demonstrates the management plan's compliance with the conditions of approval (EPBC 2017/8095).

Table 12: Framework Compliance with Conditions of Approval

Condition	Plan Reference
Environmental Offset Requirements	
8. Within one month of the completion of baseline surveys at Burnett Creek Offset site and Lyons Offset site, the approval holder must:	
a. Publish all survey data (including survey methodology and dates) from the baseline surveys required under condition 6;	Baseline surveys across both offset sites, Burnett Creak and Lyons were completed in May 2021. The Baseline Survey Results Reports are provided in **Appendix B**.
b. Submit an Offset Monitoring and Reporting framework prepared by a Suitably qualified field ecologist for approval by the Minister. The Offset	The monitoring and reporting components of this framework are provided in **Section 4** and **Section 5**.

Condition		Plan Reference
	Monitoring and Reporting framework must include (but is not limited to):	
i.	the ecological outcomes specified in conditions 9-11 (including key milestones and baseline survey results);	The ecological outcomes specified in Conditions 9-11 are provided in **Section 1.2** and **Section 3**. Specific Operation Management Unit (OMU) benchmarks are provided in **Appendix C.**
ii.	management measures proposed to achieve the ecological outcomes specified in conditions 9-11;	The management measures proposed to achieve the ecological outcomes are provided in **Section 2** and **Section 3**.
iii.	for each management action and monitoring outcome, detail how and when performance will be quantified, measured and monitored;	Each management action, monitoring activity and performance criteria is outlined in **Section 3**. How and when performance will be measured is provided in **Section 5**.
iv.	detail contingency measures to be implemented if some or all of the specified milestones in conditions 9-11 are not achieved	Corrective action triggers and corrective actions are detailed in **Section 5**. **Section 6** details overall adaptive measures to implemented as required.

2. Management Framework

This section outlines the management framework to be implemented for the duration of the approval (20 years), though as outlined within **Section 1.2** most of the targets are to be achieved within 15 years from the date of the baseline surveys and maintained for the remainder of the period of effect of the approval (30 June 2045). These measures are designed to minimise the risks associated with key threatening processes to the Koala and GHFF and enhance the quality of the habitat within the offset area. This framework has been prepared in accordance with the Offset Chapter provided to the Department within the Preliminary Documentation (refer **Appendix C**). A monitoring and reporting schedule is provided in **Section 5.**

2.1. Management Approach

The measures outlined in the following subsections are considered to be effective for the listed status of the Koala and GHFF, 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 *Approved Conservation Advice for Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designatable Unit)* (Conservation Advice).

The management actions will result in a net gain of the overall habitat quality for Koala and GHFF over the period of effect of the approval through active management, maintenance, monitoring and reporting. The baseline and future habitat quality scores for each offset and respective MNES are provided in **Table 13**.

Table 13: Offset site Koala and Grey-headed flying-fox habitat quality scores

Offset Site	Area	Koala Habitat Quality Score		GHFF Habitat Quality Score	
		Baseline	Future	Baseline	Future
Burnett Creek	150.497 ha	7	8	5	7
Lyons	250.843 ha	6	8	5	7

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.

2.2. Management Action 1 – Legally Secure Offset Area

All other incompatible land uses must be removed from the site and the site must be protected in perpetuity to attain a conservation gain. As such, the offset sites were legally secured for conservation through the VDEC process under the *Vegetation Management Act 1999* (Qld).

The VDECs legally secure the conservation use on the land. The Burnett Creek offset area was declared on 11 March 2021 and Lyons was declared on 15 March 2021 (248.68 ha) and 29 July 2021 (2.163 ha) by the Department of Resources (DOR). The declared areas are 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*. The Proponent through the offset provider will continue to manage the offset area for the life of the approval. Legally securing the offset area is listed in the Conservation Advice as a Priority Management Action, under "Habitat Loss, Disturbance and Modification".

2.3. Management Action 2 – Pest Management Plan

Feral or unwanted domestic dogs have been identified as a key threatening process under the EPBC Act, and are confirmed as a direct predation risk to Koalas. Wild dogs are regional pest species within both council areas where the offset sites are located. Wild dogs are a declared pest animal within Scenic Rim Regional Council Area and are rated as a very high priority pest animal in the City of Logan Biodiversity Plan 2017-2022 (page 32). Wild dogs have been recorded at both offset sites. At the Lyons offset site visual confirmation and prints were recorded. At the Burnett Creek offset site only visual confirmation was possible.

Predation rates by wild dogs are difficult to quantify because predation often occurs in places infrequently visited by people and the carcasses of the killed animals are buried or eaten and go undetected (Beyer *et al*. 2018). Wild dogs 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).

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. Wild dogs were also suspected of 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).

Managing animal predation is listed as a Priority Management Action under the Koala Conservation Advice. 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 pest animals 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. Pest animal control is to be undertaken in a humane manner. Annual pest monitoring is to be reported and included in the ACR.

In accordance with approval condition 9a, the management actions must achieve a 95% reduction in the numbers of non-native predators by the end of year 5 relative to the baseline. Baseline surveys detected 1 predator (cat) at the Burnett Creek offset site and 8 predators (dog and fox) at Lyons offset site (refer **Appendix B**). The year 5 target is therefore <1 predator detected at each of the offset sites (refer **Section 1.2** for ecological outcomes).

A Pest Management Plan (PMP) will be developed for the Burnett Creek and Lyons offset sites during the first year of the action. Baseline surveys for wild dogs will occur within the first year of the action and through the PMP a reduction to less than 5% of the baseline level by year 6. Key management measures for the control of feral or unwanted domestic dogs across the offset areas include:

- Development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed within 24 months of commencement of the action.
- Annual pest monitoring by a suitably qualified pest management contractor, with evidence of pest animals GPS recorded. Where there is evidence of pest animals, targeted trapping, baiting or shooting programs will be implemented by an independent suitably qualified pest management contractor. Where annual monitoring does not identify any feral or pest species, monitoring will reduce to 2 yearly.
- Participate cooperatively in pest management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective pest management in the locality of the offset areas. This includes working in conjunction with pest management occurring in:
    - The Mount Barney National Park protected area (Burnett Creek offset site).
    - Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting.
    - The Logan area (Lyons Offset site).
- Install signage at access points to inform any persons interacting with the area of feral animal control being undertaken within the offset site.

2.3.1 Pest Management Plan

The following Pest Management Plan operates on the following applied management principles to ensure objectives of this Offset Management Framework are achievable across the two offset sites, Burnett Creek and Lyons. Applied management principles include:

- Best practice methodology –management must be based on ecologically and socially responsible management practices that protect the environment and the productive capacity of natural resources.

- Improvement – research on target species, and regular monitoring and evaluation of control activities, is necessary to continually improve management practices and achieve optimal results.
- Commitment – effective management requires a combined long-term commitment by the community, industry groups and government entities.

Adaptive management for non-native predator species

Given the extended management timeline, it is not possible or intended that this Offset Management Framework will provide a detailed prescription of management actions. This framework has been based on the current state of knowledge of species ecology and best practice habitat management approaches for Koala habitat. It is anticipated that new techniques will become available over the course of the management period to monitor environmental values through indicators including vegetation composition, Koala absence, presence and abundance, and weed presence (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 integrate future research and practice development into management and monitoring actions. This will ensure best practice techniques can be adopted in an adaptive management approach that ensures 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 monitored changes in environmental condition and/or changes in base knowledge which underpins the original management approach.

Adaptive management will be used to incorporate changes into management processes across the offset sites, 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 sites 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.

Weed management

Pest flora species have been identified within the offset sites during field survey effort, including species recognised as WONS. The key flora species to controlled within the offset sites in regards to Koala habitat values is *Lantana camara* (Lantana), a WONS. Due to the extent of Lantana and potential for weeds to occur within the offset sites, a separate detailed weed management plan has been developed and is to be used in accordance with the intent of this framework (refer **Section 2.3** for the WONS Management Plan).

Non-native Predator Control

Feral or unwanted domestic dogs and dingos have been identified as a key threatening process under the EPBC Act, and are confirmed as a direct predation risk to Koalas. Managing animal predation is listed as a Priority Management Action under the Koala Conservation Advice. Additionally, the presence of other non-native predators which may pose a lower level of threat, such as *Felis catus* (Feral Cat), *Vulpes vulpes* (Fox) and various species of feral Deer, have the potential to attack Koalas and indirectly stress Koalas making them more susceptible to disease.

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. Annual monitoring is to be included in the ACR. Refer **Section 5** for monitoring and reporting schedule.

Management measures for the control of feral or unwanted domestic dogs, dingos, and other pest species across the offset area include:

- Baseline surveys including motion activated cameras and scat analysis to identify evidence of predators, and development 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 12 months of commencement of the action.
- 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 Scenic Rim Regional Council.
- Install appropriate signage informing the area is under feral control.

As the management of predator species can only be achieved at a landscape level, management will be implemented within 24 months of commencing the action. The following non-native predator monitoring methodology will be implemented:

- Record the location of non-native predators where evidence of presence is observed utilising a GPS, including notable tracks or scats.
- Field datasheet detailing the time of the monitoring event, observed non-native predator scats or tracks, photo location and notes of any evidence of positive and/or negative changes in non-native predator occurrence. Carry the previous years' non-native predator survey mapping, field datasheet and photos for noting recorded changes in non-native predator occurrences.

- 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.

Key species assessed as high priority to receive management measures, and their associated risks, are presented in **Table 14**.

Table 14: Predator species management priorities

Priority (category)	Scientific name (Common name)	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 (medium)	Felis catus (Feral Cat)	Class 2	Actual impacts on native fauna – HIGH	Widespread occurrence in low to medium densities	Control
3 (medium)	*Vulpes vulpes* (European Fox)	Class 2	Actual impacts on native fauna – MEDIUM Actual impacts on agricultural production values – LOW	Widespread occurrence in low to medium densities	Control

Management methodologies for predator species will involve approaches presented in **Table 15** were deemed appropriate, 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.

Annual monitoring and control will be reported and results will be detailed within the ACR. The annual management report 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 15: Predator species control methods (adapted from WoolProducers Australia 2014)

Method	Efficacy	Cost effectiveness	Target specificity	Humaneness acceptability	Comment
Lethal					
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 high levels of maintenance. Electric fencing can be an effective barrier. Often adequate defence against reinvasion of controlled areas.
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.

2.4. Management Action 3 – Weed of National Significance Management Plan

The control of weeds is fundamental to improving biodiversity and the ecological condition of the habitat within the offset area. The historical land uses across the offset areas 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 in regards to Koala habitat values 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* is considered a key threatening process to koalas, impacting movement between trees and prolonging time spent on the ground, making them susceptible to predators (Paull et al. 2019, The Honourable Leeanne Enoch 2019). The Queensland Draft 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 presenting a barrier to movement, Lantana also changes the structure and health of the ecosystem, which will lead to a decline in the health and quality of koala food and habitat. Lantana is a transformer weed, that changes wildfire behaviour resulting in destruction of native trees (Berry et al 2011, DAF 2016). It also supresses eucalypt recruitment, both through its allelopathic properties and its capacity to shade out other species. This prevents eucalypt recruitment, leading to an overall decline in habitat health if not managed (Threatened Species Scientific Committee, 2010). If eucalypt species cannot recruit, there will be no succession of vegetation, meaning the future health of the ecosystem is under threat.

It is not possible to remove lantana from the offset area on a single occasion, as there will be a persistent seed bank that can 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). It is therefore important that the offset area is revisited following the initial treatment for follow-up weed control and to prevent seed set and dispersal.

Weed extent has been mapped within the each of the respective Baseline Survey reports (refer **Appendix B**). Management Action 3 will target the mapped extents to control weeds and increase biodiversity, and work in collaboration within Management Action 5 – Regeneration management strategy (refer **Section 2.6**).

In accordance with approval condition 9b, the management actions must reduce the extent of weed cover to less than 20% of the baseline survey results by the end of year 5; and to less than %5 of the baseline survey results by the end of year 10. Baseline surveys found an average of 5.96% weed cover at the Burnett Creek offset site and 33.75% at the Lyons offset site (refer **Appendix B**). The year 5 target is therefore <1.2% and <6.87% and year 10 targets <.03% and <1.7%, respectively (refer **Section 1.2** for ecological outcomes).

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 16: 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
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		

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
18	Bignoniaceae	*Dolichandra (Macfadyena) unguis-cati*	Cat's Claw Creeper		WONS weed management guides available at https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html
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		
24	Verbenaceae	*Lantana camara var. camara*	Lantana		
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		

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
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		

2.5. Management Action 4 – Bushfire Management Plan

This management action refers to activities conducted to reduce the risk of wildfire to the Koala and GHFF, both from direct and indirect impacts via mortality and impact on habitat and food trees.

Uncontrolled bushfires can lead to the reduction in habitat for Koala and GHFF. A Bushfire Management Plan in accordance with relevant Queensland guidelines and have it endorsed by an experienced bushfire practitioner. The Bushfire Management Plan will assess baseline fuel loads and aim for no Koala mortalities to occur as a result of overall fuel hazard reduction action.

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.

2.6. Management Action 5 – Regeneration management strategy

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. It also is a Priority Management Action listed under "Habitat Loss, Disturbance and Modification" of the Conservation Advice for the Koala. Rehabilitation aims to enhance degraded areas through management action 2 (weed removal) and assisted natural regeneration.

As discussed in **Section 2.4**, weed extents across both offset sites have been mapped within the each of the respective Baseline Survey reports (refer **Appendix B**). Management Actions 3 to 5 will work together improve habitat quality through weed removal/control, bushfire management and native species establishment.

The vegetation across both offset sites is substantially the same, dominated by remnant vegetation with limited bare areas. As such, the key management actions across the sites will be the same (refer **Table 17**). Key management actions will include assisted natural regeneration practises to expand patches of regrowth over weed areas.

Table 17: Management Zone Rehabilitation Method Summary

Offset Site	Description	Rehabilitation Method
Burnett Creek **Lyons**	Continuous Native Canopy Vegetation	Assisted Natural Regeneration • Weed removal/control • Bushfire management • Infill planting where necessary

Within the mapped regrowth and remnant areas, the natural regeneration rehabilitation technique is considered the preferred method to enhance remnant vegetation. Where natural regeneration is unsuccessful, infill planting will be implemented to facilitate recovery (if required).

In accordance with approval conditions 10 and 11, the assisted natural regeneration must achieve an increase in the following outcomes for all operational management units at each of the offset sites, including:

- Average recruitment of woody perennial species in the EDL for relevant RE,
- Average native tree species richness for relevant RE,
- Average tree canopy cover for relevant RE,
- The number of large trees for relevant RE, and
- An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot.

The benchmarks and baseline results for each of these metrics is provided in **Section 1**. Overall, the improvement in these metrics are expected to result in an increase in habitat quality for the Koala and Grey-headed Flying-fox, and increase Koala density in accordance with conditions 10e and 11e.

Management measures for regeneration include:

- Baseline MHQA and weed extent surveys (refer **Appendix B)**;
- Primary and follow up rehabilitation works;
    - Assisted Natural Regeneration – Removal of conflicting land uses, weed removal/control and bushfire management.
- Maintenance
    - Ongoing weed management and maintenance of infill planting (if required).
- Monitoring and Reporting
    - Rehabilitation works progress reports prepared by engaged contractor to approval holder / environmental coordinator.
    - Annual photo monitoring.
    - Repeat of baseline surveys every 5 years.
    - Progress and achievements to be included within ACR.

Rehabilitation Methodology

Following resolution of the site analysis and management areas as part of rehabilitation design, prioritising site works should be considered. Prior to site works commencing, the site should be secured from degrading impacts such as grazing by stock, unauthorised access and rubbish. Some factors that may require immediate attention include:

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

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

- Primary Works
- Follow-up Works
- Maintenance Works

Primary Works

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

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

Follow-up Works

At intervals, which will vary according to the type of weed impacting the site and growing conditions, follow-up work will be necessary. This generally involves the spot-spraying of newly germinating weeds and re-sprouting sections of woody weeds and vines. It is at this stage that observational visits should be made to the site to assess the progress of vegetation regeneration, and decide the necessity to implement further follow-up work. A site that receives badly-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 swamped by weeds or damaged by inexperienced operators thereby exhausting the seed bank. Unless adequate follow-up can be ensured when planning restoration works, there is little point in commencing primary work, as time and resources are consumed with no substantial gain achieved (source: SEQERF).

Maintenance Works

By the maintenance stage, the vegetation community is at a point where native plant species are germinating and establishing, and canopy formation is occurring. Weed density is starting to decrease as the native plants which have been encouraged during the previous restoration works are able to out-compete the weeds. One of the fundamental principles of ecological restoration is that it attempts to create or re-establish an ecosystem that is self-sustaining. Therefore, it is the underlying goal that maintenance will eventually decrease to a minimum. While this goal is not always possible, due to factors such as the continual reintroduction of weed propagules to the site from nearby residential areas; unfavourable seasons or significant weather event; 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.

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. Weed management shall encompass all species declared at the Commonwealth, state and local levels, and any weeds that appear to be invasive at the site.

Critical skills for Weed Management include:

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

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. If the contractor is unsure of species, advice should be sought from a botanist, specialist contractor or confirmed with Queensland Herbarium. Refer to indicative Weed Treatment schedules derived from the *South East Queensland*

Ecological Restoration Framework: Manual (2012) for an indication of weed species and treatments (refer **Table 18**).

Knowledge of Different Weed Management Techniques

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

Table 18: Weed Treatment Schedules (source: SEQERF)

WEED MANAGEMENT TECHNIQUES	
METHOD	**DESCRIPTION**
Herbicide	**The herbicide weed control techniques described below provide a range of proven methods that can be used on a restoration site.**
Cut - Scrape-Paint	Cut the stem of the plant close to the ground (approximately 1-2cm) ensuring that soil does not come in contact with the cut surface. The cut can be made at a slight angle in order to increase the surface area that is exposed to the chemical. Apply herbicide immediately to the cut stump using poison pot and brush or dripper bottle. Using a knife, scrape the sides of the stump thoroughly to expose the green tissue. Apply herbicide to the scraped stump. The chemical must be applied within 10 seconds of the cut or scrape being made in order for it to be fully effective.
Cut - Paint	Cut the stem of the plant close to ground level. Apply herbicide to the cut stump using poison pot and brush or dripper bottle. This method is best suited to easy-to-treat weeds such as small-leaved privet (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.
oll-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 roll-hang method. Locate the base of the plant and carefully pull up the runners and roll them up. The resulting roll of vine is then hung in the fork of a tree to dry out as if it is left on the ground it is likely to re-shoot. Where runners are climbing up into a tree they are cut off at head height prior to the runner being rolled up – there is no need to pull cut vines down from trees as this action is likely to damage the tree. The base of the vine is treated using the cutscrape-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.

METHOD	DESCRIPTION
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 frilling). Frilling is more labour intensive than drilling. The greatest benefit of steminjection is that the trees can be left standing in situ as they die, provided there is no risk to humans or infrastructure from falling limbs. This creates convenient roosts for birds and other animals, and prevents the formation of large amounts of debris on the ground and damage to understorey plants which would result if the trees were to be cut down using a chainsaw.
Wick Wiping	Wick wipers can be manually used with a sponge or wick applicator, attached to a container filled with herbicide or as an attachment towed by a tractor. The manual method can be used to selectively apply herbicide to the leaves of weeds growing in sensitive situations. The hand held container can leak and generally spot spraying would be recommended. The use of a tractor drawn wick wiper is used to control taller growing species such as introduced grasses and to encourage the growth of lower growing species. This method could be used in preparation for planting.
Mechanical	**Mechanical weed control involves the use of powered and non-powered equipment such as brushcutters, chainsaws, slashers, shovels, pruners, saws, etc. These methods are best used in situations where there is a large, uninterrupted stand of weeds.**
Dig and Bag	Dig and remove tuberous/ rhizomatous root systems. Remove roots or whole plant in hard/ compacted soils. Place in suitable container and remove from site, dispose of by deep burial, burn or burial at a land fill, must not place declared weed species in recycling (mulch).
Hand-Pull	Remove totally from ground by hand (human). Perform when soil is moist. Applicable to small infestations or areas of environmental sensitivity (including sensitive watercrouses, 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 lage infestations and weed trees. Initially cost-effective, but requires immediate revegetation of site or matting/ mulch application and extensive maintenance periods. Generates excessive soil and vegetation disturbance.

Note: Table adapted from a table in SEQERF

Planting Notes

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

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

Species Selection

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

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

Sourcing Plant Material

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

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

Timing of Planting

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

Site Preparation

Site or planting preparation includes:

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

Planting Density

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

Planting Installation

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

Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged. The landscape coordinator has the right to inspect and reject stock prior to planting.
- Plants are to be planted immediately after delivery to the planting site.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient deficient, hydrophobic etc.) and above areas of potential frequent inundation and waterflow, topsoil may be used.

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

Weed monitoring

The following procedures will be implemented to ensure that the monitoring event aligns with the baseline monitoring methodology:

- On a field datasheet, detail the time of year of the monitoring event, list of observed weeds, photo location and direction and notes of any notable positive and/or negative changes in weed density and coverage.
- Carry the previous year's weed survey mapping, field datasheet and photos for noting changes in weed infestations and densities.
- Continue original baseline survey techniques (MHQA) (5 yearly) to assess positive or negative change in the coverage of weeds on the offset sites.
- Weeds to be monitored and treated annually, until performance criteria is achieved. Once performance criteria is achieved this is to be maintained for management period.

Regeneration monitoring

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

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

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

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

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

The following elements will be noted on a field datasheet:

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

If required:

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

3. Management Action and Performance Criteria Summary

The offset sites have been separated into Operational management Units (OMUs) to reflect the different actions required to reach the outcome. The OMUs reflect the Queensland Regional Ecosystem classification and correspond with the Assessment Units (AUs) used during for baseline surveys (refer **Appendix B**). OMUs details for each offset site are provided in **Table 19**. The specific benchmarks for each OMU within the Burnett Creek and Lyons offset sites are provided in **Appendix C**. A summary of the management actions, monitoring actions and performance criteria is provided within **Table 20**.

Table 19: Offset Site Operational Management Units

Offset site	OMU	Assessment Unit	VMA Status	Regional Ecosystem	Area
Burnett Creek	OMU1	AU1	Category B	Remnant 12.8.20	59.99 ha
	OMU2	AU2	Category B	Remnant 12.9-10.2	70.42 ha
	OMU3	AU3	Category B	Remnant 12.11.3	20.89 ha
Lyons	OMU1	AU1	Category B	Remnant 12.8.20	7.69 ha
	OMU2	AU2	Category B	Remnant 12.9-10.17	21.93 ha
	OMU3	AU3	Category B	Remnant 12.9-10.3	9.59 ha
	OMU4	AU4	Category B	Remnant 12.9-10.7	20.39 ha
	OMU5	AU5	Category B	Remnant 12.9-10.2	181.09 ha
	OMU6	AU6	Category C	Regrowth 12.9-10.2	10.15 ha

Table 20: Management Action and Performance Criteria Summary

Management Action	Specific Actions	Burnett Creek	Lyons	Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition
1. **Legally secure offset area**	Complete voluntary declaration applications under the *Vegetation Management Act 1999* (Qld) to legally secure the Burnett Creek and Lyons offset sites ensuring offsets for impacts on the Koala and GHFF. Exclude all other incompatible land uses	✓	✓	Legally secure Burnett Creek and Lyons Offset site through Voluntary Declaration prior to the commencement of the action. The offset sites are not being used for other purposes – site access is restricted.	• The offset sites were secured through a Voluntary Declaration under the *Vegetation Management Act 1999* (Qld) on 11 and 15 March and 29 July 2021. • The Department was notified on 24 March 2021 that the offset sites had been secured for impacts to the Koala and GHFF.	5. To compensate for the clearing of up to 89.83 ha and the functional loss of 28.01 ha of Koala habitat and Grey-headed Flying-fox foraging habitat, the approval holder must: a. Legally secure at least 151.3 ha of land at the Burnett Creek Offset site and at least 250.4 ha of land at the Lyons Offset site and commence Offset site management activities prior to undertaking any clearing at the development area. b. Within 20 business days of legally securing at least 151.3 ha of land at the Burnett Creek Offset site, and at least 250.4 ha of land at the Lyons Offset site, provide the Department with written evidence demonstrating that the Burnett Creek Offset site and Lyons Offset site have been legally secured (e.g. legal security documentation), shapefiles and the offset attributes. c. Legally limit uses and permissible activities at Burnett Creek Offset site and Lyons Offset site such that the quality of Koala habitat and Grey-Headed Flying-fox foraging habitat at the Burnett Creek Offset site and Lyons Offset site cannot lawfully be reduced. 7. For the protection of the Koala and the Grey-headed Flying-fox, the approval holder must exclude all livestock from both the Burnett Creek Offset site and Lyons Offset site prior to any clearing in the development area, and maintain this for the period of effect of the approval.
2. **Pest Management Plan**	Undertake baseline surveys to determine relative abundance index Implement Pest Management Plan. The control program and techniques (trapping, baiting, shooting) will be informed based on the results of the abundance surveys. Conduct follow-up monitoring and implement further control efforts if feral animals recur. Implement adaptive management techniques if initial control techniques are not working effectively.	✓	✓	• Relative to baseline survey results, achieve a 95% reduction in the numbers of non-native predators by the end of year 5 (refer **Section 1.2**); and • No recorded injury or death from Non-native predator attacks within the offset areas.	• Regularised grid-based motion sensor camera detection survey (record number of occurrences over days of camera deployment). • Records of injury or death from Non-native predators. • Non-native predator control statistics (Ground baiting with 1080, Shooting to euthanise trapped dogs / fox / cats, Ground shooting)	9. The approval holder must apply relevant Offset site management activities at both the Burnett Creek Offset site and Lyons Offset site to: a. Relative to baseline survey results, achieve a 95% reduction in the numbers of non-native predators by the end of year 5; and

Management Action	Specific Actions	Burnett Creek	Lyons	Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition
	Implement adaptive management techniques if initial control techniques are not working effectively.				• Opportunistic observation (direct and indirect) during other survey works.	
3. WONS Management Plan	Undertake baseline surveys to determine weed coverage % and locations Undertake primary and follow-up works • selective chemical / mechanical weed control/removal Conduct annual monitoring and reporting • Photo monitoring • Weed infestation mapping Conduct 5 year monitoring and reporting: • MHQA (weed coverage %) • Targeted transects (weed coverage %) Implement adaptive measures/corrective actions if required	✓	✓	• Reduce the extent of weed cover to less than 20% of baseline survey results by the end of year 5 (refer **Section 1.2**); and • less than 5% of baseline survey results by the end of year 10 (refer **Section 1.2**).	• Weed extent surveys and mapping, • Photo monitoring points, • Targeted weed transect surveys with a RGB approach to ensure representation of the offset sites and each Regional Ecosystem/ Assessment Unit.	b. Reduce the extent of weed cover to less than 20% of baseline survey results by the end of year 5; and to less than 5% of baseline survey results by the end of year 10.
4. Bushfire Management	Inspection and monitoring of firebreaks and trails. Actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.	✓	✓	• No record of high intensity fires in the offset sites. • No record of injury or death from fire • Vegetation composition not negatively affected by fire regime	• Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock.	-
5. Regeneration	Undertake baseline surveys to determine MHQA Scores for Koala and GHFF and weed extents. Implement weed removal, control and management actions (refer **Section 2.4**). Assisted Natural Regeneration • Weed management (refer Management Action 2)	✓	✓	Improvement in offset site MHQA Scores Burnett Creek: • Koala Habitat 7/10 – 8 /10 • GHFF 5/10 – 7/10 Lyons: • Koala Habitat 6/10 – 8 /10 • GHFF 5/10 – 7/10	• Keep accurate records and perform regular audits/monitoring of weed removal and remedial planting (if required), • Photo monitoring points, Modified Habitat Quality Assessment (MHQA) Koala:	10. The approval holder must apply assisted natural regeneration to achieve the following outcomes in all operational management units at the Burnett Creek Offset site: a. Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and to an average greater than 75% of the benchmark for relevant Regional Ecosystems present by the end of year 15.

Management Action	Specific Actions	Burnett Creek	Lyons	Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition
	• direct planting where natural regeneration fails (after a sufficient rest period) Conduct annual monitoring and reporting Implement adaptive measures/corrective actions if required			Burnett Creek Offset site (refer **Section 1.2**) • Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant RE present by the end of year 5 and to an average greater than 75% of the benchmark for relevant RE present by the end of year 15. • Average native tree species richness must be >50% of the benchmark for relevant RE present by the end of year 5 and be >90% of the benchmark for relevant RE present by the end of year 15. • Average tree canopy cover must be greater than 30% of the benchmark for relevant RE present by the end of year 5 and increase to between 50% and 200% of the benchmark for relevant RE by the end of year 15. • The number of large trees must be greater than 30% of the benchmark for relevant RE present by the end of year 5, and between 50% and 100% of the benchmark for relevant RE present by the end of year 15. • An increase in Koala density above average Koala density by the end of year 15. • An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.	• Diurnal meander for direct observation and signs • Nocturnal spotlighting surveys for individuals • MHQA • Regularised grid-based SAT (RGB-SAT) surveys GHFF: • MHQA • Diurnal meanders for roosts/camps • Dusk surveys of fly-in/out events • Spotlighting transect surveys for foraging individuals	b. Average native tree species richness must be >50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and be >90% of the benchmark for relevant Regional Ecosystems present by the end of year 15. c. Average tree canopy cover must be greater than 30% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and increase to between 50% and 200% of the benchmark for relevant Regional Ecosystems by the end of year 15. d. The number of large trees must be greater than 30% of the benchmark for relevant Regional Ecosystems present by the end of year 5, and between 50% and 100% of the benchmark for relevant Regional Ecosystems present by the end of year 15. e. An increase in Koala density above average Koala density by the end of year 15. f. An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.

Management Action	Specific Actions	Burnett Creek	Lyons	Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition
				Lyons Offset site (refer **Section 1.2**) • Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant RE present by the end of year 5 and to an average greater than 75% of the benchmark for relevant Regional Ecosystems present by the end of year 15. • Average native tree species richness must be greater than 90% of the benchmark for relevant RE by the end of year 10. • Average tree canopy cover must be between 50% and 200% of the benchmark for relevant RE by year 10. • The number of large trees must be greater than 25% of the benchmark for relevant RE present by the end of year 10, and between 50% and 100% of the benchmark for relevant RE present by the end of year 15. • An increase in Koala density above in average Koala density by the end of year 15. • An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.		11. The approval holder must apply assisted natural regeneration to achieve the following outcomes in all operational management units at the Lyons Offset site: a. Average recruitment of woody perennial species in the ecologically dominant layer greater than 50% of the benchmark for relevant Regional Ecosystems present by the end of year 5 and to an average greater than 75% of the benchmark for relevant Regional Ecosystems present by the end of year 15. b. Average native tree species richness must be greater than 90% of the benchmark for relevant Regional Ecosystems by the end of year 10. c. Average tree canopy cover must be between 50% and 200% of the benchmark for relevant Regional Ecosystems by year 10. d. The number of large trees must be greater than 25% of the benchmark for relevant Regional Ecosystems present by the end of year 10, and between 50% and 100% of the benchmark for relevant Regional Ecosystems present by the end of year 15. e. An increase in Koala density above in average Koala density by the end of year 15. f. An average of at least 6 different winter or spring flowering Grey-headed Flying-fox foraging species present in each assessment plot by the end of year 15.

4. Monitoring Actions

The following program describes the monitoring activities that will occur within the offset areas. The monitoring approach has been developed to assess success of the management actions to achieve performance criteria outlined within **Section 3** and ultimately satisfy the conditions of Approval (EPBC2017/8090). Management actions have been developed to enhance the overall biodiversity and habitat values of the offset area, compensating for the potential impacts associated with the action.

The monitoring actions directly relate to determining whether the performance criteria and approval conditions have been achieved or is on target to be achieved within the management period. As such, the monitoring actions will need to determine the following:

1. The offset areas are not being used for incompatible land uses;
2. Relative abundance of Non-native predators has decreased and no injury or deaths from Non-native predators recorded.
3. Presence of weeds has decreased from the baseline surveys;
4. Rehabilitation and regeneration actions have been implemented and Koala habitat and GHFF foraging habitat quality has increased; and
5. Increased density of Koala and presence of GHFF.

The following survey methodologies have been developed to measure the effectiveness of the management actions for enhancing habitat quality and achieving the performance criteria and therefore approval conditions.

4.1. Survey Methodologies

Detailed baseline survey methodology and results are to be provided within the Baseline Survey Report in **Appendix B**. However, baseline surveys will include:

- Koala density survey;
    - Diurnal meander search of individuals,
    - Spotlighting, and
    - Regularised grid-based spot assessment technique (RGB-SAT).
- GHFF presence survey;
    - Diurnal meanders search for roosts, and winter & spring flowering species,
    - Evening search – fly in/out events, and
    - Spotlighting of potential foraging vegetation (identified during diurnal meanders).
- Koala Habitat and GHFF foraging habitat surveys;

  - MHQA determines habitat quality score specific to each species. The survey also targets Koala food trees and GHFF foraging trees (stem count). This technique also captures weed coverage data.
  - Photo point monitoring.
- Weed extent survey;
  - Diurnal meander recording infestations and extent. Extent to be recorded with poly-line,
  - Photo point monitoring,
  - MHQA component (i.e., weed cover %), and
  - Targeted weed transect assessments.
- Pest survey;
  - Motion sensor camera survey resulting in relative abundance index,
  - Non-native Koala predator observations (direct observation, print, scats, etc.),
  - Control technique statistics (i.e., ground baiting with 1080, shooting to euthanise trapped dogs / fox / cats, ground shooting), and
  - Injury or mortality records from non-native predators

The survey methodologies outlined above have been selected as they are scientifically robust and repeatable.

The MHQA methodology has been selected for collecting the data required by a number of performance indicators. This technique gathers information specific to each matter (i.e., Koala food trees, GHFF foraging trees and weed coverage (%)), while providing an overall habitat quality for the protected matters. As these surveys are conducted in a unit area the results can be extrapolated over the entirety of the offset site, allowing results to be compared with the performance criteria, indicating whether outcomes have been achieved or if corrective actions have been triggered.

Baseline surveys were conducted April-May 2021 across Burnett Creek and Lyons. Future milestone surveys are to be conducted within the same baseline survey month(s).

Limitations exist with the Koala density surveys and GHFF presence surveys. Due to the cryptic nature of these species they may go undetected. To compensate for these limitations other surveys including spotlighting, RGD-SAT and habitat assessments have been suggested. Survey methodology limitations are discussed further within the subsequent Baseline Survey Results report.

4.2. Monitoring Action 1- Legally Secure Offset Area

The offset sites were secured through a VDEC under the VMA on 11 and 15 March 2011 and 29 July 2021. The Department was notified on 1 April 2019 that the offset site had been secured for impacts on the Koala and GHFF. As such, monitoring requirements for this management action are considered complete. However, to

ensure incompatible land uses do not occur within the offset areas regular inspections will be required. This requirement will form part of monitoring for other management actions in which site inspections and surveys are required.

4.3. Monitoring Action 2 – Pest Management Plan

Non-native predator management and monitoring will be undertaken in accordance with the *Biosecurity (Consequential Amendments and Transitional Provisions) Act 2015* (Cwlth) and the *Biosecurity Act 2014* (Qld), which generally will require all reasonable and practical steps to prevent or minimise biosecurity risks; minimise the likelihood of causing a 'biosecurity event'; and the limitation of consequences if such an event is caused. The control of non-native predators will be undertaken using legal methods, by suitably qualified pest management contractor(s). Non-native predator control is to be undertaken in a humane manner, and in accordance within **Section 2.3**.

The following non-native predator monitoring methodology will be implemented:

- Desktop Assessment
    - previous survey mapping, field datasheets, photos and notes.
- Field Survey
    - Grid-based motion detection camera deployment for minimum of 22 nights in same locations annually until 5 year milestone or performance criteria is achieved. Motion detection camera locations are to be recorded with hand-held GPS. GPS coordinates and photos to be recorded.
    - Field datasheet will detail the time of year of the monitoring event, record observed scats or tracks, photo location and notes of any evidence of positive and/or negative changes in non-native predator occurrence.
    - GPSs 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, as discussed in **Section 2.3**, will be implemented on completion of the monitoring program.

Monitoring will be reported and outcomes of that monitoring included in the ACR. This will provide detail on detected predators, 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.

4.4. Monitoring Action 3 – WONS monitoring

The methodology for non-native plant survey is to be repeated in accordance with the monitoring and reporting schedule in **Section 5**. Surveys include the search and recording of infestations, MHQA and targeted transects. The following procedures will be implemented to ensure that the monitoring events align with the baseline survey methodology:

- Desktop Assessment
    - previous survey mapping, field datasheets, photos and notes.
    - Weed and bush regeneration records for the last year.
- Field Survey
    - Use a field datasheet (MHQA & targeted transect) to record date and time of monitoring event,
    - Inspect previously identified infestations to record extent,
    - Record non-native flora species list,
    - provide photo monitoring with photo location and direction, and
    - notes of any notable positive and/or negative changes in weed density and coverage.

4.5. Monitoring Action 4 – Bushfire 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.

Any specific actions as directed by the local authority or recommended through consultation with the Queensland Rural Fire Brigade are to be recorded and reported to the project environmental consultant. Annual monitoring is to be undertaken to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock. Notes of any evidence of positive and/or negative changes is to be recorded.

This management action aims to reduce the risk of wildfire to the Koala and GHFF, via direct mortality and indirect impact on habitat and food trees.

4.6. Monitoring Action 5 - Regeneration monitoring

To monitor management action 5, MHQA are to be conducted at 5 year intervals. Performance criteria is to be achieved and maintained for the duration of the management period. Photo point monitoring and GPS locational and extent survey will be utilised. The coordinates of the initial photo monitoring will be recorded using the handheld GPS which will assist to locate the monitoring point when undertaking subsequent

monitoring. Photo point monitoring is to be undertaken annually at the same time of the year, post the rehabilitation works. If natural regeneration should fail, infill planting is to be implemented. Following infill planting, monitoring will commence in the manner outlined in **Section 2.6**.

4.6.1 Photo monitoring

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.

4.6.2 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.

4.6.3 Habitat quality

Additionally, the MHQA for Koala habitat and GHFF foraging habitat assessment will be conducted at 5 year intervals. Performance criteria is to be achieved and maintained for the duration of the management period.

4.6.4 Koala Density and GHFF Presence surveys

Direct and indirect surveys to detect Koala density and GHFF presence surveys will be repeated throughout the management period (refer **Table 21**).

4.6.5 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.

4.7. Reporting Requirements

In accordance with EPBC Approval (EPBC 2017/8090), an Annual Compliance Report will be prepared and published on the project website. The report will address the compliance with each of the conditions of approval, including any incident reports of undesirable impacts upon Koalas (including Koala habitat), and any monitoring and management milestones achieved during the previous 12 months, including progress on key management measures, attainment of performance targets and completion criteria, and adaptive implementation outcomes. The compliance report will also address the effectiveness of the management measures and how the site is progressing against performance and completion criteria.

Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of the approval will be provided to DAWE at the time of publishing the compliance report.

Further, Condition 13 requires 'For each of the Burnett Creek Offset site and Lyons Offset site, the approval holder must engage a Suitably qualified independent expert to undertake an assessment at the end of each of year 5, year 10, year 15, and year 20 as to whether each outcome required under conditions 9, 10 and 11 has been, or is likely to be, achieved in accordance with the condition requirements, 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 published within 3 months of the end of the particular period in which the assessment is undertaken and be provided to the Department within 5 business days of being published.'

5. Monitoring and Reporting Schedule

The timing and frequency of monitoring and reporting actions, and responsibilities for the offset area will be undertaken in accordance with **Table 22**.

Table 21: Timeline for monitoring actions

Management Action	Monitoring action(s)	Corrective Action Trigger	Corrective Action	Reporting Action	Responsible person(s) for activity/reporting
1. Legally secure offset sites	The offset sites were secured through a Voluntary Declaration under the *Vegetation Management Act 1999* (Qld) on 20 March 2018.	Not applicable.	Not applicable.	The Department was notified on 24 March 2021 that the offset site had been secured. Evidence in the form of the shape files and confirmation of declaration from the Queensland Department of Resources was provided with the notification.	Suitably qualified environmental consultant.
2. Pest Management	Monitoring is to occur annually until the 5 year milestone or performance criteria is achieved, after which monitoring will occur at 10, 15 and 20 year milestones via motion detection camera deployment and sightings (direct and indirect), with evidence of non-native predators GPS recorded. Baseline surveys were conducted in April – May 2021 across both offset sites. Future milestone surveys are to be conducted within the same baseline survey month(s).	a. Monitoring actions identify year 5 milestone is not achieved; – Burnett Creek = <1 – Lyons = <1 b. Monitoring actions detect increase in non-native predator detection from previous survey or relative to the baseline. The reduction in the number of non-native Koala predators, relative to the baseline results over both sites, has not been maintained from the time that it is first achieved, for the remainder of the period of effect of the approval (30 June 2045).	Implement supplementary control measures, increase frequency of control events or other management actions must be implemented as recommended by pest control expert within 6 months of a monitoring event where non-native predator detection has not decreased from baseline (refer **Section 1.2** for baseline survey results and key milestones). Where there is evidence of non-native predator activity trapping or baiting program by a suitably qualified contractor will be conducted within 6 months of detection. 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 is not achieved by the timeframes outlined in the approval conditions (refer **Section 1.2**), the corrective actions will continue until achieved, extending the management period.	Offset Area Assessment Reports to be conducted annually and progress summary to be included within the Annual Compliance Report.	Suitably qualified pest management contractor and environmental consultant as directed by offset area manager.
3. WONS Management	Targeted weed and MHQA transects to be conducted at 5 year intervals (baseline, 5, 10, 15 and 20 year milestones).	a. Weed cover has increased or remained constant, relative to the previous monitoring event. b. The extent of weed cover has not been reduced to	Weed control program to be expanded/adapted to improve outcomes within 6 months following a monitoring event where the weed extent has not decreased from baseline (refer **Section 1.2** for baseline results and key milestones).	Offset Area Assessment Reports to be conducted annually and progress summary to be included within the Annual Compliance Report.	Suitably qualified weed management contractor and environmental consultant as directed by offset area manager.

Management Action	Monitoring action(s)	Corrective Action Trigger	Corrective Action	Reporting Action	Responsible person(s) for activity/reporting
	Baseline surveys were conducted in April-May 2021. Future milestone surveys are to be conducted within the same baseline survey month(s). Photo monitoring and weed infestation mapping to occur annually until year 10 milestone or performance criteria is achieved. Once performance criteria is achieved photo monitoring and weed infestation mapping is to occur at 5 year intervals to ensure levels are maintained throughout the management period. Photo monitoring coordinates are to be recorded and occur in the same location each survey period. 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 (refer to **Appendix B**, the Baseline Survey Report**, Section 2** for survey timing).	less than 20% of baseline survey results by the end of year 5; – Burnett Creek = >1.2% – Lyons = >6.8% c. The extent of weed cover has not been reduced to less than 5% of baseline survey results by the end of year 10; – Burnett Creek = >0.3% – Lyons = >1.7% d. The extent of weed cover has not been maintained at 5% of the baseline by year 20.	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 is not achieved by the timeframes outlined in the approval conditions (refer **Section 1.2**), the corrective actions will continue until achieved, extending the management period.		
4. Bushfire Management	Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management.	a. Unexpected bushfire event and resurgence of weeds/decrease Koala habitat and GHFF foraging 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 (Scenic Rim Regional Council) which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads within 6 months or as soon as appropriate (i.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 or natural events.	Any bushfire management actions undertaken under the direction of the local authority or recommended in consultation with the Queensland Rural Fire Brigade are to be reported to the projects environmental consultant. Offset Area Assessment Reports to be conducted annually and progress summary to be included within the Annual Compliance Report.	Suitably qualified bushfire management contractor and environmental consultant as directed by the offset area manager.

Management Action	Monitoring action(s)	Corrective Action Trigger	Corrective Action	Reporting Action	Responsible person(s) for activity/reporting
5. Rehabilitation and generation	MHQA transects to be conducted at 5 year intervals (baseline, 5, 10, 15 and 20 year milestones). Baseline surveys were conducted in April-May 2021. Future milestone surveys are to be conducted within the same baseline survey month(s). Photo monitoring to occur annually. Photo monitoring coordinates are to be recorded and occur in the same location each survey period (refer to **Appendix B**). **Assisted Natural Regeneration** Natural regeneration areas within the offset sites will be monitored annually via photo monitoring and at 5 year intervals through MHQA transects. **Infill Planting (if required)** 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. The success and survival rate of plantings will be audited every two years until year 5 milestone after commencement of reconstruction works. If establishment is confirmed after 5 years monitoring will be carried out at 10, 15 and 20- year milestones to ensure performance criteria is achieved within the management period. **Improve Koala Habitat and GHFF Foraging Habitat** Habitat quality is to be monitored through MHQA transects for the Koala and GHFF and Koala Density and GHFF presence surveys. Monitoring is to be undertaken at 5 year intervals, at 5, 10, 15 and 20-year milestones, to determine if the target quality score has achieved the required 1 and 2-point gains (refer **Table 5**) and increase relative density of Koalas and usage of the sites by GHFF which are to be maintained for the management period. Opportunistic observations of Koala and GHFF to be reported throughout the management period.	Should MHQA surveys and photo monitoring indicate that natural regeneration is less than the performance criteria after a sufficient rest period implement corrective actions. If audits and MHQA surveys indicate that the rate of plant stock failure is greater than 10% or Koala and GHFF habitat does not achieve performance criteria (refer to **Section 3**) 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. The success and survival rate of plantings will be audited every two years until year 5 milestone after commencement of reconstruction works. Monitoring will occur regularly after planting in accordance with watering schedules (dependent on rainfall) of infill planting and supplementary direct seeding, planting, weed control, fertilizer, amelioration or other management actions will be implemented as required to enhance success rate and stimulate tree growth and establishment. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events. If key milestones and performance criteria is not achieved by the timeframes outlined in the approval conditions (refer **Section 1.2**), the corrective actions will continue until achieved, extending the management period.	Offset Area Assessment Reports to be conducted annually and progress summary to be included within the Annual Compliance Report.	Suitably qualified bush regeneration contractor is to report the following to the Proponent and project environmental consultant: • Planting/seedling events, • Watering schedule, • Implemented corrective actions, and • Success/failure rates within initial maintenance period/watering period. Environmental consultant is responsible for the following: • Audits of reconstruction/ planting works, • MHQA surveys, • Koala density & GHFF presence surveys, and • Preparation of Annual Compliance Report.

6. Adaptive Management

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

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

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

6.1. Limitations

Although an adaptive management plan will be implemented across the offset sites for the duration of the offset monitoring, there remains a number of potential limitations that may arise. These include the following:

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

The implementation of adaptive management will ensure that a number of limitations listed are avoided and/or the subsequent impacts are mitigated where possible. The promotion of suitable habitat on-site for the Koala through implementing rehabilitation and regeneration management plans and non-native predator management plans, along with the continuous monitoring of population size, will assist in Koala utilisation of the site. Further, the annual review of this Offset Management Framework, inclusive of the management plans 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 conditioned ACR as part of EPBC Approval (EPBC 2017/8090).

Limitations associated with the Baseline Surveys have been discussed within the Baseline Survey Results Reports. However, to ensure progress towards performance criteria is assessed correctly the baseline surveys have been developed to be repeatable and gather the data required for comparison against the performance 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 sites.

7. Reference List

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Rhodes, J. R., Beyer, H. L., Preece, H.J. and McAlpine, C.A. 2015. South East Queensland Koala Population Modelling Study. UniQuest, Brisbane, Australia.

Threatened Species Scientific Committee, (2010) 'Approved Conservation Advice for *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designatable Unit) (Conservation Advice)'.

WoolProducers Association (2014) 'National Wild Dog Action Plan: Promoting and supporting community-driven action for landscape scale wild dog management'.

8. Appendices

Appendix A

Risk Assessment

Appendix B

Baseline Survey Report

Appendix C

Preliminary Documentation Submission- Offsets Chapter

Appendix A

Risk Assessment

Risk assessment for offset sites

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the offset sites is presented in the table belowError! Reference source not found.. 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 OMPs 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, **SHG/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 sites, 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 site locations, 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 site Legislative reform prejudices proposed tenure arrangements for offset properties.	Management action 1: • Legally secure the offset area by way of voluntary declaration under the *Vegetation Management Act 1999*.	R	Mod	Low	Action cannot commence without legally securing offset sites.	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 Koala injury/mortality resulting

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		
							from introduced predator attack will initiate supplementary monitoring and control measures. In the event that a Koala is found injured, transport immediately to a local vet, or suitably qualified and experienced wildlife carer.
WONS Management	Failure to control weeds	Management Action 3: • Develop and implement a weed strategy, with a particular focus on weeds listed with particularly ability to impact on Koala movement and structural vegetation composition (predominantly *Lantana camara*), and under the *Biosecurity*	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	If weed survey indicates weed cover is not reduced since previous survey, weed control program to be expanded/ adapted to improve outcomes.

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		
		Act 2014, to reduce weed cover to target thresholds. • Undertake weed management in accordance with **section 2.4.**				5 yearly habitat monitoring data as part of the framework.	
High intensity fire	A high intensity uncontrolled fire occurs within the offset site/s which causes loss of Koala and GHFF habitat	Management Action 4: Actions as directed by the local authority (Scenic Rim Regional Council and Logan City Council) which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.	P	M	Med	Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock.	If a wildfire occurs in the offset sites, the following actions will be undertaken: • Implement fire control • Repair any fire breaks and access tracks. • Stay informed through the Rural Fire Service. • 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

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		
							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 Koala habitat and GHFF foraging habitat	Landowner-approval holder agreements fail to adequately address management commitments in the offset plan	Management Action 1-5: • The offset sites have been legally secured for conservation purposes. The development of this framework outlines specific management actions to achieve performance criteria.	U	Mod	Low	Scheduled monitoring/surveys and Annual Compliance Reports	• Review Offset Management Framework • Implement adaptive management and corrective actions
	The offset sites fail to naturally regenerate	Management Action 3: • Remove incompatible land uses	U	Mod	Low	After a sufficient rest period the repeat MHQA will indicate progress towards performance criteria.	• infill planting/ revegetation to be implemented after sufficient rest period.

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
		• WONS management (refer Management Action 3) • Sufficient rest period					
	Failure to increase Koala food trees and GHFF foraging species	Management Action 1: • legally secure offset sites and remove incompatible land uses Management Action 3: • Reduce the extent of weed cover to less than 20% of baseline survey results by the end of year 5; and • less than 5% of baseline survey results by the end of year 10. • 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 Koala and GHFF 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 (refer **Section 2.6**).				Annual plant stock audit (first 5 years). Planting and monitoring event schedules by the qualified bush regenerator.	If there is a high rate of plant stock failure adaptive management and corrective actions will be implemented and may include, additional supplementary planting, direct seeding, weed control, fertiliser, water spike, mulching, tree guards, etc.
Increase Koala and GHFF density	Failure to measure an increase in species stocking rates and offset site usage	Management Actions 1-5: • Legally secure and remove other land uses • Implement WONS management • Encourage natural regeneration • Undertake bushfire management • Undertake pest management	P	Mod	Med	Undertake Koala density/ occurrence surveys using SAT methodology (Phillips and Callaghan 2011) within the offset area. Undertake SAT surveys at 5 yearly intervals. Undertake GHFF presence surveys and targeted foraging flora species at 5 year intervals.	If surveys indicate a decrease in baseline results then an assessment needs to be undertaken by an expert in relation to the potential causes and remediation actions where possible through adaptive 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		
						Record opportunistic sightings inclusive of scat findings (location and date).	

Appendix B

Baseline Survey Reports

Baseline Survey Report

EPBC 2017/8090

Burnett Creek Offset Site

Prepared for EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd

27 July 2021

Job No. 9694

Document Control

Document: Offset Site Baseline Surveys for Burnett Creek under EPBC 2017/8090 prepared by Saunders Havill Group for EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd.

Document Issue

Issue	Date	Prepared By	Checked By
A	27/07/2021	LT	AR

Prepared by

ABN 24 144 972 949
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Reports and plans by others may be included in this document.

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Abbreviations and Acronyms

AU	Assessment Unit
DAM	Declared Area Map
DAWE	Department of Agriculture, Water and the Environment
DES	Department of Environment and Science (Qld)
DoR	Department of Resources (Qld) (formerly DNRME, Department of Natural Resources, Mines and Energy)
EDQ	Economic Development Queensland (Qld)
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
GHFF	Grey-headed Flying-fox *(Pteropus poliocephalus)*
NCA	*Nature Conservation Act 1992* (Qld)
NCPR	Nature Conservation (Plants) Regulation 2020
OMU	Operational Management Unit
PDA	Priority Development Area (herein referencing the Greater Flagstone Priority Development Area)
PMAV	Property Map of Assessable Vegetation
RAI	Relative Abundance Index
RE	Regional Ecosystem
SEQ	South-east Queensland
SHG	Sunders Havill Group
VMA	*Vegetation Management Act 1992* (Qld)
WONS	Weeds of National Significance

Terminology

Burnett Creek property means entire Lot 100 on WD682.

Burnett Creek offset site means part of Lot 100 on WD682 covering an area of 150.497 ha which has been legally secured to compensate for impacts associated with approved development EPBC2017/8090.

1. Introduction

The *Environmental Management Division* of Saunders Havill Group (SHG) was engaged by EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd (the Proponent) to prepare a Baseline Survey Report for the Burnett Creek offset site associated with the impact for the approved 'Park Ridge Residential Development' located at Clarke Road, Park Ridge (EPBC Act reference 2017/8090). The approval pertains to the construction of a residential development comprising of industrial, mixed use and residential development covering 116.35 hectare (ha) incorporating a 12.96 ha area for environmental management and conservation.

The Park Ridge Residential Development was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC 2017/8090) on the 19th March 2017. The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*) and the Grey-headed Flying-fox (GHFF) (*Pteropus poliocephalus*), which are both listed as 'vulnerable' under the EPBC Act.

As part of the Preliminary Documentation requirements, a proposal was developed to compensate for the impacts from clearing of up to 89.93 ha and functional loss of 28.01 ha of Koala habitat and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC Act Approval for 2017/8090. The offset includes the dedication and rehabilitation of a total of 401.7 ha of land across two (2) offset sites referred to as the Burnett Creek Offset Site and Lyons Offset site. This report documents the baseline survey results for the Burnett Creek Offset Site. The baseline survey results for the Lyons Offset Site will be contained within a separate report. Additionally, the proposed management and rehabilitation actions required across both offset sites to achieve the offset are provided within a subsequent Offset Management Plan.

The project was approved under the EPBC Act subject to conditions on 23 November 2020 with effect until 30 June 2045. Condition 6 of the approval requires that the approval holder must complete and provide the Department with the results and dates of the following surveys:

a. The vegetation condition attributes for each Regional Ecosystem (RE), specifying the baseline habitat quality assessment data for each operation management unit (OMU);
b. The number and condition of winter or spring flowering GHFF foraging species across the offset site;
c. The species stocking rate for the Koala and GHFF;
d. The extent of weed cover;
e. The number of non-native predators in each season, including in areas adjacent to the offset site;
f. The number of Koala mortalities attributable to non-native predators; and
g. The baseline conditions in respect of each of the outcomes specified in conditions 9-11.

The surveys must be conducted by a suitably qualified person, consistent with the Department's approved survey guidelines and designed to provide results that are representative of the entire areas of the Burnett Creek offset site.

This report has been prepared to satisfy the requirements of the conditions of approval accompanying the controlled action determination.

1.1. Offset site summary

Two (2) offset sites were secured to deliver the offset required under the EPBC Act approval:

- Burnett Creek; and
- Lyons.

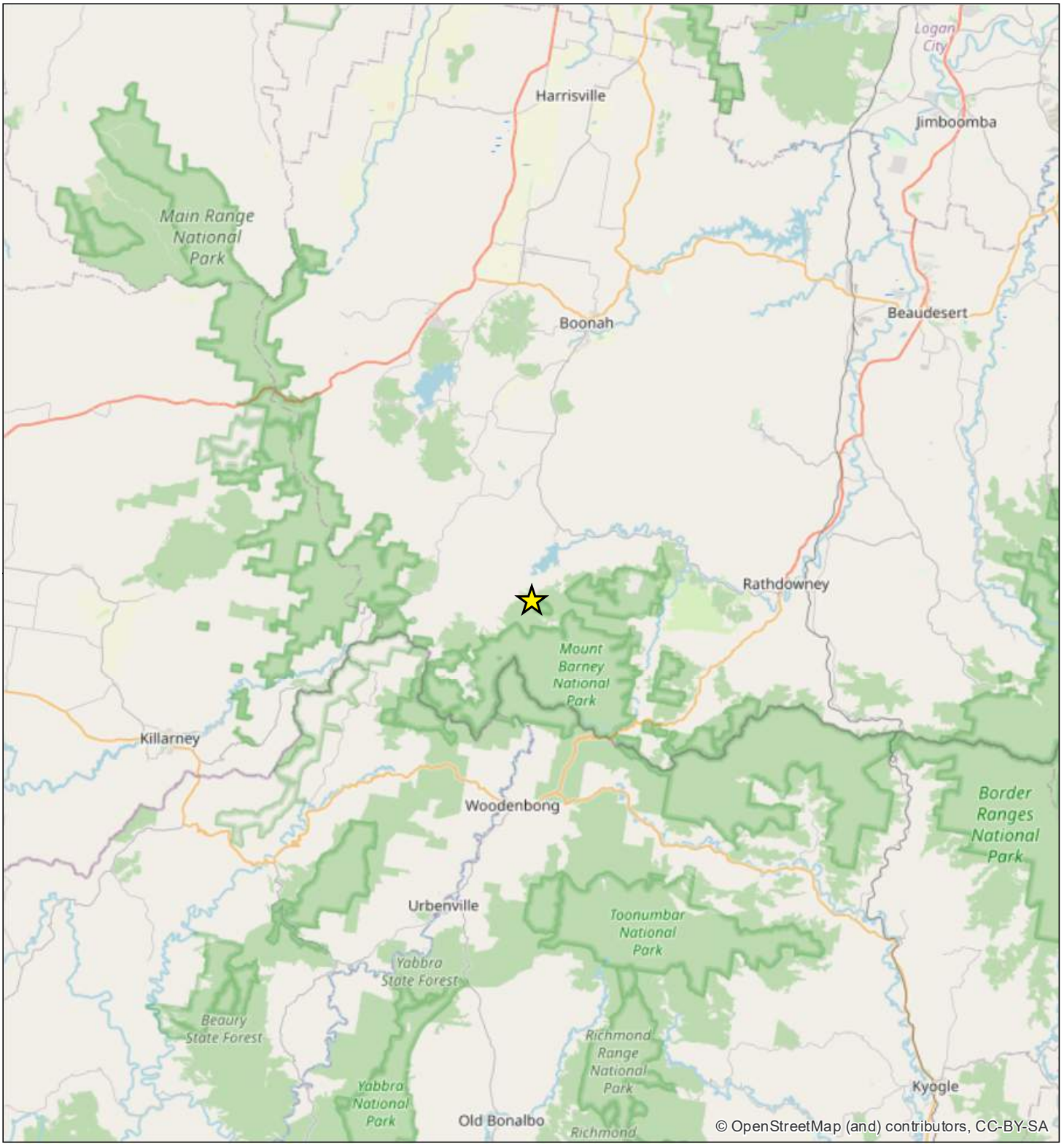
In accordance with Condition 5(a) of the EPBC Act approval conditions the approval holder must legally secure at least 151.3 ha of land at the Burnett Creek Offset Site and at least 250.4 ha of land at the Lyons Offset Site. During the Voluntary Declaration process to legally secure the offset sites under the Queensland *Vegetation Management Act 1999*, only 150.497 ha of suitable land was available at the Burnett Creek Offset Site. This shortfall was remedied through increasing the land secured across the Lyons Offset Site. This matter is discussed further in the subsequent Offset Management Plan

The Burnett Creek site is also located in the Scenic Rim Regional LGA, 46 kilometres (km) south of the Natural Bridge and approximately 6 km from the Queensland-New South Wales state border. The Offset Site is zoned rural and located within the boundary of the Flinders Karawatha Corridor and South East Queensland Regional Plan — Regional Biodiversity Corridor. Key details relating to the Burnett Creek offset site are located in Error! Reference source not found..

Table 1: Burnett Creek offset site summary

Address	Burnett Creek Road, Burnett Creek
Lot / Plan	Part Lot 100 on WD682
Property Area	200.747 ha
Offset Area	150.497 ha
Tenure	Freehold
Local government area	Scenic Rim Regional Council
Date legally secured	11 March 2021

Although only part of Lot 100 on WD682 (Burnett Creek property) has been secured for the offset associated with EPBC 2017/8090, the entire property is to be managed for conservation. Management actions will therefore be performed over the entire site. As such, surveys have been extended to the entire Burnett Creek property.



Legend

☆ Offset site location

Figure 2

Site Context - Burnett Creek

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

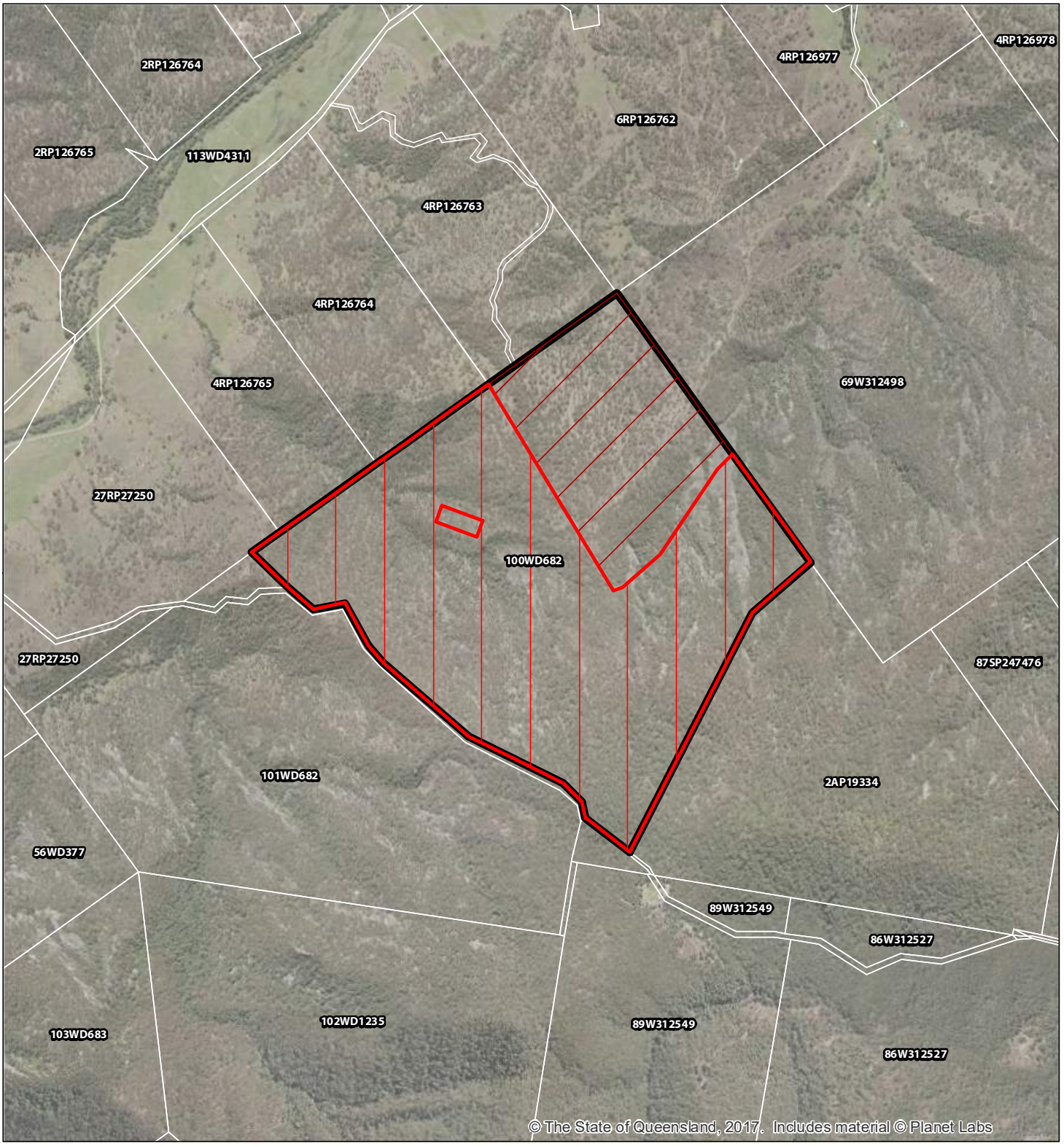
File ref. 9694 E Figure 1 BL2021 Site Context BC B
Date *27/07/2021*
Project *Burnett Creek Road, Burnett Creek*

0 1 2 4 6 8 10 12 14 16 *km*

N

Scale (A4): 1:500,000 [GDA 1994 MGA Z56]

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021.



Legend

- Offset site DCDB
- Existing legally secured offset area (2019/000446)
- Offset area (150.497 ha)
- Qld DCDB

Figure 2

Site Aerial - Burnett Creek

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

File ref. 9694 E Figure 2 BL2021 Site Aerial BC B
Date *27/07/2021*
Project *Burnett Creek Road, Burnett Creek*

0 100 200 400 600 800 *m*

N

Scale (A4): 1:20,000 [GDA 1994 MGA Z56]

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021

2. Baseline survey methodology

These surveys have been conducted by the Saunders Havill Group, and suitably qualified personnel consistent with the Department's approved survey guidelines, and designed to provide results that are representative of the entire Burnett Creek offset site.

Condition 6 states that within 6 months of the date of the approval, the approval holder must complete baseline surveys of the Burnett Creek Offset Site including the following surveys:

a. vegetation condition attributes for each Regional Ecosystem (RE), specifying the baseline habitat quality assessment data for each operation management unit (OMU);
b. number and condition of winter or spring flowering GHFF foraging species across the offset site;
c. species stocking rate for the Koala and GHFF;
d. extent of weed cover;
e. number of non-native predators in each season, including in areas adjacent to the offset site;
f. number of Koala mortalities attributable to non-native predators; and
g. baseline conditions in respect of each of the outcomes specified in conditions 9-11.

The methodology of each survey detailed within the following sections incorporates the required baseline surveys outlined above. A summary of the surveys conducted is provided within **Table 2**.

Table 2: Survey Methodology Summary

Condition	Methodology	Burnett Creek
6 (a)	Modified Habitat Quality Assessment (MHQA)	3 June 2019 & 28 February 2020
6 (b)	MHQA-Stem Density	3 June 2019 & 28 February 2020 6, 7, 13 & 27 May 2021
6 (c)	Koala - Regularised grid-based Spot Assessment Technique (RGB-SAT)	6, 7, 13 & 27 May 2021
	GHFF – MHQA-Stem Density	3 June 2019 & 28 February 2020
6 (d)	Random diurnal meander recording extent, MHQA and targeted non-native plant transect assessments	6, 7, 13 & 27 May 2021 3 June 2019 & 28 February 2020
6 (e) & (f)	Motion Sensor Camera survey	8 April to 13 May 2021

Condition	Methodology	Burnett Creek
6 (g)	MHQA	3 June 2019 & 28 February 2020

Table 3: Surveyor Details

Name	Position	Qualifications	Survey Date
Andrew Ridley	Senior Environmental Scientist	Bachelor of Science	6, 7, 13 & 27 May 2021
David Havill	Senior Ecologist	Bachelor of Applied Science (Natural Systems and Wildlife Management) Diploma of Arboriculture	3 June 2019 & 28 February 2020 8 & 9 April 2021
Amy Westman	Ecologist	Bachelor of Science (Zoology)	6, 13 & 27 May 2021
Liam Brzezinski	Ecologist	Bachelor of Environmental Management (Natural Systems and Wildlife)	8 & 9 April 2021
Laura Thorley	Environmental Scientist	Bachelor of Environmental Management (Natural Systems and Wildlife)	7 May 2021

As demonstrated within **Table 3**, all surveys were conducted by a suitably qualified person with professional qualifications and experience related to the nominated subject matter, ensuring an independent assessment and analysis in accordance with relevant standards and methodologies.

2.1. Offset Site Assessment Units

The Burnett Creek Offset site were separated into assessment units (AU) for the baseline surveys. Vegetation was categorised according to status, remnant and non-remnant. Within each of these categories each Regional Ecosystem (RE) (remnant or pre-clear) is a separate AU. The Burnett Creek offset site was separated into AUs to ensure each habitat type was assessed to provide results that are representative of the entire offset site.

The Burnett Creek offset site consists of three (3) AUs, one (1) within each different RE (refer **Table 4**).

Table 4: Assessment Units – Burnett Creek

Assessment Unit	VMA Status	Regional Ecosystem	Area (ha)
AU1	Category B (remnant)	RE12.8.20	59.99 ha
AU2	Category B (remnant)	RE12.9-10.2	70.42

Assessment Unit	VMA Status	Regional Ecosystem	Area (ha)
AU3	Category B (remnant)	RE12.11.3	20.89

Further, a 350m grid was applied over the Burnett Creek property to stratify sampling, reducing bias and increasing repeatability of SAT and camera trap surveys. As discussed within **Section 1.1**, surveys have been extended to the entire Burnett Creek property as the entire property is to be managed for conservation. Thus, the 350m grid was applied over the entire Burnett Creek property.

Grid cells were separated by 350m for monitoring across the Burnett Creek property after a literature review of home ranges for targeted species, being Koala (SAT), cat, dog and foxes (non-native koala predators). Home ranges for Koalas vary depending on gender and, availability and quality of habitat. Thus, home ranges increase in size with limited habitat and food resources. Home ranges have been estimated between 10 - 135 ha depending on these factors.

In South East Queensland (SEQ), the average distance between natal and breeding home ranges was similar for males and females, at approximately 3.5 km (Dique *et al.* 2003b). Maximum dispersal distances were up to about 10 km for males and females (Dique *et al.* 2003b). Other studies have reported moves of just over and 16 km in rural south-east Queensland (White 1999).

Feral cat and dog home ranges are usually much larger as they are highly mobile. McGregor *et al.* 2015 found that home ranges for feral cats ranged from 397 ha for females to 855 ha for males. The *NSW Wild Dog Management Strategy 2017-2021* (NSW DPI 2017) cat home ranges vary from 160-2060 ha or larger. As such, a 700m grid cell separation is recommended for feral dog monitoring.

The application of 350m grid cells for SAT and Camera trap locations were determined appropriate for the Burnett Creek property based on the home ranges of target animals and property size.

2.2. Diurnal Searches

Diurnal searches for direct observations of fauna or signs of fauna activity and potentially suitable habitat resources are an important component of fauna surveys. Searches were conducted for direct observations of fauna or signs of fauna activity and potential habitat resources were conducted simultaneously with all other surveys conducted throughout the surveying period and across the Burnett Creek Offset site (detailed in following sections). As such, these surveys were conducted between the 6 and 27 May 2021.

As discussed within **Section 2.1**, the offset site was separated into quadrants in representative habitats to ensure that each offset site was systematically searched. The results of these surveys are therefore considered an accurate representation of the entire offset site. The use of quadrants and assessment units ensures the effort can be repeated over time for comparisons. Importantly, these searches targeted direct observations of

koalas, koala scat, koala food trees, GHFF roost sites and GHFF foraging species. Where identified significant habitat resources or signs of fauna activity were located using a GPS.

As noted within the *Survey Guidelines for Australia's threatened manmmals* (Department of Sustainability, Environment, Water, Pollution and Communities, 2011), the time taken to effectively search a subject site varies considerably according to the size and nature of the area. For large sites and remote areas, such as the Burnett Creek offset site, constraints required the identification of potential habitat resources through ground-truthing after reviewing vegetation maps, aerial photographs and imagery. The size and topography of the offset site contributed to time constraints limiting the search area. This limitation was reduced with the use of AUs and the RGB approach, ensuring results are representative of the entire area.

2.3. Modified Habitat Quality Assessment

This survey method addresses Condition 6(a)-(d) and (g) compiling details including;

- The vegetation condition attributes for each RE;
- number and condition of winter or spring flowering GHFF foraging species across the offset site;
- species stocking rate for the Koala and GHFF;
- extent of weed cover; and
- baseline conditions in respect of each of the outcomes specified in conditions 9-11.

These values were incorporated into a larger habitat assessment using a modified version of the Queensland State Governments "*Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy*" Version 1.2 April 2017. The purpose of this guideline is to provide a methodology for proponents to determine the habitat quality of a site under the Queensland Environmental Offsets framework. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to MNES.

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

The MHQA combines the three (3) core indicators into two (2) (site condition and site context) with each being equally weighted at 30 % of the final score. The balance of the weighting (40 %) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate has been added to the MHQA to better incorporate MNES, and for the purpose of this preliminary documentation, the vulnerable-listed Koala and GHFF MNES. The following section details the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

Site Condition (30 %)

Assessing site condition is an integral step in determining specific quantification of impacts, while also determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of habitat quality and has a direct

influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community, and is benchmarked against the expected range for a relatively undisturbed community.

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

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

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

Site Context (30 %)

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

- size of patch;
- connectedness;
- context;
- ecological corridors;

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

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

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

Species Stocking Rate (40 %)
The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. Species stocking rates are estimates of the Koala carrying capacity of the site at the time of undertaking the survey.

Baseline Koala activity levels were determined by utilising the SAT (*Phillips et al.* 2011). The SAT survey results indicated a 'low' Koala activity across both the impact and offset sites (refer **Section 2.3.1** for details). Utilising these Koala activity levels, and inferring the results with current available published scientific literature, an estimated Koala carrying capacity (stocking rate) was determined.

Table 5: Koala MQHA Stocking Rate Scoring

Species Stocking Rate (40%)			
SAT survey results	**Low (<22.52% (East Coast Med-High))**	**Medium (>22.52% but <32.84% (East Coast Med-High))**	**High (>32.84% (East Coast Med-High))**
	20	30	40

A 100 m X 20 m plot was used to gather the data required for the MHQA. Eight (8) plots were conducted across the Burnett Creek. Five (5) 1 m x 1 m quadrats, located 10 m apart and on alternate sides along the transect we performed within each plot. Each of the ground cover component was assessed so that the cover totals 100%. Although not all components are used in the scoring, assessment of all attributes improves the ability to estimate cover of the assessable attributes.

Photo Set 1: The 100m x 20m plot within offset site, centre line shown by measuring tape.

Photo Set 2: 1m x1m quadrants within transect.

2.3.1 Species Stocking Rate

Koalas are difficult to detect and occur at low densities in many parts of their range. The most appropriate survey method and design depends on the type of data that is desired (i.e. presence/absence, abundance, habitat preference, density, tree species preference) and the size/complexity of the site. Gathering more complex data (i.e. density) or surveying larger, more complex sites will generally require more time and resources. The benefits of more thorough surveys are a higher level of confidence in the assessment and more information on which to plan and make decisions (DoE, 2014).

The direct and indirect sampling techniques can be categorised into three different approaches;

- total counts;
- partial counts; and
- indices.

Total counts are direct visual observations where each individual is counted within a survey area. This technique is popular with large easy to detect and identifiable animals. It determines the total number of

individuals within the sampling site. This method is not always viable over large areas or where animals are hard to detect.

Partial counts using line transect with distance sampling or strip transects where individuals are counted within a predetermined distance of the transect. Distance sampling with line transects can be used to determine relative density/abundance of a population based on the recorded distance from the line to the animal and the angle at which the animal is from the observer.

Indices using animal signs such as scats, tracks or scratches are used to indicate presence/absence and activity within habitats. Animal signs can be sampled along line transects, strip transects or selection of specific habitat element. Munks *et al.* 1996 found that due to koala behaviour they require more effort to survey using visual observations. Sullivan *et al.* 2002 advocates for the use of faecal pellet counts for sampling as this method requires less effort. Indices have been included within the baseline koala surveys and discussed further in **Section 3.2**.

For actions with a large footprint, or landscape-scale impacts, baseline monitoring which evaluates koala abundance, movement and habitat preferences in the area proposed to be affected by the project are considered necessary. This may involve a combination of direct and indirect survey methods in the study area, particularly if there is limited desktop data available. These surveys will be important for the implementation of mitigation measures and offsets (DoE, 2014).

To satisfy the approval conditions, a baseline koala density survey is required to measure progress towards achieving the performance criteria as prescribed within the approval conditions (ref. EPBC 2017/8090). The Burnett Creek were both surveyed using direct methods, including;

- Diurnal Searches; and
- Opportunistic observations during other works (i.e. habitat transects, motion sensor camera traps, SAT, etc.).

Given Koalas are largely nocturnal and travel during the night, it is difficult to survey an animal as elusive and cryptic as the Koala, which has contributed to the lack of a standardised survey method (Phillips and Callaghan 2011). Visual observations through spotlighting is considered to be one of the most effective methods for detecting Koalas as the animal is more active and eyes reflect light.

Transects were conducted within appropriate habitats to detect fauna. Due to the remoteness of the Burnett Creek offset site, habitats were not able to be sampled on two separate nights. However, fauna signs such as tree scratches and faecal pellets identified during diurnal searches can be used as indicators of presence within a habitat and provide an estimate for abundance or density.

<u>Regularised Grid-Based Spot Assessment Technique</u>

As discussed above, indirect methods can be use to determine presence/absence of fauna. Indices using animal signs including scats, tracks and scratches can indicate species presence and habitat use. Koala activity levels and density were determined by utilising SAT. Surveys are undertaken in accordance with the methodology developed by Phillips and Callaghan (2011) and specified in the *EPBC Act Referral Guidelines for*

the Vulnerable Koala. The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage and is therefore uses indices to determine presence/absence.

The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats, or is known to be a food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed.

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

This approach results in an activity level; low, medium or high for the study area. Activity levels derived from SAT sites should only be interpreted in the context of location specific habitat use. Low activity levels can be associated with low density populations, density is usually affected by primary food tree availability (Phillip and Callaghan 2011; Phillips and Callaghan 2000; Phillips *et al.* 2000).

The RGB-SAT sampling is typically applied at a rate of 1:10-20ha at a landscape using intervals from 200-500m (Phillips and Hopkins 2007, Hopkins *et al* 20070, Biolink 2017; Biolink 2019). Utilising the RGB-SAT method reduces sampling biases and ensures the results provide a representative of the entire Burnett Creek offset site. The grid size was tailored to the offset site size and estimated density and therefore detectability of pellets. To ensure detection of results and accurate representation of each offset site a 350m grid was selected resulting in a minimum of eleven (11) at Burnett Creek property, nine (9) of which are located within the Burnett Creek offset site.

The Koala SAT survey methodology is considered an accurate technique when estimating low-density Koala populations (Mossaz 2010). Research by Rhodes *et al.* (2015) indicates that within the Ipswich region the Koala density is approximately 0.03 Koalas/ha. Rhodes *et al.* (2015) attribute the low population density to a negative relationship identified between temperature and Koala densities. Therefore, when estimating a Koala density in an area that is known to be 'low', the SAT survey methodology is considered to provide an accurate determination on the activity levels (Mossaz 2010).

Although the SAT survey methodology is considered an accurate technique when estimating low-density koala populations there is a number of limitations. The abundance and density of Koalas cannot be determined through this method. However, fixed amount of sampling gives fixed proportion of population and the value of index usually increases with population density.

Stable populations have higher rate of faecal pellet deposition (Lunney *et al.* 1998), leading to bias occupational rate where multiple SAT sites can be occupied by only the one animal (Phillips and Hopkins

2008). Home ranges can be large depending on sex of the animal and availability of preferred food trees (Phillip and Callaghan 2011).

The selection of SAT sites is also very important as they may be in places where there is either really high or low activity rates which can skew results. As such, the RGB-SAT approach was used to reduce bias and ensure the results were representative of the offset site. The size of the grids were tailored to each site for greater detection of results. However, Cristescu *et al.* 2012, found that detectability varied up to 16% between plots of different ground cover.

There are a number of benefits to this survey method, most importantly, it is a relatively fast and repeatable process which can be applied to large areas such as the offset areas. It is a passive method of sampling and does not require disturbance of the target species and is easy to repeat. This method establishes if the area is occupied by Koalas, their possible distribution within the area and identifies habitat quality through the tree preference and distribution data. As the SAT method is easy to repeat with reproducible results conducting a study over time will be able to determine possible changes in distribution over time and the reason for this change.

2.4. Grey-headed Flying-fox Foraging Habitat Assessment

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

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

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

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

Site Condition (40 %)

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

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

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

Assessment methodology of the above condition characteristics is outlined below:

- Vegetation condition – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment. Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- 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 6** for the benchmark scoring values for this condition characteristic.
- Flower scores (average) – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the flower score of the recorded canopy species. The individual score for each flowering GHFF foraging tree is then divided by the number of species recorded (GHFF foraging and non-GHFF foraging trees) to produce an average. The benchmark values for this condition characteristic have been derived from the findings published by Eby and Law (2008) (*Ranking the feeding habitat of Grey-headed flying foxes for conservation management*). Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- Timing of biological shortages – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the*

Grey-headed Flying-fox (DoEE 2017) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). It should be noted that this condition characteristic is weighted and 'food shortages' has been weighted heavier than the balance of the characteristics which are equal, as 'food shortages' is recognised as a major issue. Refer to **Table 6** for the benchmark scoring values for this condition characteristic.

- Quality of foraging habitat – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017). Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- 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 6** for the benchmark scoring values for this condition characteristic.

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 (i.e. eight (8) located across the Burnett Creek offset site).

Site Context (30 %)

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

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

Assessment methodology of the above context characteristics is outlined below:

- Size of patch – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. Refer to **Table 7** for the benchmark scoring values for this context characteristic.
- Connectedness – This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring (11/17 – 11/18)) 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 7** for the benchmark scoring values for this context characteristic.
- 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 20 km buffer of the site measured. This context characteristic is measured using GIS. Refer to **Table 7** for the benchmark scoring values for this context characteristic.
- 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 7** for the benchmark scoring values for this context characteristic.
- 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 7** for the benchmark scoring values for this context characteristic.
- 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 (11/17 – 11/18)) 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 (DoEE, Australian Government, 2019). Refer to **Table 7** for the benchmark scoring values for this context characteristic.

2.4.1 Species Stocking Rate

Species Stocking Rate (40 %)

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

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

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

The species stocking rate scoring was determined by analysing the *Technical Descriptions of Regional Ecosystems of Southeast Queensland* (Ryan 2019) and the stem density per hectare associated with the technical description of the regional ecosystem (refer **Table 8**).

As stated within the *Survey Guidelines for Australian Threatened Bats*, the GHFF occupies most areas in their distribution in highly irregular patterns, and therefore surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to conduct vegetation surveys to identify feeding habitat.

Table 6: GHFF FHA Site Condition (40%) Scoring Benchmarks

Score	Description
Vegetation Condition Scoring	
5	Category X / non-remnant
10	Category C / regrowth
20	Category B / remnant
Species Richness Scoring	
0	0 GHFF foraging species
5	1 – 3 GHFF foraging species
10	4 – 6 GHFF foraging species
20	> 6 GHFF foraging species
Flower Score (average) Scoring	
2	0.01 – 0.25
5	0.26 – 0.50
8	0.51 – 0.75
10	0.76 – 1.00
Timing of Biological Shortages Scoring	
5	Food shortages

Score	Description
3	Pregnancy and birthing
3	Lactation
3	Mating and conception
3	Migration paths
3	Fruit industries
Total (/20)	Combine total of above
Quality of Foraging Habitat (trees >0.65 wt p*r) Scoring	
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
Non-Native Plant Cover Scoring	
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 7: GHFF FHA Site Context (30%) Scoring Benchmarks

Score	Description
Size of Patch Scoring	
0	< 5 hectares
2	5 – 25 hectares
5	26 – 100 hectares
7	101 – 200 hectares
10	> 200 hectares
Connectedness Scoring	
0	< 1 active Grey-headed Flying-fox camp within a 20 km radius

Score	Description
3	1 – 3 active Grey-headed Flying-fox camp within a 20 km radius
6	4 – 6 active Grey-headed Flying-fox camp within a 20 km radius
10	> 6 active Grey-headed Flying-fox camp within a 20 km radius
Context Scoring	
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
Ecological Corridors Scoring	
0	Not within an ecological corridor
6	Sharing a common boundary with an ecological corridor
10	Within an ecological corridor
Threats to Species Scoring	
1	High level threat to the species
5	Moderate level threat to the species
10	Low level threat to the species
Role of Site Location to Species Overall Population in the State Scoring	
0	< 1 active level 3 Grey-headed Flying-fox camp within a 20 km radius
5	1 – 3 active level 3 Grey-headed Flying-fox camp within a 20 km radius
10	> 3 active level 3 Grey-headed Flying-fox camp within a 20 km radius

Table 8: Species Stocking Rate (40%) Scoring Benchmarks (RE12.9-10.2)

Score	Stem Density Results (T1 and T2)
1	0 – 200 stems per hectare
2	201 – 300 stems per hectare
4	301 – 400 stems per hectare
6	401 – 430 stems per hectare
8	431 – 460 stems per hectare
10	461 – 490 stems per hectare
8	491 – 520 stems per hectare
6	521 – 550 stems per hectare
4	551 – 600 stems per hectare
2	600 + stems per hectare

2.5. Weed Cover Survey

Together with the MHQA methodology outlined above, this survey method was utilised to address Condition 6(d) and determine the extent of weed cover across the offset site.

Where time and resources are limited estimating plant populations should be simplified through sampling of random or fixed points. Sampling rather than attempting to measure everything over the whole site, estimates of the whole rather than a precise and complete record reducing resources and time. Measurements may be taken at random points on each visit or at fixed points that are revisited. While there are statistical reasons for choosing random points, revisiting fixed points provides greater confidence that changes have occurred over time rather than natural variation at the site (Auld, B. 2009). Fixed points were established over the Burnett Creek offset site using the AUs and RGB approach to stratify sampling to ensure each area of interest is sampled and result in a representative measure across the entire site (refer to **Figure 1**).

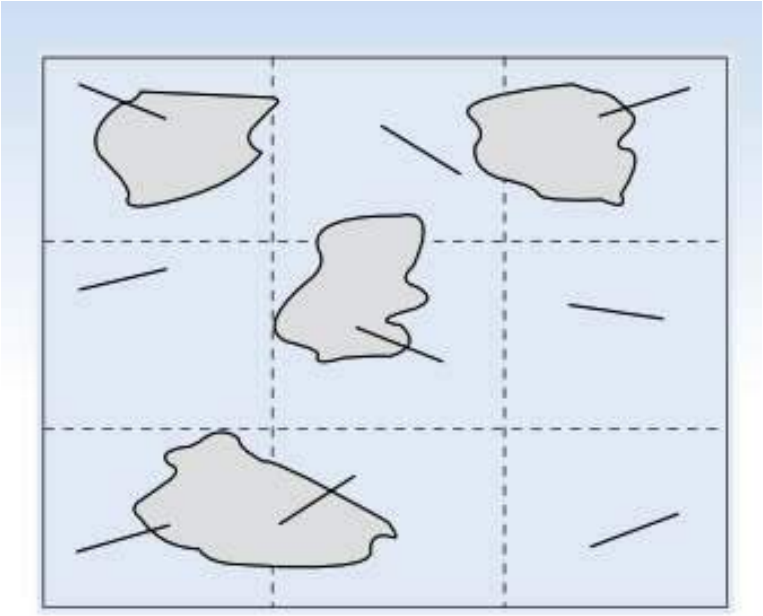


Figure 3. The area has been divided or 'stratified' into equal parts to ensure greater coverage from a limited number of sampling points.

Figure 3: Stratified sampling method (extract- Figure 3: Auld, B 2009)

Mapping an entire site accurately for weeds and native vegetation would not normally be attempted except for very small sites. So, maps would not usually form part of a quantitative monitoring program but could be used to indicate gross changes in vegetation cover, if updated over time (Auld, B. 2009).

A combination of three (3) survey methods was used to measure non-native plant coverage across the Burnett Creek offset site including, MQHA, targeted weed transects (stratified sampling) and mapping of ground-truthed weed extent. All of these survey techniques were used to complement one another to build a baseline measurement to ensure improvements can be measured over the offset site management period.

Weed coverage has been incorporated into the 100m x 20m plot performed for MHQA (refer **Section 3.3.1**). All non-native plant cover was assessed by estimating the cover of exotic species over the 100 m x 20 m plot and is recorded as a percentage of overall vegetation. This data is recorded within Part E of the habitat quality assessment sheet records the non-native plant species and percentage of cover (refer to **Appendix B**).

Targeted weed transects were also conducted across the Burnett Creek offset site. As discussed, transects were stratified across the offset site to sample each offset site using the RGB approach. Each transect was 100m in length and estimated the abundance of non-native plant cover. This is most conveniently done by measuring their ground cover which is the perpendicular projection of aerial parts of plants on to the ground, for a given area this is often measured as a percentage of the whole area (refer to **Figure 2**).

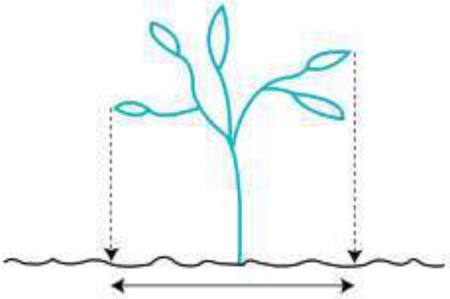


Figure 5. Ground cover of a plant indicated by the horizontal arrowed line.

Figure 4: Measuring ground cover (extract- Figure 5: Auld, B. 2009)

The width of a transect can be reduced to a single line: a line-transect. Using a tape measure stretched between two fixed points as a line-transect is a convenient way to estimate cover of different species as lengths along the tape (refer to **Figure 3**). This technique was applied to the Burnett Creek offset site.

Figure 8. Using one edge of a tape measure to estimate the percent cover of flatweed or cat's ear amongst grass and plant litter.

Figure 5: Line transect methodology (extract- Figure 8: Auld, B. 2009)

Further, where patches of weed cover were identified within the Burnett Creek offset site, these were located using a hand-held GPS. Sampling points overlap a number of these patches providing further detail for future site management.

2.6. Non-native Koala Predator Survey

To address Condition 6 (e) and (f) an assessment of non-native Koala predators was conducted via the use of camera trapping along with assessing and recording evidence of predators (e.g. scats, tracks, den count and traces) and/or Koala mortalities attributable to predators. Non-native Koala predators means any animal not native to Australia that is known to predate on Koalas of any age.

Camera traps have the advantage of potentially obtaining a wide range of significant information. Automatic camera systems are triggered by an animal passing in front of a sensor that detects movement, changes in ambient light, or a thermal differential (Moen & Lindquist 2004). Cameras allow for the detection of species that are difficult to study due to their elusive and nocturnal habits (Mace *et al.* 2004). They are less time consuming, less costly, and less invasive than long-term direct observation of animals. They are also beneficial in studying animals in inaccessible or difficult to access locations such as dens and nest cavities, or in rugged terrain (Mace *et al.* 1994). In addition, they enable the collection of valuable information about multiple species within any given community (Rosellini *et al.* 2008) and provide data that is more permanent and less disputable than data gathered by direct observation.

The use of camera trapping and den count is considered to be an effective method in capturing, assessing and monitoring pest management.

Motion-triggered infrared camera trap

Camera trapping involves setting up a fixed motion-triggered infrared camera to capture images or video of animals which pass in front of camera or are lured by bait. This set-up identifies fauna activity beyond the scope of direct observational studies and in the absence of potential observer impacts.

Infrared sensing cameras with an infrared flash were deployed, which use motion to trigger. Cameras were attached 30-50 cm from the ground on a tree or post, and directed towards the bait which is placed about 1.5-2 m from the mounted camera. The bait generally consisted of chicken bones/carcasses. The programming was consistent across all cameras, and cameras were set up in a consistent manner to maintain similar detection probabilities. For detecting Koala predators, cameras were placed in the vicinity of an animal trail. Cameras may be placed in alternate locations where active trails are identified.

Again, this survey was used in combination with the RGB approach, stratifying the survey over the Burnett Creek property. Six (6) cameras were deployed across the Burnett Creek property, four (4) located within the Burnett Creek offset site between 8 April and 13 May 2021.

As discussed within **section 2.1**, the number of cameras deployed at the Burnett Creek property were determined using the 350m grid to stratify sampling, reducing bias and increasing repeatability. Grid cells were separated by 350m for monitoring across the Burnett Creek property after a literature review of home ranges for targeted species, being Koala (SAT), cat, dog and foxes (non-native koala predators).

A relative abundance index (RAI) is to be calculated for non-native Koala predators, cats, dogs and foxes, using the formula RAI= D/TN x 100, where D is numbers of detection and TN is the total number of camera-trap days

(all cameras combined). This methodology ensures that the surveys are representative of the entire offset site and repeatable for future monitoring requirements.

Figure 6: Camera trap set-up at Burnett Creek offset site (Camera 3).

Further, a non-native predator control program is to be implemented (to be outlined in the Offset Management Plan). Throughout the duration of control program, the results of each trapping, baiting and shooting event will be reported to provide evidence that progress is made towards achieving the targets outlined within approval Conditions 6 (e) and (f). This will be shown through a decrease in records of lethal predator control.

2.7. Limitations

Direct observation of koalas is most successful when conducted between August and January as resident females with back-young are more easily observed during this time (DoE 2013). This survey work occurred between 8 April – 27 May 2021 and therefore reduced detectability and lower activity levels was an expected limitation.

High rainfall can impact surveys as it can interfere with placement of faecal pellets and/or speed up decomposition. According to the Bureau of Meteorology (BoM) Wilsons Peak (the nearest weather station to the Burnett Creek offset site) received 367.4 mm rainfall from in March 2021, more than double the monthly average (139.4 mm). Therefore, faecal pellets may have been washed away by surface runoff in the lead up to the survey and/or experienced an increased rate of decomposition. Additionally, approximately 56.4 mm of rainfall was received throughout May 2021 during the SAT surveys further reducing detectability.

Droughts can also impact surveys as Koalas move away from their core habitat to find food and habitat. Historically Wilsons Peak's mean rainfall for summer (December to February) is 472 mm. The same period in 2020-2021 recorded 456 mm which is largely consistent with the average suggesting sampling was representative of the typical conditions.

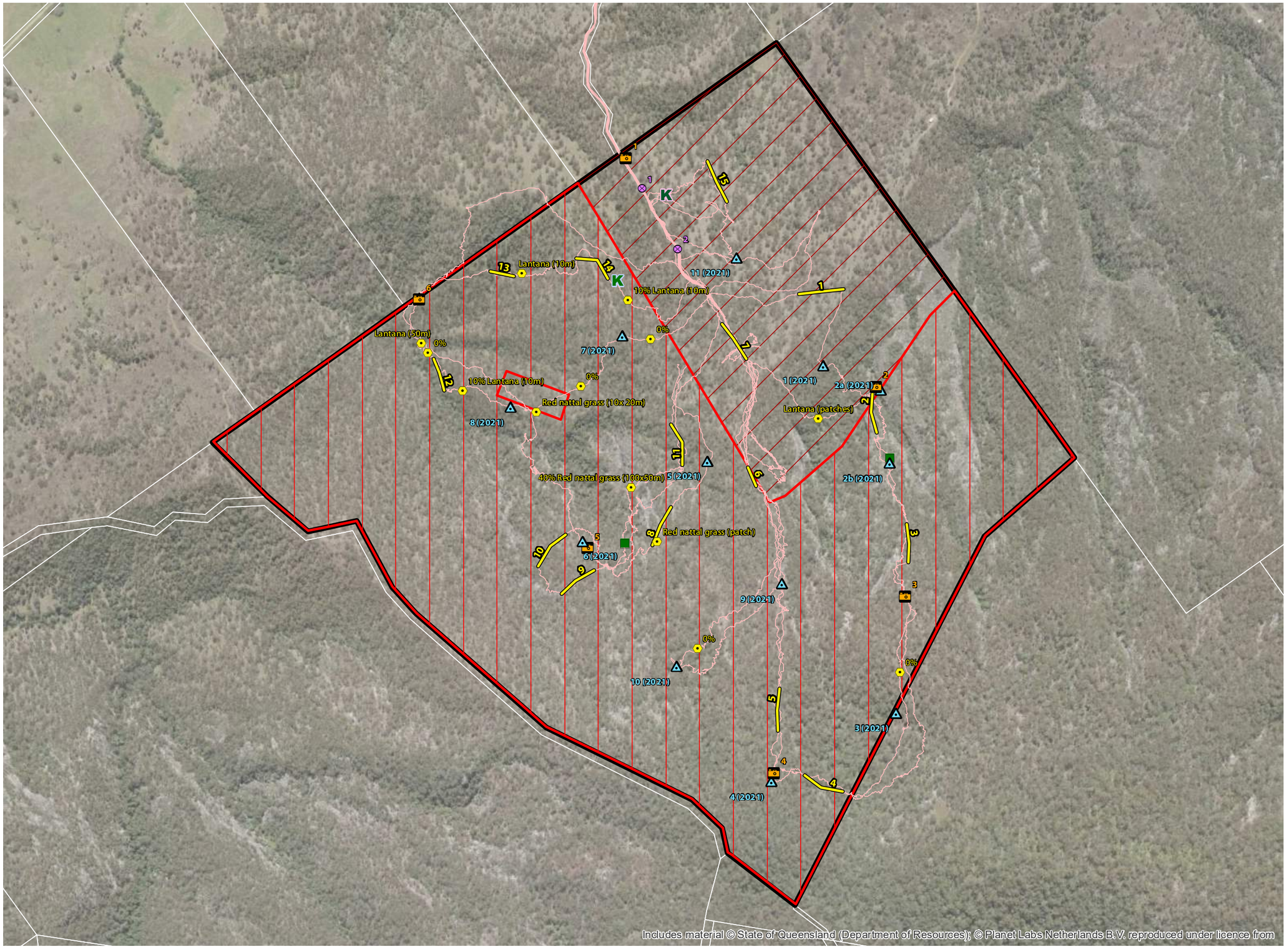
During camera trap surveying, an attempt to capture every animal several times over should be made to increase probability of species identification, however this could lead to individuals being counted multiple times. This limitation is moderated by camera set-up using bursts settings and the implementation of an independence threshold of two (2) minutes. Therefore, every observation of an animal two (2) minutes after the first observation is considered a new observation. Additionally, for the Burnett Creek the entire property has been sampled as vertebrate pest management should apply a landscape-wide approach if possible.

As noted within the *Survey Guidelines for Australia's threatened manmmals* (Department of Sustainability, Environment, Water, Pollution and Communities, 2011), the time taken to effectively search a subject site varies considerably according to the size and nature of the area. For large sites and remote areas, such as the Burnett Creek offset site, constraints required the identification of potential habitat resources through ground-truthing after reviewing vegetation maps, aerial photographs and imagery. The size and topography of the offset site contributed to time constraints limiting the search area. This limitation was reduced with the use of AUs and the RGB approach, ensuring results are representative of the entire area.

The terrain across the Burnett Creek is difficult to traverse with numerous ridges and cliff faces. As such, where possible surveys were conducted as close as possible to points dictated by the 350m grid applied.

It is noted that some surveys were not conducted during peak activity seasons (Spring & Summer) however this is not expected to impact the baseline fauna or flora survey results as resident populations would be present on-site and flowering and fruiting species are identifiable within off-peak seasons. It is recommended future monitoring is conducted within the optimal seasons to ensure overall site variability is captured over the management period.

1. Survey Effort



Legend

- Qld DCDB
- Offset site DCDB
- Existing legally secured offset area (2019/000446)
- Offset area (150.497 ha)
- Motion detection camera
- Grey-headed Fly-fox Survey
- Koala (female)
- Koala (male)
- Koala scat
- SAT
- Weed observations
- Weed transect
- GPS Tracklog

0 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:9,000 @ A3

N

Issue	Date	Description	Drawn	Checked
B	27/07/2021	Preliminary	TC	LT

ENVIRO CAPITAL

on behalf of
Pointcorp Heritage
Park Pty Ltd

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2021. Updated data available at http://qldspatial.information.qld.gov.au/catalogue//

3. Baseline Survey Results

3.1. Species Stocking Rate

As outlined within Section 2 above, the species stocking rates for Koala and GHFF were incorporated into the MHQA. This section discusses the survey results required to calculate the species stocking rates for both Koala and GHFF.

3.1.1 Koala

To satisfy the approval conditions, a baseline koala density survey is required to measure progress towards achieving the performance criteria as prescribed within the approval conditions (ref. EPBC 2017/8090). The Burnett Creek offset site was surveyed using direct methods, including, diurnal searches and opportunistic observations during other survey works.

Diurnal searches and opportunistic observations resulted in the identification of two (2) Koalas. One (1) Koala (adult male) was identified within the Burnett Creek offset site, another Koala (adult female) was identified within the wider Burnett Creek property external the offset site (refer **Plan 8**).

Table 9: Direct Koala observations summary

Location	Date	Age	Sex
Burnett Creek offset site	13/05/2021	Adult	Male
Burnett Creek property	27/05/2021	Adult	Female

Photo Set 3: Koalas recorded within Burnett Creek property. Adult male located within the Burnett Creek offset site (left) and adult female located external the Burnett Creek offset site (right).

Indirect methods can be used to determine presence/absence of fauna. Indices using animal signs including scats, tracks and scratches can indicate species presence and habitat use. Koala activity levels and density were determined by utilising SAT. Surveys are undertaken in accordance with the methodology developed by Phillips and Callaghan (2011) and specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala*. The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage and is therefore uses indices to determine presence/absence. Phillips & Callaghan (1995) found this technique is suitable for use in conjunction with stratified/random or systematic survey techniques but has proved especially powerful when applied at the landscape-scale using a RGB sampling design and appropriate spatial modelling techniques.

RGB-SAT sampling aims to provide a simple, unbiased and robust sampling tool that addresses the issue of determining and delineating koala metapopulation boundaries for the purposes of providing conservation and planning certainty (Phillips, S. and Hopkins, M. 2007). A systematic approach was used to survey for evidence of koala activity. In order to ensure a uniform and unbiased distribution of sampling effort throughout the study area, a 350m x 350m grid was applied on a map of the Burnett Creek property and the resulting grid-cell intersections selected as sampling.

Eleven (11) SAT surveys were completed across the Burnett Creek property in May 2021, eight (8) of which are located within the Burnett Creek offset site. Ten (10) SAT surveys were completed within the remnant mapping, and one (1) within the non-remnant mapping. All, except one (1) within remnant vegetation, yielded a 'low Koala activity level' result (based on East Coast med-high area/density) (Phillips and Callaghan 2011) (refer to **Table 10**). Refer to **Appendix A** for raw SAT data.

Table 10: SAT Survey Summary – Burnett Creek

SAT	Date	Total Percentage	Vegetation Status	Activity Category	Within Offset Site
1	6 May 2021	6.67%	Remnant	Low	
2	6 May 2021	3.33%	Remnant	Low	
3	6 May 2021	0%	Remnant	Low	✓
4	6 May 2021	0%	Remnant	Low	✓
5	7 May 2021	3.33%	Remnant	Low	✓
6	7 May 2021	0%	Remnant	Low	✓
7	13 May 2021	16.67%	Remnant	Low	✓
8	13 May 2021	6.67%	Remnant	Low	✓
9	27 May 2021	10.00%	Remnant	Low	✓
10	27 May 2021	23.33%	Remnant	Medium (Normal)	✓
11	27 May 2021	16.67%	Non-remnant	Low	

The usage of this methodology detailed by Phillips and Callaghan (2011) is considered an effective way of accurately gauging Koala density within a site. However, there are limitations to the method including the mobility of Koalas, total number entering and exiting the site, and mortality rates. However, given the time of year these surveys were undertaken (off-peak season) it can be assumed that the results are representative of the resident Koalas which would inhabit that offset site year-round and are not transient individuals which come and go during mating season (August to February). Other factors which may contribute to the low scores include the difficulty in identifying scats using the SAT method. This method relies heavily on the observer's ability to spot scat amongst ground cover which can vary significantly between SAT locations. Cristescu *et al.* 2012, found that detectability varied up to 16% between plots of different ground cover.

The Koala SAT survey methodology is considered an accurate technique when estimating low-density Koala populations (Mossaz 2010). Research by Rhodes *et al.* (2015) indicates that within the Ipswich region the Koala density is approximately 0.03 Koalas/ha. Rhodes *et al.* (2015) attribute the low population density to a negative relationship identified between temperature and Koala densities. Therefore, when estimating a Koala density in an area that is known to be 'low', the SAT survey methodology is considered to provide an accurate determination on the activity levels (Mossaz 2010).

As there was only one (1) observation across the Burnett Creek offset site, Koala carrying capacity has been estimated using SAT survey results, scientific literature and data for the SEQ Koala population. The Koala carrying capacity has been estimated in the MHQA to coincide with the latest available published scientific literature and data for the SEQ Koala population.

A recent study undertaken by Rhodes *et al.* (2015) revealed that the density of Koala populations in SEQ ranges from 0.004 Koalas/ha to 6.54 Koalas/ha, with the average Koala density across the region being 0.04 Koalas/ha. These findings are supported by Melzer *et al.* (1994) who indicates that the Koala population in SEQ ranges from 0.005 Koalas/ha to 2.5 Koalas/ha. The more recent study by Rhodes *et al.* (2015) found that the negative relationship between temperature and Koala densities is consistent with other studies elsewhere (Adams-Hosking *et al.* 2011, Lunney *et al.* 2014) and is associated with low Koala densities in the Ipswich City Council region, where temperatures are relatively high. Within the Ipswich City Council region, the Rhodes *et al.* (2015) study detected thirty-six (36) Koalas over 1,078 transect hectares, resulting in a Koala density of 0.033 Koalas/ha.

Using the available published scientific literature and SAT results (refer to **Table 10**), it can be inferred that the Burnett Creek offset site demonstrates low Koala activity levels (Phillips *et al.* (2011), and therefore contain an estimated Koala density ranging from 0.02 to 0.08 Koalas/ha. Therefore, using these Koala density estimations and Koala habitat, 150.497 ha, the offset site has an estimated Koala carrying capacity of between three (3) and twelve (12) (refer to **Table 11**). It should be noted that due to the lack of available published scientific literature of Koala densities in SEQ, these carrying capacity estimates are subject to ongoing adaptive management as data and scientific literature becomes available.

Table 11: Offset Site Koala Carrying Capacity Estimate

Offset Site	Area (ha)	Density (Koalas/ha)	Carrying Capacity (Koalas)
Burnett Creek	150.497 ha	0.02 to 0.08	3 (3.009)– 12 (12.039)

3.1.2 Grey-headed Flying-fox

The GHFF occupies most areas in their distribution in highly irregular patterns, and therefore surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to search appropriate databases and other sources for the locations of camps, and to conduct vegetation surveys to identify feeding habitat. As discussed in **Section 2.4**, the following methods in accordance with the *Survey guidelines for Australia's threatened bats* of were employed:

1. Prior to the survey.

   A review of known flying fox camps was conducted for the project area, and the wider general area (refer to **Section 4.3**).
2. Daytime field surveys for camps.

   Surveying for Flying-fox camps is considered to be appropriate through walking transects, watching for flying bats and listening for their distinctive calls. Due to the distinctness and clear visibility of flying-fox camps, GHFF presence was assessed by focusing on daytime field surveys for camps, in conjunction with vegetation surveys/habitat assessment as per **Section 3.4**.
3. Surveys of vegetation communities and food plants.

   Foraging habitat assessments were conducted and are discussed in **Section 3.3.**
4. Night time surveys.

   Evening searches were also conducted via walking transects and spotlighting whilst walking transects can survey for individuals using the site for foraging purposes. Flying-fox camp investigations were completed for known camps in the nearby area to confirm GHFF presence/absence, and were undertaken during the day when flying-fox are typically roosting.

<u>Desktop Review</u>

This species roosts in large aggregations or camps in close proximity (20 km or less) to a regular food source, often in stands of riparian rainforest, Paperbark or Casuarina forest (Eby, 1995). Camps provide resting habitat, sites of social interactions and refuge for animals during significant phases of their annual cycle, such as birth, lactation and conception (Parry-Jones and Augee 1992).

The GHFF occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria (Tidemann, 1998; refer to **Figure 7**). However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. As a result, patterns of occurrence and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly (Eby & Lunney 2002). At a regional scale, broad trends in the distribution of plants with similar flowering and fruiting times support regular annual cycles of migration (Eby & Lunney 2002). It is infrequently found west of the Great Dividing Range (Tidemann 1998). The species occurs

at a higher latitude than any other megachiropteran (megabat) species (Aston 1987; Menkhorst & Dixon 1985; Parry-Jones & Augee 1991).

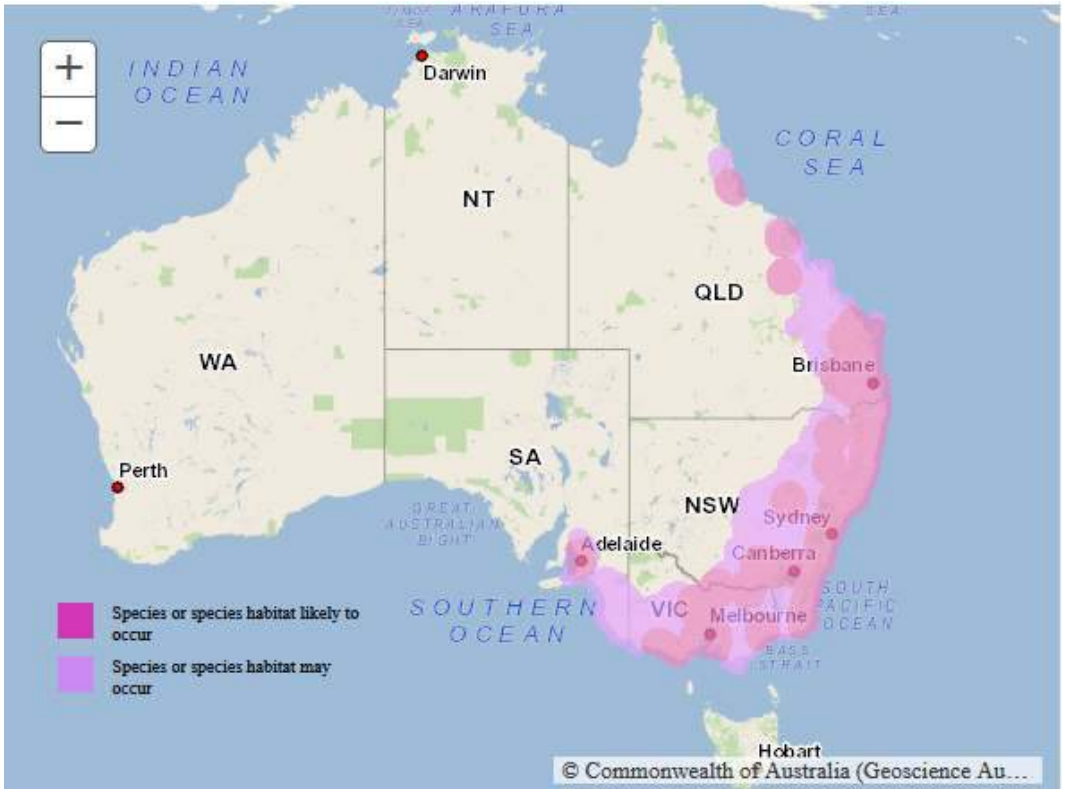


Figure 7: Grey-headed Flying-fox (*Pteropus poliocephalus*) Distribution Map (DAWE SPRAT, 2021)

A review of WildNet records indicate that the closet GHFF records occur within approximately 23km of the Burnett Creek site. Data derived from the DAWE national Flying-fox monitoring program indicates that three (3) flying-fox camps are known to occur within 25km of the Burnett Creek offset site, again one (1) of these is considered inactive (refer to **Table 12**).

Table 12: Flying-fox camps proximate Burnett Creek Offset Site (DAWE, 2021)

Camp ID	Location	Approximate Distance (km)	GHFF Records	BFF Records	Survey Date
551	Kooralbyn, Routley Drive	24.88	-	500-2,499	8/2020
568	Rathdowney, John street	22.87	Flying-fox camp has not been surveyed and is considered inactive		
289	Bicentenial Park, Boonah	24.82	2,500-9,999	2,500-9,999	5/2014

The Burnett Creek offset site contains suitable foraging habitat for the GHFF (refer to **Table 18**). RE mapping demonstrates that the site contains a variety of flowering and fruiting foraging species to support individuals

and larger populations. However, fruiting and flowering usually occurs between spring-autumn. These findings were ground-truthed through on-site surveys (refer to **Section 3.4**).

Table 13: Regional Ecosystem Summary – Burnett Creek offset site

VMA Status	RE	Description	AU
Category B	RE12.8.20	Shrubby woodland with *Eucalyptus racemosa subsp. racemosa* or *E. dura* on Cainozoic igneous rocks	1
Category B	RE12.9-10.2	*Corymbia citriodora subsp. variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks	2
Category B	RE12.11.3	*Eucalyptus siderophloia, E. propinqua* +/- E. *microcorys, Lophostemon confertus, Corymbia intermedia*, *E. acmenoides* open forest on metamorphics +/- interbedded volcanics	3

Site Surveys

A wide range of methods can be used to count bats. Murphy *et al.* (2008) identified just two methods that could be implemented rapidly and at large spatial scales; fly-out counts, where animals are counted in the air as they exit a camp, and ground counts, where animals are counted during the day in the camp. Following review of recommended methodologies for population density calculations within provided by CSIRO (A monitoring method for the Grey-headed Flying-fox, (*Pteropus poliocephalus)* (Westcott *et al.* 2011)), fly-out counts and ground-counts relating to flying-fox exiting camps and being situated within camps during the day were considered suitable for estimating abundance.

The offset site was traversed by foot to identify GHFF presence or absence in the form of camps on-site. DAWE determined that the development was a controlled action as it will result in the clearing of vegetation identified as suitable foraging habitat for the GHFF (EPBC2017/8090). As such, the approved development does not directly impact on this species as no roosts/camps were identified within the impact site. Therefore, the GHFF foraging habitat assessment is considered more important in regard to the offset requirements.

The methods utilised for the GHFF presence survey included desktop and a range of on-site surveys in accordance with the *Survey guidelines for Australia's threatened Bats*. Although some fruiting and flowering species were identified on-site, future surveys should be conducted during peak flowering and fruiting seasons (Spring and Summer) to ensure individuals foraging on-site are captured.

3.2. Modified Habitat Quality Assessment

3.2.1 Koala

A total of eight (8) MHQAs were conducted across the Burnett Creek offset site, with the first seven (7) completed in June 2019, and the one (1) completed in February 2020. Three (3) were conducted in AU1 and AU2 and two (2) conducted within AU3 being the smaller unit (refer **Appendix B** for results data, and Error! Reference source not found. for results summary).

The Burnett Creek offset site scored a 2.57 out of 3 for site context based on 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 (refer to **Plan 2** for context analysis). The site condition, site context score and species stocking rate (2.29 out of 3) combined to provide a habitat quality score of 6.67 (rounded to 7.00).

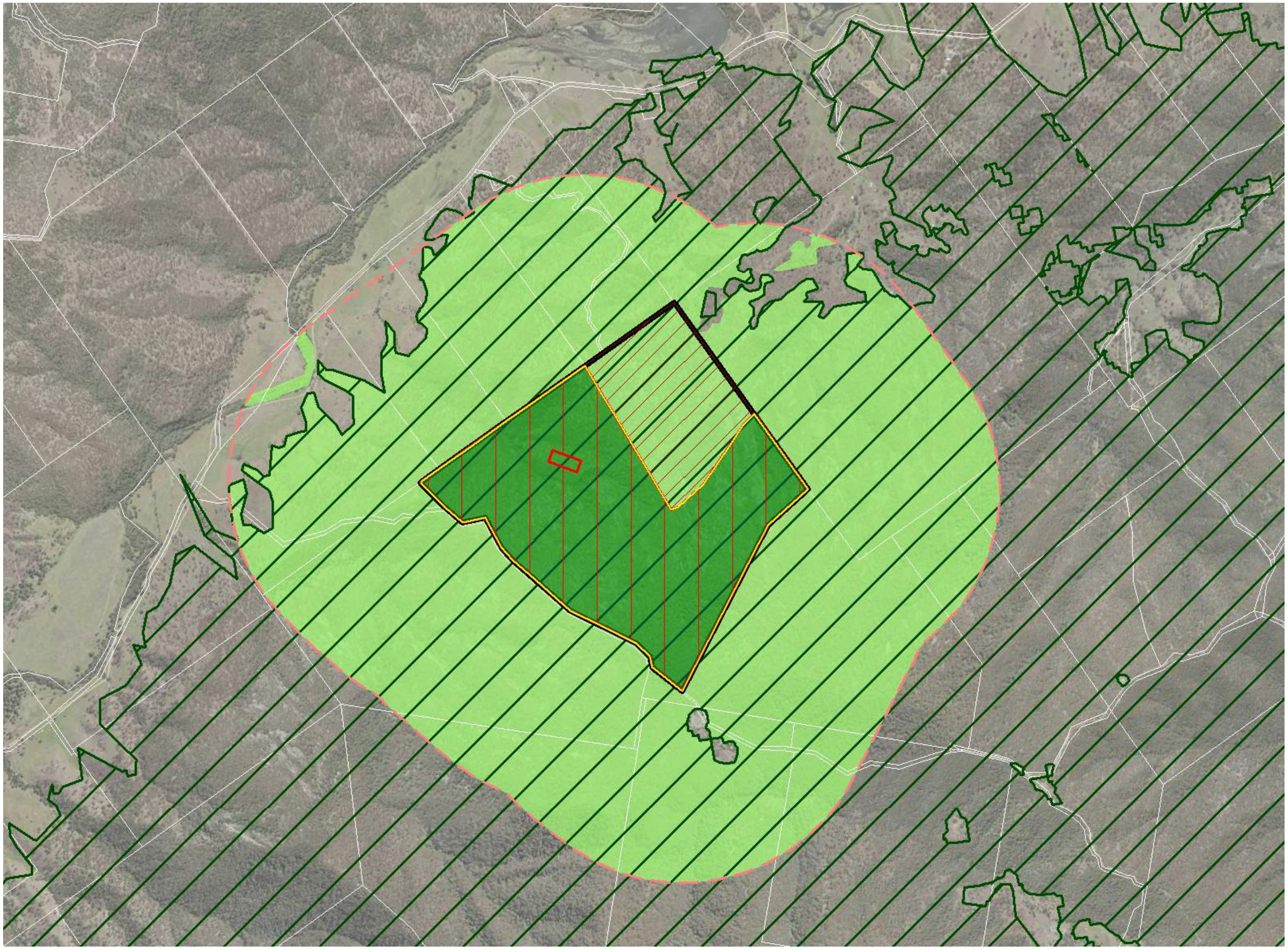
Table 14: Modified Habitat Quality Assessment Tool (non-remnant) [Koala]

Attribute	Condition Characteristics	AU1 Score (RE12.8.20)	AU2 Score (RE12.9-10.2)	AU3 Score (RE12.11.3)
Site Condition (30%)	Recruitment of woody perennial species in EDL	3.67/5	2/5	0/5
	Native plant species richness – trees	3.33/5	3.33/5	3.75/5
	Native plant species richness – shrubs	2.5/5	1.67/5	1.25/5
	Native plant species richness – grasses	2.5/5	3.33/5	2.5/5
	Native plant species richness – forbs	2.5/5	2.5/5	1.25/5
	Tree canopy height	5/5	5/5	5/5
	Tree canopy cover	4/5	4.17/5	4.5/5
	Shrub canopy cover	5/5	4.33/5	3/5
	Native grass cover	4.33/5	3.67/5	5/5
	Organic litter	3/5	4.33/5	3/5
	Large trees	3.33/15	5/15	7.5/15
	Coarse woody debris	2/5	4/5	2/5
	Non-native plant cover	8.33/10	8.33/10	10/10
	Quality and availability of food and foraging habitat	5/10	5/10	5/10

Attribute	Condition Characteristics	AU1 Score (RE12.8.20)	AU2 Score (RE12.9-10.2)	AU3 Score (RE12.11.3)
	Quality and availability of shelter habitat	5/10	5/10	5/10
	Site Condition Score	**60/100**	**62/100**	**58.75/100**
	Site Condition Score (out of 3)	**1.79**	**1.85**	**1.76**
Site Context (30%)	**Size of the patch**	10/10	10/10	10/10
	Connectedness	5/5	5/5	5/5
	Context	5/5	5/5	5/5
	Ecological corridors	6/6	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	5/5
	Threats to the species	7/15	7/15	7/15
	Species mobility capacity	10/10	10/10	10/10
	Site Context Score	**48/56**	**48/56**	**48/56**
	Site Context Score (out of 3)	**2.57**	**2.57**	**2.57**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	10	10	10
	Species usage of the site (habitat type & evidenced usage)	15	15	15
	Approximate density (per ha)	10	10	10
	Role/importance of species population on site	5	5	5
	Species Stocking Rate Score	**40/70**	**40/70**	**40/70**
	Species Stocking Rate Score (out of 4)	**2.29**	**2.29**	**2.29**
Site Condition Score		**1.79**	**1.85**	**1.76**
Site Context Score		**2.57**	**2.57**	**2.57**
Species Stocking Rate Score		**2.29**	**2.29**	**2.29**
Habitat Quality Score		**6.64**	**6.71**	**6.62**
Assessment Unit Area (ha)		**60**	**70.42**	**20.89**

Attribute Condition Characteristics	AU1 Score (RE12.8.20)	AU2 Score (RE12.9-10.2)	AU3 Score (RE12.11.3)
Total offset area (ha)	**151.3**	**151.3**	**151.3**
Assessment Unit Size Weighting	**0.40**	**0.47**	**0.14**
Weighted Habitat Quality Score	**2.63**	**3.12**	**0.91**
Score	**6.67 (rounded to 7)**		

2. Koala Context Assessment



Legend

- Qld DCDB
- Offset site DCDB
- Existing site VDEC
- Offset area (150.497 ha)
- Koala critical habitat onsite
- 1km buffer
- Percentage of area boundary length connecting habitat critical to the survival of the Koala on and off site – 100%
- Percentage of habitat critical to the survival of the Koala within 1 km of the area (92%)
- Size of habitat critical to the survival of the Koala patch >200m corridor connectivity (>10,000 ha)

0 200 400 600 800 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:20,000 @ A3

N

Issue	Date	Description	Drawn	Checked
B	27/07/2021	Preliminary	TC	LT

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3.2.2 Grey-headed Flying-fox Foraging Habitat

As discussed within **Section 3.2**, a total of eight (8) MHQAs were conducted, with three (3) were conducted in AU1 and AU2 and two (2) conducted within AU3 being the smaller unit. GHFF foraging habitat assessments were conducted in conjunction with each of these transects (refer **Appendix C** for results data **Table 15** for results summary).

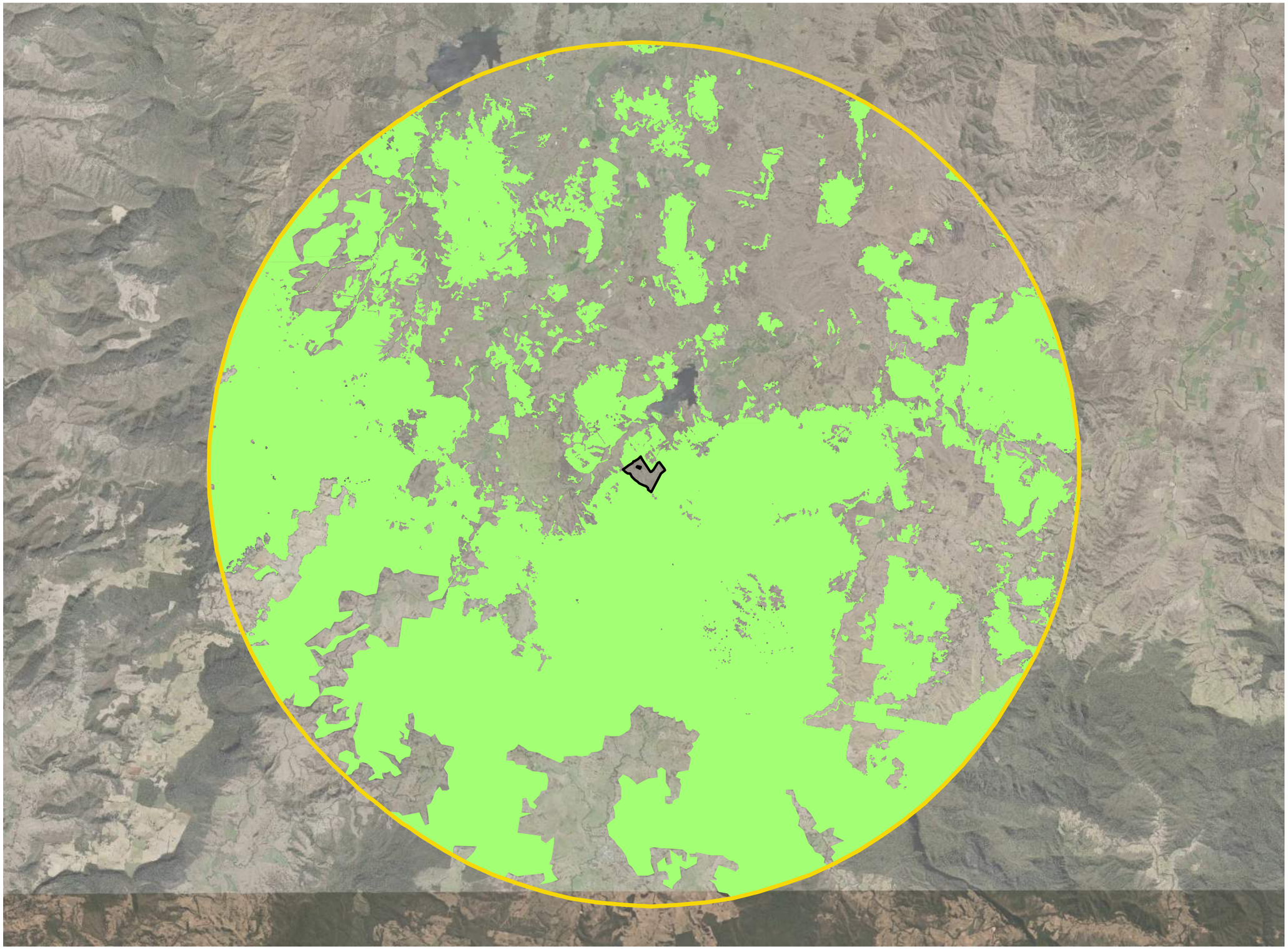
The Burnett Creek offset site scored a 1.55 out of 3 for site context based on size of patch, connectedness, context, ecological corridors, role of site location to species overall population in the State and threats to the species (refer to **Plan 3** for context analysis). Species stocking rate was consistent between AU1 and AU2, however significantly increased within AU3 yielding 0.6 out of 3 and 1.5 out of 3 respectively. The site condition, site context score and species stocking rate combined to provide a habitat quality score of 5.08 (rounded to 5).

Table 15: Burnett Creek Offset Site Grey-headed Flying-fox Habitat Quality

Attribute	Condition characteristics	AU1 Score (RE12.9-10.4)	AU2 Score (RE12.9-10.12)	AU3 Score (RE12.3.11)
Site Condition (40 %)	Vegetation Condition	20/20	20/20	20/20
	Species Richness	11.67/20	13.3/20	15/20
	Flower Score	6/10	6/10	5/10
	Timing of Biological Shortages	10/10	10/10	8.75/10
	Quality of Foraging Habitat	3.33/20	5/20	5/20
	Non-native Plant Cover	16.67/20	16.67/20	20/20
	Site condition score	67.67/100	71/100	73.75/100
	Site condition score (out of 4)	**2.71**	**2.84**	**2.95**
Site Context (30 %)	Size of the patch	10/10	10/10	10/10
	Connectedness	0/10	0/10	0/10
	Context	6/10	6/10	6/10
	Ecological corridors	10/10	10/10	10/10
	Role of site location to species overall population in the State	0/10	0/10	0/10

Attribute	Condition characteristics	AU1 Score (RE12.9-10.4)	AU2 Score (RE12.9-10.12)	AU3 Score (RE12.3.11)
	Threats to the species	5/10	5/10	5/10
	Site context score	31/60	31/60	31/60
	Site context score (out of 3)	**1.55**	**1.55**	**1.55**
Species Stocking Rate (30 %)	GHFF large trees	2/10	2/10	5/10
	Species stocking rate score	0.6/10	2/10	5/10
	Species stocking rate score (out of 3)	**0.6**	**0.6**	**1.5**
Total quality score		4.86	4.99	6.00
Assessment unit area		60	70.42	20.89
Total offset area		151.3	151.3	151.3
Size Weighting		0.40	0.47	0.14
Area weighted score		1.93	2.32	0.83
Total (out of 10)		**5.08 (rounded to 5)**		

3. Grey-headed Flying-fox Context Assessment



Legend

- Offset area (150.497 ha)
- 20km Context buffer
- Percentage of GHFF habitat in 20km context area from offset area is 55%
- GHFF roost camp - recently recorded activity (no records)
- GHFF roost camp - level 3 =< population recently recorded (no records)

0 2 4 6 8 km

Transverse Mercator | GDA 1994 | Zone 56 | 1:185,000 @ A3

N

Issue	Date	Description	Drawn	Checked
B	27/07/2021	Preliminary	TC	LT

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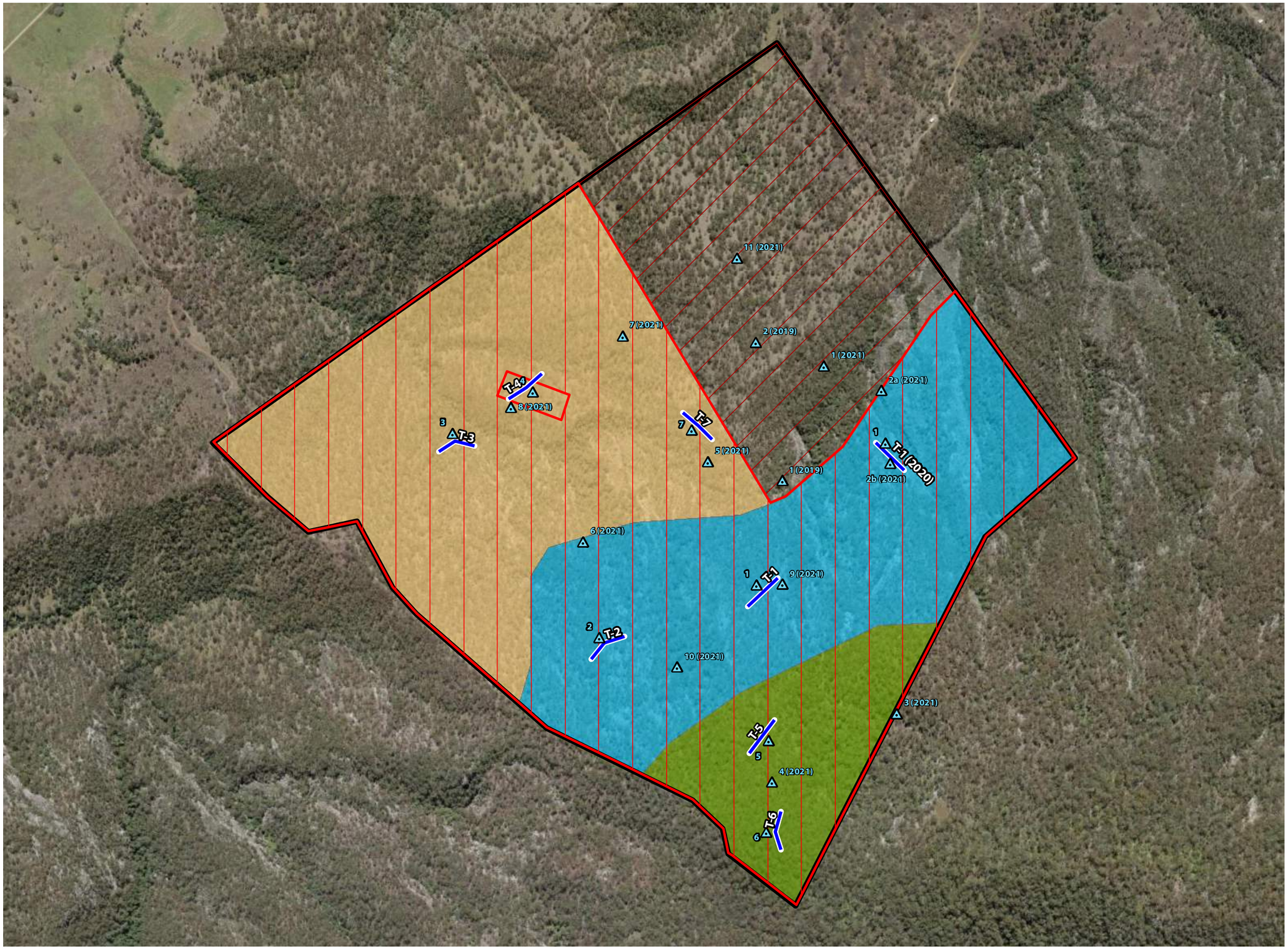
4. Habitat Quality Survey



Legend

- Offset site DCDB
- Existing legally secured offset area (2019/000446)
- Offset area (150.497 ha)
- Habitat quality transects
- SAT survey

Assessment Units

- Unit 1 - 60 ha
- Unit 2 - 70.42 ha
- Unit 3 - 20.89 ha

0 100 200 300 400 m

N

Transverse Mercator | GDA 1994 | Zone 56 | 1:9,000 @ A3

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3.3. Weed Cover

Weed cover across the Burnett Creek property were recorded using three (3) complimentary techniques; MQHA, targeted weed transects, and locating and mapping weed cover extents (refer to **Section 2.7** for survey methodology).

The MHQA surveyed weed cover simultaneously with other habitat quality indicators across the Burnett Creek offset site. A summary of these results are provided in **Table 16**. The average across the Burnett Creek offset site within the MQHA transects is 1.61%. These surveys are easily repeated to ensure non-native plant cover over the offset site decreases over the management period.

Table 16: MHQA Non-native Plant Cover Summary – Burnett Creek Offset Site

AU	Area (ha)	Transect ID	Vegetation Status	RE	Non-native plant cover (%)
1	59.99 ha	T1 (2020), T1 & T2	Remnant	RE12.8.20	2.25%
2	70.42	T3, T4 & T7	Remnant	RE12.9-10.2	2.6%
3	20.89	T5 & T6	Remnant	RE12.11.3	0.0%
Offset Site Average					**1.61%**

Fifteen (15) weed cover transects were conducted across the Burnett Creek property, twelve (12) of which are located within the Burnett Creek offset site. These transect differentiate between non-native plant cover and weeds of national significance (WONS). Utilising the weed cover methodology the average non-native plant cover and WONS is 5.96% and 2.66%, respectively (refer to **Table 17**). Transects 3, 8, 12 and 13 were recorded with greater than %5 non-native plant cover, the greatest of which was Transect 12 with 35%. A list of the recorded weed species is provided in **Table 18**. Refer to **Appendix D** for raw non-native plant cover transect data.

Table 17: Weed Cover Transects – Burnett Creek Offset Site

Transect ID	AU	Non-native plant cover (%)	WONS (%)
WT2	1	0.0%	0.0%
WT3	1	5.1%	2.1%
WT4	3	1.4%	0.0%
WT5	3	1.5%	0.0%
WT6	2	1.4%	0.3%
WT8	2	12.0%	0.0%
WT9	1	0.0%	0.0%

Transect ID	AU	Non-native plant cover (%)	WONS (%)
WT10	1	2.0%	0.0%
WT11	2	0.0%	0.0%
WT12	2	35.0%	27.5%
WT13	2	8.7%	2.0%
WT14	2	4.4%	0.0%
Offset Site Average		**5.96%**	**2.66%**

Table 18: Recorded Weed Species – Burnett Creek Offset Site

Scientific Name	Common Name	WONS
Bidens pilosa	Cobbler's Pegs	
Crassocephalum crepidioides	Thickhead	
Desmodium uncinatum	Silver-leaf Desmodium	
Heliotropium amplexicaule	Blue Heliotrope	
Lantana camara	Lantana	✓
Lantana montevidensis	Creeping Lantana	
Melinis repens	Red Natal Grass	
Passiflora suberosa	Corky Passion Vine	
Senecio madagascariensis	Fireweed	✓
Solanum nigrum	Blackberry Nightsahde	

Additionally, where patches of non-native plant cover were identified within the offset site, these were located with a hand-held GPS and the extent of the patch were mapped to guide future management actions within the Burnett Creek offset site (refer to **Plan 5**).

3.4. Non-native Koala Predator Survey

Field surveys did not identify any evidence of Koala mortalities.

Six (6) motion activated cameras were deployed across the Burnett Creek property, four (4) within the Burnett Creek offset site from 8 April to 13 May 2021. Surveys across the entire Burnett Creek property are relevant for the baseline surveys of the offset site and future monitoring and management actions to be implemented following the approval of the Offset Management Plan.

The Burnett Creek property cameras detected only one (1) individual non-native Koala predator over a total of 175 survey nights (refer to **Table 19**). Other native and non-native species were capture during this survey. A full list of animals captured throughout this survey is provided in **Appendix E**.

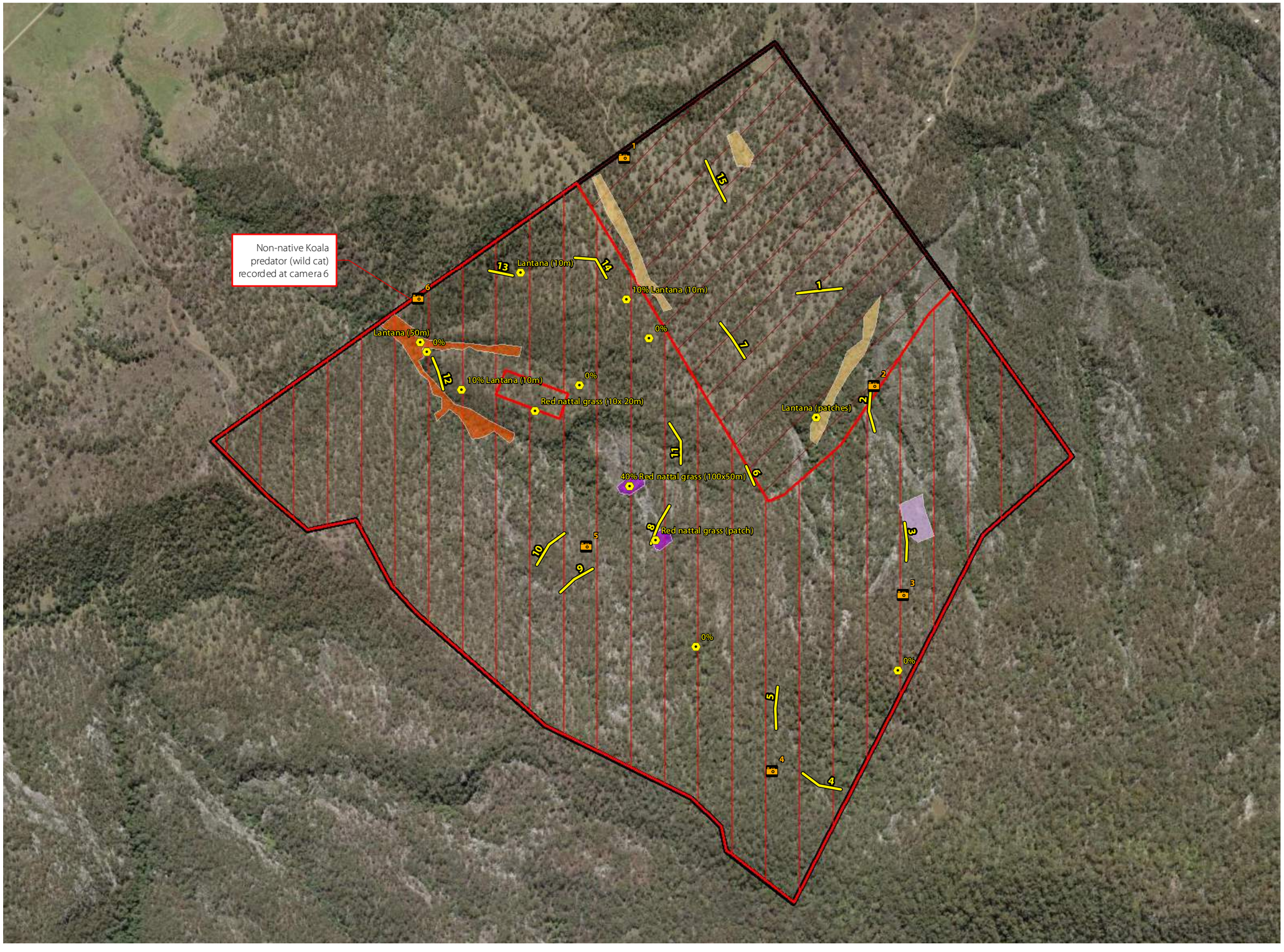
A relative abundance index (RAI) was calculated for non-native Koala predators, cats, dogs and foxes, using the formula RAI= D/TN x 100, where D is numbers of detection and TN is the total number of camera-trap nights (all cameras combined). Thus, the RAI for Burnett Creek property is **0.57**.

Table 19: Non-native Koala Predator Survey Results Summary – Burnett Creek property

Camera	Survey Duration (nights)	Species	Detection	Within offset site	RAI
1	28	Nil	-		
2	28	Nil	-		
3	28	Nil	-	✓	
4	28	Nil	-	✓	**0.57**
5	28	Nil	-	✓	
6	35	Cat (*Felis catus*)	1	✓	
Total	**175**		**1**		

Photo 1: Cat captured on Burnett Creek property Camera 6.

5. Non-native Plant and Predators



Legend

- Offset site DCDB
- Existing legally secured offset area (2019/000446)
- Offset area (150.497 ha)
- Motion detection camera
- Weed observations
- Weed transect
- Red natal grass - 20%
- Red natal grass - 5%
- Lantana - 50%
- Lantana - 10%

0 100 200 300 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:9,000 @ A3

N

Issue	Date	Description	Drawn	Checked
A	28/07/2021	Preliminary	TC	LT

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5. Appendices

Appendix A

Koala SAT Survey Data

Appendix B

Koala MHQA Data

Appendix C

Grey-headed Flying-fox Foraging Habitat Assessment Data

Appendix D

Weed Transect Data

Appendix E

Non-native Koala Predator Data

Appendix A

Koala SAT Survey Data

Burnett Creek

SAT #	Positive Results (/30)	%	Activity Level
1	2	6.67%	Low
2	1	3.33%	Low
3	0	0.00%	Nil
4	0	0.00%	Nil
5	1	3.33%	Low
6	0	0.00%	Nil
7	5	16.67%	Low
8	2	6.67%	Low
9	3	10.00%	Low
10	7	23.30%	Medium
11	5	16.67%	Low
AVG	**2.36**	**7.88%**	**Low**

Table 2. Categorisation of Koala activity into Low, Medium (normal) and High use categories based on use of mean activity level ± 99 per cent confidence intervals (nearest percentage equivalents) from each of the three area/population density categories indicated in Table 1.

Activity category	Low use	Medium (normal) use	High use
Area (density)			
East Coast (low)	-	≥ 3.33% but ≤ 12.59%	> 12.59%
East Coast (med – high)	< 22.52%	≥ 22.52% but ≤ 32.84%	> 32.84%
Western Plains (med – high)	< 35.84%	≥ 35.84% but ≤ 46.72%	> 46.72%

Burnett Creek

SAT Survey 1 (07.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	550	N
2	*Allocasuarina torulosa*	She-oak	180	N
3	*Corymbia citriodora*	Spotted Gum	120	Y
4	*Allocasuarina torulosa*	She-oak	200	N
5	*Corymbia citriodora*	Spotted Gum	190	N
6	*Corymbia citriodora*	Spotted Gum	120	N
7	*Corymbia citriodora*	Spotted Gum	180	N
8	*Eucalyptus crebra*	Narrow-leaved Ironbark	100	N
9	*Corymbia citriodora*	Spotted Gum	200	N
10	*Corymbia citriodora*	Spotted Gum	110	N
11	*Corymbia citriodora*	Spotted Gum	210	N
12	*Allocasuarina torulosa*	She-oak	150	N
13	*Corymbia citriodora*	Spotted Gum	160	N
14	*Corymbia citriodora*	Spotted Gum	130	N
15	*Eucalyptus tindaliae*	Tindal's Stringybark	200	N
16	*Eucalyptus tindaliae*	Tindal's Stringybark	310	N
17	*Corymbia citriodora*	Spotted Gum	120	N
18	*Lophostemon confertus*	Brushbox	140	N
19	*Eucalyptus tereticornis*	Forest Red Gum	530	N
20	*Corymbia citriodora*	Spotted Gum	190	N
21	*Allocasuarina torulosa*	She-oak	150	N
22	*Corymbia citriodora*	Spotted Gum	330	N
23	*Allocasuarina torulosa*	She-oak	160	N
24	*Corymbia citriodora*	Spotted Gum	140	N
25	*Allocasuarina torulosa*	She-oak	190	N
26	*Allocasuarina torulosa*	She-oak	160	Y
27	*Corymbia citriodora*	Spotted Gum	150	N
28	*Corymbia citriodora*	Spotted Gum	440	N
29	*Lophostemon confertus*	Brushbox	180	N
30	*Corymbia citriodora*	Spotted Gum	210	N
Total Trees with Koala Scats				2
Total Percentage of Koala Use				6.67%
Koala Use (Based on East Coast Med-High Habitat)				Low

Burnett Creek

SAT Survey 2 (07.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus dura*	Ironbark	210	Y
2	*Eucalyptus dura*	Ironbark	180	N
3	*Eucalyptus dura*	Ironbark	250	N
4	*Corymbia trachyphloia*	Brown Bloodwood	180	N
5	*Eucalyptus dura*	Ironbark	150	N
6	*Eucalyptus dura*	Ironbark	500	N
7	*Eucalyptus dura*	Ironbark	300	N
8	*Eucalyptus dura*	Ironbark	300	N
9	*Eucalyptus dura*	Ironbark	250	N
10	*Eucalyptus dura*	Ironbark	230	N
11	*Eucalyptus dura*	Ironbark	170	N
12	*Eucalyptus dura*	Ironbark	270	N
13	*Eucalyptus dura*	Ironbark	350	N
14	*Eucalyptus dura*	Ironbark	370	N
15	*Eucalyptus dura*	Ironbark	270	N
16	*Corymbia trachyphloia*	Brown Bloodwood	140	N
17	*Eucalyptus dura*	Ironbark	230	N
18	*Corymbia trachyphloia*	Brown Bloodwood	220	N
19	*Eucalyptus dura*	Ironbark	220	N
20	*Eucalyptus dura*	Ironbark	310	N
21	*Eucalyptus dura*	Ironbark	250	N
22	*Corymbia trachyphloia*	Brown Bloodwood	180	N
23	*Eucalyptus dura*	Ironbark	300	N
24	*Eucalyptus dura*	Ironbark	250	N
25	*Corymbia trachyphloia*	Brown Bloodwood	250	N
26	*Eucalyptus dura*	Ironbark	320	N
27	*Eucalyptus dura*	Ironbark	160	N
28	*Eucalyptus dura*	Ironbark	320	N
29	*Eucalyptus dura*	Ironbark	330	N
30	*Eucalyptus dura*	Ironbark	140	N
Total Trees with Koala Scats				1
Total Percentage of Koala Use				3.33%
Koala Use (Based on East Coast Med-High Habitat)				Low

SAT Survey 3 (06.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus dura*	Ironbark	240	N
2	*Eucalyptus dura*	Ironbark	250	N
3	*Eucalyptus dura*	Ironbark	280	N
4	*Eucalyptus dura*	Ironbark	180	N
5	*Eucalyptus dura*	Ironbark	220	N
6	*Eucalyptus dura*	Ironbark	160	N
7	*Eucalyptus dura*	Ironbark	200	N
8	*Eucalyptus acmenoides*	White Mahogany	700	N
9	*Eucalyptus dure*	Ironbark	380	N
10	*Eucalyptus acmenoides*	White Mahogany	600	N
11	*Eucalyptus dura*	Ironbark	150	N
12	*Eucalyptus microcorys*	Tallowwood	720	N
13	*Eucalyptus acmenoides*	White Mahogany	530	N
14	*Allocasuarina torulosa*	She-oak	150	N
15	*Corymbia intermedia*	Pink Bloodwood	210	N
16	*Eucalyptus acmenoides*	White Mahogany	120	N
17	*Eucalyptus acmenoides*	White Mahogany	840	N
18	*Eucalyptus dura*	Ironbark	170	N
19	*Eucalyptus acmenoides*	White Mahogany	210	N
20	*Eucalyptus acmenoides*	White Mahogany	680	N
21	*Eucalyptus acmenoides*	White Mahogany	730	N
22	*Eucalyptus acmenoides*	White Mahogany	250	N
23	*Allocasuarina torulosa*	She-oak	140	N
24	*Eucalyptus dura*	Ironbark	180	N
25	*Eucalyptus dura*	Ironbark	240	N
26	*Eucalyptus dura*	Ironbark	300	N
27	*Eucalyptus dura*	Ironbark	240	N
28	*Eucalyptus dura*	Ironbark	220	N
29	*Eucalyptus dura*	Ironbark	250	N
30	*Eucalyptus dura*	Ironbark	170	N
Total Trees with Koala Scats				0
Total Percentage of Koala Use				0%
Koala Use (Based on East Coast Med-High Habitat)				Nil

SAT Survey 4 (06.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	180	N
2	*Corymbia citriodora*	Spotted Gum	140	N
3	*Lophostemon confertus*	Brushbox	200	N
4	*Lophostemon confertus*	Brushbox	180	N
5	*Corymbia citriodora*	Spotted Gum	220	N
6	*Eucalyptus acmenoides*	White Mahogany	370	N
7	*Corymbia citriodora*	Spotted Gum	140	N
8	*Eucalyptus carnea*	Broad-leaved White Mahogany	340	N
9	*Angophora leiocarpa*	Smooth-barked Apple	320	N
10	*Eucalyptus carnea*	Broad-leaved White Mahogany	440	N
11	*Eucalyptus carnea*	Broad-leaved White Mahogany	320	N
12	*Corymbia citriodora*	Spotted Gum	150	N
13	*Angophora leiocarpa*	Smooth-barked Apple	180	N
14	*Eucalyptus carnea*	Broad-leaved White Mahogany	320	N
15	*Angophora leiocarpa*	Smooth-barked Apple	400	N
16	*Eucalyptus microcorys*	Tallowwood	400	N
17	*Eucalyptus carnea*	Broad-leaved White Mahogany	330	N
18	*Allocasuarina torulosa*	She-oak	150	N
19	*Allocasuarina torulosa*	She-oak	190	N
20	*Corymbia citriodora*	Spotted Gum	140	N
21	*Corymbia citriodora*	Spotted Gum	160	N
22	*Eucalyptus major*	Flooded Gum	350	N
23	*Angophora leiocarpa*	Smooth-barked Apple	370	N
24	*Corymbia intermedia*	Pink Bloodwood	230	N
25	*Eucalyptus major*	Flooded Gum	230	N
26	*Corymbia intermedia*	Pink Bloodwood	150	N
27	*Eucalyptus carnea*	Broad-leaved White Mahogany	420	N
28	*Angophora woodsiana*	Rough-barked apple	160	N
29	*Eucalyptus microcorys*	Tallowwood	300	N
30	*Corymbia citriodora*	Spotted Gum	300	N
Total Trees with Koala Scats				0
Total Percentage of Koala Use				0%
Koala Use (Based on East Coast med-high Habitat)				Nil

SAT Survey 5 (07.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	610	N
2	*Eucalyptus carnea*	Broad-leaved White Mahogany	450	N
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	N
4	*Eucalyptus acmenoides*	White Mahogany	260	N
5	*Angophora leiocarpa*	Smoth-barked Apple	450	N
6	*Eucalyptus acmenoides*	White Mahogany	300	N
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	350	N
8	*Corymbia intermedia*	Pink Bloodwood	310	N
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	410	N
10	*Allocasuarina torulosa*	She-oak	180	N
11	*Corymbia citriodora*	Spotted Gum	160	N
12	*Eucalyptus crebra*	Narrow-leaved Ironbark	460	N
13	*Corymbia citriodora*	Spotted Gum	200	N
14	*Allocasuarina torulosa*	She-oak	100	N
15	*Corymbia intermedia*	Pink Bloodwood	310	N
16	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	N
17	*Eucalyptus acmenoides*	White Mahogany	520	N
18	*Eucalyptus crebra*	Narrow-leaved Ironbark	230	N
19	*Eucalyptus acmenoides*	White Mahogany	450	N
20	*Eucalyptus carnea*	Broad-leaved White Mahogany	650	N
21	*Eucalyptus carnea*	Broad-leaved White Mahogany	600	Y
22	*Corymbia citriodora*	Spotted Gum	350	N
23	*Eucalyptus crebra*	Narrow-leaved Ironbark	250	N
24	*Eucalyptus carnea*	Broad-leaved White Mahogany	700	N
25	*Corymbia citriodora*	Spotted Gum	400	N
26	*Eucalyptus carnea*	Broad-leaved White Mahogany	450	N
27	*Eucalyptus carnea*	Broad-leaved White Mahogany	300	N
28	*Corymbia citriodora*	Spotted Gum	450	N
29	*Eucalyptus carnea*	Broad-leaved White Mahogany	800	N
30	*Corymbia citriodora*	Spotted Gum	700	N
Total Trees with Koala Scats				1
Total Percentage of Koala Use				3.33%
Koala Use (Based on East Coast medium-hgih Habitat)				Low

Burnett Creek

SAT Survey 6 (07.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	220	N
2	*Corymbia citriodora*	Spotted Gum	200	N
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	N
4	*Corymbia citriodora*	Spotted Gum	180	N
5	*Eucalytpus crebra*	Narrow-leaved Ironbark	300	N
6	*Corymbia citriodora*	Spotted Gum	200	N
7	*Eucalyptus carnea*	Broad-leaved White Mahogany	450	N
8	*Corymbia citriodora*	Spotted Gum	120	N
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	350	N
10	*Eucalyptus crebra*	Narrow-leaved Ironbark	140	N
11	*Eucalyptus crebra*	Narrow-leaved Ironbark	140	N
12	*Corymbia citriodora*	Spotted Gum	300	N
13	*Eucalyptus crebra*	Narrow-leaved Ironbark	220	N
14	*Eucalyptus dura*	Ironbark	240	N
15	*Eucalyptus dura*	Ironbark	160	N
16	*Eucalyptus dura*	Ironbark	220	N
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	N
18	*Corymbia citriodora*	Spotted Gum	380	N
19	*Eucalyptus carnea*	Broad-leaved White Mahogany	300	N
20	*Corymbia citriodora*	Spotted Gum	550	N
21	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	N
22	*Corymbia citriodora*	Spotted Gum	150	N
23	*Corymbia citriodora*	Spotted Gum	350	N
24	*Corymbia citriodora*	Spotted Gum	300	N
25	*Eucalyptus carnea*	Broad-leaved White Mahogany	400	N
26	*Corymbia citriodora*	Spotted Gum	320	N
27	*Eucalyptus carnea*	Broad-leaved White Mahogany	350	N
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	N
29	*Corymbia citriodora*	Spotted Gum	350	N
30	*Corymbia citriodora*	Spotted Gum	420	N
Total Trees with Koala Scats				0
Total Percentage of Koala Use				0%
Koala Use (Based on East Coast med-high Habitat)				Nil

Burnett Creek

SAT Survey 7 (13.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	170	Y
2	*Eucalyptus acmenoides*	White Mahogany	330	Y
3	*Corymbia citriodora*	Spotted Gum	100	N
4	*Corymbia citriodora*	Spotted Gum	120	N
5	*Corymbia citriodora*	Spotted Gum	180	N
6	*Corymbia citriodora*	Spotted Gum	220	N
7	*Corymbia citriodora*	Spotted Gum	100	Y
8	*Eucalyptus tereticornis*	Fored Red Gum	410	Y
9	*Eucalyptus acmenoides*	White Mahogany	230	Y
10	*Corymbia citriodora*	Spotted Gum	100	N
11	*Corymbia citriodora*	Spotted Gum	190	N
12	*Corymbia citriodora*	Spotted Gum	320	N
13	*Corymbia citriodora*	Spotted Gum	180	N
14	*Corymbia citriodora*	Spotted Gum	270	N
15	*Corymbia citriodora*	Spotted Gum	230	N
16	*Eucalyotus acmenoides*	White Mahogany	280	N
17	*Corymbia citriodora*	Spotted Gum	190	N
18	*Corymbia citriodora*	Spotted Gum	710	N
19	*Corymbia citriodora*	Spotted Gum	130	N
20	*Corymbia citriodora*	Spotted Gum	270	N
21	*Corymbia citriodora*	Spotted Gum	210	N
22	*Corymbia citriodora*	Spotted Gum	150	N
23	*Corymbia citriodora*	Spotted Gum	700	N
24	*Corymbia citriodora*	Spotted Gum	310	N
25	*Corymbia citriodora*	Spotted Gum	180	N
26	*Eucalyptus crebra*	Narrow-leaved Ironbark	740	N
27	*Eucalyptus acmenoides*	White Mahogany	350	N
28	*Eucalyptus tereticornis*	Fored Red Gum	700	N
29	*Corymbia citriodora*	Spotted Gum	210	N
30	*Corymbia citriodora*	Spotted Gum	370	N
Total Trees with Koala Scats				5
Total Percentage of Koala Use				16.67%
Koala Use (Based on East Coast med-high Habitat)				Low

Burnett Creek

SAT Survey 8 (13.05.2021)				
Tree Numbe	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	270	N
2	*Eucalyptus crebra*	Narrow-leaved Ironbark	210	N
3	*Corymbia citriodora*	Spotted Gum	240	N
4	*Corymbia citriodora*	Spotted Gum	750	N
5	*Corymbia citriodora*	Spotted Gum	300	N
6	*Corymbia citriodora*	Spotted Gum	230	N
7	*Corymbia citriodora*	Spotted Gum	310	N
8	*Corymbia citriodora*	Spotted Gum	300	N
9	*Corymbia citriodora*	Spotted Gum	170	N
10	*Corymbia citriodora*	Spotted Gum	220	N
11	*Corymbia citriodora*	Spotted Gum	290	N
12	*Corymbia citriodora*	Spotted Gum	310	N
13	*Corymbia citriodora*	Spotted Gum	300	Y
14	*Corymbia citriodora*	Spotted Gum	150	Y
15	*Eucalyptus tereticornis*	Forest Red Gum	190	N
16	*Eucalyptus crebra*	Narrow-leaved Ironbark	140	N
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	N
18	*Corymbia citriodora*	Spotted Gum	150	N
19	*Corymbia citriodora*	Spotted Gum	130	N
20	*Corymbia citriodora*	Spotted Gum	260	N
21	*Corymbia citriodora*	Spotted Gum	210	N
22	*Corymbia citriodora*	Spotted Gum	200	N
23	*Corymbia citriodora*	Spotted Gum	280	N
24	*Eucalyptus crebra*	Narrow-leaved Ironbark	700	N
25	*Corymbia citriodora*	Spotted Gum	110	N
26	*Eucalyptus crebra*	Narrow-leaved Ironbark	220	N
27	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	N
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	400	N
29	*Eucalyptus crebra*	Narrow-leaved Ironbark	120	N
30	*Corymbia citriodora*	Spotted Gum	200	N
Total Trees with Koala Scats				2
Total Percentage of Koala Use				6.67%
Koala Use (Based on East Coast med-high Habitat)				Low

SAT Survey 9 (27.05.2021)				
Tree Number	***Species name***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus dura*	Ironbark	230	N
2	*Eucalyptus dura*	Ironbark	230	N
3	*Eucalyptus dura*	Ironbark	250	N
4	*Eucalyptus dura*	Ironbark	260	N
5	*Corymbia trachyphloia*	Brown Bloodwood	250	N
6	*Eucalyptus dura*	Ironbark	320	N
7	*Eucalyptus dura*	Ironbark	170	N
8	*Eucalyptus dura*	Ironbark	270	N
9	*Eucalyptus dura*	Ironbark	250	N
10	*Eucalyptus dura*	Ironbark	100	N
11	*Eucalyptus dura*	Ironbark	200	N
12	*Eucalyptus dura*	Ironbark	320	N
13	*Eucalyptus dura*	Ironbark	220	N
14	*Eucalyptus dura*	Ironbark	310	N
15	*Eucalyptus dura*	Ironbark	300	N
16	*Eucalyptus dura*	Ironbark	330	N
17	*Eucalyptus dura*	Ironbark	200	N
18	*Eucalyptus dura*	Ironbark	310	N
19	*Eucalyptus dura*	Ironbark	210	N
20	*Eucalyptus dura*	Ironbark	350	N
21	*Eucalyptus dura*	Ironbark	370	N
22	*Eucalyptus dura*	Ironbark	250	N
23	*Eucalyptus dura*	Ironbark	300	N
24	*Eucalyptus dura*	Ironbark	280	N
25	*Angophora leiocarpa*	Smooth-barked Apple	290	Y
26	*Eucalyptus dura*	Ironbark	290	N
27	*Eucalyptus dura*	Ironbark	270	N
28	*Eucalyptus dura*	Ironbark	400	Y
29	*Eucalyptus dura*	Ironbark	220	Y
30	*Eucalyptus dura*	Ironbark	280	N
Total Trees with Koala Scats				3
Total Percentage of Koala Use				10%
Koala Use (Based on East Coast med-high Habitat)				Low

SAT Survey 10 (27.05.2021)				
Tree Number	***Species name***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus acmenoides*	White Mahogany	430	N
2	*Eucalyptus microcorys*	Tallowwood	380	N
3	*Corymbia intermedia*	Pink Bloodwood	180	N
4	*Eucalyptus acmenoides*	White Mahogany	470	N
5	*Eucalyptus microcorys*	Tallowwood	240	N
6	*Angophora leiocarpa*	Smooth-barked Apple	450	N
7	*Eucalyptus acmenoides*	White Mahogany	650	N
8	*Eucalyptus acmenoides*	White Mahogany	230	N
9	*Corymbia citriodora*	Spotted Gum	200	N
10	*Corymbia citriodora*	Spotted Gum	190	N
11	*Eucalyptus acmenoides*	White Mahogany	620	N
12	*Corymbia citriodora*	Spotted Gum	300	N
13	*Eucalyptus acmenoides*	White Mahogany	730	N
14	*Corymbia intermedia*	Pink Bloodwood	160	Y
15	*Eucalyptus acmenoides*	White Mahogany	200	Y
16	*Corymbia citriodora*	Spotted Gum	240	N
17	*Corymbia citriodora*	Spotted Gum	280	N
18	*Angophora leiocarpa*	Smooth-barked Apple	420	N
19	*Eucalyptus acmenoides*	White Mahogany	890	Y
20	*Corymbia citriodora*	Spotted Gum	130	Y
21	*Angophora leiocarpa*	Smooth-barked Apple	460	Y
22	*Eucalyptus acmenoides*	White Mahogany	500	Y
23	*Corymbia citriodora*	Spotted Gum	180	Y
24	*Eucalyptus acmenoides*	White Mahogany	830	N
25	*Corymbia citriodora*	Spotted Gum	220	N
26	*Eucalyptus acmenoides*	White Mahogany	150	N
27	*Eucalyptus acmenoides*	White Mahogany	160	N
28	*Allocasuarina torulosa*	She-oak	200	N
29	*Corymbia citriodora*	Spotted Gum	130	N
30	*Eucalyptus siderophloia*	Grey Ironbark	150	N
Total Trees with Koala Scats				7
Total Percentage of Koala Use				23.30%
Koala Use (Based on East Coast med-high Habitat)				High

Burnett Creek

SAT Survey 11 (27.05.2021)				
Tree Number	***Species name***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	220	N
2	*Eucalyptus melanophloia*	Silver-leaved Ironbark	300	N
3	*Corymbia citriodora*	Spotted Gum	330	N
4	*Corymbia citriodora*	Spotted Gum	240	N
5	*Corymbia citriodora*	Spotted Gum	500	Y
6	*Corymbia citriodora*	Spotted Gum	300	N
7	*Corymbia citriodora*	Spotted Gum	380	N
8	*Corymbia citriodora*	Spotted Gum	310	N
9	*Eucalyptus siderophloia*	Grey Ironbark	200	N
10	*Corymbia citriodora*	Spotted Gum	360	N
11	*Corymbia citriodora*	Spotted Gum	280	Y
12	*Corymbia citriodora*	Spotted Gum	360	N
13	*Corymbia citriodora*	Spotted Gum	280	Y
14	*Corymbia citriodora*	Spotted Gum	310	Y
15	*Corymbia citriodora*	Spotted Gum	240	N
16	*Corymbia citriodora*	Spotted Gum	340	N
17	*Corymbia citriodora*	Spotted Gum	140	N
18	*Corymbia citriodora*	Spotted Gum	180	N
19	*Eucalyptus siderophloia*	Grey Ironbark	100	N
20	*Eucalyptus siderophloia*	Grey Ironbark	270	Y
21	*Corymbia citriodora*	Spotted Gum	290	N
22	*Corymbia citriodora*	Spotted Gum	330	N
23	*Eucalyptus siderophloia*	Grey Ironbark	250	N
24	*Eucalyptus siderophloia*	Grey Ironbark	250	N
25	*Corymbia citriodora*	Spotted Gum	350	N
26	*Corymbia citriodora*	Spotted Gum	180	N
27	*Corymbia citriodora*	Spotted Gum	280	N
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	260	N
29	*Corymbia citriodora*	Spotted Gum	120	N
30	*Corymbia citriodora*	Spotted Gum	260	N
Total Trees with Koala Scats				5
Total Percentage of Koala Use				16.67%
Koala Use (Based on East Coast med-high Habitat)				Low

Appendix B

Koala MHQA Data

Habitat Quality Site Assessment Template…….. **PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD**

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** …… **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	03.06.2019

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 1 and 2 - mapped as RE12.8.20/12.8.19

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Eucalyptus dura*	Common Name	Smooth-branched Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Brachychiton sp.*	Common Name	
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Euccalyptus dura*	Common Name	Smooth-branched Ironbark
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Alyxia ruscifolia*	Common Name	Chain Fruit
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Gleichenia dicarpa*	Common Name	Coral Fern
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Plectranthus sp.*	Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Panicum decompsitum*	Common Name	Native Millet
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Panicum decompsitum*	Common Name	Native Millet
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	9		
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Drynaria sp.*	Common Name	Basket Fern
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Lepidosperma sp.*	Common Name	
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Rice Flower
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Pomacx umbellata*	Common Name	Pomax
Scientific Name	*Phylanthes?*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern

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

Total percentage cover within plot	2.50%		
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Bidens pillosa*	Common Name	Cobblers Pegs
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 F - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	334.50		
1	4.00	26	
2	0.50	27	
3	15.00	28	
4	6.00	29	
5	12.00	30	
6	0.50	31	
7	0.80	32	
8	0.60	33	
9	8.00	34	
10	6.00	35	
11	4.00	36	
12	9.00	37	
13	0.50	38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	70.00%	47.50%	57.50%	50.00%	35.00%	52.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	20.00%	12.50%	10.00%	35.00%	16.50%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	4	Number of large non eucalypt trees:	0
Total Number Large Trees:	4		

Median Tree Canopy Height Measurements	Canopy:	18.50	Sub-canopy:	7.50	Emergent:	

Number of ecologically dominant layer species regenerating:	56

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	56.40%	Sub-canopy:	11.90%	Emergent:	
Shrub canopy cover %	16.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site ☐	An Offset Site ☐	an Advanced Offset Site ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	03.06.2019

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.11.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 6 and Transect 5 - mapped RE12.9/10.17

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus microcorys*	Common Name	Tallowood
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Eucalyptus propinqua*	Common Name	Grey Gum
Scientific Name	*Eucalyptus microcorys*	Common Name	Tallowood
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	Lophostemon confertus	Common Name	Brush Box
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Persoonia sp.*	Common Name	Geebung
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Lomatia silaifolia*	Common Name	Crinkle Bush
Scientific Name	*Brachychiton sp.?*	Common Name	Spiky Leaf?
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear 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	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Pteridium*	Common Name	Bracken Fern
Scientific Name	*Sida acuta*	Common Name	Small Sida
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Lomandra multiflora*	Common Name	Many-flowered Mat Rush
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Rice Flower
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Hybanthus stellarioides*	Common Name	Spade Flower
Scientific Name	*Dianella careula*	Common Name	Blue Flax-lily

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

Total percentage cover within plot	0.00%		
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	

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

Total Length of Course Woody Debris (Meters):	918.00		
1	6.00	26	14.50
2	8.20	27	5.00
3	4.50	28	6.00
4	0.60	29	0.60
5	0.50	30	0.50
6	0.50	31	0.80
7	8.00	32	0.50
8	12.40	33	1.50
9	15.20	34	
10	1.40	35	
11	9.50	36	
12	15.20	37	
13	6.20	38	
14	7.00	39	
15	10.00	40	
16	0.50	41	
17	10.00	42	
18	3.00	43	
19	8.50	44	
20	1.00	45	
21	6.00	46	
22	5.30	47	
23	6.50	48	
24	2.00	49	
25	6.20	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	42.50%	60.00%	42.50%	45.00%	22.50%	42.50%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	25.00%	17.50%	30.00%	32.50%	40.00%	29.00%

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

Eucalypt Large tree DBH benchmark used :	400	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	28	Number of large non eucalypt trees:	0
Total Number Large Trees:	28		

Median Tree Canopy Height Measurements	Canopy:	21.50	Sub-canopy:	13.00	Emergent:	

Number of ecologically dominant layer species regenerating:	76

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	74.80%	Sub-canopy:	29.60%	Emergent:	
Shrub canopy cover %	9.30%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template…….. **PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD**

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- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** …… **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	03.06.2019

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum	0m Mark	Zone	Easting	Northing
WGS 84 ☐				
GDA 94 ☐	50m Mark	Zone	Easting	Northing
Plot bearing		Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 3, 4 and 7

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Angophera subvalentina*	Common Name	Broad-leaved Apple
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leved Ironbark
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Breynia oblongifolia*	Common Name	Coffee Bush
Scientific Name	*Dodonaea viscosa*	Common Name	Hop Bush
Scientific Name	*Ficus coronata*	Common Name	Sandpaper Fig
Scientific Name	*Drynaria*	Common Name	Basket Fern
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Persoonia*	Common Name	Geebung
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	7		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Scented Top?*	Common Name	
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Scented Top?*	Common Name	
Scientific Name	*Oplismenus sp.*	Common Name	Basket Grasss
Scientific Name	*Panicum decompositum*	Common Name	Native Millet
Scientific Name	*Aristida sp.*	Common Name	
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	*Panicum decompositum*	Common Name	Native Millet
Scientific Name	*Aristida sp.*	Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	9		
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Lobelia purpurescens*	Common Name	White Root
Scientific Name	*Vigna unguiculata*	Common Name	Cow Pea
Scientific Name	*Lepidosperma sp.*	Common Name	
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Vigna unguiculata*	Common Name	Cow Pea
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Desmodium sp.*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Lepidosperma sp.*	Common Name	

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

Total percentage cover within plot	2.60%		
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Bidens Pillosa*	Common Name	Cobblers Pegs
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	456.33		
1	0.50	26	6.80
2	0.50	27	
3	0.50	28	
4	8.00	29	
5	8.20	30	
6	8.00	31	
7	12.30	32	
8	8.60	33	
9	14.80	34	
10	0.80	35	
11	0.50	36	
12	14.00	37	
13	3.60	38	
14	8.20	39	
15	8.00	40	
16	0.50	41	
17	3.00	42	
18	4.80	43	
19	1.00	44	
20	7.50	45	
21	3.00	46	
22	2.60	47	
23	3.00	48	
24	2.20	49	
25	6.00	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	50.00%	41.60%	40.00%	50.00%	58.30%	47.98%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	23.30%	28.30%	23.30%	16.60%	21.60%	22.62%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	5	Number of large non eucalypt trees:	0
Total Number Large Trees:	5		

Median Tree Canopy Height Measurements	Canopy:	22.60	Sub-canopy:	12.30	Emergent:	

Number of ecologically dominant layer species regenerating:	71

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	62.10%	Sub-canopy:	24.70%	Emergent:	
Shrub canopy cover %	33.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	

Part B - Site Data

Property	Burnett Creek	Date	28/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

T1 - Rock/Eucalypt Forest

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

Tree species richness:			
Total number of species	3		
Scientific Name	*Eucalyptus dura*	**Common Name**	Smooth-branched Ironbark
Scientific Name	*Corymbia trachyphloia*	**Common Name**	Brown Bloodwood
Scientific Name	*Eucalyptus carnea*	**Common Name**	Thick-leaved Mahogony
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	3		
Scientific Name	*Xanthorrhoea sp.*	**Common Name**	Grass Tree
Scientific Name	*Salonaum ellipticum*	**Common Name**	Potato Bush
Scientific Name	*Allocasuarina littoralis*	**Common Name**	Black She-oak
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	*Poaceae sp.*	**Common Name**	Tussock Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
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	7		
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax-lily
Scientific Name	*Desmodium sp.*	**Common Name**	Hairy Desmodium
Scientific Name	*Drynaria sp.*	**Common Name**	Basket Fern
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Lepidosperma sp.*	**Common Name**	
Scientific Name	*Hardenbergia violacea*	**Common Name**	Native Sarsparilla
Scientific Name	*Ozothamnus diosmifolius*	**Common Name**	Rice Flower

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

Total percentage cover within plot	2.00%		
Scientific Name	*Tradescantia zebrina*	**Common Name**	Wandering Jew
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 E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	271.00		
1	6.20	26	
2	0.60	27	
3	1.20	28	
4	5.10	29	
5	0.20	30	
6	0.50	31	
7	1.00	32	
8	0.80	33	
9	8.00	34	
10	0.50	35	
11	3.00	36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	10.00%	0.00%	0.00%	60.00%	14.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	10.00%	15.00%	5.00%	20.00%	10.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Litter	0.00%	30.00%	10.00%	0.00%	10.00%	10.00%
Rock	80.00%	40.00%	70.00%	95.00%	10.00%	59.00%
Bare Ground	20.00%	10.00%	5.00%	0.00%	0.00%	7.00%
Cryptogram						0.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	0	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

Median Tree Canopy Height Measurements	Canopy:	20.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	26.70	Sub-canopy:	6.90	Emergent:	
Shrub canopy cover %	17.60					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	1.40	8.10	6.70	T2	57.20	63.00	5.80
T1	8.80	12.10	3.30	T2	92.00	93.10	1.10
T1	28.20	37.50	9.30	T2			
T1	92.60	100.00	7.40	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	1.70	3.10	1.40	**Shrub**	31.30	32.40	1.10
Shrub	3.70	4.80	1.10	**Shrub**	38.40	39.20	0.90
Shrub	7.30	7.90	0.60	**Shrub**	44.30	45.40	1.10
Shrub	8.90	9.60	0.70	**Shrub**	57.20	58.00	0.80
Shrub	10.40	11.90	1.50	**Shrub**	62.00	63.00	1.00
Shrub	13.40	17.40	4.00	**Shrub**	80.60	81.80	1.20
Shrub	26.30	27.30	1.00	**Shrub**	97.70	98.90	1.20

Part I: GHFF Stem Count

Species Name	Stem Count
Eucalyptus dura	35
Corymbia trachyphloia	14
Eucalyptus carnea	2
Allocasuarina littoralis	1

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

Assessment Unit - Regional Ecosystem	Assessment Unit 1 Remnant - 12.8.20												
Site Reference	Benchmark	Transect 1			Transect 2			Transect 2020 1					Benchmark
	RE12.8.20	Transect Data	% Benchmark	Score	Transect Data	% Benchmark	Score	Transect Data	% Benchmark	Score	Average % benchmark	Assessment Unit Average	RE12.9-10.2
Recruitment of woody perennial species in EDL	**100**	40	40.00	**3**	71	71.00	**3**	100	100.00	**5**	55.50	3.67	**100**
Native plant species richness - trees	**7**	5	71.43	**2.5**	7	100.00	**5**	3	42.86	**2.5**	85.71	3.33	**6**
Native plant species richness - shrubs	**10**	3	30.00	**2.5**	7	70.00	**2.5**	3	30.00	**2.5**	50.00	2.50	**7**
Native plant species richness - grasses	**4**	2	50.00	**2.5**	2	50.00	**2.5**	3	75.00	**2.5**	50.00	2.50	**7**
Native plant species richness - forbes	**15**	6	40.00	**2.5**	6	40.00	**2.5**	7	46.67	**2.5**	40.00	2.50	**13**
Tree canopy height (Canopy)	**21**	16	76.19	5	21	100.00	5	20	95.24	5	88.10	NA	**21**
Tree canopy height (Sub-canopy)	**7**	7	100.00	5	8	114.29	5	8	114.29	5	107.14	NA	**12**
Tree Canopy Height Average	**NA**	NA	NA	**5**	NA	NA	**5**	NA	NA	**5**	NA	5.00	**NA**
Tree canopy cover (Canopy)	**44**	47.8	108.64	5	65	147.73	5	26.7	60.68	5	128.18	NA	**64**
Tree canopy cover (Sub-canopy)	**16**	17.3	108.13	5	6.5	40.63	2	6.9	43.13	2	74.38	NA	**20**
Tree Canopy Cover Average	**NA**	NA	NA	**5**	NA	NA	**3.5**	NA	NA	**3.5**	NA	4.00	**NA**
Shrub canopy cover	**29**	20.4	70.34	**5**	19.5	67.24	**5**	17.6	60.69	**5**	68.79	5.00	**6**
Native grass cover	**20**	67	335.00	**5**	37	185.00	**5**	14	70.00	**3**	260.00	4.33	**21**
Organic litter	**40**	16	40.00	**3**	17	42.50	**3**	10	25.00	**3**	41.25	3.00	**48**
Large trees (euc plus non-euc) (per ha)	**20**	1	5.00	**5**	6	30.00	**5**	0	0.00	**0**	17.50	3.33	**38**
Coarse woody debris (per ha)	**811**	289	35.64	**2**	380	46.86	**2**	271	33.42	**2**	41.25	2.00	**506**
Non-native plant cover	**0**	0	0.00	**10**	5	5.00	**5**	2	2.00	**10**	2.50	8.33	**0**
Quality and availability of food and foraging habitat	**NA**	10	NA	**10**	**10**	NA	**10**	**10**	NA	**10**	NA	10.00	**NA**
Quality and availability of shelter	**NA**	10	NA	**10**	**10**	NA	**10**	**10**	NA	**10**	NA	10.00	**NA**
											Average of Transect scores		
Site Condition Score				73			69			66.5	71	70	
MAX Site Condition Score				*100*			*100*			*100*		*100*	
Site Condition Score - out of 3												**2.09**	
Site Context													
Size of patch				10			10			10		10	
Connectedness				5			5			5		5	
Context				5			5			5		5	
Ecological Corridors				6			6			6		6	
Role of site location to species overall population in the state				5			5			5		5	
Threats to the species				7			7			7		7	
Species mobility capacity				10			10			10		10	
Site Context Score				48			48					48	
MAX Site Context Score				*56*			*56*					*56*	
Site Context Score - out of 3												**2.57**	

Species Stocking Rate (SSR)

Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0		5		10		10	SAT surveys detected koalas are present on
		No		Yes - adjacent		Yes - on site			
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10		15		10	Presence of scats over site indicates koalas
		Not habitat	Dispersal	Foraging		Breeding			
Approximate density (per ha)	Score	0	10	20		30		10	SAT surveys showed low presence using the
		0%							
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)		35							
SRR Score (out of 4)		**2.00**							

***SSR Supplementary Table**					
*Key source population for breeding	Score	0	10	0	Given the low usage and lack of evidence of breeding occurring on site it is not considered to be a key populaiton for bre
		No	Yes/ Possibly		
*Key source population for dispersal	Score	0	5	5	Unknown but using the cautionary principle it is considered possible.
		No	Yes/ Possibly		
*Necessary for maintaining genetic diversity	Score	0	15	0	The site is highly unlikely to necessary for maintaining genetic diversity given the low density
		No	Yes/ Possibly		
*Near the limit of the species range	Score	0	15	0	The site is not near the limit of koalas range
		No	Yes		

Final habitat quality score (weighted)	**AU1**	**AU2**	**AU3**	**Average/ Final**	
Site Condition score (out of 3)	2.09	2.15	2.06	2.10	
Site Context Score (out of 3)	2.57	2.57	2.57	2.57	
Species Stocking Rate Score (out of 4)	2	2	2	2.00	6.67
Habitat Quality score (out of 10)	*6.66*	*6.72*	*6.63*	6.670595238	
Assessment Unit area (ha)	59.9953	70.4186	20.8854	151.2993	
Total offset area (ha) for this MNES	151.2993	151.2993	151.2993		
Size Weighting	0.40	0.47	0.14	***1.00***	
Weighted Habitat Quality Score	***2.64***	***3.13***	***0.92***	***6.68***	
Rounded weighted Habitat Quality Score				**7**	

Assessment Unit 2 - Remnant 12.9-10.2											Assessment Unit 3 - Remnant RE12.11.3						
Transect 3			Transect 4			Transect 7					Benchmark	Transect 5			Transect 6		
Transect Data	% Benchmark	Score	Transect Data	% Benchmark	Score	Transect Data	% Benchmark	Score	Average % benchmark	Assessment Unit Average	RE12.11.3	Transect Data	% Benchmark	Score	Transect Data	% Benchmark	Score
57	57	**3**	75	75	**3**	0	0	**0**	44	**2.00**	**100**	0	0	**0**	0	0	**0**
7	117	**5**	4	67	**2.5**	5	83	**2.5**	89	**3.33**	**6**	5	83	**2.5**	7	117	**5**
5	71	**2.5**	1	14	**0**	2	29	**2.5**	38	**1.67**	**12**	2	17	**0**	5	42	**2.5**
2	29	**2.5**	7	100	**5**	3	43	**2.5**	57	**3.33**	**4**	1	25	**2.5**	3	75	**2.5**
4	31	**2.5**	2	15	**2.5**	5	38	**2.5**	28	**2.50**	**21**	9	43	**2.5**	3	14	**0**
21	100	5	26	124	5	21	100	5	108	**NA**	**25**	22	88	5	2	8	5
12	100	5	14	117	5	11	92	5	103	**NA**	**10**	15	150	5	11	110	5
NA	NA	**5**	NA	NA	**5**	NA	NA	**5**	NA	**5.00**	**NA**	NA	NA	**5**	NA	NA	**5**
6.2	10	0	61.4	96	5	56.5	88	5	65	**NA**	**72**	79.8	111	5	80.7	112	5
26.1	131	5	20.5	103	5	27.5	138	5	124	**NA**	**17**	38	224	3	20.6	121	5
NA	NA	**2.5**	NA	NA	**5**	NA	NA	**5**	NA	**4.17**	**NA**	NA	NA	**4**	NA	NA	**5**
8.4	140	**5**	7.1	118	**5**	23.7	395	**3**	218	**4.33**	**21**	9.9	47	**3**	9.3	44	**3**
54	257	**5**	6	29	**1**	48	229	**5**	171	**3.67**	**16**	63	394	**5**	34	213	**5**
8	17	**3**	82	171	**5**	39	81	**5**	90	**4.33**	**76**	26	34	**3**	32	42	**3**
2	5	**5**	4	11	**5**	8	21	**5**	12	**5.00**	**63**	39	62	**10**	17	27	**5**
177	35	**2**	708	140	**5**	484	96	**5**	90	**4.00**	**370**	954	258	**2**	882	238	**2**
5	NA	**5**	2	NA	**10**	1	1	**10**	1	**8.33**	**0**	0	0	**10**	0	0	**10**
10	NA	**10**	**10**	NA	**10**	**10**	NA	**10**	NA	**10.00**	**NA**	**10**	NA	**10**	**10**	NA	**10**
10	NA	**10**	**10**	NA	**10**	**10**	NA	**10**	NA	**10.00**	**NA**	**10**	NA	**10**	**10**	NA	**10**
									Average of Transect scores								
		68			74				71	72				69.5			68
		100			*100*					*100*				*100*			*100*
										2.15							
		10			10			10		10				10			10
		5			5			5		5				5			5
		5			5			5		5				5			5
		6			6			6		6				6			6
		5			5			5		5				5			5
		7			7			7		7				7			7
		40			10			10		10				10			10
		78			48					48				48			48
		56			*56*					*56*				*56*			*56*
										2.57							

site

are foraging on site

e east coast (med-high) category

eding

Average % benchmark	Assessment Unit Average
0.00	**0.00**
100.00	**3.75**
29.17	**1.25**
50.00	**2.50**
28.57	**1.25**
48.00	**NA**
130.00	**NA**
NA	**5.00**
111.46	**NA**
172.35	**NA**
NA	**4.50**
45.71	**3.00**
303.13	**5.00**
38.16	**3.00**
44.44	**7.50**
248.11	**2.00**
0.00	**10.00**
NA	**10.00**
NA	**10.00**

Average of Transect scores	
68.75	68.75
	100
	2.06

	10
	5
	5
	6
	5
	7
	10
	48
	56
	2.57

Appendix C

Grey-headed Flying-fox Foraging Habitat Assessment Data

All of this new editing

Assessment Unit - Regional Ecosystem	AU 1 - REMNANT - 12.8.20								AU 2 - REMNANT - 12.9-10.2								AU 3 - REMNANT - 12.11.3					
Site Reference	OUT OF	Transect 1		Transect 2		Transect 2020 T1		Mean Score	OUT	Transect 3		Transect 4		Transect 7		Mean Score	OUT OF	Transect 5		Transect 6		Mean Score
	(X/X)	comment	Score	comment	Score	comment	Score		OF	comment	Score	comment	Score	comment	Score		(X/X)	comment	Score	comment	Score	
Vegetation Condition	**20**	cat B	20	cat B	20	cat B	20	20	**20**	cat B	20	cat B	20	cat B	20	20	**20**	cat B	20	cat B	20	20
Species Richness	**20**	5	10	7	20	3	5	11.66667	**20**	7	20	4	10	5	10	13.33333	**20**	5	10	7	20	15
Flower Score	**10**	0.344286	5	0.482	5	0.503333	8	6	**10**	0.5186	8	0.4875	5	0.48	5	6	**10**	0.492	5	0.494286	5	5
Timing of Biological Shortages	**10**	all	10	all	10	all	10	10	**10**	all	10	all	10	all	10	10	**10**	No food short	7.5	all	10	8.75
Quality of Foraging Habitat	**20**	1	5	1	5	0	0	3.333333	**20**	3	5	3	5	3	5	5	**20**	2	5	3	5	5
Non-native Plant Cover	**20**	0.00%	20	5.00%	10	2.00%	20	16.66667	**20**	5.00%	10	2.00%	20	1.00%	20	16.66667	**20**	0.00%	20	0.00%	20	20
Site Condition Score			70		70		63	67.66667			73		70		70	71			67.5		80	73.75
MAX Site Condition Score	***X***	*X*	*100*	*X*	*100*	*X*	*100*	*100*	***X***	*X*	*100*	*X*	*100*	*X*	*100*	*100*	***X***	*X*	*100*	*X*	*100*	*100*
Site Condition Score - out of 4	**X**	**X**	**2.80**	**X**	**2.80**	**X**	**2.52**	**2.71**	**X**	**X**	**2.92**	**X**	**2.80**	**X**	**2.80**	**2.84**	**X**	**X**	**2.70**	**X**	**3.20**	**2.95**
Size of patch	**10**		10		10		10	10	**10**		10		10		10	10	**10**		10		10	10
Connectedness	**10**	0 active car	0		0		0	0	**10**		0		0		0	0	**10**		0	0	0	0
Context	**10**	56%	6		6		6	6	**10**		6		6		6	6	**10**		6		6	6
Ecological Corridors	**10**		10		10		10	10	**10**		10		10		10	10	**10**		10		10	10
Role of site location to species overall population in the sta	**10**	0 ≥ 3 level ca	0		0		0	0	**10**		0		0		0	0	**10**		0		0	0
Threats to the species	**10**	moderate	5		5		5	5	**5**		5		5		5	5	**5**		5		5	5
Site Context Score			31		31		31	31			31		31		31	31			31		31	31
MAX Site Context Score	***X***	*X*	*60*	*X*	*60*	*X*	*60*	*60*	***X***	*X*	*60*	*X*	*60*	*X*	*60*	*60*	***X***	*X*	*60*	*X*	*60*	*60*
Site Context Score - out of 3	**X**	**X**	**1.55**	**X**	**1.55**	**X**	**1.55**	**1.55**	**X**	**X**	**1.55**	**X**	**1.55**	**X**	**1.55**	**1.55**	**X**	**X**	**1.55**	**X**	**1.55**	**1.55**
Presence of large trees	**10**	5	2	30	4	0	0	2	**10**	5	2	11	2	21	2	2	**10**	62	6	27	4	5
Species Stocking Rate Score			2		4		0	2			2		2		2	2			6		4	5
MAX Species Stocking Rate Score	***X***	*X*	*10*	*X*	*10*	*X*	*10*	*10*	***X***	*X*	*10*	*X*	*10*	*X*	*10*	*10*	***X***	*X*	*10*	*X*	*10*	*10*
Species Stocking Rate Score - out of 3	**X**		**0.60**		**1.20**		**0.00**	**0.60**	**X**		**0.60**		**0.60**		**0.60**	**0.60**	**X**		**1.80**		**1.20**	**1.50**
Total			**4.95**		**5.55**		**4.07**	**4.86**			**5.07**		**4.95**		**4.95**	**4.99**			**6.05**		**5.95**	**6.00**

Assessment unit	AU1	AU2	AU3	Total
Toatal quality score	4.86	4.99	6.00	
Assessment unit area	59.995	70.4186	20.8854	151.2993
Toatal offset area	151.3	151.2993	151.299	
Size Weighting	0.40	0.47	0.14	***1.00***
Area weighted score	1.9258	2.322475	0.82824	***5.08***
Rounded Modified Quality Habitat Assessment Score				**5**

	AU1	Transect 1	Wt p*r	**Flower scores working**	**Timing of biological shortages**					Qulity of foraging habitat (1 = Wt p*r ≥0.65)
					Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating and conception Dec-Mar	Migration paths All year	Fruit industries Aug-Mar	
ᵖ mean of all Eucalyptus	*Eucalyptus acmenoides*		0.43			x	x	**x**	x	x	
† Value of 0.65 given as species listed as important winter f	*Angophera leiocarpa*		0.35								
* Assinged based on related species	*Eucalyptus dura* ᵖ		0.53								
	Corymbia citriodora		0.65	x		x			x	x	1
	Allocasuarina torulosa		0								
	Brachychiton sp.		0								

Corymbia trachyphloia	0.45			x	**x**	x	x	
	0.3442857	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**1**
AU1 Transect 2								
Corymbia citriodora	0.65	x						1
Euccalyptus dura	0.53							
Eucalyptus acmenoides	0.43		x	x	**x**	x	x	
Angophera leiocarpa	0.35							
Corymbia trachyphloia	0.45			x	**x**	x	x	
	0.482	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**1**
AU1 Transect 2020 T1								
Eucalyptus dura	0.53	x	x			x	x	
Corymbia trachyphloia	0.45			x	**x**	x	x	
Eucalyptus carnea ‡	0.53		x	x		x	x	
	0.5033333	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**0**
AU2 Transect 3								
Eucalyptus crebra †	0.65	x				x		1
Corymbia citriodora	0.65	x	x			x	x	1
Lophostemon confertus	0.64		x	x	x	x	x	1
Allocasuarina torulosa	0							
Corymbia trachyphloia	0.45			x	**x**	x	x	
Corymbia intermedia	0.86			x	x	x	x	
*Angophera subvalentina**	0.38							
	0.5185714	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**3**
AU2 Transect 4								
Corymbia citriodora	0.65	x	x			x	x	1
Eucalyptus crebra	0.65	x				x		1
Eucalyptus tereticornis	0.65	x	x	x	x	x	x	1
Allocasuarina torulosa	0							
	0.4875	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**3**
AU2 Transect 7								
Corymbia citriodora	0.65	x	x			x	x	1
Eucalyptus crebra	0.65	x				x		1
Corymbia trachyphloia	0.45			x	**x**	x	x	
Allocasuarina torulosa	0							
Eucalyptus tereticornis	0.65	x	x	x	x	x	x	1
	0.48	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**3**
AU3 Transect 5								
Eucalyptus microcorys ‡	0.53		x	x	x	x	x	
Eucalyptus acmenoides	0.43		x	x	**x**	x	x	
Corymbia intermedia	0.86			x	x	x	x	1
Lophostemon confertus	0.64		x	x	x	x	x	1
Allocasuarina torulosa	0							
	0.492	No	**yes**	**yes**	**yes**	**yes**	**yes**	**2**
AU3 Transect 6								
Eucalyptus acmenoides	0.43		x	x	**x**	x	x	
Corymbia citriodora	0.65	x	x			x	x	1
Eucalyptus microcorys	0.53		x	x	x	x	x	
Corymbia intermedia	0.86			x	x	x	x	1
Allocasuarina torulosa	0							
Eucalyptus crebra	0.65	x				x		1
Eucalyptus propinqua	0.34			x	x	x	x	
	0.4942857	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**3**

Appendix D

Weed Transect Data

Burnett Creek - Ground Layer Transect (100M) 1				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	10.0	*Themeda triandra*	Kangaroo Grass	10.00
10.0	20.0	*Heteropogon contortus*	Black Spear Grass	10.00
20.0	**20.2**	***Senecio madagascariensis***	**Fireweed**	**0.20**
20.2	75.0	*Themeda triandra*	Kangaroo Grass	54.80
75.0	100.0	*Heteropogon contortus*	Black Spear Grass	25.00
			Native/bare cover	**99.8%**
			Total Exotic/weed cover	**0.2%**
			Weeds of National Significance cover	**0.2%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 2				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	100.0	*Themeda triandra*	Kangaroo Grass	100.00
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
			Native/bare cover	**100.0%**
			Total Exotic/weed cover	**0.0%**
			Weeds of National Significance cover	**0.0%**

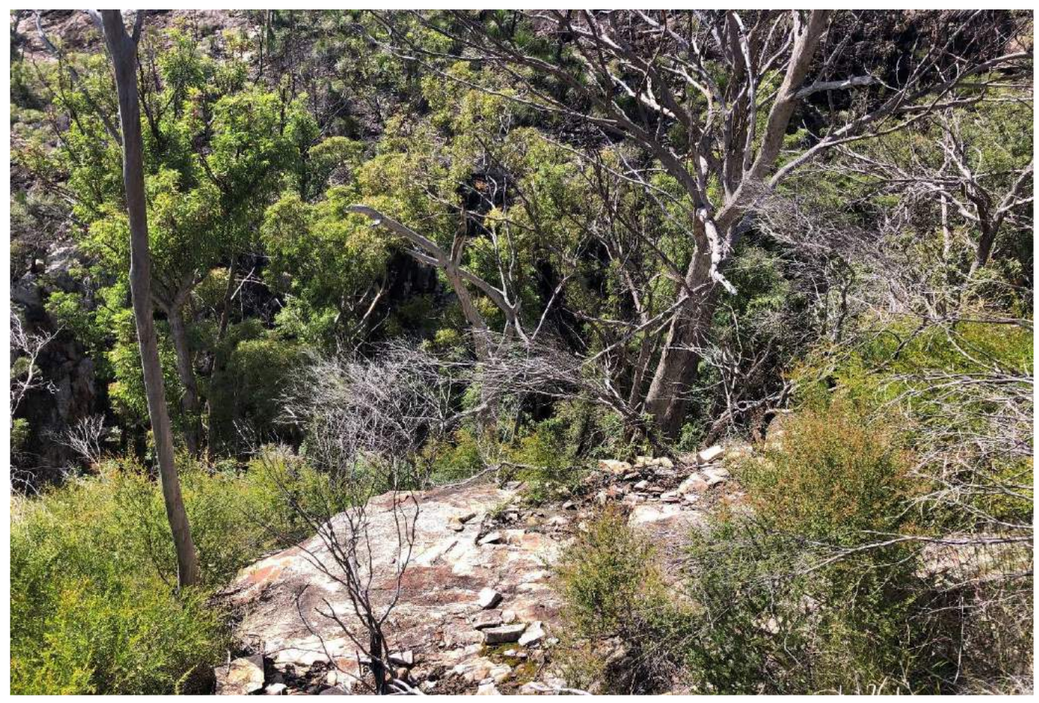
50m

North

East

South

West



Burnett Creek - Ground Layer Transect (100M) 3				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	**3.0**	***Melinis repens***	**Red Natal Grass**	**3.00**
3.0	5.0	*Themeda triandra*	Kangaroo Grass	2.00
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
5.0	**6.5**	***Lantana camara***	**Lantana**	**1.50**
6.5	24.0	*Themeda triandra*	Kangaroo Grass	17.50
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
24.0	**24.2**	***Senecio madagascariensis***	**Fireweed**	**0.20**
24.2	40.0	*Themeda triandra*	Kangaroo Grass	15.80
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
40.0	**40.2**	***Senecio madagascariensis***	**Fireweed**	**0.20**
40.2	80.0	*Themeda triandra*	Kangaroo Grass	39.80
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
80.0	**80.2**	***Senecio madagascariensis***	**Fireweed**	**0.20**
80.2	100.0	*Themeda triandra*	Kangaroo Grass	19.80
		Heteropogon contortus	Black Spear Grass	
		Xanthorrhoea johnsonii	Forest Grass Tree	
		Bare Rock	Bare Rock	
			Native/bare cover	**94.9%**
			Total Exotic/weed cover	**5.1%**
			Weeds of National Significance cover	**2.1%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 4				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	2.0	*Themeda triandra*	Kangaroo Grass	2.00
2.0	**2.5**	***Bidens pilosa***	**Cobbler's Pegs**	**0.50**
2.5	4.0	*Themeda triandra*	Kangaroo Grass	1.50
4.0	**4.2**	***Bidens pilosa***	**Cobbler's Pegs**	**0.20**
4.2	40.0	*Themeda triandra*	Kangaroo Grass	35.80
40.0	**40.2**	***Bidens pilosa***	**Cobbler's Pegs**	**0.20**
40.2	52.0	*Themeda triandra*	Kangaroo Grass	11.80
52.0	**52.3**	***Crassocephalum crepidioides***	**Thickhead**	**0.30**
52.3	55.0	*Themeda triandra*	Kangaroo Grass	2.70
55.0	**55.1**	***Bidens pilosa***	**Cobbler's Pegs**	**0.10**
55.1	95.0	*Themeda triandra*	Kangaroo Grass	39.90
95.0	**95.1**	***Bidens pilosa***	**Cobbler's Pegs**	**0.10**
95.1	100.0	*Themeda triandra*	Kangaroo Grass	4.90
			Native/bare cover	**98.6%**
			Total Exotic/weed cover	**1.4%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 5				
Start (m)	**Finish (m)**	**Species**	**Common Name**	**Coverage**
0	60	*Themeda triandra*	Kangaroo Grass	60
60	**61.5**	***Bidens pilosa***	**Cobbler's Pegs**	**1.5**
61.5	100	*Themeda triandra*	Kangaroo Grass	38.5
			Native/bare cover	**98.5%**
			Total Exotic/weed cover	**1.5%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 6				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	50.0	*Themeda triandra*	Kangaroo Grass	50.00
50.0	**50.3**	***Melinis repens***	**Red Natal Grass**	**0.30**
50.3	80.0	*Themeda triandra*	Kangaroo Grass	29.70
80.0	**80.1**	***Senecio madagascariensis***	**Fireweed**	**0.10**
80.1	85.0	*Themeda triandra*	Kangaroo Grass	4.90
85.0	**85.2**	***Senecio madagascariensis***	**Fireweed**	**0.20**
85.2	90.0	*Themeda triandra*	Kangaroo Grass	4.80
90.0	**90.5**	***Bidens pilosa***	**Cobbler's Pegs**	**0.50**
90.5	93.0	*Themeda triandra*	Kangaroo Grass	2.50
93.0	**93.3**	***Bidens pilosa***	**Cobbler's Pegs**	**0.30**
93.3	100.0	*Themeda triandra*	Kangaroo Grass	6.70
			Native/bare cover	**98.6%**
			Total Exotic/weed cover	**1.4%**
			Weeds of National Significance cover	**0.3%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 7				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	5.0	*Themeda triandra*	Kangaroo Grass	5.00
5.0	**5.4**	***Crassocephalum crepidioides***	**Thickhead**	**0.40**
5.4	7.0	*Themeda triandra*	Kangaroo Grass	1.60
7.0	**7.1**	***Crassocephalum crepidioides***	**Thickhead**	**0.10**
7.1	15.0	*Themeda triandra*	Kangaroo Grass	7.90
15.0	**15.2**	***Crotalaria lanceolata***	**Rattlepod**	**0.20**
15.2	20.0	*Themeda triandra*	Kangaroo Grass	4.80
20.0	**20.1**	***Crassocephalum crepidioides***	**Thickhead**	**0.10**
20.1	50.0	*Themeda triandra*	Kangaroo Grass	29.90
50.0	**50.2**	***Crassocephalum crepidioides***	**Thickhead**	**0.20**
50.2	100.0	*Themeda triandra*	Kangaroo Grass	49.80
			Native/bare cover	**99.0%**
			Total Exotic/weed cover	**1.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 8				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	40.0	*Themeda triandra*	Kangaroo Grass	40.0
40.0	**42.0**	***Melinis repens***	**Red Natal Grass**	**2.0**
42.0	50.0	*Bare rock*	Bare rock	8.0
50.0	**75.0**	*Leptospermum petersonii*	Lemon-scented Tea-tree	25.0
75.0	**85.0**	***Melinis repens***	**Red Natal Grass**	**10.0**
85.0	90.0	*Bare Rock*	Bare Rock	5.0
90.0	100.0	*Themeda triandra*	Kangaroo Grass	10.0
			Native/bare cover	**88.0%**
			Total Exotic/weed cover	**12.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 9				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	100.0	*Themeda triandra*	Kangaroo Grass	100.0
		Leaf Litter	Leaf Litter	
			Native/bare cover	**100.0%**
			Total Exotic/weed cover	**0.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 10				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	80.0	*Themeda triandra*	Kangaroo Grass	80.0
80.0	**82.0**	***Melinis repens***	**Red Natal Grass**	**2.0**
82.0	100.0	*Themeda triandra*	Kangaroo Grass	18.0
			Native/bare cover	**98.0%**
			Total Exotic/weed cover	**2.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 11				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	100.0	*Themeda triandra*	Kangaroo Grass	100.0
		Heteropogon contortus	Black Spear Grass	
			Native/bare cover	**100.0%**
			Total Exotic/weed cover	**0.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 12				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	**10.0**	***Lantana camara***	**Lantana**	**10.0**
		Passiflora suberosa	**Corky Passion Vine**	
10.0	12.0	*Themeda triandra*	Kangaroo Grass	2.0
12.0	**14.0**	***Lantana camara***	**Lantana**	**2.0**
		Heliotropium amplexicaule	**Blue Heliotrope**	
14.0	18.0	*Themeda triandra*	Kangaroo Grass	4.0
18.0	**20.0**	***Lantana camara***	**Lantana**	**2.0**
20.0	25.0	*Themeda triandra*	Kangaroo Grass	5.0
		Leaf Litter	Leaf Litter	
25.0	**27.0**	***Lantana camara***	**Lantana**	**2.0**
		Bidens pilosa	**Cobbler's Pegs**	
		Desmodium uncinatum	**Silver-leaf Desmodium**	
27.0	52.0	*Themeda triandra*	Kangaroo Grass	25.0
		Leaf Litter	Leaf Litter	
52.0	**55.0**	***Lantana camara***	**Lantana**	**3.0**
55.0	65.0	*Themeda triandra*	Kangaroo Grass	10.0
		Leaf Litter	Leaf Litter	
65.0	**70.0**	***Lantana camara***	**Lantana**	**5.0**
70.0	80.0	*Themeda triandra*	Kangaroo Grass	10.0
		Leaf Litter	Leaf Litter	
80.0	**82.0**	***Lantana camara***	**Lantana**	**2.0**
82.0	84.0	*Themeda triandra*	Kangaroo Grass	2.0
		Leaf Litter	Leaf Litter	
84.0	**90.0**	***Lantana camara***	**Lantana**	**6.0**
90.0	97.0	*Themeda triandra*	Kangaroo Grass	7.0
		Leaf Litter	Leaf Litter	
97.0	**100.0**	***Lantana camara***	**Lantana**	**3.0**
			Native/bare cover	**65.0%**
			Total Exotic/weed cover	**35.0%**
			Weeds of National Significance cover	**27.5%**

50m

North

South

East

West

Burnett Creek - Ground Layer Transect (100M) 13				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	2.0	*Themeda triandra*	Kangaroo Grass	2.0
		Leaf Litter	Leaf Litter	
2.0	**2.3**	***Bidens pilosa***	**Cobbler's Pegs**	**0.3**
2.3	**10.0**	*Themeda triandra*	Kangaroo Grass	7.7
		Leaf Litter	Leaf Litter	
10.0	**10.2**	***Senecio madagascariensis***	**Fireweed**	**0.2**
10.2	**10.4**	***Melinis repens***	**Red Natal Grass**	**0.2**
10.4	12.0	*Themeda triandra*	Kangaroo Grass	1.6
		Leaf Litter	Leaf Litter	
12.0	**14.0**	***Lantana camara***	**Lantana**	**2.0**
14.0	55.0	*Themeda triandra*	Kangaroo Grass	41.0
		Leaf Litter	Leaf Litter	
55.0	**56.0**	***Desmodium uncinatum***	**Silver-leaf Desmodium**	**1.0**
56.0	**80.0**	*Themeda triandra*	Kangaroo Grass	24.0
		Leaf Litter	Leaf Litter	
80.0	83.0	***Desmodium uncinatum***	**Silver-leaf Desmodium**	**3.0**
		Bidens pilosa	**Cobbler's Pegs**	
		Solanum nigrum	**Blackberry Nightsahde**	
83.0	98.0	*Themeda triandra*	Kangaroo Grass	15.0
		Leaf Litter	Leaf Litter	
98.0	**100.0**	***Desmodium uncinatum***	**Silver-leaf Desmodium**	**2.0**
		Bidens pilosa	**Cobbler's Pegs**	
		Solanum nigrum	**Blackberry Nightsahde**	
			Native/bare cover	**91.3%**
			Total Exotic/weed cover	**8.7%**
			Weeds of National Significance cover	**2.0%**

50m

North

South

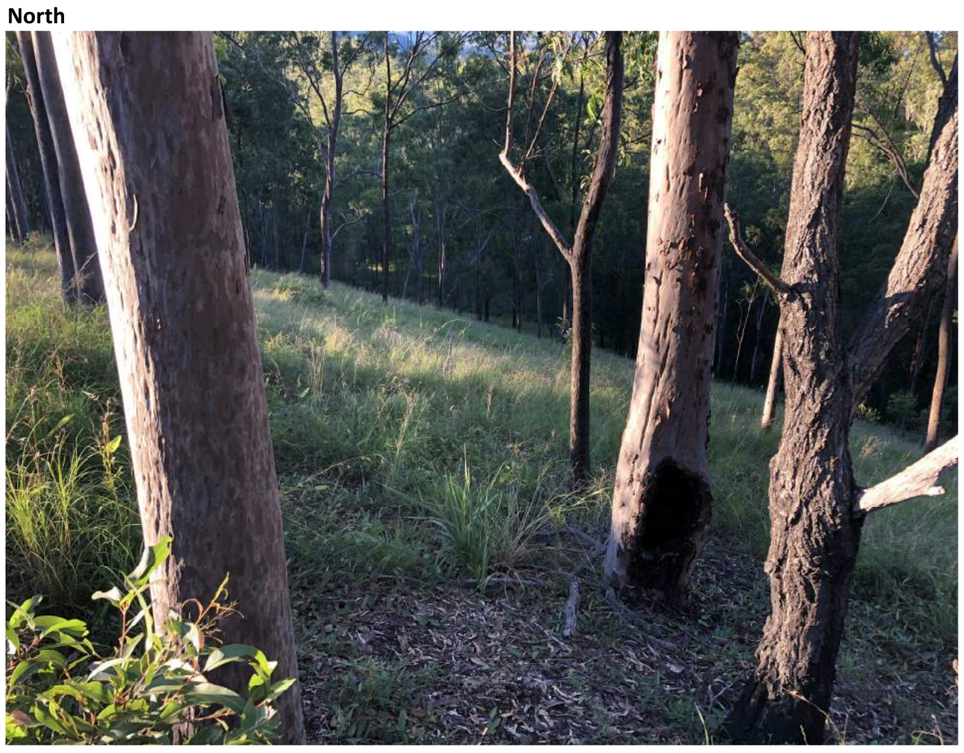
East

West

Burnett Creek - Ground Layer Transect (100M) 14				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	10.0	*Themeda triandra*	Kangaroo Grass	10.00
		Leaf Litter	Leaf Litter	
10.0	**10.2**	***Melinis repens***	**Red Natal Grass**	**0.20**
10.2	20.0	*Themeda triandra*	Kangaroo Grass	9.80
		Leaf Litter	Leaf Litter	
20.0	**21.0**	***Lantana montevidensis***	**Creeping Lantana**	**1.00**
		Desmodium uncinatum	**Silver-leaf Desmodium**	
21.0	25.0	*Themeda triandra*	Kangaroo Grass	4.00
		Leaf Litter	Leaf Litter	
25.0	**25.5**	***Lantana montevidensis***	**Creeping Lantana**	**0.50**
		Desmodium uncinatum	**Silver-leaf Desmodium**	
25.5	40.0	*Themeda triandra*	Kangaroo Grass	14.50
		Leaf Litter	Leaf Litter	
40.0	**41.0**	***Lantana montevidensis***	**Creeping Lantana**	**1.00**
		Desmodium uncinatum	**Silver-leaf Desmodium**	
41.0	52.0	*Themeda triandra*	Kangaroo Grass	11.00
		Leaf Litter	Leaf Litter	
52.0	**52.5**	***Heliotropium amplexicaule***	**Blue Heliotrope**	**0.50**
52.5	75.0	*Themeda triandra*	Kangaroo Grass	22.50
		Leaf Litter	Leaf Litter	
75.0	**75.2**	***Desmodium uncinatum***	**Silver-leaf Desmodium**	**0.20**
75.2	90.0	*Themeda triandra*	Kangaroo Grass	14.80
		Leaf Litter	Leaf Litter	
90.0	**91.0**	***Lantana montevidensis***	**Creeping Lantana**	**1.00**
		Desmodium uncinatum	**Silver-leaf Desmodium**	
			Native/bare cover	**86.6%**
			Total Exotic/weed cover	**4.4%**
			Weeds of National Significance cover	**0.0%**

50m

North



South

East

West

Burnett Creek - Ground Layer Transect (100M) 15				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Coverage**
0.0	40.0	*Themeda triandra*	Kangaroo Grass	40.00
40.0	**43.0**	***Melinis repens***	**Red Natal Grass**	**3.00**
43.0	87.0	*Themeda triandra*	Kangaroo Grass	44.00
87.0	**89.0**	***Melinis repens***	**Red Natal Grass**	**2.00**
89.0	100.0	*Themeda triandra*	Kangaroo Grass	11.00
			Native/bare cover	**95.0%**
			Total Exotic/weed cover	**5.0%**
			Weeds of National Significance cover	**0.0%**

50m

North

South

East

West

Appendix E

Non-native Koala Predator Data

Burnett Creek - Camera Trap Data

Camera	Set up	Collection	Common name	Species	Occurrence	Native/Non native
1	8/04/2021	6/05/2021	Pretty face wallaby	*Macropus parryi*	1	Native
2	9/04/2021	7/05/2021	Grey Shrike Thrush	*Colluricincla harmonica*	1	Native
			Brush-tailed Rock wallaby	*Petrogale penicillata*	1	Native
			Brush-tailed possum	*Trichosurus vulpecula*	1	Native
3	8/04/2021	6/05/2021	Northern brown bandicoot	*Isoodon macrourus*	1	Native
			Brush-tailed Rock wallaby	*Petrogale penicillata*	1	Native
			Australian Magpie	*Macropus rufogriseus*	1	Native
4	8/04/2021	6/05/2021	Pretty face wallaby	*Macropus parryi*	1	Native
5	9/04/2021	7/05/2021	Northern brown bandicoot	*Isoodon macrourus*	1	Native
6	9/04/2021	13/05/2021	Cat	*Felis catus*	1	Non-Native
			Pretty face Wallaby	*Macropus parryi*	1	Native
			Cow	*Bos taurus*	1	Non-Native

Burnett Creek - Camera 1

Burnett Creek - Camera 2

Burnett Creek - Camera 3

Burnett Creek - Camera 4

Burnett Creek - Camera 5

Burnett Creek - Camera 6

Baseline Survey Report

EPBC 2017/8090

Lyons Offset Site

Prepared for EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd

28 July 2021

Job No. 9694

Document Control

Document: Offset Site Baseline Surveys for Lyons under EPBC 2017/8090 prepared by Saunders Havill Group for EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd.

Document Issue

Issue	Date	Prepared By	Checked By
A	28/07/2021	LT	AR

Prepared by

ABN 24 144 972 949
www.saundershavill.com

Reports and plans by others may be included in this document.

Table of Contents

Plans

Tables

Figures

Abbreviations and Acronyms

AU	Assessment Unit
DAM	Declared Area Map
DAWE	Department of Agriculture, Water and the Environment
DES	Department of Environment and Science (Qld)
DoR	Department of Resources (Qld) (formerly DNRME, Department of Natural Resources, Mines and Energy)
EDQ	Economic Development Queensland (Qld)
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
GHFF	Grey-headed Flying-fox *(Pteropus poliocephalus)*
NCA	*Nature Conservation Act 1992* (Qld)
NCPR	Nature Conservation (Plants) Regulation 2020
OMU	Operational Management Unit
PDA	Priority Development Area (herein referencing the Greater Flagstone Priority Development Area)
PMAV	Property Map of Assessable Vegetation
RAI	Relative Abundance Index
RE	Regional Ecosystem
RGB	Regularised grid-based
SEQ	South-east Queensland
SHG	Sunders Havill Group
VMA	*Vegetation Management Act 1992* (Qld)
WONS	Weeds of National Significance

1. Introduction

The *Environmental Management Division* of Saunders Havill Group (SHG) was engaged by EnviroCapital as the approved offset provider for Pointcorp Heritage Park Pty Ltd (the Proponent) to prepare a Baseline Survey Report for the Lyons offset site associated with the impact for the approved 'Park Ridge Residential Development' located at Clarke Road, Park Ridge (EPBC Act reference 2017/8090). The approval pertains to the construction of a residential development comprising of industrial, mixed use and residential development covering 116.35 hectare (ha) incorporating a 12.96 ha area for environmental management and conservation.

The Park Ridge Residential Development was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC 2017/8090) on the 19th March 2017. The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*) and the Grey-headed Flying-fox (GHFF) (*Pteropus poliocephalus*), which are both listed as 'vulnerable' under the EPBC Act.

As part of the Preliminary Documentation requirements, a proposal was developed to compensate for the impacts from clearing of up to 89.93 ha and functional loss of 28.01 ha of Koala habitat and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC Act Approval for 2017/8090. The offset includes the dedication and rehabilitation of a total of 401.7 ha of land across two (2) offset sites referred to as the Burnett Creek Offset Site and Lyons Offset site. This report documents the baseline survey results for the Lyons Offset Site. The baseline survey results for the Burnett Creek Offset Site will be contained within a separate report. Additionally, the proposed management and rehabilitation actions required across both offset sites to achieve the offset are provided within a subsequent Offset Management Plan.

The project was approved under the EPBC Act subject to conditions on 23 November 2020 with effect until 30 June 2045. Condition 6 of the approval requires that the approval holder must complete and provide the Department with the results and dates of the following surveys:

a. The vegetation condition attributes for each Regional Ecosystem (RE), specifying the baseline habitat quality assessment data for each operation management unit (OMU);
b. The number and condition of winter or spring flowering GHFF foraging species across the offset site;
c. The species stocking rate for the Koala and GHFF;
d. The extent of weed cover;
e. The number of non-native predators in each season, including in areas adjacent to the offset site;
f. The number of Koala mortalities attributable to non-native predators; and
g. The baseline conditions in respect of each of the outcomes specified in conditions 9-11.

The surveys must be conducted by a suitably qualified person, consistent with the Department's approved survey guidelines and designed to provide results that are representative of the entire offset site.

This report has been prepared to satisfy the requirements of the conditions of approval accompanying the controlled action determination.

1.1. Offset site summary

Two (2) offset sites were secured to deliver the offset required under the EPBC Act approval:

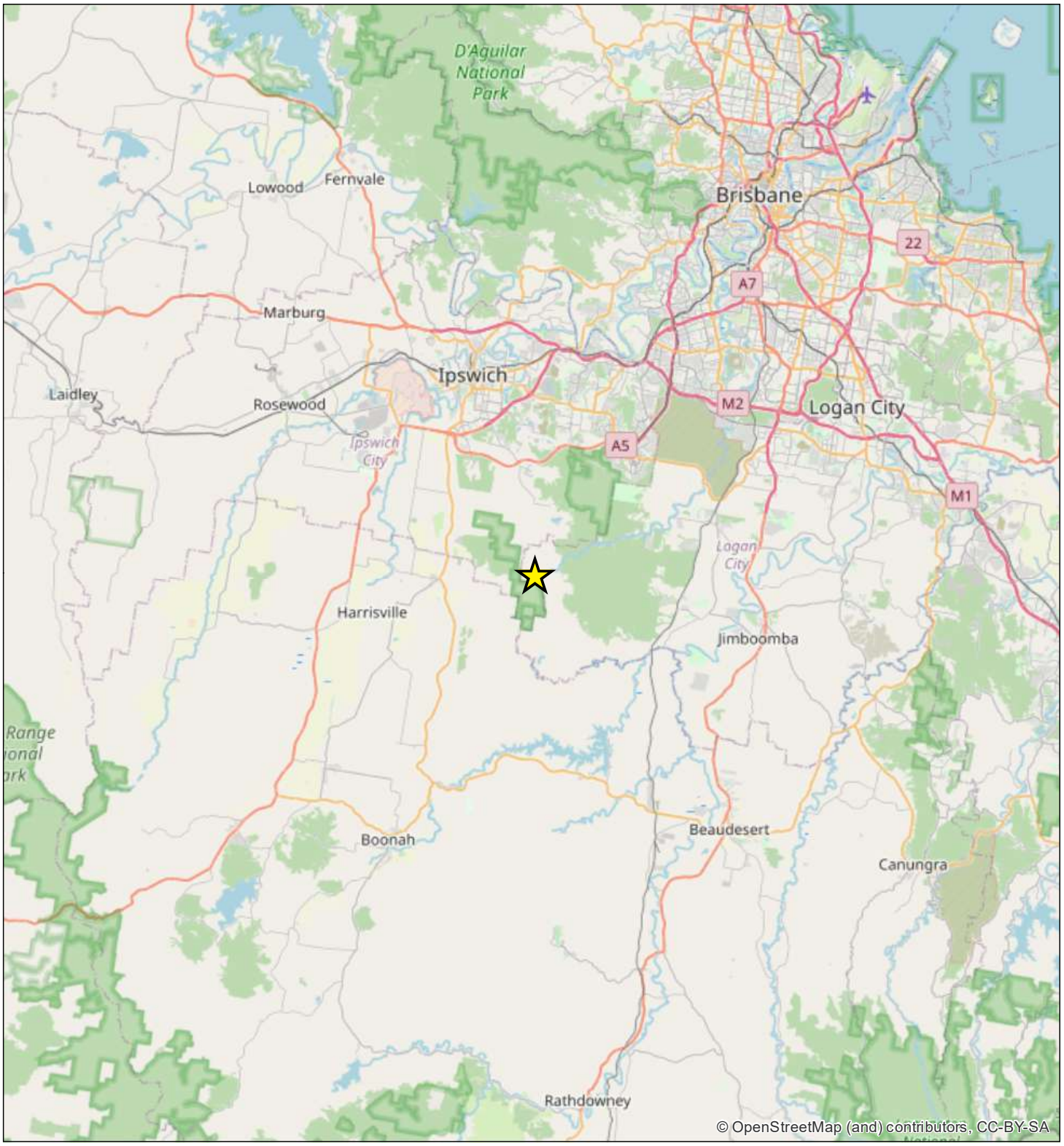
- Burnett Creek; and
- Lyons.

In accordance with Condition 5(a) of the EPBC Act approval conditions the approval holder must legally secure at least 151.3 ha of land at the Burnett Creek Offset Site and at least 250.4 ha of land at the Lyons Offset Site. During the Voluntary Declaration process to legally secure the offset sites under the Queensland *Vegetation Management Act 1999*, only 150.497 ha of suitable land was available at the Burnett Creek Offset Site. This shortfall was remedied through increasing the land secured across the Lyons Offset Site. This matter is discussed further in the subsequent Offset Management Plan.

The Lyons offset site is located in the Logan City Council local government area (LGA), approximately 20 kilometres (km) south of the City of Ipswich. The Offset Site is zoned Environmental Management and Conservation and accessed via Mount Flinders Road. Key details relating to the Lyons offset site are provided in **Table 1**.

Table 1: Lyons offset site summary

Address	Mount Flinders Road, Lyons 4124
Lot / Plan	Part Lot 7 S312785
Property Area	261.54 ha
Offset Area	250.843 ha
Tenure	Freehold
Local government area	Logan City Council
Date legally secured	15 March 2021 (248.68 ha) & 29 July 2021 (2.163 ha)



Legend

☆ Offset Site Location

Figure 1

Site Context

File ref. 9694 E Figure 1 Site Context Lyons A
Date *3/08/2021*
Project *Lot 7 on S312785*

0 5 10 20 *km*

Scale (A4): 1:500,000 [GDA 2020 MGA Z56]

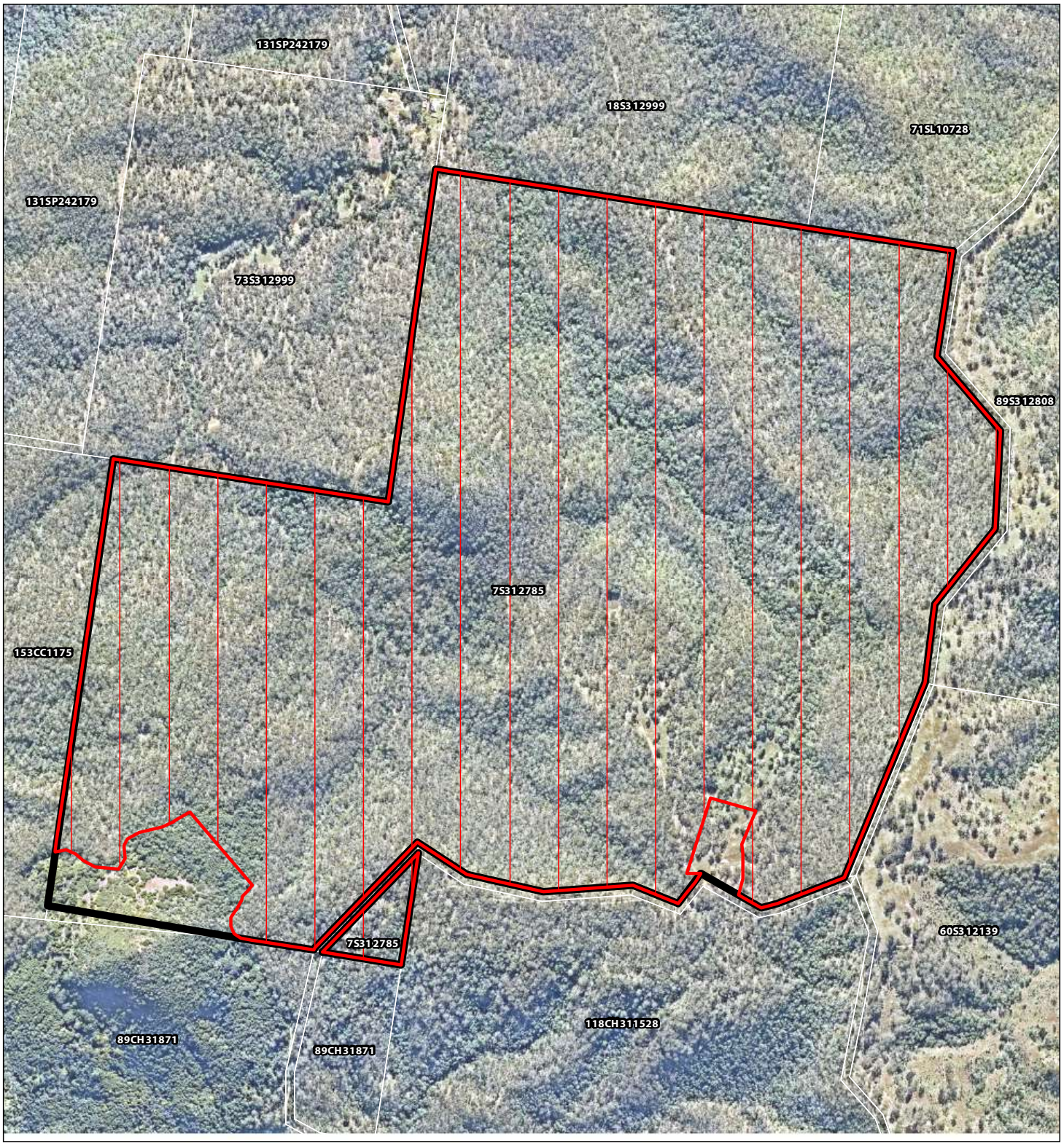
N

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

Layer Source: *© State of Queensland 2021*



Legend

- Site DCDB
- Qld DCDB
- Offset Area (250.84 ha)

Figure 2

Site Aerial

ENVIRO CAPITAL

on behalf of Pointcorp Heritage Park Pty Ltd

saunders havill group

File ref. 9694 E Figure 2 Site Aerial Lyons A
Date *5/08/2021*
Project *Lot 7 on S312785*

0 50 100 200 300 400 *m*

N

Scale (A4): 1:12,500 [GDA 2020 MGA Z56]

Layer Source: © State of Queensland 2021,Nearmap 2021

2. Baseline survey methodology

These surveys have been conducted by the Saunders Havill Group, and suitably qualified personnel consistent with the Department's approved survey guidelines, and designed to provide results that are representative of the entire Lyons offset site.

Condition 6 states that within 6 months of the date of the approval, the approval holder must complete baseline surveys of the Lyons Offset Site including the following surveys:

a. vegetation condition attributes for each Regional Ecosystem (RE), specifying the baseline habitat quality assessment data for each operation management unit (OMU);
b. number and condition of winter or spring flowering GHFF foraging species across the offset site;
c. species stocking rate for the Koala and GHFF;
d. extent of weed cover;
e. number of non-native predators in each season, including in areas adjacent to the offset site;
f. number of Koala mortalities attributable to non-native predators; and
g. baseline conditions in respect of each of the outcomes specified in conditions 9-11.

The methodology of each survey detailed within the following sections incorporates the required baseline surveys outlined above. A summary of the surveys conducted is provided within **Table 2**.

Table 2: Survey Methodology Summary

Condition	Methodology	Survey Date
6 (a)	Modified Habitat Quality Assessment (MHQA)	27 May 2019 & 20 February 2020
6 (b)	MHQA-Stem Density	27 May 2019 & 20 February 2020
6 (c)	Koala - Regularised grid-based Spot Assessment Technique (RGB-SAT) GHFF – MHQA-Stem Density	19, 20, 22 & 23 April 2021 and 14 May 2021 27 May 2019 & 20 February 2020
6 (d)	Random diurnal meander recording extent, MHQA and targeted non-native plant transect assessments	3 June 2019 & 28 February 2020 19, 20, 22 & 23 April 2021 and 14 May 2021
6 (e) & (f)	Motion Sensor Camera survey	19 April to 13 May 2021

Condition	Methodology	Survey Date
6 (g)	MHQA	3 June 2019 & 28 February 2020

Table 3: Surveyor Details

Name	Position	Qualifications	Survey Date
Andrew Ridley	Senior Environmental Scientist	Bachelor of Science	22 & 23 April 2021 and 14 May 2021
David Havill	Senior Ecologist	Bachelor of Applied Science (Natural Systems and Wildlife Management) Diploma of Arboriculture	13 June 2019, 28 February 2020 and 19 & 20 April 2021
Liam Brzezinski	Ecologist	Bachelor of Environmental Management (Natural Systems and Wildlife)	19, 20, 22 & 23 April 2021 and 14 May 2021

As demonstrated within **Table 3**, all surveys were conducted by a suitably qualified person with professional qualifications and experience related to the nominated subject matter, ensuring an independent assessment and analysis in accordance with relevant standards and methodologies.

2.1. Offset Site Assessment Units

The Lyons offset site was separated into assessment units (AU) for the baseline surveys. Vegetation was categorised according to status, remnant and non-remnant. Within each of these categories each Regional Ecosystem (RE) (remnant or pre-clear) is a separate AU. The Lyons offset site was separated into AUs to ensure each habitat type was assessed to provide results that are representative of the entire offset site.

The Lyons offset site consists of six (6) AUs, one (1) within each different RE and status category (refer **Table 4**).

Table 4: Assessment Units – Lyons

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)
AU1	Remnant	12.8.20	7.69
AU2	Remnant	12.9-10.17	21.93
AU3	Remnant	12.9-10.3	9.59
AU4	Remnant	12.9-10.7	20.39
AU5	Remnant	12.9-10.2	181.09

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)
AU6	Regrowth	12.9-10.2	10.15

Further, a 350 m grid was applied over the offset site to stratify sampling, reducing bias and increasing repeatability of SAT and camera trap surveys. Grid cells were separated by 350 m for monitoring across the Lyons offset site after a literature review of home ranges for targeted species, being Koala (SAT), cat, dog and foxes (non-native koala predators). Home ranges for Koalas vary depending on gender and, availability and quality of habitat. Thus, home ranges increase in size with limited habitat and food resources. Home ranges have been estimated between 10 - 135 ha depending on these factors.

In South East Queensland (SEQ), the average distance between natal and breeding home ranges was similar for males and females, at approximately 3.5 km (Dique *et al.* 2003b). Maximum dispersal distances were up to about 10 km for males and females (Dique *et al.* 2003b). Other studies have reported moves of just over and 16 km in rural south-east Queensland (White 1999).

Feral cat and dog home ranges are usually much larger as they are highly mobile. McGregor *et al.* 2015 found that home ranges for feral cats ranged from 397 ha for females to 855 ha for males. The *NSW Wild Dog Management Strategy 2017-2021* (NSW DPI 2017) cat home ranges vary from 160-2060 ha or larger. As such, a 700 m grid cell separation is recommended for feral dog monitoring.

The application of 35 0m grid cells for SAT and Camera trap locations were determined appropriate for the Lyons property based on the home ranges of target animals and property size.

2.2. Diurnal Searches

Diurnal searches for direct observations of fauna or signs of fauna activity and potentially suitable habitat resources are an important component of fauna surveys. Searches were conducted for direct observations of fauna or signs of fauna activity and potential habitat resources were conducted simultaneously with all other surveys conducted throughout the surveying period and across the Lyons offset site (detailed in following sections). As such, these surveys were conducted between the 19 April 2021 and 14 May 2021.

As discussed within **Section 2.1**, the offset site was separated into quadrants in representative habitats to ensure that each offset site was systematically searched. The results of these surveys are therefore considered an accurate representation of the entire offset site. The use of quadrants and assessment units ensures the effort can be repeated over time for comparisons. Importantly, these searches targeted direct observations of koalas, koala scat, koala food trees, GHFF roost sites and GHFF foraging species. Where identified significant habitat resources or signs of fauna activity were located using a GPS.

As noted within the *Survey Guidelines for Australia's threatened manmmals* (Department of Sustainability, Environment, Water, Pollution and Communities, 2011), the time taken to effectively search a subject site

varies considerably according to the size and nature of the area. For large sites and remote areas, such as the Lyons offset site, constraints required the identification of potential habitat resources through ground-truthing after reviewing vegetation maps, aerial photographs and imagery. The size and topography of both offset sites contributed to time constraints limiting the search area. This limitation was reduced with the use of AUs and the RGB approach, ensuring results are representative of the entire area.

2.3. Modified Habitat Quality Assessment

This survey method addresses Condition 6(a)-(d) and (g) compiling details including;

- The vegetation condition attributes for each RE;
- number and condition of winter or spring flowering GHFF foraging species across the offset site;
- species stocking rate for the Koala and GHFF;
- extent of weed cover; and
- baseline conditions in respect of each of the outcomes specified in conditions 9-11.

These values were incorporated into a larger habitat assessment using a modified version of the Queensland State Governments "*Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy*" Version 1.2 April 2017. The purpose of this guideline is to provide a methodology for proponents to determine the habitat quality of a site under the Queensland Environmental Offsets framework. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to MNES.

The MHQA combines the three (3) core indicators into two (2) (site condition and site context) with each being equally weighted at 30 % of the final score. The balance of the weighting (40 %) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate has been added to the MHQA to better incorporate MNES, and for the purpose of this preliminary documentation, the vulnerable-listed Koala and GHFF MNES. The following section details the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

Site Condition (30 %)

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

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

- recruitment of woody perennial species in Ecologically Dominant Layer (EDL);
- native plant species richness – trees;

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

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

Site Context (30 %)

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

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

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

Koala, equally Koalas can utilise areas of non-remnant vegetation or high value regrowth vegetation that does not yet achieve remnant status. Therefore, site context under the MHQA accounts for surrounding Koala habitat rather than remnant vegetation.

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

Species Stocking Rate (40 %)
The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. Species stocking rates are estimates of the Koala carrying capacity of the site at the time of undertaking the survey.

Baseline Koala activity levels were determined by utilising the SAT (*Phillips et al.* 2011). The SAT survey results indicated a 'low' Koala activity across both the impact and offset sites (refer **Section 2.3.1** for details). Utilising these Koala activity levels, and inferring the results with current available published scientific literature, an estimated Koala carrying capacity (stocking rate) was determined.

Table 5: Koala MQHA Stocking Rate Scoring

Species Stocking Rate (40%)			
SAT survey results	**Low (<22.52% (East Coast Med-High))**	**Medium (>22.52% but <32.84% (East Coast Med-High))**	**High (>32.84% (East Coast Med-High))**
	20	30	40

A 100 m X 20 m plot was used to gather the data required for the MHQA. The offset sites were surveyed using Fourteen (14) plots located at Lyons. Five (5) 1 m x 1 m quadrats, located 10 m apart and on alternate sides along the transect we performed within each plot. Each of the ground cover component was assessed so that the cover totals 100%. Although not all components are used in the scoring, assessment of all attributes improves the ability to estimate cover of the assessable attributes.

Photo Set 1: The 100m x 20m plot within offset site, centre line shown by measuring tape.

Photo Set 2: Example of 1m x1m quadrants.

2.3.1 Species Stocking Rate - Koala

Koalas are difficult to detect and occur at low densities in many parts of their range. The most appropriate survey method and design depends on the type of data that is desired (i.e. presence/absence, abundance, habitat preference, density, tree species preference) and the size/complexity of the site. Gathering more complex data (i.e. density) or surveying larger, more complex sites will generally require more time and resources. The benefits of more thorough surveys are a higher level of confidence in the assessment and more information on which to plan and make decisions (DoE, 2014).

The direct and indirect sampling techniques can be categorised into three different approaches;

- total counts;
- partial counts; and
- indices.

Total counts are direct visual observations where each individual is counted within a survey area. This technique is popular with large easy to detect and identifiable animals. It determines the total number of

individuals within the sampling site. This method is not always viable over large areas or where animals are hard to detect.

Partial counts using line transect with distance sampling or strip transects where individuals are counted within a predetermined distance of the transect. Distance sampling with line transects can be used to determine relative density/abundance of a population based on the recorded distance from the line to the animal and the angle at which the animal is from the observer.

Indices using animal signs such as scats, tracks or scratches are used to indicate presence/absence and activity within habitats. Animal signs can be sampled along line transects, strip transects or selection of specific habitat element. Munks *et al.* 1996 found that due to koala behaviour they require more effort to survey using visual observations. Sullivan *et al.* 2002 advocates for the use of faecal pellet counts for sampling as this method requires less effort. Indices have been included within the baseline koala surveys and discussed further in **Section 3.2**.

For actions with a large footprint, or landscape-scale impacts, baseline monitoring which evaluates koala abundance, movement and habitat preferences in the area proposed to be affected by the project are considered necessary. This may involve a combination of direct and indirect survey methods in the study area, particularly if there is limited desktop data available. These surveys will be important for the implementation of mitigation measures and offsets (DoE, 2014).

To satisfy the approval conditions, a baseline koala density survey is required to measure progress towards achieving the performance criteria as prescribed within the approval conditions (ref. EPBC 2017/8090). The offset site was both surveyed using direct methods, including;

- Diurnal Searches; and
- Opportunistic observations during other works (i.e. habitat transects, motion sensor camera traps, SAT, etc.).

Given Koalas are largely nocturnal and travel during the night, it is difficult to survey an animal as elusive and cryptic as the Koala, which has contributed to the lack of a standardised survey method (Phillips and Callaghan 2011). Visual observations through spotlighting is considered to be one of the most effective methods for detecting Koalas as the animal is more active and eyes reflect light. However, given the remoteness and size of the offset site direct observations through transects covering the entirety of the site are not feasible. Fauna signs such as tree scratches and faecal pellets identified during diurnal searches can be used as indicators of presence within a habitat and provide an estimate for abundance or density.

<u>Regularised Grid-Based Spot Assessment Technique</u>

As discussed above, indirect methods can be use to determine presence/absence of fauna. Indices using animal signs including scats, tracks and scratches can indicate species presence and habitat use. Koala activity levels and density were determined by utilising SAT. Surveys are undertaken in accordance with the methodology developed by Phillips and Callaghan (2011) and specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala*. The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage and is therefore uses indices to determine presence/absence.

The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats, or is known to be a food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed.

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

This approach results in an activity level; low, medium or high for the study area. Activity levels derived from SAT sites should only be interpreted in the context of location specific habitat use. Low activity levels can be associated with low density populations, density is usually affected by primary food tree availability (Phillip and Callaghan 2011; Phillips and Callaghan 2000; Phillips *et al.* 2000).

The RGB-SAT sampling is typically applied at a rate of 1:10-20ha at a landscape using intervals from 200-500 m (Phillips and Hopkins 2007, Hopkins *et al* 20070, Biolink 2017; Biolink 2019). Utilising the RGB-SAT method reduces sampling biases and ensures the results provide a representative of the entire offset site. The grid size was tailored to the offset sites size and estimated density and therefore detectability of pellets. To ensure detection of results and accurate representation of the offset site a 350 m grid was applied over the entire site.

The Koala SAT survey methodology is considered an accurate technique when estimating low-density Koala populations (Mossaz 2010). Research by Rhodes *et al.* (2015) indicates that within the Ipswich region the Koala density is approximately 0.03 Koalas/ha. Rhodes *et al.* (2015) attribute the low population density to a negative relationship identified between temperature and Koala densities. Therefore, when estimating a Koala density in an area that is known to be 'low', the SAT survey methodology is considered to provide an accurate determination on the activity levels (Mossaz 2010).

Although the SAT survey methodology is considered an accurate technique when estimating low-density koala populations there is a number of limitations. The abundance and density of Koalas cannot be determined through this method. However, fixed amount of sampling gives fixed proportion of population and the value of index usually increases with population density.

Stable populations have higher rate of faecal pellet deposition (Lunney *et al.* 1998), leading to bias occupational rate where multiple SAT sites can be occupied by only the one animal (Phillips and Hopkins 2008). Home ranges can be large depending on sex of the animal and availability of preferred food trees (Phillip and Callaghan 2011).

The selection of SAT sites is also very important as they may be in places where there is either really high or low activity rates which can skew results. As such, the RGB-SAT approach was used to reduce bias and ensure the results were representative of the offset sites. The size of the grids were tailored to each site for greater

detection of results. However, Cristescu *et al.* 2012, found that detectability varied up to 16% between plots of different ground cover.

There are a number of benefits to this survey method, most importantly, it is a relatively fast and repeatable process which can be applied to large areas such as the offset areas. It is a passive method of sampling and does not require disturbance of the target species and is easy to repeat. This method establishes if the area is occupied by Koalas, their possible distribution within the area and identifies habitat quality through the tree preference and distribution data. As the SAT method is easy to repeat with reproducible results conducting a study over time will be able to determine possible changes in distribution over time and the reason for this change.

2.4. Grey-headed Flying-fox Foraging Habitat Assessment

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

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

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

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

Site Condition (40%)

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

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

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

Assessment methodology of the above condition characteristics is outlined below:

- Vegetation condition – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment. Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- 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 6** for the benchmark scoring values for this condition characteristic.
- Flower scores (average) – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the flower score of the recorded canopy species. The individual score for each flowering GHFF foraging tree is then divided by the number of species recorded (GHFF foraging and non-GHFF foraging trees) to produce an average. The benchmark values for this condition characteristic have been derived from the findings published by Eby and Law (2008) (*Ranking the feeding habitat of Grey-headed flying foxes for conservation management*). Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- Timing of biological shortages – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). It should be noted that this condition characteristic is weighted and 'food shortages' has been weighted heavier than the balance of the characteristics which are equal, as 'food shortages' is recognised as a major issue. Refer to **Table 6** for the benchmark scoring values for this condition characteristic.

- Quality of foraging habitat – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017). Refer to **Table 6** for the benchmark scoring values for this condition characteristic.
- 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 6** for the benchmark scoring values for this condition characteristic.

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

Site Context (30 %)

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

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

Assessment methodology of the above context characteristics is outlined below:

- Size of patch – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. Refer to **Table 7** for the benchmark scoring values for this context characteristic.

- Connectedness – This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring (11/17 – 11/18)) 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 7** for the benchmark scoring values for this context characteristic.
- 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 20 km buffer of the site measured. This context characteristic is measured using GIS. Refer to **Table 7** for the benchmark scoring values for this context characteristic.
- 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 7** for the benchmark scoring values for this context characteristic.
- 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 7** for the benchmark scoring values for this context characteristic.
- 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 (11/17 – 11/18)) 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 (DoEE, Australian Government, 2019). Refer to **Table 7** for the benchmark scoring values for this context characteristic.

2.4.1 Species Stocking Rate

Species Stocking Rate (40 %)

The GHFF FHA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology.

The species stocking rate was assessed by using the percentage of trees reaching the Large Tree benchmark. Large trees are described as a measure for the provision of reliable foraging resources for wildlife, providing nectar, leaves and seeds (Biocondition manual). Large trees provide greater leaf material and nectar for foraging purposes than trees with low DBH, and so are a reliable indicator of provision of quality habitat for GHFF. Larger trees, on average flower more frequently, more intensely and for a longer period of time than small trees (Wilson and Bennett 1999, Wilson 2002). The presence of Large Trees is considered to be of significant importance in identifying optimal habitat for GHFF.

Large trees are assessed using the Modified Habitat Quality Assessment Transects and are an indicator for the potential for foraging tree density and food availability. The number of Large Trees is recorded and compared

to the benchmark data for the relating Regional Ecosystem. This is converted into a percentage of the benchmark, and a score ascribed as per **Table 8**.

As stated within the *Survey Guidelines for Australian Threatened Bats*, the GHFF occupies most areas in their distribution in highly irregular patterns, and therefore surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to conduct vegetation surveys to identify feeding habitat.

Table 6: GHFF FHA Site Condition (40%) Scoring Benchmarks

Score	Description
Vegetation Condition Scoring	
5	Category X / non-remnant
10	Category C / regrowth
20	Category B / remnant
Species Richness Scoring	
0	0 GHFF foraging species
5	1 – 3 GHFF foraging species
10	4 – 6 GHFF foraging species
20	> 6 GHFF foraging species
Flower Score (average) Scoring	
2	0.01 – 0.25
5	0.26 – 0.50
8	0.51 – 0.75
10	0.76 – 1.00
Timing of Biological Shortages Scoring	
5	Food shortages
3	Pregnancy and birthing
3	Lactation
3	Mating and conception
3	Migration paths
3	Fruit industries
Total (/20)	Combine total of above
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
Non-Native Plant Cover Scoring	
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 7: GHFF FHA Site Context (30%) Scoring Benchmarks

Score	Description
Size of Patch Scoring	
0	< 5 hectares
2	5 – 25 hectares
5	26 – 100 hectares
7	101 – 200 hectares
10	> 200 hectares
Connectedness Scoring	
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
Context Scoring	
0	< 10 % Grey-headed Flying-fox foraging habitat within a 20 km radius

Score	Description
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
Ecological Corridors Scoring	
0	Not within an ecological corridor
6	Sharing a common boundary with an ecological corridor
10	Within an ecological corridor
Threats to Species Scoring	
1	High level threat to the species
5	Moderate level threat to the species
10	Low level threat to the species
Role of Site Location to Species Overall Population in the State Scoring	
0	< 1 active level 3 Grey-headed Flying-fox camp within a 20 km radius
5	1 – 3 active level 3 Grey-headed Flying-fox camp within a 20 km radius
10	> 3 active level 3 Grey-headed Flying-fox camp within a 20 km radius

Table 8: GHFF Species Stocking Rate Scoring Benchmarks

Score	Large trees present
1	No large trees present
2	1-25% of the benchmark Regional Ecosystem DBH
4	26-50% of the benchmark Regional Ecosystem DBH
6	51-75% of the benchmark Regional Ecosystem DBH
8	76-100% of the benchmark Regional Ecosystem DBH
10	≥ Benchmark number of large trees of Regional Ecosystem DBH

2.5. Weed Cover Survey

Together with the MHQA methodology outlined above, this survey method was utilised to address Condition 6(d) and determine the extent of weed cover across the offset site.

Where time and resources are limited estimating plant populations should be simplified through sampling of random or fixed points. Sampling rather than attempting to measure everything over the whole site, estimates of the whole rather than a precise and complete record reducing resources and time. Measurements may be taken at random points on each visit or at fixed points that are revisited. While there are statistical reasons for choosing random points, revisiting fixed points provides greater confidence that changes have occurred over time rather than natural variation at the site (Auld, B. 2009). Fixed points were established over the offset site using the AUs and RGB approach to stratify sampling to ensure each area of interest is sampled and result in a representative measure across the entire site (refer to **Figure 1**).

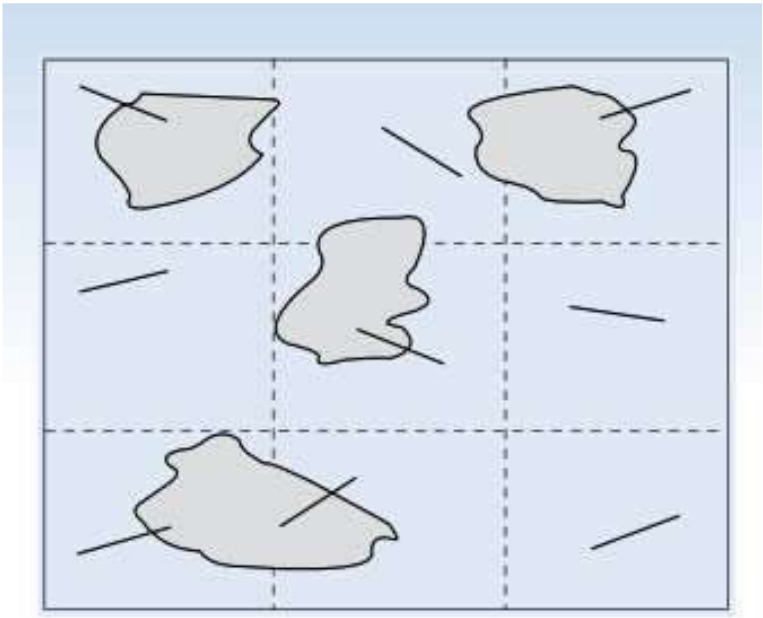


Figure 3. The area has been divided or 'stratified' into equal parts to ensure greater coverage from a limited number of sampling points.

Figure 3: Stratified sampling method (extract- Figure 3: Auld, B 2009)

Mapping an entire site accurately for weeds and native vegetation would not normally be attempted except for very small sites. So, maps would not usually form part of a quantitative monitoring program but could be used to indicate gross changes in vegetation cover, if updated over time (Auld, B. 2009).

A combination of three (3) survey methods was used to measure non-native plant coverage across the offset site including, MQHA, targeted weed transects (stratified sampling) and mapping of ground-truthed weed extent. All of these survey techniques were used to complement one another to build a baseline measurement to ensure improvements can be measured over the offset site management period.

Weed coverage has been incorporated into the 100 m x 20 m plot performed for MHQA (refer **Section 3.3.1**). All non-native plant cover was assessed by estimating the cover of exotic species over the 100 m x 20 m plot and is recorded as a percentage of overall vegetation. This data is recorded within Part E of the habitat quality assessment sheet records the non-native plant species and percentage of cover (refer to **Appendix B**).

Targeted weed transects were also conducted across the offset site. As discussed, transects were stratified across the offset sites to sample each offset site using the RGB approach. Each transect was 100 m in length and estimated the abundance of non-native plant cover. This is most conveniently done by measuring their ground cover which is the perpendicular projection of aerial parts of plants on to the ground, for a given area this is often measured as a percentage of the whole area (refer to **Figure 2**).

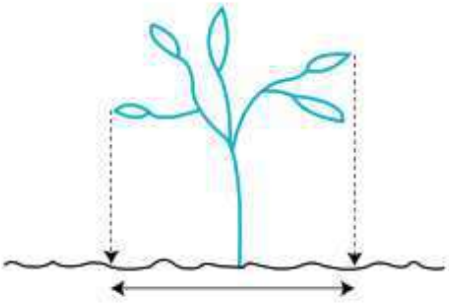


Figure 5. Ground cover of a plant indicated by the horizontal arrowed line.

Figure 4: Measuring ground cover (extract- Figure 5: Auld, B. 2009)

The width of a transect can be reduced to a single line: a line-transect. Using a tape measure stretched between two fixed points as a line-transect is a convenient way to estimate cover of different species as lengths along the tape (refer to **Figure 3**). This technique was applied to the Lyons offset site.

Figure 8. Using one edge of a tape measure to estimate the percent cover of flatweed or cat's ear amongst grass and plant litter.

Figure 5: Line transect methodology (extract- Figure 8: Auld, B. 2009)

Further, where patches of weed cover were identified within the offset site, these were located using a hand-held GPS. Sampling points overlap a number of these patches providing further detail for future site management.

2.6. Non-native Koala Predator Survey

To address Condition 6 (e) and (f) an assessment of non-native Koala predators was conducted via the use of camera trapping along with assessing and recording evidence of predators (e.g. scats, tracks, den count and traces) and/or Koala mortalities attributable to predators. Non-native Koala predators means any animal not native to Australia that is known to predate on Koalas of any age.

Camera traps have the advantage of potentially obtaining a wide range of significant information. Automatic camera systems are triggered by an animal passing in front of a sensor that detects movement, changes in ambient light, or a thermal differential (Moen & Lindquist 2004). Cameras allow for the detection of species that are difficult to study due to their elusive and nocturnal habits (Mace *et al.* 2004). They are less time consuming, less costly, and less invasive than long-term direct observation of animals. They are also beneficial in studying animals in inaccessible or difficult to access locations such as dens and nest cavities, or in rugged terrain (Mace *et al.* 1994). In addition, they enable the collection of valuable information about multiple species within any given community (Rosellini *et al.* 2008) and provide data that is more permanent and less disputable than data gathered by direct observation.

The use of camera trapping and den count is considered to be an effective method in capturing, assessing and monitoring pest management.

Motion-triggered infrared camera trap

Camera trapping involves setting up a fixed motion-triggered infrared camera to capture images or video of animals which pass in front of camera or are lured by bait. This set-up identifies fauna activity beyond the scope of direct observational studies and in the absence of potential observer impacts.

Infrared sensing cameras with an infrared flash were deployed, which use motion to trigger. Cameras were attached 30-50 cm from the ground on a tree or post, and directed towards the bait which is placed about 1.5-2 m from the mounted camera. The bait generally consisted of chicken bones/carcasses. The programming was consistent across all cameras, and cameras were set up in a consistent manner to maintain similar detection probabilities. For detecting Koala predators, cameras were placed in the vicinity of an animal trail. Cameras may be placed in alternate locations where active trails are identified.

Seven (7) cameras were deployed across the offset site between 19 April and 13 May 2021. As discussed within **section 2.1**, the number of cameras deployed across the offset site was determined using the 350 m grid to stratify sampling, reducing bias and increasing repeatability. Grid cells were separated by 350 m for monitoring across the offset site after a literature review of home ranges for targeted species, being Koala (SAT), cat, dog and foxes (non-native koala predators).

A relative abundance index (RAI) is to be calculated for non-native Koala predators, cats, dogs and foxes, using the formula RAI= D/TN x 100, where D is numbers of detection and TN is the total number of camera-trap days (all cameras combined). This methodology ensures that the surveys are representative of the entire offset site and repeatable for future monitoring requirements.

Figure 6: Camera trap set-up at offset site (Camera 5).

Further, a non-native predator control program is to be implemented (to be outlined in the Offset Management Plan). Throughout the duration of control program, the results of each trapping, baiting and shooting event will be reported to provide evidence that progress is made towards achieving the targets outlined within approval Conditions 6 (e) and (f). This will be shown through a decrease in records of lethal predator control.

2.7. Limitations

Direct observation of koalas is most successful when conducted between August and January as resident females with back-young are more easily observed during this time (DoE 2013). This survey work occurred between 8 April – 27 May 2021 and therefore reduced detectability and lower activity levels was an expected limitation.

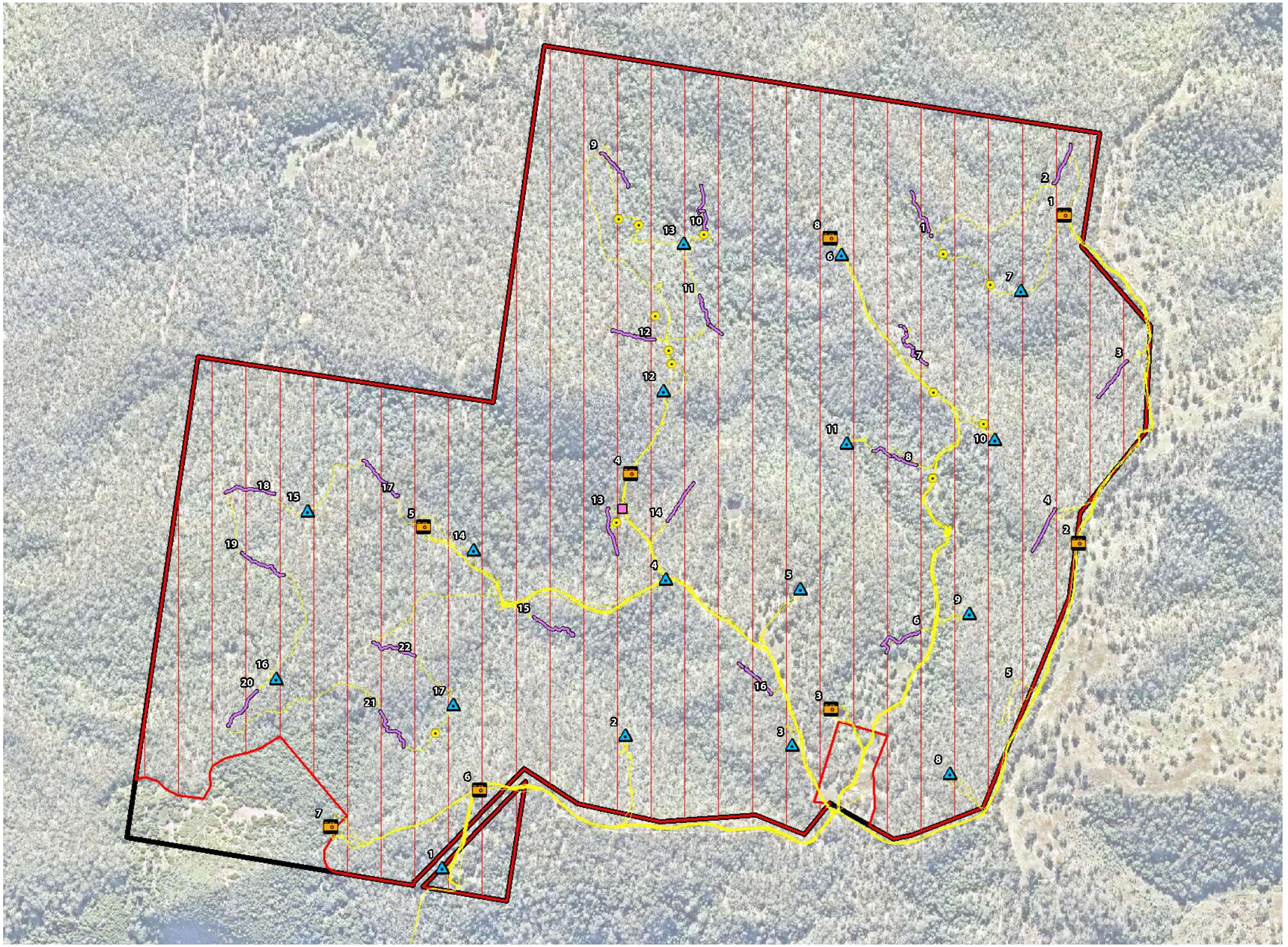
High rainfall can impact surveys as it can interfere with placement of faecal pellets and/or speed up decomposition. Although the Lyons Alert weather station is the closest to the offset site, this station was not in operation during the entire survey period (22 March to 28 April). However, did record only 62.4 mm and 68 mm for January and February, respectively which are approximately 35% and 25% less than average. Following this period, the next closest weather station (Jingle Downs Alert) recorded over 300 mm in March exceeding the average for this month by 200 mm. Faecal pellets may have been washed away by surface runoff in the lead up to the survey and/or experienced an increased rate of decomposition. Additionally, the region experienced higher than average rainfall in April, potentially impacting the detection of faecal pellets during SAT surveys. As discussed, the months preceding the surveys recorded less rainfall than average. Droughts can also impact surveys as Koalas move away from their core habitat to find food and habitat.

During camera trap surveying, an attempt to capture every animal several times over should be made to increase probability of species identification, however this could lead to individuals being counted multiple times. This limitation is moderated by camera set-up using bursts settings and the implementation of an independence threshold of two (2) minutes. Therefore, every observation of an animal two (2) minutes after the first observation is considered a new observation.
As noted within the *Survey Guidelines for Australia's threatened manmmals* (Department of Sustainability, Environment, Water, Pollution and Communities, 2011), the time taken to effectively search a subject site varies considerably according to the size and nature of the area. For large sites and remote areas, such as the Lyons offset site, constraints required the identification of potential habitat resources through ground-truthing after reviewing vegetation maps, aerial photographs and imagery. The size and topography of both offset sites contributed to time constraints limiting the search area. This limitation was reduced with the use of AUs and the RGB approach, ensuring results are representative of the entire area.

The terrain across the offset site is difficult to traverse. As such, where possible surveys were conducted as close as possible to points dictated by the 350 m grid applied.

It is noted that some surveys were not conducted during peak activity seasons (Spring & Summer) however this is not expected to impact the baseline fauna or flora survey results as resident populations would be present on-site and flowering and fruiting species are identifiable within off-peak seasons. It is recommended future monitoring is conducted within the optimal seasons to ensure overall site variability is captured over the management period.

1. Survey Effort



Legend

- Qld DCDB
- Offset site DCDB
- Offset area (250.84 ha)
- Camera
- Dog Print
- SAT
- Weed Observation
- Weed transect
- GPS Tracklog

0 100 200 300 400 m

N

Transverse Mercator | GDA 1994 | Zone 56 | 18,072 @ A3

Issue	Date	Description	Drawn	Checked
A	5/08/2021	Preliminary	LS	LT

ENVIRO CAPITAL

on behalf of
Pointcorp Heritage
Park Pty Ltd

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2021. Updated data available at http://qldspatial.information.qld.gov.au/catalogue//

3. Baseline Survey Results

3.1. Species Stocking Rate

As outlined within **Section 2** above, the species stocking rates for Koala and GHFF were incorporated into the MHQA. This section discusses the survey results required to calculate the species stocking rates for both Koala and GHFF.

3.1.1 Koala

To satisfy the approval conditions, a baseline Koala density survey is required to measure progress towards achieving the performance criteria as prescribed within the approval conditions (ref. EPBC 2017/8090). The Lyons offset site was surveyed using direct methods, including, diurnal searches and opportunistic observations during other survey works. Diurnal searches and opportunistic observations failed to identify this species.

Although the detection of a single individual via camera survey does not provide a density or species stocking rate, a Koala was detected within the offset site via the motion detection camera survey deployed between the 19 April and 13 May 2021. This individual was detected on Camera 3 (refer to **Photo 1** and **Plan 1** for camera locations).

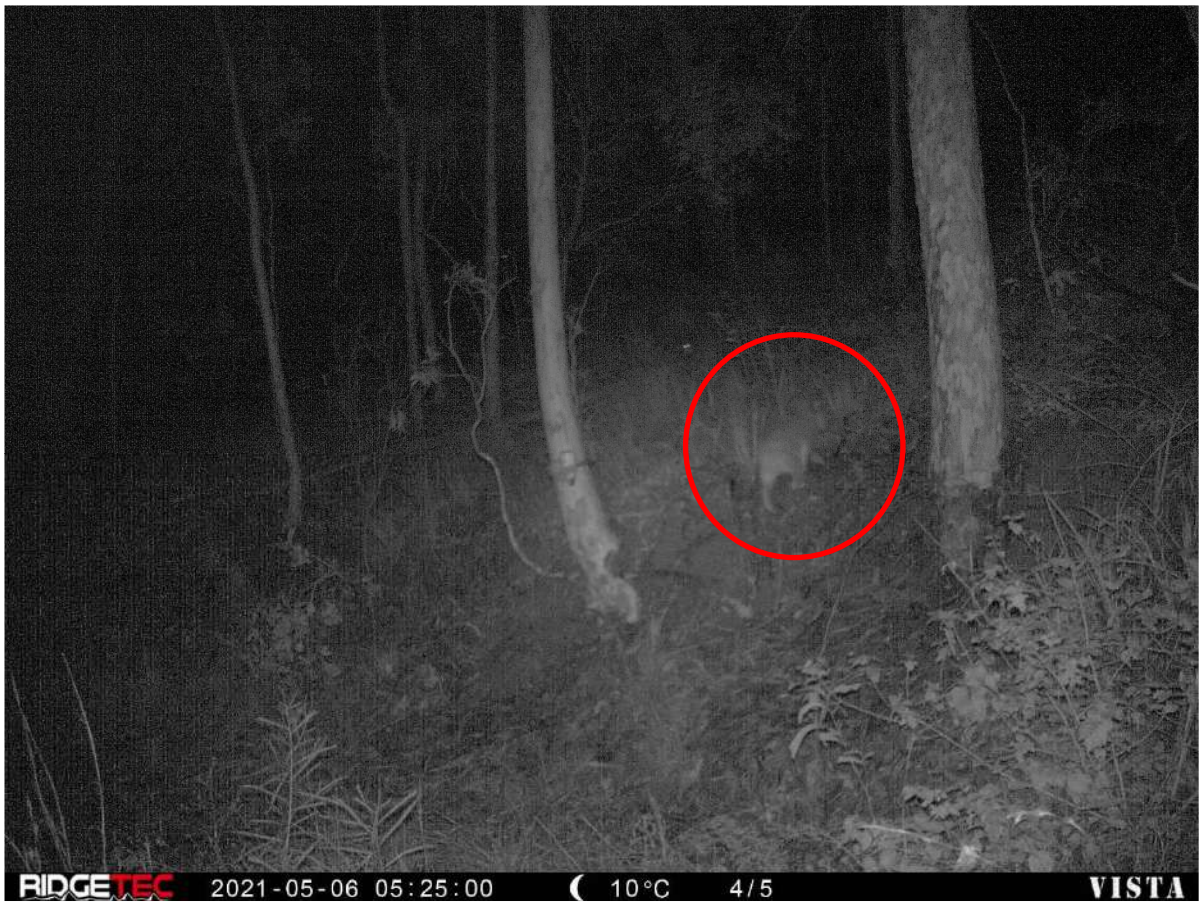


Photo 1: Koala detected at Camera 3 location.

Indirect methods can be used to determine presence/absence of fauna. Indices using animal signs including scats, tracks and scratches can indicate species presence and habitat use. Koala activity levels and density were determined by utilising SAT. Surveys are undertaken in accordance with the methodology developed by Phillips and Callaghan (2011) and specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala*. The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage and is therefore uses indices to determine presence/absence. Phillips & Callaghan (1995) found this technique is suitable for use in conjunction with stratified/random or systematic survey techniques but has proved especially powerful when applied at the landscape-scale using a RGB sampling design and appropriate spatial modelling techniques.

RGB-SAT sampling aims to provide a simple, unbiased and robust sampling tool that addresses the issue of determining and delineating koala metapopulation boundaries for the purposes of providing conservation and planning certainty (Phillips, S. and Hopkins, M. 2007). A systematic approach was used to survey for evidence of koala activity. In order to ensure a uniform and unbiased distribution of sampling effort throughout the study area, a 350 m x 350 m grid was applied on a map of the offset site and the resulting grid-cell intersections selected as sampling.

Seventeen (17) SAT surveys were completed across the Lyons offset site between April and May 2021. Eight (8) SAT sites yielded a 'low Koala activity level' result (based on East Coast med-high area/density) (Phillips and Callaghan 2011) (refer to **Table 9)**. The other nine (9) SAT sites yielded nil results. Refer to **Appendix A** for raw SAT data.

Table 9: SAT Survey Summary – Lyons

SAT	Date	Total Percentage	Activity Category
1	20 April 2021	0%	Nil
2	20 April 2021	6.667%	Low
3	20 April 2021	0%	Nil
4	20 April 2021	6.667%	Low
5	20 April 2021	0%	Nil
6	20 April 2021	3.333%	Low
7	22 April 2021	3.333%	Low
8	22 April 2021	0%	Nil
9	22 April 2021	3.333%	Low
10	22 April 2021	0%	Nil
11	22 April 2021	0%	Nil
12	23 April 2021	10.00%	Low
13	23 April 2021	10.00%	Low

SAT	Date	Total Percentage	Activity Category
14	14 May 2021	3.333%	Low
15	14 May 2021	0%	Nil
16	14 May 2021	0%	Nil
17	14 May 2021	0%	Nil

The usage of this methodology detailed by Phillips and Callaghan (2011) is considered an effective way of accurately gauging Koala density within a site. However, there are limitations to the method including the mobility of Koalas, total number entering and exiting the site, and mortality rates. However, given the time of year these surveys were undertaken (off-peak season) it can be assumed that the results are representative of the resident Koalas which would inhabit that offset site year-round and are not transient individuals which come and go during mating season (August to February). Other factors which may contribute to the low scores include the difficulty in identifying scats using the SAT method. This method relies heavily on the observer's ability to spot scat amongst ground cover which can vary significantly between SAT locations. Cristescu *et al.* 2012, found that detectability varied up to 16% between plots of different ground cover.

The Koala SAT survey methodology is considered an accurate technique when estimating low-density Koala populations (Mossaz 2010). Research by Rhodes *et al.* (2015) indicates that within the Ipswich region the Koala density is approximately 0.03 Koalas/ha. Rhodes *et al.* (2015) attribute the low population density to a negative relationship identified between temperature and Koala densities. Therefore, when estimating a Koala density in an area that is known to be 'low', the SAT survey methodology is considered to provide an accurate determination on the activity levels (Mossaz 2010).

As there was only one (1) observation across the Lyons offset site detected via the motion detection camera survey, Koala carrying capacity has been estimated using SAT survey results, scientific literature and data for the SEQ Koala population. The Koala carrying capacity has been estimated in the MHQA to coincide with the latest available published scientific literature and data for the SEQ Koala population.

A recent study undertaken by Rhodes *et al.* (2015) revealed that the density of Koala populations in SEQ ranges from 0.004 Koalas/ha to 6.54 Koalas/ha, with the average Koala density across the region being 0.04 Koalas/ha. These findings are supported by Melzer *et al.* (1994) who indicates that the Koala population in SEQ ranges from 0.005 Koalas/ha to 2.5 Koalas/ha. The more recent study by Rhodes *et al.* (2015) found that the negative relationship between temperature and Koala densities is consistent with other studies elsewhere (Adams-Hosking *et al.* 2011, Lunney *et al.* 2014) and is associated with low Koala densities in the Ipswich City Council region, where temperatures are relatively high. Within the Ipswich City Council region, the Rhodes *et al.* (2015) study detected thirty-six (36) Koalas over 1,078 transect hectares, resulting in a Koala density of 0.033 Koalas/ha.

Using the available published scientific literature and SAT results (refer to **Table 9**), it can be inferred that the Lyons offset site demonstrates low Koala activity levels (Phillips *et al*. (2011), and therefore contain an estimated Koala density ranging from 0.02 to 0.08 Koalas/ha. Therefore, using these Koala density estimations

and Koala habitat, 250.843 ha, the offset site has an estimated Koala carrying capacity of between five (5) and twenty (20) (refer to **Table 10**). It should be noted that due to the lack of available published scientific literature of Koala densities in SEQ, these carrying capacity estimates are subject to ongoing adaptive management as data and scientific literature becomes available.

Table 10: Offset Site Koala Carrying Capacity Estimate

Offset Site	Area (ha)	Density (Koalas/ha)	Carrying Capacity (Koalas)
Lyons	250.843 ha	0.02 to 0.08	5 (5.016)– 20 (20.067)

Based on the findings of these surveys, condition characteristics for each of the AUs were calculated (refer **Table 11**).

Table 11: Species stocking rate condition characteristics - Koala

Condition Characteristic	AU1	AU2	AU3	AU4	AU5	AU6
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	10	10	10	10	10
Species usage of the site (habitat type & evidenced usage)	15	15	15	15	15	15
Approximate density (per ha)	10	10	10	10	10	10
Role/importance of species population on site	5	5	5	5	5	5
Species Stocking Rate Score	40/70	40/70	40/70	40/70	40/70	40/70
Species Stocking Rate Score (out of 4)	2.29	2.29	2.29	2.29	2.29	2.29

3.1.2 Grey-headed Flying-fox

The GHFF occupies most areas in their distribution in highly irregular patterns, and therefore surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to search appropriate databases and other sources for the locations of camps, and to conduct vegetation surveys to identify feeding habitat. As discussed in **Section 2.4**, the following methods in accordance with the *Survey guidelines for Australia's threatened bats* of were employed:

1. Prior to the survey.

   A review of known flying fox camps was conducted for the project area, and the wider general area.
2. Daytime field surveys for camps.

   Surveying for Flying-fox camps is considered to be appropriate through walking transects, watching for flying bats and listening for their distinctive calls. Due to the distinctness and clear visibility of flying-fox camps, GHFF presence was assessed by focusing on daytime field surveys for camps, in conjunction with vegetation surveys/habitat assessment as per **Section 3.2**.
3. Surveys of vegetation communities and food plants.

   Foraging habitat assessments were conducted and are discussed in **Section 3.2.**
4. Night time surveys.

   Evening searches were also conducted via walking transects and spotlighting whilst walking transects can survey for individuals using the site for foraging purposes. Flying-fox camp investigations were completed for known camps in the nearby area to confirm GHFF presence/absence, and were undertaken during the day when flying-fox are typically roosting.

Desktop Review

This species roosts in large aggregations or camps in close proximity (20 km or less) to a regular food source, often in stands of riparian rainforest, Paperbark or Casuarina forest (Eby, 1995). Camps provide resting habitat, sites of social interactions and refuge for animals during significant phases of their annual cycle, such as birth, lactation and conception (Parry-Jones and Augee 1992).

The GHFF occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria (Tidemann, 1998; refer to **Figure 7**). However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. As a result, patterns of occurrence and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly (Eby & Lunney 2002). At a regional scale, broad trends in the distribution of plants with similar flowering and fruiting times support regular annual cycles of migration (Eby & Lunney 2002). It is infrequently found west of the Great Dividing Range (Tidemann 1998). The species occurs at a higher latitude than any other megachiropteran (megabat) species (Aston 1987; Menkhorst & Dixon 1985; Parry-Jones & Augee 1991).

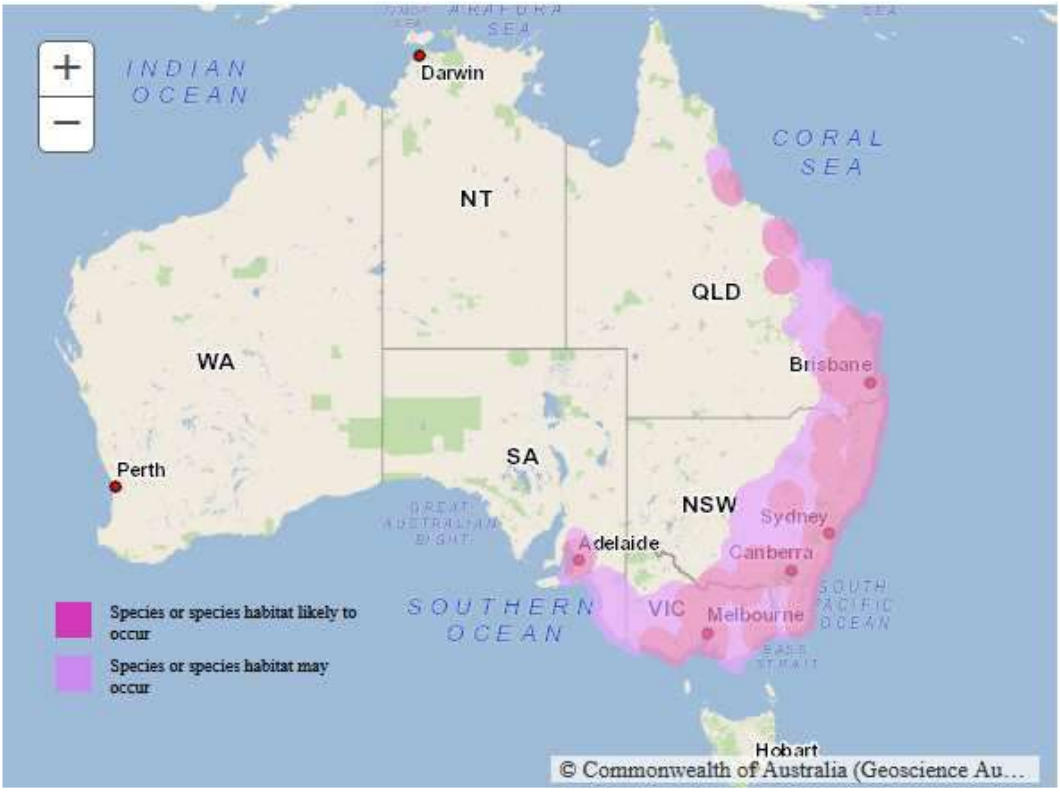


Figure 7: Grey-headed Flying-fox (*Pteropus poliocephalus*) Distribution Map (DAWE SPRAT, 2021)

A review of WildNet records indicate that the closet GHFF record occurs within approximately 4km of the Lyons offset site. Data derived from the DAWE national Flying-fox monitoring program indicates that five (5) flying-fox camps are known to occur within 20km of the Lyons offset site, one (1) of these is considered inactive (refer to **Plan 3**).

The Lyons site contains suitable foraging habitat for the GHFF (refer to **Table 12**). RE mapping demonstrates that the site contains a variety of flowering and fruiting foraging species to support individuals and larger populations. However, fruiting and flowering usually occurs between spring-autumn. These findings were ground-truthed through on-site surveys (refer to **Section 3.2**).

Table 12: Regional Ecosystem Summary

VMA Status	RE	Short Description	AU
Category B	RE12.8.20	Shrubby woodland with *Eucalyptus racemosa subsp. racemosa* or *E. dura* on Cainozoic igneous rocks	1
Category B & C	RE12.9-10.2	*Corymbia citriodora subsp. variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks	5 & 6
Category B	RE12.9-10.3	*Eucalyptus moluccana* open forest on sedimentary rocks	3

VMA Status	RE	Short Description	AU
Category B	RE12.9-10.7	*Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp. and E. melanophloia* woodland on sedimentary rocks	4
Category B	RE12.9-10.17	*Eucalyptus acmenoides, E. major, E. siderophloia +/- Corymbia citriodora subsp. variegata* open forest on sedimentary rocks	2

Site Surveys

A wide range of methods can be used to count bats. Murphy *et al.* (2008) identified just two methods that could be implemented rapidly and at large spatial scales; fly-out counts, where animals are counted in the air as they exit a camp, and ground counts, where animals are counted during the day in the camp. Following review of recommended methodologies for population density calculations within provided by CSIRO (A monitoring method for the Grey-headed Flying-fox, (*Pteropus poliocephalus)* (Westcott *et al.* 2011)), fly-out counts and ground-counts relating to flying-fox exiting camps and being situated within camps during the day were considered suitable for estimating abundance.

The offset sites were traversed by foot to identify GHFF presence or absence in the form of camps on-site. DAWE determined that the development was a controlled action as it will result in the clearing of vegetation identified as suitable foraging habitat for the GHFF (EPBC2017/8090). As such, the approved development does not directly impact on this species as no roosts/camps were identified within the impact site. As stated within the *Survey Guidelines for Australian Threatened Bats*, the GHFF occupies most areas in their distribution in highly irregular patterns, and therefore surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to conduct vegetation surveys to identify feeding habitat.

As discussed above, species stocking rate for GHFF associated with this proposed action is related to the percentage of trees reaching the Large Tree benchmark at the site at the time of undertaking the survey. The number and condition of winter or spring flowering GHFF foraging species across the offset site were captured within the MHQA assessments (results provided in **Section 3.2.2**).

Baseline GHFF species stocking rate was assessed by using the percentage of trees reaching the Large Tree benchmark. Large trees are described as a measure for the provision of reliable foraging resources for wildlife, providing nectar, leaves and seeds (Biocondition manual). Large trees provide greater leaf material and nectar for foraging purposes than trees with low DBH, and so are a reliable indicator of provision of quality habitat for GHFF. Larger trees, on average flower more frequently, more intensely and for a longer period of time than small trees (Wilson and Bennett 1999, Wilson 2002). The presence of Large Trees is considered to be of significant importance in identifying optimal habitat for GHFF.

Large trees are assessed using the Modified Habitat Quality Assessment Transects and are an indicator for the potential for foraging tree density and food availability. The number of Large Trees is recorded and compared to the benchmark data for the relating Regional Ecosystem. This is converted into a percentage of the benchmark, and a score ascribed. (refer **Appendix C** for raw data).

3.2. Modified Habitat Quality Assessment

3.2.1 Koala

A total of fourteen (14) MHQAs were conducted across the Lyons offset site, with nine (9) completed in May 2019, and the five (5) completed in February 2020. Three (3) were conducted in AU1 and AU2 and two (2) conducted within AU3 being the smaller unit (refer **Appendix B** for results data).

The Lyons offset site scored a 2.46 out of 3 for site context based on 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 (refer to **Plan 2** for context analysis). The site condition, site context score and species stocking rate (2 out of 3) combined to provide a habitat quality score of 6.49 (rounded to 6.00).

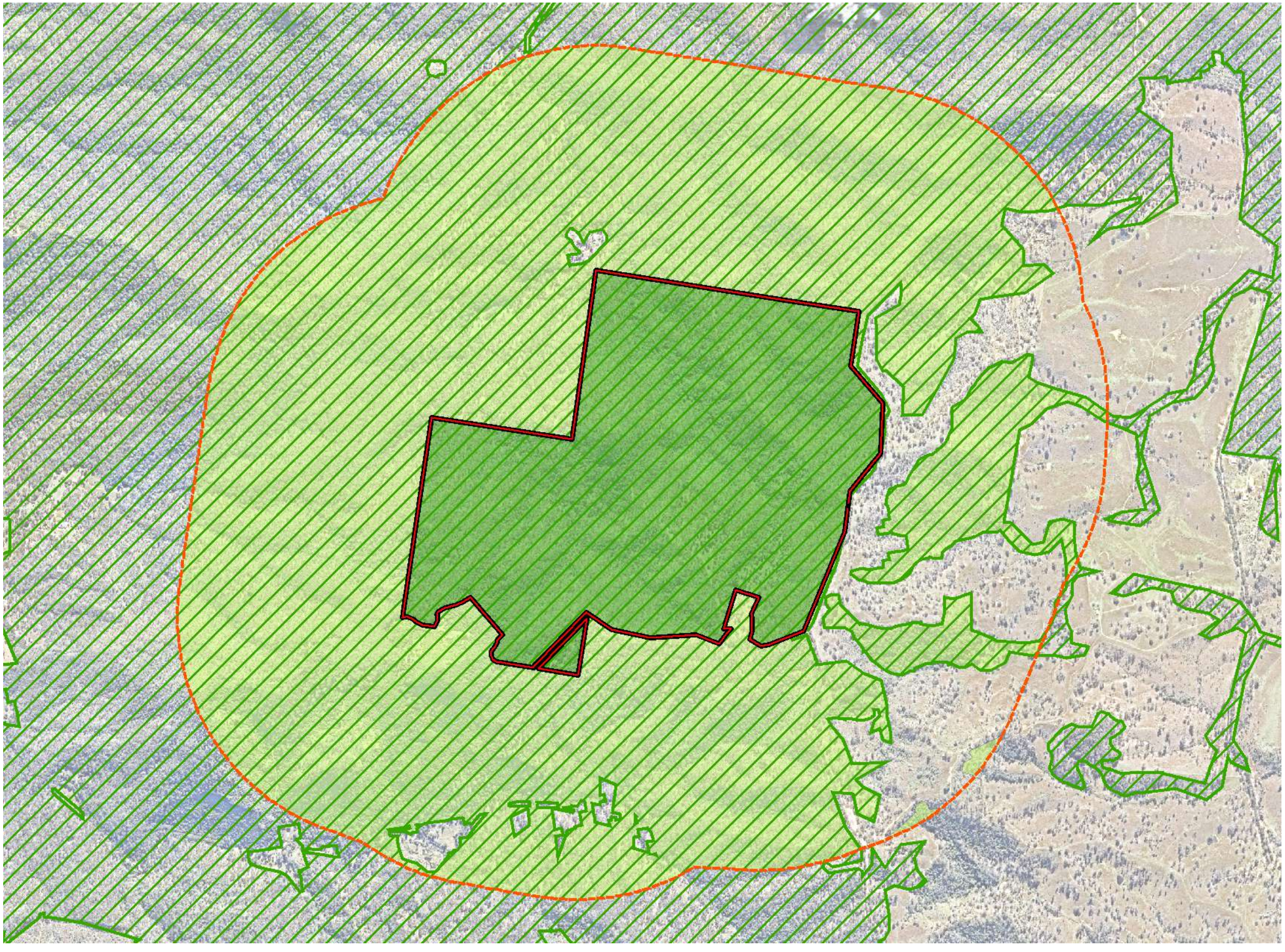
Table 13: Lyons Modified Habitat Quality Assessment Tool [Koala]

Attribute	Condition Characteristics	AU1	AU2	AU3	AU4	AU5	AU6
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	4/5	4/5	0/5	3/5	4/5
	Native plant species richness – trees	2.5/5	5/5	5/5	5/5	3.13/5	3.75/5
	Native plant species richness – shrubs	2.5/5	2.5/5	2.5/5	1.25/5	1.88/5	1.25/5
	Native plant species richness – grasses	3.75/5	2.5/5	2.5/5	2.5/5	2.5/5	3.75/5
	Native plant species richness – forbs	2.5/5	2.5/5	2.5/5	1.25/5	1.25/5	2.5/5
	Tree canopy height	5/5	5/5	5/5	5/5	5/5	5/5
	Tree canopy cover	4.5/5	4.5/5	4.5/5	4/5	5/5	3.75/5
	Shrub canopy cover	1.5/5	4/5	5/5	3/5	5/5	5/5
	Native grass cover	2/5	0.5/5	1/5	2/5	3/5	1/5
	Organic litter	5/5	3/5	5/5	4/5	5/5	4/5
	Large trees	2.5/15	5/15	5/15	2.5/15	5/15	5/15
	Coarse woody debris	5/5	1/5	2/5	5/5	4.25/5	3.5/5

Attribute	Condition Characteristics	AU1	AU2	AU3	AU4	AU5	AU6
	Non-native plant cover	2.5/10	10/10	4/10	5/10	5/10	4/10
	Quality and availability of food and foraging habitat	10/10	10/10	10/10	10/10	10/10	10/10
	Quality and availability of shelter habitat	10/10	10/10	10/10	10/10	10/10	10/10
	Site Condition Score	**63/100**	**62/100**	**68/100**	**61/100**	**69/100**	**67/100**
	Site Condition Score (out of 3)	**1.90**	**1.86**	**2.04**	**1.82**	**2.07**	**2.00**
Site Context (30%)	**Size of the patch**	10/10	10/10	10/10	10/10	10/10	10/10
	Connectedness	4/5	4/5	4/5	4/5	4/5	4/5
	Context	4/5	4/5	4/5	4/5	4/5	4/5
	Ecological corridors	6/6	6/6	6/6	6/6	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	5/5	5/5	5/5	5/5
	Threats to the species	7/15	7/15	7/15	7/15	7/15	7/15
	Species mobility capacity	10/10	10/10	10/10	10/10	10/10	10/10
	Site Context Score	**46/56**	**46/56**	**46/56**	**46/56**	**46/56**	**46/56**
	Site Context Score (out of 3)	**2.46**	**2.46**	**2.46**	**2.46**	**2.46**	**2.46**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	10	10	10	10	10	10

Attribute	Condition Characteristics	AU1	AU2	AU3	AU4	AU5	AU6
	Species usage of the site (habitat type & evidenced usage)	10	10	10	10	10	10
	Approximate density (per ha)	10	10	10	10	10	10
	Role/importance of species population on site	5	5	5	5	5	5
	Species Stocking Rate Score	35/70	35/70	35/70	35/70	35/70	35/70
	Species Stocking Rate Score (out of 4)	2	2	2	2	2	2
Site Condition Score		1.90	1.86	2.04	1.82	2.07	2.00
Site Context Score		2.46	2.46	2.46	2.46	2.46	2.46
Species Stocking Rate Score		2	2	2	2	2	2
Habitat Quality Score		6.36	6.32	6.50	6.28	6.53	6.46
Assessment Unit Area		7.69	21.93	9.59	20.39	181.09	10.15
Total impact Area (ha)		250.84	250.84	250.84	250.84	250.84	250.84
Assessment Unit Size Weighting		0.03	0.09	0.04	0.08	0.72	0.04
Weighted Habitat Quality Score		**0.19**	**0.55**	**0.25**	**0.51**	**4.69**	**0.29**
Habitat Quality Score		**6.49 (rounded to 6)**					

2. Koala Context Assessment



Legend

- Qld DCDB
- Offset Site
- Percentage of Koala Critical habitat within 1km of offset site (84%)
- Koala Habitat Onsite
- Size of Koala critical habitat patch adjoining offset site with a >200m corridor connectivity (>10,000 ha)
- Site 1km Buffer
- Percentage of offset area boundary length supporting a koala critical habitat connection off and on site (100%)

0 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:17,022 @ A3

N

Issue	Date	Description	Drawn	Checked
A	3/08/2021	Preliminary	LS	LT

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3.2.2 Grey-headed Flying-fox Foraging Habitat

As discussed within **Section 3.2.1**, a total of fourteen (14) MHQAs were conducted, with two (2) conducted in each AU, excluding AU2 and AU5 with one (1) and four (4), respectively. GHFF foraging habitat assessments were conducted in conjunction with each of these transects (refer **Appendix C** for results data **Table 14** for results summary).

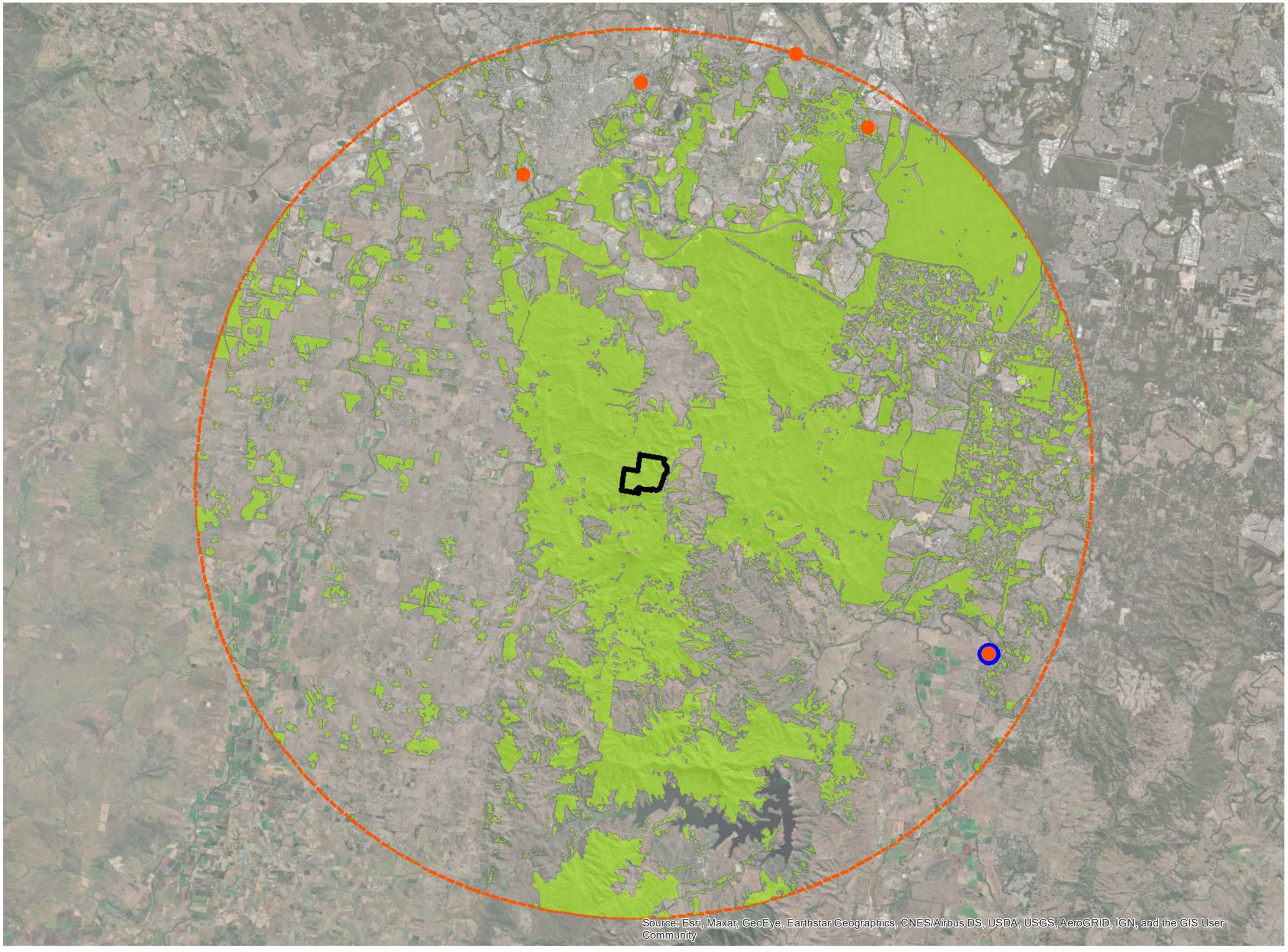
The Lyons offset site scored a 2.22 out of 3 for site context based on size of patch, connectedness, context, ecological corridors, role of site location to species overall population in the State and threats to the species (refer to **Plan 3** for context analysis). Species stocking rate varied significantly between AUs from 0.3 to 1.2. The site condition, site context score and species stocking rate combined to provide a habitat quality score of 5.27 (rounded to 5).

Table 14: Lyons Offset Site Grey-headed Flying-fox Habitat Quality

Attribute	Condition characteristics	AU1	AU2	AU3	AU4	AU5	AU6
Site Condition (40 %)	Vegetation Condition	20/20	20/20	20/20	20/20	20/20	10/20
	Species Richness	10/20	20/20	20/20	20/20	10/20	12.5/20
	Flower Score	5/10	5/10	6.5/10	5/10	4.25/10	6.5/10
	Timing of Biological Shortages	10/10	10/10	10/10	10/10	9.25/10	10/10
	Quality of Foraging Habitat	5/20	7.5/20	5/20	7.5/20	5/20	5/20
	Non-native Plant Cover	5.5/20	5.5/20	5/20	7.5/10	10/10	7.5/20
	Site condition score	55.5/100	68/100	66.5/100	70/100	58.5/100	51.5/100
	Site condition score (out of 4)	2.22	2.72	2.66	2.8	2.34	2.06
Site Context (30 %)	Size of the patch	10/10	10/10	10/10	10/10	10/10	10/10
	Connectedness	6/10	6/10	6/10	6/10	6/10	6/10
	Context	6/10	6/10	6/10	6/10	6/10	6/10
	Ecological corridors	10/10	10/10	10/10	10/10	10/10	10/10

Attribute	Condition characteristics	AU1	AU2	AU3	AU4	AU5	AU6
	Role of site location to species overall population in the State	5/10	5/10	5/10	5/10	5/10	5/10
	Threats to the species	5/10	5/10	5/10	5/10	5/10	5/10
	Site context score	42/60	42/60	42/60	42/60	42/60	42/60
	Site context score (out of 3)	2.10	2.10	2.10	2.10	2.10	2.10
Species Stocking Rate (30 %)	GHFF large trees	1/10	3/10	6/10	4/10	3.5/10	3/10
	Species stocking rate score	1/10	3/10	6/10	4/10	3.5/10	3/10
	Species stocking rate score (out of 3)	0.3	0.9	1.2	0.6	0.75	0.9
Total quality score		4.62	5.72	5.96	5.5	5.19	5.06
Assessment unit area		7.69	21.93	9.59	20.39	181.09	10.15
Total offset area		250.84	250.84	250.84	250.84	250.84	250.84
Size Weighting		0.03	0.09	0.04	0.08	0.72	0.04
Area weighted score		0.14	0.5	0.23	0.45	3.75	0.20
Total (out of 10)		**5.27 (rounded to 5)**					

3. Grey-headed Flying-fox Context Assessment



Legend

- Offset Site DCDB
- Site 20km Buffer
- Percentage of GHFF habitat in 20km context area from offset area - 37%
- GHFF roost camp - recently recorded activity (5)
- GHFF roost camp - level 3 =< population recently recorded (no records)

0 1 2 3 4 Kilometers

Transverse Mercator | GDA 1994 | Zone 56 | 1:180,000 @ A3

N

Issue	Date	Description	Drawn	Checked
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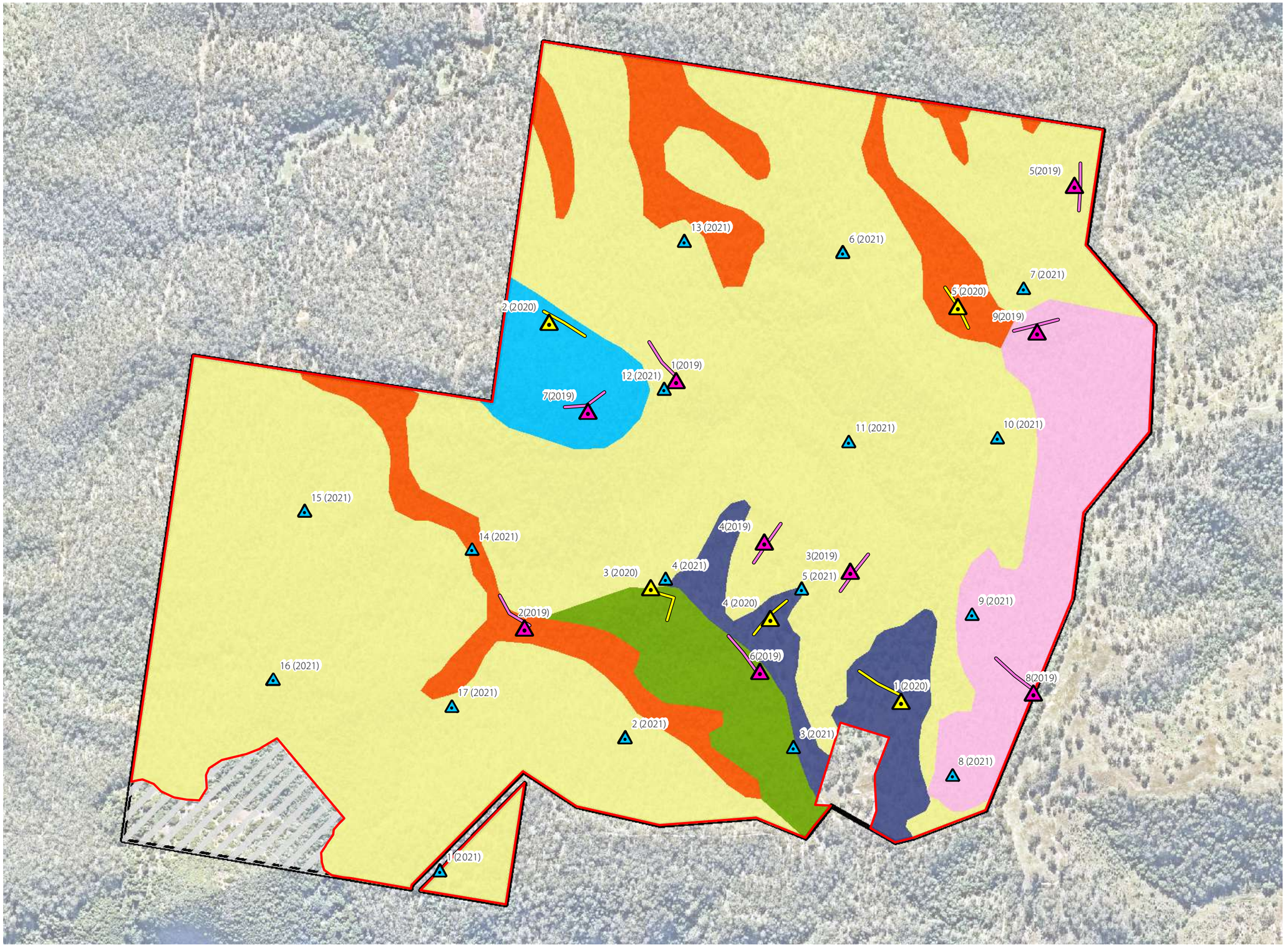
4. Habitat Quality Survey



Legend

- Qld DCDB
- Offset site DCDB
- Offset area (250.84 ha)

Assessment Units

- Unit 1 - 7.69 ha
- Unit 2 - 21.93 ha
- Unit 3 - 9.59 ha
- Unit 4 - 20.39 ha
- Unit 5 - 181.09 ha
- Unit 6 - 10.15 ha
- Habitat not-critical to the survival of the Koala
- Habitat Quality Transect (2020)
- Habitat Quality Transect (2019)
- SAT (2021)
- SAT (2020)
- SAT (2019)

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0 100 200 300 400 m

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Transverse Mercator | GDA 1994 | Zone 56 | 18,000 @ A3

Issue	Date	Description	Drawn	Checked
A	11/08/2021	Preliminary	LS	LT

3.3. Weed Cover

Weed cover across the Lyons offset site were recorded using three (3) complimentary techniques; MQHA, targeted weed transects, and locating and mapping patches of weeds (refer to **Section 2.7** for survey methodology).

The MHQA surveyed weed cover simultaneously with other habitat quality indicators across the Lyons offset sites. A summary of these results are provided in **Table 15**. The average across the Lyons offset site within the MQHA transects is 33.75%. These surveys are easily repeated to ensure non-native plant cover over the offset site decreases over the management period.

Table 15: MHQA Non-native Plant Cover Summary – Lyons

AU	Transect ID	Vegetation Status	RE	Non-native plant cover (%)
1	T7 (2019) & T2 (2020)	Remnant	RE12.8.20	42.5%
2	T2 (2019) & T5 (2020)	Remnant	RE12.9-10.17	45%
3	T6 (2019) & T3 (2020)	Remnant	RE12.9-10.3	37.5%
4	T8 & T9 (2019)	Remnant	RE12.9-10.7	32.5%
5	T1, T3, T4 & T5 (2019)	Remnant	RE12.9-10.2	12.5%
6	T1 & T4 (2020)	Regrowth	12.9-10.2	32.5%
Offset Site Average				**33.75%**

Twenty-two (22) weed cover transects were conducted across the offset site. These transect differentiate between non-native plant cover and weeds of national significance (WONS). Utilising the weed cover methodology the average non-native plant cover and WONS is 50.95% and 23.23%, respectively (refer to **Table 16**). Transects 8, 9, 10 and 11 were recorded with 90% or greater non-native plant cover, the greatest of which was Transect 8 with 96%. A list of the recorded weed species is provided in **Table 16**. Refer to **Appendix D** for raw non-native plant cover transect data.

Table 16: Weed Cover Transects – Lyons

Transect ID	AU	Non-native plant cover (%)	WONS (%)
WT1	2	74%	22%
WT2	5	27%	3%
WT3	4	14%	6%
WT4	4	43%	19%
WT5	4	29%	8%

Transect ID	AU	Non-native plant cover (%)	WONS (%)
WT6	6	59%	37%
WT7	5	59%	1%
WT8	5	96%	57%
WT9	5	90%	53%
WT10	2	90%	71%
WT11	5	90%	33%
WT12	5	41%	4%
WT13	5	47%	34%
WT14	6	21%	3%
WT15	2	55%	43%
WT16	3	48%	22%
WT17	5	57%	19%
WT18	5	24%	5%
WT19	5	74%	34%
WT20	5	13%	4%
WT21	5	52%	30%
WT22	5	18%	3%
Offset Site Average		**50.95**	**23.23%**

Table 17: Recorded Weed Species – Lyons

Scientific Name	Common Name	WONS
Ageratum houstonianum	Blue Billygoat weed	
Bidens pilosa	Cobbler's Pegs	
Desmodium uncinatum	Silver-leaf Desmodium	
Desmodium intortum	Green-leaf Desmodium	
Lantana camara	Lantana	✓
Lantana montevidensis	Creeping Lantana	
Melinis repens	Red Natal Grass	
Passiflora suberosa	Corky Passion Vine	

Additionally, where patches of non-native plant cover were identified within the offset sites, these were located with a hand-held GPS and the extent of the patch were mapped to guide future management actions within the offset site (refer to **Plan 5**).

3.4. Non-native Koala Predator Survey

Field surveys did not identify any evidence of Koala mortalities.

Seven (7) motion activated cameras were deployed across the Lyons Offset Site between 19 April and 13 May 2021. The cameras detected eight (8) non-native Koala predators, all identified as dogs (*Canis familiaris*), over a total of 168 survey nights (refer to **Table 18**). Other native and non-native species were capture during this survey. A full list of animals captured throughout this survey is provided in **Appendix E**.

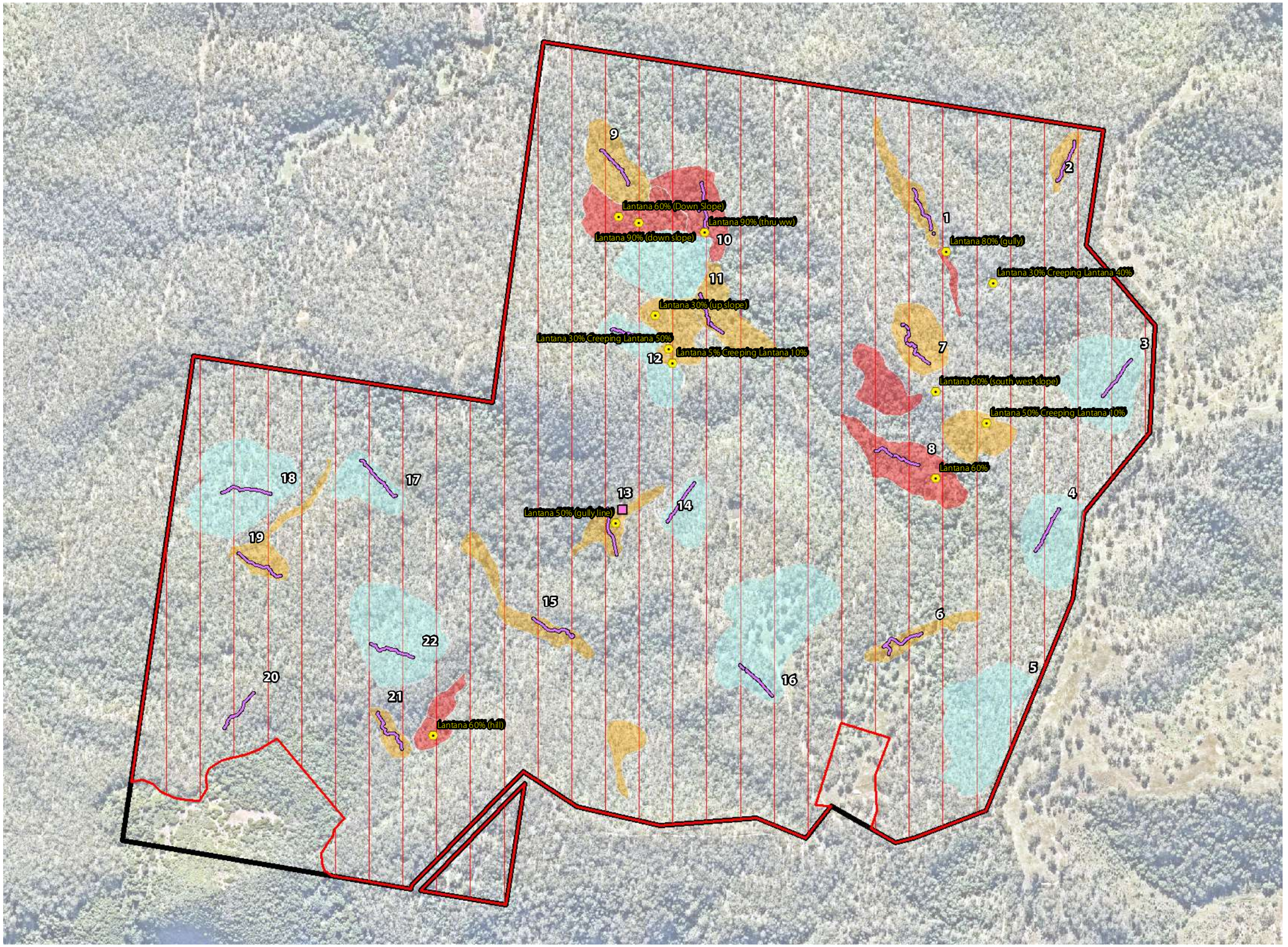
A relative abundance index (RAI) was calculated for non-native Koala predators, cats, dogs and foxes, using the formula RAI= D/TN x 100, where D is numbers of detection and TN is the total number of camera-trap nights (all cameras combined). Thus, the RAI for Lyons is **4.76**.

Table 18: Non-native Koala Predator Survey Results Summary – Lyons

Camera	Survey Duration (nights)	Species	Detection	RAI
1	24	Nil	-	
2	24	Nil	-	
3	24	Dog (*Canis familiaris*)	2	
4	24	Nil	-	
5	24	Dog (*Canis familiaris*)	5	**4.76**
6	24	Dog (*Canis familiaris*)	1	
7	24	Nil	-	
Total	**168**		**8**	

Photo 2: Dog captured on Camera 5.

5. Non-native Plants and Predators



Legend

- Qld DCDB
- Offset site DCDB
- Offset area (250.84 ha)
- Scattered Weeds (Blue) - <20%
- Moderate Weed density (Orange) - 30% - 50%
- Major Weed density (Red) - >60%
- Dog Scat
- Weed Observation
- Weed transect

0 100 200 300 400 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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5. Appendices

Appendix A

Koala SAT Survey Data

Appendix B

Koala MHQA Data

Appendix C

Grey-headed Flying-fox Foraging Habitat Assessment Data

Appendix D

Weed Transect Data

Appendix E

Non-native Koala Predator Data

Appendix A

Koala SAT Survey Data

SAT Survey 1 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow Leaf Ironbark	380	Nil
2	*Eucalyptus crebra*	Narrow Leaf Ironbark	420	Nil
3	*Corymbia citriodora*	Spotted Gum	180	Nil
4	*Corymbia citriodora*	Spotted Gum	190	Nil
5	*Corymbia citriodora*	Spotted Gum	140	Nil
6	*Corymbia citriodora*	Spotted Gum	660	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	190	Nil
8	*Eucalyptus tereticornis*	Forest Red Gum	180	Nil
9	*Corymbia tessellaris*	Moreton Bay Ash	100	Nil
10	*Corymbia citriodora*	Spotted Gum	150	Nil
11	*Corymbia citriodora*	Spotted Gum	180	Nil
12	*Eucalyptus crebra*	Narrow Leaf Ironbark	430	Nil
13	*Corymbia citriodora*	Spotted Gum	120	Nil
14	*Lophostemon confertus*	Brush Box	200	Nil
15	*Lophostemon confertus*	Brush Box	180	Nil
16	*Corymbia citriodora*	Spotted Gum	250	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	660	Nil
18	*Lophostemon confertus*	Brush Box	160	Nil
19	*Eucalyptus crebra*	Narrow Leaf Ironbark	230	Nil
20	*Corymbia citriodora*	Spotted Gum	220	Nil
21	*Corymbia citriodora*	Spotted Gum	260	Nil
22	*Eucalyptus tereticornis*	Forest Red Gum	170	Nil
23	*Corymbia citriodora*	Spotted Gum	180	Nil
24	*Eucalyptus crebra*	Narrow Leaf Ironbark	420	Nil
25	*Corymbia citriodora*	Spotted Gum	140	Nil
26	*Corymbia citriodora*	Spotted Gum	130	Nil
27	*Corymbia citriodora*	Spotted Gum	160	Nil
28	*Corymbia citriodora*	Spotted Gum	170	Nil
29	*Corymbia citriodora*	Spotted Gum	300	Nil
30	*Eucalyptus tereticornis*	Forest Red Gum	160	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 2 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow Leaf Ironbark	290	Nil
2	*Eucalyptus crebra*	Narrow Leaf Ironbark	230	Nil
3	*Corymbia citriodora*	Spotted Gum	180	Nil
4	*Corymbia citriodora*	Spotted Gum	240	Nil
5	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
6	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
7	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
8	*Acacia disparrima*	Hickory Wattle	120	Nil
9	*Eucalyptus crebra*	Narrow Leaf Ironbark	210	Nil
10	*Eucalyptus crebra*	Narrow Leaf Ironbark	270	Nil
11	*Corymbia citriodora*	Spotted Gum	130	Nil
12	*Eucalyptus crebra*	Narrow Leaf Ironbark	360	Nil
13	*Eucalyptus crebra*	Narrow Leaf Ironbark	330	Nil
14	*Eucalyptus crebra*	Narrow Leaf Ironbark	140	Nil
15	*Eucalyptus crebra*	Narrow Leaf Ironbark	290	Nil
16	*Eucalyptus crebra*	Narrow Leaf Ironbark	230	Nil
17	*Eucalyptus crebra*	Narrow Leaf Ironbark	260	Nil
18	*Eucalyptus crebra*	Narrow Leaf Ironbark	350	Nil
19	*Eucalyptus crebra*	Narrow Leaf Ironbark	130	Scats
20	*Eucalyptus crebra*	Narrow Leaf Ironbark	360	Scats
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	380	Nil
22	*Eucalyptus melanophloia*	Silver Leaf Ironbark	240	Nil
23	*Eucalyptus melanophloia*	Silver Leaf Ironbark	300	Nil
24	*Eucalyptus crebra*	Narrow Leaf Ironbark	300	Nil
25	*Corymbia citriodora*	Spotted Gum	100	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	190	Nil
27	*Eucalyptus crebra*	Narrow Leaf Ironbark	190	Nil
28	*Eucalyptus melanophloia*	Silver Leaf Ironbark	230	Nil
29	*Eucalyptus crebra*	Narrow Leaf Ironbark	280	Nil
30	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
Number of Trees with Koala Scats				**2**
Percentage of Trees with Koala Scats				**6.667%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 3 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus moluccana*	Gum Topped Box	590	Nil
2	*Eucalyptus crebra*	Narrow Leaf Ironbark	600	Nil
3	*Corymbia citriodora*	Spotted Gum	620	Nil
4	*Eucalyptus tereticornis*	Forest Red Gum	240	Nil
5	*Corymbia citriodora*	Spotted Gum	190	Nil
6	*Corymbia citriodora*	Spotted Gum	220	Nil
7	*Eucalyptus moluccana*	Gum Topped Box	560	Nil
8	*Eucalyptus crebra*	Narrow Leaf Ironbark	120	Nil
9	*Eucalyptus moluccana*	Gum Topped Box	100	Nil
10	*Eucalyptus moluccana*	Gum Topped Box	340	Nil
11	*Eucalyptus moluccana*	Gum Topped Box	240	Nil
12	*Corymbia citriodora*	Spotted Gum	190	Nil
13	*Corymbia citriodora*	Spotted Gum	420	Nil
14	*Eucalyptus tereticornis*	Forest Red Gum	260	Nil
15	*Eucalyptus moluccana*	Gum Topped Box	220	Nil
16	*Eucalyptus moluccana*	Gum Topped Box	420	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	200	Nil
18	*Corymbia citriodora*	Spotted Gum	200	Nil
19	*Corymbia citriodora*	Spotted Gum	140	Nil
20	*Eucalyptus moluccana*	Gum Topped Box	160	Nil
21	*Eucalyptus moluccana*	Gum Topped Box	420	Nil
22	*Eucalyptus moluccana*	Gum Topped Box	460	Nil
23	*Eucalyptus moluccana*	Gum Topped Box	160	Nil
24	*Eucalyptus moluccana*	Gum Topped Box	560	Nil
25	*Eucalyptus moluccana*	Gum Topped Box	140	Nil
26	*Eucalyptus moluccana*	Gum Topped Box	550	Nil
27	*Corymbia citriodora*	Spotted Gum	100	Nil
28	*Corymbia citriodora*	Spotted Gum	150	Nil
29	*Eucalyptus tereticornis*	Forest Red Gum	620	Nil
30	*Eucalyptus moluccana*	Gum Topped Box	260	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 4 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus moluccana*	Gum Topped Box	720	Nil
2	*Eucalyptus moluccana*	Gum Topped Box	150	Nil
3	*Eucalyptus moluccana*	Gum Topped Box	310	Nil
4	*Eucalyptus moluccana*	Gum Topped Box	620	Nil
5	*Eucalyptus moluccana*	Gum Topped Box	540	Nil
6	*Corymbia citriodora*	Spotted Gum	190	Nil
7	*Corymbia citriodora*	Spotted Gum	100	Nil
8	*Corymbia citriodora*	Spotted Gum	240	Nil
9	*Corymbia citriodora*	Spotted Gum	190	Nil
10	*Eucalyptus moluccana*	Gum Topped Box	210	Nil
11	*Corymbia citriodora*	Spotted Gum	140	Nil
12	*Erythrina vespertilio*	Bat Wing Coral Tree	210	Nil
13	*Corymbia citriodora*	Spotted Gum	170	Nil
14	*Eucalyptus moluccana*	Gum Topped Box	490	Nil
15	*Corymbia citriodora*	Spotted Gum	120	Nil
16	*Corymbia citriodora*	Spotted Gum	160	Nil
17	*Eucalyptus moluccana*	Gum Topped Box	100	Scats
18	*Corymbia citriodora*	Spotted Gum	160	Scats
19	*Euclayptus crebra*	Narrow Leaf Ironbark	290	Nil
20	*Eucalyptus moluccana*	Gum Topped Box	200	Nil
21	*Eucalyptus moluccana*	Gum Topped Box	170	Nil
22	*Corymbia citriodora*	Spotted Gum	370	Nil
23	*Corymbia citriodora*	Spotted Gum	120	Nil
24	*Corymbia citriodora*	Spotted Gum	260	Nil
25	*Corymbia citriodora*	Spotted Gum	620	Nil
26	*Eucalyptus moluccana*	Gum Topped Box	120	Nil
27	*Eucalyptus moluccana*	Gum Topped Box	160	Nil
28	*Corymbia citriodora*	Spotted Gum	250	Nil
29	*Corymbia citriodora*	Spotted Gum	180	Nil
30	*Eucalyptus moluccana*	Gum Topped Box	100	Nil
Number of Trees with Koala Scats				**2**
Percentage of Trees with Koala Scats				**6.667%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 5 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	330	Nil
2	*Corymbia citriodora*	Spotted Gum	130	Nil
3	*Erythrina vespertilio*	Bat Wing Coral Tree	170	Nil
4	*Corymbia citriodora*	Spotted Gum	330	Nil
5	*Corymbia citriodora*	Spotted Gum	200	Nil
6	*Corymbia citriodora*	Spotted Gum	220	Nil
7	*Eucalyptus crebra*	Narrow Leaf Ironbark	480	Nil
8	*Corymbia citriodora*	Spotted Gum	770	Nil
9	*Corymbia citriodora*	Spotted Gum	260	Nil
10	*Corymbia citriodora*	Spotted Gum	270	Nil
11	*Acacia disparrima*	Hickory Wattle	220	Nil
12	*Corymbia citriodora*	Spotted Gum	290	Nil
13	*Corymbia citriodora*	Spotted Gum	150	Nil
14	*Corymbia citriodora*	Spotted Gum	100	Nil
15	*Corymbia citriodora*	Spotted Gum	110	Nil
16	*Corymbia citriodora*	Spotted Gum	160	Nil
17	*Corymbia citriodora*	Spotted Gum	180	Nil
18	*Corymbia citriodora*	Spotted Gum	140	Nil
19	*Corymbia citriodora*	Spotted Gum	130	Nil
20	*Corymbia citriodora*	Spotted Gum	610	Nil
21	*Corymbia citriodora*	Spotted Gum	590	Nil
22	*Corymbia citriodora*	Spotted Gum	310	Nil
23	*Corymbia citriodora*	Spotted Gum	180	Nil
24	*Corymbia citriodora*	Spotted Gum	260	Nil
25	*Corymbia citriodora*	Spotted Gum	710	Nil
26	*Corymbia citriodora*	Spotted Gum	220	Nil
27	*Corymbia citriodora*	Spotted Gum	490	Nil
28	*Corymbia citriodora*	Spotted Gum	160	Nil
29	*Corymbia citriodora*	Spotted Gum	180	Nil
30	*Corymbia citriodora*	Spotted Gum	170	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 6 (Lyons Property) 20.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	550	Nil
2	*Corymbia citriodora*	Spotted Gum	320	Nil
3	*Corymbia citriodora*	Spotted Gum	260	Nil
4	*Corymbia citriodora*	Spotted Gum	180	Nil
5	*Corymbia citriodora*	Spotted Gum	140	Nil
6	*Corymbia citriodora*	Spotted Gum	220	Scats
7	*Corymbia citriodora*	Spotted Gum	160	Nil
8	*Corymbia citriodora*	Spotted Gum	120	Nil
9	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
10	*Corymbia citriodora*	Spotted Gum	190	Nil
11	*Corymbia citriodora*	Spotted Gum	290	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	100	Nil
13	*Corymbia citriodora*	Spotted Gum	100	Nil
14	*Corymbia citriodora*	Spotted Gum	100	Nil
15	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
16	*Corymbia citriodora*	Spotted Gum	420	Nil
17	*Corymbia citriodora*	Spotted Gum	240	Nil
18	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
19	*Corymbia citriodora*	Spotted Gum	190	Nil
20	*Corymbia citriodora*	Spotted Gum	150	Nil
21	*Corymbia citriodora*	Spotted Gum	320	Nil
22	*Corymbia citriodora*	Spotted Gum	210	Nil
23	*Corymbia citriodora*	Spotted Gum	180	Nil
24	*Corymbia citriodora*	Spotted Gum	140	Nil
25	*Corymbia citriodora*	Spotted Gum	190	Nil
26	*Corymbia citriodora*	Spotted Gum	220	Nil
27	*Corymbia citriodora*	Spotted Gum	100	Nil
28	*Corymbia citriodora*	Spotted Gum	140	Nil
29	*Corymbia citriodora*	Spotted Gum	140	Nil
30	*Corymbia citriodora*	Spotted Gum	320	Nil
Number of Trees with Koala Scats				**1**
Percentage of Trees with Koala Scats				**3.333%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 7 (Lyons Property) 22.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	280	Scats
2	*Corymbia citriodora*	Spotted Gum	170	Nil
3	*Corymbia citriodora*	Spotted Gum	450	Nil
4	*Corymbia intermedia*	Pink Bloodwood	170	Nil
5	*Eucalyptus melanophloia*	Silver Leaf Ironbark	110	Nil
6	*Corymbia citriodora*	Spotted Gum	100	Nil
7	*Corymbia citriodora*	Spotted Gum	510	Nil
8	*Corymbia intermedia*	Pink Bloodwood	230	Nil
9	*Corymbia citriodora*	Spotted Gum	270	Nil
10	*Eucalyptus melanophloia*	Silver Leaf Ironbark	200	Nil
11	*Allocasuarina torulosa*	Forest She Oak	140	Nil
12	*Corymbia citriodora*	Spotted Gum	230	Nil
13	*Eucalyptus crebra*	Narrow Leaf Ironbark	260	Nil
14	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
15	*Eucalyptus crebra*	Narrow Leaf Ironbark	280	Nil
16	*Acacia disparrima*	Hickory Wattle	120	Nil
17	*Corymbia citriodora*	Spotted Gum	110	Nil
18	*Corymbia citriodora*	Spotted Gum	160	Nil
19	*Eucalyptus melanophloia*	Silver Leaf Ironbark	150	Nil
20	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
21	*Eucalyptus tereticornis*	Forest Red Gum	240	Nil
22	*Corymbia citriodora*	Spotted Gum	180	Nil
23	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
24	*Corymbia citriodora*	Spotted Gum	260	Nil
25	*Eucalyptus tereticornis*	Forest Red Gum	330	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	220	Nil
27	*Corymbia intermedia*	Pink Bloodwood	100	Nil
28	*Corymbia intermedia*	Pink Bloodwood	120	Nil
29	*Eucalyptus crebra*	Narrow Leaf Ironbark	230	Nil
30	*Corymbia citriodora*	Spotted Gum	350	Nil
Number of Trees with Koala Scats				**1**
Percentage of Trees with Koala Scats				**3.333%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 8 (Lyons Property) 22.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus tereticornis*	Forest Red Gum	360	Nil
2	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
3	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
4	*Eucalyptus crebra*	Narrow Leaf Ironbark	170	Nil
5	*Corymbia citriodora*	Spotted Gum	100	Nil
6	*Eucalyptus crebra*	Narrow Leaf Ironbark	180	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	290	Nil
8	*Eucalyptus crebra*	Narrow Leaf Ironbark	170	Nil
9	*Corymbia citriodora*	Spotted Gum	330	Nil
10	*Corymbia citriodora*	Spotted Gum	120	Nil
11	*Corymbia citriodora*	Spotted Gum	150	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	240	Nil
13	*Eucalyptus crebra*	Narrow Leaf Ironbark	140	Nil
14	*Corymbia citriodora*	Spotted Gum	280	Nil
15	*Eucalyptus crebra*	Narrow Leaf Ironbark	150	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	210	Nil
17	*Corymbia citriodora*	Spotted Gum	230	Nil
18	*Eucalyptus tereticornis*	Forest Red Gum	540	Nil
19	*Corymbia citriodora*	Spotted Gum	160	Nil
20	*Eucalyptus crebra*	Narrow Leaf Ironbark	140	Nil
21	*Corymbia tessellaris*	Moreton Bay Ash	130	Nil
22	*Corymbia citriodora*	Spotted Gum	130	Nil
23	*Corymbia tessellaris*	Moreton Bay Ash	140	Nil
24	*Eucalyptus tereticornis*	Forest Red Gum	350	Nil
25	*Eucalyptus tereticornis*	Forest Red Gum	200	Nil
26	*Eucalyptus tereticornis*	Forest Red Gum	230	Nil
27	*Corymbia citriodora*	Spotted Gum	340	Nil
28	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
29	*Corymbia citriodora*	Spotted Gum	210	Nil
30	*Corymbia citriodora*	Spotted Gum	110	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 9 (Lyons Property) 22.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	210	Nil
2	*Corymbia citriodora*	Spotted Gum	230	Nil
3	*Corymbia citriodora*	Spotted Gum	260	Scats
4	*Corymbia citriodora*	Spotted Gum	430	Nil
5	*Corymbia citriodora*	Spotted Gum	280	Nil
6	*Corymbia tessellaris*	Moreton Bay Ash	180	Nil
7	*Corymbia citriodora*	Spotted Gum	210	Nil
8	*Corymbia citriodora*	Spotted Gum	300	Nil
9	*Corymbia citriodora*	Spotted Gum	300	Nil
10	*Eucalyptus melinophloia*	Silver Leaf Ironbark	140	Nil
11	*Eucalyptus crebra*	Narrow Leaf Ironbark	130	Nil
12	*Corymbia tessellaris*	Moreton Bay Ash	150	Nil
13	*Corymbia citriodora*	Spotted Gum	230	Nil
14	*Corymbia citriodora*	Spotted Gum	300	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	320	Nil
16	*Corymbia citriodora*	Spotted Gum	140	Nil
17	*Eucalyptus crebra*	Narrow Leaf Ironbark	200	Nil
18	*Eucalyptus crebra*	Narrow Leaf Ironbark	350	Nil
19	*Corymbia citriodora*	Spotted Gum	370	Nil
20	*Corymbia citriodora*	Spotted Gum	280	Nil
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	210	Nil
22	*Corymbia citriodora*	Spotted Gum	130	Nil
23	*Eucalyptus tereticornis*	Forest Red Gum	200	Nil
24	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
25	*Corymbia citriodora*	Spotted Gum	160	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	140	Nil
27	*Corymbia intermedia*	Pink Bloodwood	110	Nil
28	*Eucalyptus crebra*	Narrow Leaf Ironbark	260	Nil
29	*Corymbia citriodora*	Spotted Gum	230	Nil
30	*Eucalyptus crebra*	Narrow Leaf Ironbark	190	Nil
Number of Trees with Koala Scats				**1**
Percentage of Trees with Koala Scats				**3.333%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 10 (Lyons Property) 22.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow Leaf Ironbark	180	Nil
2	*Eucalyptus crebra*	Narrow Leaf Ironbark	200	Nil
3	*Eucalyptus melinophloia*	Silver Leaf Ironbark	210	Nil
4	*Eucalyptus melinophloia*	Silver Leaf Ironbark	180	Nil
5	*Corymbia citriodora*	Spotted Gum	260	Nil
6	*Corymbia citriodora*	Spotted Gum	340	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
8	*Corymbia citriodora*	Spotted Gum	300	Nil
9	*Corymbia citriodora*	Spotted Gum	200	Nil
10	*Corymbia citriodora*	Spotted Gum	360	Nil
11	*Corymbia citriodora*	Spotted Gum	180	Nil
12	*Corymbia citriodora*	Spotted Gum	140	Nil
13	*Corymbia citriodora*	Spotted Gum	380	Nil
14	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	230	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	290	Nil
18	*Corymbia citriodora*	Spotted Gum	130	Nil
19	*Corymbia citriodora*	Spotted Gum	150	Nil
20	*Corymbia citriodora*	Spotted Gum	130	Nil
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	120	Nil
22	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
23	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
24	*Corymbia citriodora*	Spotted Gum	460	Nil
25	*Corymbia citriodora*	Spotted Gum	280	Nil
26	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
27	*Eucalyptus melinophloia*	Silver Leaf Ironbark	160	Nil
28	*Corymbia citriodora*	Spotted Gum	260	Nil
29	*Corymbia citriodora*	Spotted Gum	330	Nil
30	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 11 (Lyons Property) 22.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	180	Nil
2	*Corymbia citriodora*	Spotted Gum	260	Nil
3	*Eucalyptus melinophloia*	Silver Leaf Ironbark	140	Nil
4	*Corymbia citriodora*	Spotted Gum	200	Nil
5	*Corymbia citriodora*	Spotted Gum	120	Nil
6	*Corymbia citriodora*	Spotted Gum	220	Nil
7	*Corymbia citriodora*	Spotted Gum	200	Nil
8	*Lophostemon confertus*	Brush Box	210	Nil
9	*Corymbia citriodora*	Spotted Gum	180	Nil
10	*Corymbia citriodora*	Spotted Gum	160	Nil
11	*Corymbia citriodora*	Spotted Gum	130	Nil
12	*Eucalyptus melinophloia*	Silver Leaf Ironbark	110	Nil
13	*Eucalyptus crebra*	Narrow Leaf Ironbark	200	Nil
14	*Eucalyptus crebra*	Narrow Leaf Ironbark	220	Nil
15	*Corymbia citriodora*	Spotted Gum	160	Nil
16	*Corymbia citriodora*	Spotted Gum	160	Nil
17	*Corymbia citriodora*	Spotted Gum	150	Nil
18	*Corymbia citriodora*	Spotted Gum	130	Nil
19	*Eucalyptus crebra*	Narrow Leaf Ironbark	340	Nil
20	*Corymbia citriodora*	Spotted Gum	230	Nil
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	400	Nil
22	*Corymbia citriodora*	Spotted Gum	140	Nil
23	*Corymbia citriodora*	Spotted Gum	150	Nil
24	*Corymbia citriodora*	Spotted Gum	200	Nil
25	*Corymbia citriodora*	Spotted Gum	200	Nil
26	*Corymbia citriodora*	Spotted Gum	120	Nil
27	*Corymbia citriodora*	Spotted Gum	130	Nil
28	*Corymbia citriodora*	Spotted Gum	130	Nil
29	*Corymbia citriodora*	Spotted Gum	180	Nil
30	*Corymbia citriodora*	Spotted Gum	140	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 12 (Lyons Property) 23.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow Leaf Ironbark	280	Nil
2	*Eucalyptus tereticornis*	Forest Red Gum	390	Nil
3	*Eucalyptus crebra*	Narrow Leaf Ironbark	130	Nil
4	*Eucalyptus crebra*	Narrow Leaf Ironbark	220	Nil
5	*Eucalyptus tereticornis*	Forest Red Gum	160	Nil
6	*Eucalyptus crebra*	Narrow Leaf Ironbark	350	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	320	Nil
8	*Eucalyptus crebra*	Narrow Leaf Ironbark	280	Nil
9	*Eucalyptus tereticornis*	Forest Red Gum	140	Scats
10	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
11	*Eucalyptus tereticornis*	Forest Red Gum	260	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
13	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
14	*Eucalyptus crebra*	Narrow Leaf Ironbark	300	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	140	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	290	Nil
17	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
18	*Corymbia citriodora*	Spotted Gum	180	Nil
19	*Eucalyptus crebra*	Narrow Leaf Ironbark	300	Nil
20	*Eucalyptus crebra*	Narrow Leaf Ironbark	210	Nil
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	240	Nil
22	*Eucalyptus tereticornis*	Forest Red Gum	600	Nil
23	*Corymbia citriodora*	Spotted Gum	510	Scats
24	*Eucalyptus crebra*	Narrow Leaf Ironbark	290	Nil
25	*Eucalyptus tereticornis*	Forest Red Gum	100	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	210	Nil
27	*Eucalyptus crebra*	Narrow Leaf Ironbark	200	Nil
28	*Corymbia citriodora*	Spotted Gum	400	Scats
29	*Eucalyptus tereticornis*	Forest Red Gum	210	Nil
30	*Corymbia citriodora*	Spotted Gum	130	Nil
Number of Trees with Koala Scats				**3**
Percentage of Trees with Koala Scats				**10.000%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 13 (Lyons Property) 23.04.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow Leaf Ironbark	350	Nil
2	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
3	*Eucalyptus crebra*	Narrow Leaf Ironbark	180	Nil
4	*Erythrina vespertilio*	Bat Wing Coral Tree	120	Nil
5	*Erythrina vespertilio*	Bat Wing Coral Tree	120	Nil
6	*Eucalyptus crebra*	Narrow Leaf Ironbark	240	Nil
7	*Corymbia intermedia*	Pink Bloodwood	100	Nil
8	*Corymbia intermedia*	Pink Bloodwood	220	Nil
9	*Eucalyptus melionphloia*	Silver Leaf Ironbark	220	Scats
10	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
11	*Corymbia tessellaris*	Moreton Bay Ash	190	Nil
12	*Corymbia tessellaris*	Moreton Bay Ash	130	Nil
13	*Corymbia citriodora*	Spotted Gum	340	Nil
14	*Corymbia citriodora*	Spotted Gum	180	Nil
15	*Eucalyptus melionphloia*	Silver Leaf Ironbark	230	Nil
16	*Corymbia citriodora*	Spotted Gum	280	Nil
17	*Corymbia tessellaris*	Moreton Bay Ash	230	Nil
18	*Corymbia intermedia*	Pink Bloodwood	350	Nil
19	*Eucalyptus crebra*	Narrow Leaf Ironbark	400	Nil
20	*Corymbia citriodora*	Spotted Gum	320	Nil
21	*Corymbia tessellaris*	Moreton Bay Ash	240	Nil
22	*Corymbia citriodora*	Spotted Gum	260	Nil
23	*Corymbia citriodora*	Spotted Gum	230	Nil
24	*Eucalyptus melionphloia*	Silver Leaf Ironbark	140	Nil
25	*Eucalyptus crebra*	Narrow Leaf Ironbark	320	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	370	Nil
27	*Corymbia citriodora*	Spotted Gum	290	Nil
28	*Corymbia citriodora*	Spotted Gum	200	Scats
29	*Eucalyptus crebra*	Narrow Leaf Ironbark	480	Scats
30	*Corymbia tessellaris*	Moreton Bay Ash	140	Nil
Number of Trees with Koala Scats				**3**
Percentage of Trees with Koala Scats				**10.000%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 14 (Lyons Property) 14.05.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus tereticornis*	Forest Red Gum	290	Nil
2	*Corymbia citriodora*	Spotted Gum	200	Nil
3	*Lophostemon confertus*	Brushbox	210	Nil
4	*Corymbia intermedia*	Pink Bloodwood	140	Y
5	*Lophostemon confertus*	Brushbox	140	Nil
6	*Allocasurina littoralis*	She-oak	130	Nil
7	*Lophostemon confertus*	Brushbox	200	Nil
8	*Corymbia citriodora*	Spotted Gum	400	Nil
9	*Corymbia citriodora*	Spotted Gum	170	Nil
10	*Lophostemon confertus*	Brushbox	150	Nil
11	*Acacia disparrima*	Hickory wattle	130	Nil
12	*Corymbia citriodora*	Spotted Gum	170	Nil
13	*Corymbia citriodora*	Spotted Gum	160	Nil
14	*Lophostemon confertus*	Brushbox	240	Nil
15	*Lophostemon confertus*	Brushbox	150	Nil
16	*Lophostemon confertus*	Brushbox	160	Nil
17	*Corymbia citriodora*	Spotted Gum	190	Nil
18	*Lophostemon confertus*	Brushbox	160	Nil
19	*Corymbia citriodora*	Spotted Gum	200	Nil
20	*Corymbia tessallaris*	Moreton Bay Ash	290	Nil
21	*Corymbia citriodora*	Spotted Gum	180	Nil
22	*Eucalyptus tereticornis*	Forest Red Gum	330	Nil
23	*Lophostemon confertus*	Brushbox	360	Nil
24	*Corymbia citriodora*	Spotted Gum	240	Nil
25	*Eucalyptus tereticornis*	Forest Red Gum	180	Nil
26	*Corymbia citriodora*	Spotted Gum	170	Nil
27	*Corymbia citriodora*	Spotted Gum	400	Nil
28	*Corymbia citriodora*	Spotted Gum	200	Nil
29	*Corymbia citriodora*	Spotted Gum	140	Nil
30	*Eucalyptus tereticornis*	Forest Red Gum	280	Nil
Number of Trees with Koala Scats				**1**
Percentage of Trees with Koala Scats				**3.333%**
Koala Use (Based on East Coast Med-High)				**Low**

SAT Survey 15 (Lyons Property) 14.05.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
2	*Eucalyptus crebra*	Narrow-leaved Ironbark	100	Nil
3	*Corymbia citriodora*	Spotted Gum	190	Nil
4	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
5	*Eucalyptus crebra*	Narrow-leaved Ironbark	130	Nil
6	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	Nil
7	*Corymbia citriodora*	Spotted Gum	160	Nil
8	*Corymbia tessallaris*	Moreton Bay Ash	110	Nil
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	220	Nil
10	*Corymbia citriodora*	Spotted Gum	230	Nil
11	*Corymbia citriodora*	Spotted Gum	180	Nil
12	*Corymbia citriodora*	Spotted Gum	160	Nil
13	*Corymbia citriodora*	Spotted Gum	160	Nil
14	*Corymbia citriodora*	Spotted Gum	120	Nil
15	*Corymbia citriodora*	Spotted Gum	150	Nil
16	*Corymbia citriodora*	Spotted Gum	300	Nil
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	220	Nil
18	*Eucalyptus crebra*	Narrow-leaved Ironbark	450	Nil
19	*Corymbia citriodora*	Spotted Gum	220	Nil
20	*Eucalyptus crebra*	Narrow-leaved Ironbark	250	Nil
21	*Corymbia citriodora*	Spotted Gum	330	Nil
22	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
23	*Corymbia citriodora*	Spotted Gum	310	Nil
24	*Corymbia citriodora*	Spotted Gum	170	Nil
25	*Corymbia citriodora*	Spotted Gum	210	Nil
26	*Eucalyptus crebra*	Narrow-leaved Ironbark	220	Nil
27	*Corymbia citriodora*	Spotted Gum	220	Nil
28	*Corymbia citriodora*	Spotted Gum	190	Nil
29	*Corymbia citriodora*	Spotted Gum	140	Nil
30	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 16 (Lyons Property) 14.05.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	280	Nil
2	*Corymbia citriodora*	Spotted Gum	450	Nil
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	240	Nil
4	*Corymbia citriodora*	Spotted Gum	310	Nil
5	*Corymbia citriodora*	Spotted Gum	180	Nil
6	*Corymbia citriodora*	Spotted Gum	270	Nil
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	370	Nil
8	*Corymbia citriodora*	Spotted Gum	130	Nil
9	*Corymbia citriodora*	Spotted Gum	250	Nil
10	*Corymbia citriodora*	Spotted Gum	350	Nil
11	*Eucalyptus crebra*	Narrow-leaved Ironbark	490	Nil
12	*Eucalyptus crebra*	Narrow-leaved Ironbark	140	Nil
13	*Eucalyptus crebra*	Narrow-leaved Ironbark	240	Nil
14	*Corymbia citriodora*	Spotted Gum	250	Nil
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	420	Nil
16	*Eucalyptus crebra*	Narrow-leaved Ironbark	350	Nil
17	*Corymbia citriodora*	Spotted Gum	270	Nil
18	*Eucalyptus tereticornis*	Forest Red Gum	210	Nil
19	*Corymbia citriodora*	Spotted Gum	270	Nil
20	*Eucalyptus crebra*	Narrow-leaved Ironbark	260	Nil
21	*Corymbia citriodora*	Spotted Gum	150	Nil
22	*Corymbia citriodora*	Spotted Gum	130	Nil
23	*Corymbia citriodora*	Spotted Gum	140	Nil
24	*Corymbia citriodora*	Spotted Gum	100	Nil
25	*Corymbia citriodora*	Spotted Gum	140	Nil
26	*Corymbia citriodora*	Spotted Gum	300	Nil
27	*Eucalyptus crebra*	Narrow-leaved Ironbark	370	Nil
28	*Corymbia citriodora*	Spotted Gum	120	Nil
29	*Corymbia citriodora*	Spotted Gum	330	Nil
30	*Eucalyptus crebrA*	Narrow-leaved Ironbark	240	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

SAT Survey 17 (Lyons Property) 14.05.2021				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats Recorded**
1	*Corymbia citriodora*	Spotted Gum	230	Nil
2	*Corymbia tessallaris*	Moreton Bay Ash	130	Nil
3	*Corymbia citriodora*	Spotted Gum	120	Nil
4	*Corymbia tessallaris*	Moreton Bay Ash	180	Nil
5	*Corymbia tessallaris*	Moreton Bay Ash	110	Nil
6	*Corymbia tessallaris*	Moreton Bay Ash	230	Nil
7	*Corymbia citriodora*	Spotted Gum	210	Nil
8	*Eucalyptus crebra*	Narrow-leaved Ironbark	310	Nil
9	*Corymbia citriodora*	Spotted Gum	120	Nil
10	*Corymbia citriodora*	Spotted Gum	350	Nil
11	*Corymbia citriodora*	Spotted Gum	160	Nil
12	*Corymbia citriodora*	Spotted Gum	120	Nil
13	*Eucalyptus crebra*	Narrow-leaved Ironbark	230	Nil
14	*Corymbia citriodora*	Spotted Gum	270	Nil
15	*Corymbia citriodora*	Spotted Gum	100	Nil
16	*Corymbia citriodora*	Spotted Gum	100	Nil
17	*Corymbia tessallaris*	Moreton Bay Ash	130	Nil
18	*Corymbia citriodora*	Spotted Gum	140	Nil
19	*Corymbia citriodora*	Spotted Gum	290	Nil
20	*Eucalyptus melanphloia*	Silver-leaved Ironbark	300	Nil
21	*Corymbia citriodora*	Spotted Gum	380	Nil
22	*Corymbia citriodora*	Spotted Gum	250	Nil
23	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
24	*Corymbia citriodora*	Spotted Gum	240	Nil
25	*Corymbia tessallaris*	Moreton Bay Ash	160	Nil
26	*Eucalyptus crebra*	Narrow-leaved Ironbark	250	Nil
27	*Corymbia citriodora*	Spotted Gum	110	Nil
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	120	Nil
29	*Eucalyptus crebra*	Narrow-leaved Ironbark	120	Nil
30	*Corymbia citriodora*	Spotted Gum	290	Nil
Number of Trees with Koala Scats				**0**
Percentage of Trees with Koala Scats				**0.000%**
Koala Use (Based on East Coast Med-High)				**Nil**

Appendix B

Koala MHQA Data

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☐	An Offset Site	☑	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum					
WGS 84 ☐	0m Mark	Zone	Easting	Northing	
GDA 94 ☐					
	50m Mark	Zone	Easting	Northing	
Plot bearing			Recorders	DH and LC	

Site description and Location (including details of discrete polygons within the assessment unit)
T7 - top of hill in landzone 8

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Acacia sp.*	Common Name	
Scientific Name	*Brachychiton populneus*	Common Name	Kurrajong
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Eucalyptus melinophloia*	Common Name	Silver-leaved Ironbark
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	*Solanum sp.*	Common Name	
Scientific Name	*Gahnia aspera*	Common Name	Rough Saw Sedge
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Aristida leptopoda*	Common Name	*White Speargrass*
Scientific Name	*Cymbopogon refractus*	Common Name	*Barbed Wire Grass*
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:			
Total number of species	11		
Scientific Name	*Lomandra longifolia*	Common Name	
Scientific Name	*Clematicissus opaca*	Common Name	Grape Vine
Scientific Name	*Plectranthus sp.*	Common Name	
Scientific Name	*Sida cordifolia*	Common Name	Flannel Weed
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Smilax australis*	Common Name	Barbed Wire Vine
Scientific Name	*Blechnum neohollandicum*	Common Name	Prickly Rasp Fern
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Xerochrysum viscosum*	Common Name	Native Daisy
Scientific Name	*Drynaria rigidula*	Common Name	Basket Fern
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot	5.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
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 F - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	717.00		
1	5.00	26	
2	10.00	27	
3	6.30	28	
4	3.50	29	
5	5.50	30	
6	4.30	31	
7	0.50	32	
8	6.00	33	
9	0.80	34	
10	3.00	35	
11	7.00	36	
12	3.20	37	
13	7.00	38	
14	0.60	39	
15	9.00	40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	5.00%	20.00%	10.00%	10.00%	10.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	30.00%	25.00%	10.00%	40.00%	30.00%	27.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	0	Number of large non eucalypt trees:	0
Total Number Large Trees:			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	14.00	Emergent:	

Number of ecologically dominant layer species regenerating:	67

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	35.90%	Sub-canopy:	48.20%	Emergent:	
Shrub canopy cover %	3.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site ☐	An Offset Site ☐	an Advanced Offset Site ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.17	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 2 - 12.9-10.17a. Waterway vegetation consistant with RE12.9-10.17a.

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

Tree species richness:			
Total number of species	14		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus tereticornis*	**Common Name**	Forest Red Gum
Scientific Name	*Acacia fimbriata*	**Common Name**	Fringed Wattle
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Erythrina vespertilio*	**Common Name**	Batwing Coral Tree
Scientific Name	*Jagera pseudorhus*	**Common Name**	Foambark
Scientific Name	*Ficus rubignosa*	**Common Name**	Rusty Fig

Shrub species richness:			
Total number of species	2		
Scientific Name	*Citrus sp.*	**Common Name**	
Scientific Name	*Dodonaea viscosa*	**Common Name**	Hop Bush
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	4		
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Aristida calycina*	**Common Name**	Dark Aristida
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
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	11		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax-Lily
Scientific Name	*Glycine sp.*	**Common Name**	Small Glycine
Scientific Name	*Clematicissus opaca*	**Common Name**	Forest Grape
Scientific Name	*Desmodium sp.*	**Common Name**	
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Doodia aspera*	**Common Name**	Prickly Rasp Fern
Scientific Name	*Smilax australis*	**Common Name**	Barbed Wire Vine
Scientific Name	*Cassytha pubescens*	**Common Name**	Devils Twine
Scientific Name	*Adiantum sp.*	**Common Name**	Maidenhair Fern

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

Total percentage cover within plot	15.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion
Scientific Name	*Melinis repens*	**Common Name**	Red Natal
Scientific Name	*Ageratina riparia*	**Common Name**	Mist Flower
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total Length of Course Woody Debris (Meters):	49.00		
1	3.40	26	
2	1.50	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	10.00%	20.00%	15.00%	5.00%	11.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	80.00%	70.00%	60.00%	40.00%	50.00%	60.00%

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

Eucalypt Large tree DBH benchmark used :	430	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	14.00	Emergent:	

Number of ecologically dominant layer species regenerating:	60

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	66.20%	Sub-canopy:	52.90%	Emergent:	
Shrub canopy cover %	12.30%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site ☐	An Offset Site ☐	an Advanced Offset Site ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 6 - Mapped 12.9-10.2/12.9-10.7. Species consistant with 12.9-10.3

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus molucanna*	Common Name	Gum-topped Box
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus melinophloia*	Common Name	Silver-leaved Ironbark
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Angophera subvalentina*	Common Name	Broad-leaved Apple
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species	3		
Scientific Name		Common Name	Slender Wattle
Scientific Name		Common Name	Sally Wattle
Scientific Name		Common Name	White Cedar
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	*Aristida sp.*	Common Name	
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Panicum sp.*	Common Name	
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear 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	

Forbs and others (non grass ground) species richness:			
Total number of species	9		
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-Lily
Scientific Name	*Cassytha pubescens*	Common Name	Devils Twine
Scientific Name	*Eremophila debilis*	Common Name	Winter Apple
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Wahlenbergia sp.*	Common Name	
Scientific Name	*Glycine sp.*	Common Name	Small Glycine
Scientific Name	Plectranthus sp.	Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot	45.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Jacaranda mimosifolia*	Common Name	Jacaranda
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Bidens pillosa*	Common Name	Cobblers Peg
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	141.00		
1	5.00	26	
2	4.30	27	
3	4.80	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	15.00%	10.00%	5.00%	5.00%	5.00%	8.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	75.00%	85.00%	80.00%	85.00%	75.00%	80.00%

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

Eucalypt Large tree DBH benchmark used :	450	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	12	Number of large non eucalypt trees:	0
Total Number Large Trees:	12		

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	13.00	Emergent:	

Number of ecologically dominant layer species regenerating:	50

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	86.40%	Sub-canopy:	23.40%	Emergent:	
Shrub canopy cover %	11.50%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) Standard Assessment ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
4		12.9-10.7	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		Zone	Easting	Northing
WGS 84 ☐	0m Mark			
GDA 94 ☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders	

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 8 - Mapped RE12.9-10.2/12.9-10.7 in upper catchment. Transect 9 - Gully line vegetation

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

Tree species richness:			
Total number of species	11		
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Brachychiton populneus*	Common Name	Kurrajong
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest She Oak
Scientific Name	*Jagera pseudorhus*	Common Name	Foam Bark
Scientific Name	*Mallotus philippensis*	Common Name	Red Kamala
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum

Shrub species richness:			
Total number of species	3		
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Grewia retusifolia*	Common Name	Dogs Balls
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	8		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida sp.*	Common Name	
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Chloris sp.*	Common Name	Windmill Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Sida cordifolia*	Common Name	Flannel Weed
Scientific Name	*Smilax australis*	Common Name	Barbed Wire Vine
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Adiantum sp.*	Common Name	Maidenhair Fern
Scientific Name	*Nephrolepis cordifolia*	Common Name	Fishbone Fern
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat berry
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Gymnostachys anceps*	Common Name	Settlers Flax
Scientific Name	*Drynaria sp.*	Common Name	Basket Fern

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

Total percentage cover within plot	32.50%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	296.50		
1	3.50	26	
2	2.00	27	
3	0.60	28	
4	8.00	29	
5	6.00	30	
6	8.00	31	
7	10.00	32	
8	1.20	33	
9	20.00	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	30.00%	25.00%	50.00%	30.00%	35.00%	34.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	37.50%	52.50%	25.00%	45.00%	30.00%	38.00%

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

Eucalypt Large tree DBH benchmark used :	390	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	7	Number of large non eucalypt trees:	1
Total Number Large Trees:	8		

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	16.00	Emergent:	

Number of ecologically dominant layer species regenerating:	7

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	59.70%	Sub-canopy:	37.10%	Emergent:	
Shrub canopy cover %	14.20%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging	Quality and availability of shelter	Species mobility capacity	Role of site location to overall
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Habitat Quality Site Assessment Template…….. **PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD**

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** …… **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
5		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 5 - Mapped RE12.9-10.2/RE12.9-10.7. Elements of both Res but most representative of RE12.9-10.2. Transect 4 - Mapped RE12.9-10.7/RE12.9-10.3/RE12.9-10.17. Transect 3 - Mapped RE12.9-10.2/RE12.9-10.17a/RE12.9-10.7/RE12.9-10.3. Transect 1 - Mapped RE12.9-10.2/RE12.9-10.7

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

Tree species richness:			
Total number of species	10		
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Brachychiton sp.*	Common Name	
Scientific Name	*Petalostigma pubescens*	Common Name	Quinine Bush
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus moluccanna*	Common Name	Gum-topped Box
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Allocasuarina littoralis*	Common Name	Black Sheoak
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver-leaf Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia tesselaris*	Common Name	Moreton Bay Ash
Scientific Name	*Brachychiton sp.*	Common Name	

Shrub species richness:			
Total number of species	7		
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Ficus coronata*	Common Name	Sand Paper Fig
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Acacia fimbriata*	Common Name	Fringed Wattle
Scientific Name	*Acacia melanoxylon*	Common Name	Sally Wattle
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Acacia melanoxylon*	Common Name	Sally Wattle
Scientific Name	*Acacia fimbriata*	Common Name	Fringed Wattle
Scientific Name	*Breynia oblongifolia*	Common Name	Coffee Bush
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	12		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Panicum sp.*	Common Name	
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Sporobolus creber*	Common Name	Slender Rats Tail Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Pristida sp.*	Common Name	
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Chloris sp.*	Common Name	Windmill Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass

Forbs and others (non grass ground) species richness:			
Total number of species	13		
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Gahnia aspera*	Common Name	Rough Saw Sedge
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Goodentia rotundfolia*	Common Name	Star Goodenia
Scientific Name	*Glossocardia bidens*	Common Name	Native Cobbler Peg
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Lobelia purpurescens*	Common Name	White Root
Scientific Name	*Cyperus gracilis*	Common Name	Slender Flat Sedge
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Lomandra multiflora*	Common Name	Many-flowered Mat Rush
Scientific Name	*Plectranthus sp.*	Common Name	

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

Total percentage cover within plot	12.50%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Conyza bonariensis*	Common Name	Flaxleaf Fleabane
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Optunia sp.*	Common Name	Prickly Pear
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Oxalis sp.*	Common Name	Wood Sorrel
Scientific Name	*Lantan montevidensis*	Common Name	*Creeping Lantana*
Scientific Name	*Opuntia sp.*	Common Name	*Prickly Pear*
Scientific Name	*Passiflora suberosa*	Common Name	*Corky Passion*
Scientific Name	*Senecio madagascariensis*	Common Name	*Fireweed*

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

Total Length of Course Woody Debris (Meters):	470.50		
1	4.00	26	6.60
2	3.80	27	10.00
3	4.50	28	12.00
4	3.60	29	14.50
5	2.70	30	3.20
6	8.00	31	0.50
7	0.50	32	8.30
8	2.00	33	0.60
9	10.00	34	8.00
10	3.50	35	0.80
11	5.00	36	0.60
12	0.50	37	1.00
13	1.30	38	3.00
14	0.50	39	9.00
15	2.50	40	
16	14.00	41	
17	6.30	42	
18	4.50	43	
19	4.20	44	
20	10.00	45	
21	6.00	46	
22	0.50	47	
23	0.50	48	
24	8.50	49	
25	3.20	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	11.25%	11.25%	28.75%	8.75%	11.25%	14.25%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	50.00%	50.00%	51.25%	57.50%	58.75%	53.50%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

Median Tree Canopy Height Measurements	Canopy:	19.50	Sub-canopy:	11.50	Emergent:	

Number of ecologically dominant layer species regenerating:	69

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	84.86%	Sub-canopy:	25.35%	Emergent:	
Shrub canopy cover %	6.78%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Habitat Quality Site Assessment Template……..

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet			

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T2 - Rocky steep slope, NE facing

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Ficus rubignosa*	**Common Name**	Rusty Fig
Scientific Name	*Acacia shirleyi*	**Common Name**	Lancewood
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	4		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Acacia shirleyi*	**Common Name**	Lancewood
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name	*Ficus coronata*	**Common Name**	Sand Paper Fig
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	6		
Scientific Name	*Eragrostis brownii*	**Common Name**	Browns Love Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	6		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Drynaria rigidula*	**Common Name**	Basket Fern
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Lomandra multiflora*	**Common Name**	Many-flowered Mat Rush
Scientific Name	*Plectranthus parviflorus*	**Common Name**	
Scientific Name	*Cyperus gracilis*	**Common Name**	Slender Flat Sedge
Scientific Name		**Common Name**	

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

Total percentage cover within plot	80.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Prickly Pear
Scientific Name	*Tradescantia zebrina*	**Common Name**	Wandering Jew

Scientific Name	*Oxalis corniculata*	Common Name	Creeping Woodsorrel
Scientific Name	*Physalis angulata*	Common Name	Goose Berry
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	737.00		
1	3.20	26	
2	11.00	27	
3	13.00	28	
4	4.10	29	
5	2.00	30	
6	2.00	31	
7	3.50	32	
8	5.00	33	
9	3.10	34	
10	4.00	35	
11	2.50	36	

12	0.50	37	
13	0.80	38	
14	0.50	39	
15	10.00	40	
16	8.50	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	15.00%	15.00%	5.00%	5.00%	10.00%	10.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	40.00%	50.00%	40.00%	15.00%	50.00%	39.00%
Litter	15.00%	15.00%	30.00%	25.00%	15.00%	20.00%
Rock	10.00%	10.00%	10.00%		20.00%	12.50%
Bare Ground	20.00%	10.00%	15.00%	55.00%	5.00%	21.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	1	Number of large non eucalypt trees:	1
Total Number Large Trees:	2		

C. citro	530
Bratchychiton	400

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	11.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	76.80	Sub-canopy:	31.10	Emergent:	
Shrub canopy cover %	1.50					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	8.40	8.40	T2	6.20	12.50	6.30
T1	8.40	16.80	8.40	T2	21.20	24.00	2.80
T1	29.60	36.80	7.20	T2	31.10	32.60	1.50
T1	39.30	47.30	8.00	T2	36.00	38.90	2.90
T1	52.00	59.40	7.40	T2	46.00	50.00	4.00
T1	59.40	65.40	6.00	T2	54.80	59.40	4.60
T1	66.00	70.40	4.40	T2	65.00	68.30	3.30
T1	70.40	75.20	4.80	T2	82.40	86.60	4.20
T1	76.00	89.30	13.30	T2	98.50	100.00	1.50
T1	91.10	100.00	8.90	T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	71.00	72.50	1.50	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	21/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.17	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T5 - remnant, gully vegetation (12.9-10.17a)

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Erythrina vespertilio*	**Common Name**	Bat's Wing Coral Tree
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She-oak
Scientific Name	*Angophora woodsiana*	**Common Name**	Rough-barked Apple
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Acacia disparrima*	**Common Name**	Hickory Wattle
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Mallotus phillipensis*	**Common Name**	Red Kamala
Scientific Name	*Grewia latifolia*	**Common Name**	Dogs Balls
Scientific Name	*Xanthorrhoea*	**Common Name**	Grass Tree
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	5		
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Sporobolus creber*	**Common Name**	Native Rparamatta Grass
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	11		
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak fern
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Murdannia graminea*	**Common Name**	Slug Herb
Scientific Name	*Lomandra multiflora*	**Common Name**	Many Flowered Mat Rush
Scientific Name	*Phyllanthus microcladus*	**Common Name**	Small Leaved Phyllanthus
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Eremophila debilis*	**Common Name**	Winter Apple
Scientific Name	*Desmodium rhytidophyllumn*	**Common Name**	Hairy Desmodium

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

Total percentage cover within plot	75.00%

Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Tradescantia fluminensis*	**Common Name**	Wandering Jew
Scientific Name	*Cida cordifolia*	**Common Name**	Flannel Weed
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Oxalis corniculata*	**Common Name**	Creeping Woodsorrel
Scientific Name	*Rubus sp.*	**Common Name**	Wild Raspberry
Scientific Name	*Dichondra repens*	**Common Name**	Kidney Weed
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):	**923.00**		
1	5.50	**26**	6.50
2	6.50	**27**	4.30
3	1.40	**28**	
4	1.20	**29**	
5	1.00	**30**	
6	0.60	**31**	
7	2.50	**32**	
8	8.00	**33**	
9	10.00	**34**	
10	1.40	**35**	
11	4.80	**36**	

12	13.50	37	
13	0.50	38	
14	7.50	39	
15	1.40	40	
16	1.80	41	
17	1.60	42	
18	0.50	43	
19	0.60	44	
20	5.20	45	
21	0.70	46	
22	0.90	47	
23	1.20	48	
24	1.40	49	
25	1.80	50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	0.00%	10.00%	10.00%	0.00%	4.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	5.00%	10.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	
Non native forbs and shrubs	35.00%	70.00%	5.00%	10.00%	100.00%	44.00%
Litter	65.00%	30.00%	80.00%	67.00%	0.00%	48.40%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	0.00%	0.00%	0.00%	0.00%	0.00%	
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	430	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	4	Number of large non eucalypt trees:	1
Total Number Large Trees:	5		

L. confertus	450	560
C. inter	490	
C. citro	680	

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	14.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	59.80	Sub-canopy:	28.70	Emergent:	
Shrub canopy cover %	8.20					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	2.10	2.10	T2	10.00	17.50	7.50
T1	6.20	15.90	9.70	T2	57.60	60.80	3.20
T1	17.70	22.10	4.40	T2	61.20	64.50	3.30
T1	22.10	31.40	9.30	T2	71.20	75.90	4.70
T1	33.00	42.40	9.40	T2	77.60	82.60	5.00
T1	42.40	50.50	8.10	T2	90.30	95.30	5.00
T1	50.50	54.90	4.40	T2			
T1	87.60	95.30	7.70	T2			
T1	95.30	100.00	4.70	T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	2.60	3.40	0.80	**Shrub**	62.90	64.00	1.10
Shrub	8.00	8.70	0.70	**Shrub**	64.00	65.00	1.00
Shrub	29.10	30.00	0.90	**Shrub**	91.60	92.60	1.00
Shrub	52.00	53.10	1.10	**Shrub**	95.30	96.90	1.60

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

T3 - Steep SW facing slope

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus teretcironis*	**Common Name**	Forest Red Gum
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus molucanna*	**Common Name**	Gum-toppped Box
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	4		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Jacksonia scoparia*	**Common Name**	Dogwood
Scientific Name	*Acacia salicina*	**Common Name**	Sally Wattle
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	5		
Scientific Name	*Agrostis avenacea*	**Common Name**	Fairy Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Plectranthus parviflorus*	**Common Name**	Little Spurflower
Scientific Name	*Glossocarsia bidens*	**Common Name**	Native Cobbler Peg
Scientific Name	*Adiantum sp.*	**Common Name**	Maidenhair Fern
Scientific Name	*Ere,ophilia debilis*	**Common Name**	Winter Apple
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Hybanthus stellarioidea*	**Common Name**	Spade Flower

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

Total percentage cover within plot	30.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Prickly Pear

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

Total Length of Course Woody Debris (Meters):	124.00		
1	3.40	26	
2	1.00	27	
3	1.00	28	
4	3.00	29	
5	4.00	30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	15.00%	15.00%	10.00%	5.00%	11.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	5.00%	5.00%	2.00%
Native shrubs	0.00%		0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	15.00%	10.00%	15.00%	5.00%	10.00%	11.00%
Litter	65.00%	65.00%	65.00%	70.00%	75.00%	68.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	10.00%	10.00%	5.00%	10.00%	5.00%	8.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	450	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

E. tere	520	510	510
E. moll	540	460	490
C. citro			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	11.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	55.20	Sub-canopy:	34.80	Emergent:	
Shrub canopy cover %	10.30					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	3.40	3.40	T2	4.90	6.10	1.20
T1	3.40	6.30	2.90	T2	10.70	17.10	6.40
T1	10.90	18.50	7.60	T2	23.50	27.60	4.10
T1	21.50	26.00	4.50	T2	30.40	35.00	4.60
T1	28.00	35.00	7.00	T2	44.10	47.30	3.20
T1	43.70	51.00	7.30	T2	52.00	56.20	4.20
T1	56.80	61.20	4.40	T2	80.40	84.00	3.60
T1	63.10	68.00	4.90	T2	85.00	92.50	7.50
T1	71.30	76.00	4.70	T2			
T1	79.00	84.00	5.00	T2			

T1	92.50	96.00	3.50	**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	21.40	22.20	0.80	**Shrub**	63.40	64.30	0.90
Shrub	25.00	26.50	1.50	**Shrub**	66.30	68.00	1.70
Shrub	30.60	31.60	1.00	**Shrub**	83.30	84.90	1.60
Shrub	52.00	53.00	1.00	**Shrub**	95.00	96.80	1.80

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet			

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
6		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T1 - Non remnant. Patchy vegetation with open grazing area. Some exposed rocks

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus tereticornis*	**Common Name**	Forest Red Gum
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Melia azedarach*	**Common Name**	White Cedar
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	7		
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Aristida calycina*	**Common Name**	Dark Aristida
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Agrostis avenacea*	**Common Name**	Fairy Grass
Scientific Name	*Panicum decompositum*	**Common Name**	Native Millet
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	5		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Cyperus gracilis*	**Common Name**	Slender Flat Sedge
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Phyllanthes sp.*	**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total percentage cover within plot	45.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Sida cordifolia*	**Common Name**	Flannel Weed
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Pear Tree
Scientific Name	*Gomphocarpus physocarpus*	**Common Name**	Balloon Cotton

Scientific Name	*Setaria sp.*	Common Name	Rats Tail Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	451.00		
1	7.20	26	
2	6.00	27	
3	8.10	28	
4	4.20	29	
5	0.60	30	
6	1.00	31	
7	1.00	32	
8	7.50	33	
9	3.00	34	
10	6.50	35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	0.00%	10.00%	0.00%	5.00%	5.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	5.00%	0.00%	10.00%	0.00%	3.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	5.00%	0.00%	0.00%	35.00%	80.00%	24.00%
Non native forbs and shrubs	5.00%	90.00%	10.00%	30.00%	10.00%	29.00%
Litter	75.00%	0.00%	5.00%	10.00%	0.00%	18.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	5.00%	5.00%	70.00%	15.00%	5.00%	20.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

C. citro	380
C. inter	610
E. crebra	670

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	12.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	30

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	32.60	Sub-canopy:	31.40	Emergent:	
Shrub canopy cover %	3.90					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	1.60	1.60	T2	13.40	17.50	4.10
T1	13.00	29.70	16.70	T2	17.50	21.20	3.70
T1	31.40	32.60	1.20	T2	55.60	61.50	5.90
T1	49.30	55.60	6.30	T2	63.00	69.50	6.50
T1	61.50	68.30	6.80	T2	82.80	89.00	6.20
T1				T2	95.00	100.00	5.00
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	0.90	1.70	0.80	**Shrub**	95.00	95.80	0.80
Shrub	26.30	27.10	0.80	**Shrub**			
Shrub	27.40	28.40	1.00	**Shrub**			
Shrub	29.80	30.30	0.50	**Shrub**			

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	22/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
6		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T4 - non remnant 12.9-10.2, uphill of dam, scattered trees/grazing area

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

Tree species richness:			
Total number of species	3		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus molucanna*	**Common Name**	Gum-toppped Box
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey 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**	

Shrub species richness:			
Total number of species	1		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey 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**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	4		
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wire Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
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	8		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Fimbristylis sp.*	**Common Name**	Fringe Rush
Scientific Name		**Common Name**	Arrow leaf
Scientific Name	*Glossocarsia bidens*	**Common Name**	Native Cobbler Peg
Scientific Name	*Phyllanthes sp.*	**Common Name**	
Scientific Name	*Eremophilia debilis*	**Common Name**	Winter Apple
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	*Opuntia sp.*	**Common Name**	Prickly Pear
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Heliotropium amplexicaule*	**Common Name**	Blue Heliotrope
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Cyperus polystachyos*	**Common Name**	Bunchy Sedge
Scientific Name	*Cida cordifolia*	**Common Name**	Flannel Weed
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total Length of Course Woody Debris (Meters):	**157.00**		
1	1.30	**26**	
2	0.70	**27**	
3	3.60	**28**	
4	10.10	**29**	
5		**30**	
6		**31**	
7		**32**	
8		**33**	
9		**34**	
10		**35**	
11		**36**	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	5.00%	5.00%	5.00%	5.00%	6.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	75.00%	35.00%	5.00%	5.00%	65.00%	37.00%
Non native forbs and shrubs	10.00%	10.00%	10.00%	5.00%	15.00%	10.00%
Litter	5.00%	20.00%	40.00%	75.00%	10.00%	30.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	0.00%	30.00%	40.00%	10.00%	15.00%	19.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

C. citro	450			
E. moll	710	530	750	450
E. crebra	550			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	12.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	56.00	Sub-canopy:	0.00	Emergent:	
Shrub canopy cover %	3.20					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	2.50	17.70	15.20	T2			
T1	42.00	54.80	12.80	T2			
T1	66.00	77.10	11.10	T2			
T1	83.10	100.00	16.90	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	25.30	27.50	2.20	Shrub			
Shrub	80.60	81.60	1.00	Shrub			
Shrub				Shrub			
Shrub				Shrub			

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

(FORM COMPLETE)

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Appendix C

Grey-headed Flying-fox Foraging Habitat Assessment Data

Assessment Unit - Regional Ecosystem	AU 1 - REMNANT - 12.8.20						AU 2 - REMNANT - 12.9-10.17						AU 3 - REMNANT			
Site Reference	OUT OF	Transect 7		Transect 2020 T2			OUT OF	Transect 2		Transect 2020 T5			OUT OF	Transect 6		Transect
	(X/X)	comment	Score	commen	Score	Mean Score	(X/X)	comment	Score	comment	Score	ean Scor	(X/X)	commen	Score	comment
Vegetation Condition	**20**	cat B	20	cat B	20	20	**20**	cat B	20	cat B	20	20	**20**	cat B	20	cat B
Species Richness	**20**	6	10	6	10	10	**20**	15	20	9	20	20	**20**	8	20	7
Flower Score	**10**	0.60	8	0.28	2	5	**10**	0.29	5	0.30	5	5	**10**	0.47	8	0.42
Timing of Biological Shortages	**10**	all	10	all	10	10	**10**	all	10	all	10	10	**10**	all	10	all
Quality of Foraging Habitat	**20**	2	5	2	5	5	**20**	4	10	2	5	7.5	**20**	3	5	3
Non-native Plant Cover	**20**	5.00%	10	80.00%	1	5.5	**20**	15.00%	10	75.00%	1	5.5	**20**	45.00%	5	30.00%
Site Condition Score			63		48	55.5			75		61	68			68	
MAX Site Condition Score	***X***	*X*	*100*	*X*	*100*	*100*	***X***	*X*	*100*	*X*	*100*	*100*	***X***	*X*	*100*	*X*
Site Condition Score - out of 4	**X**	**X**	**2.52**	**X**	**1.92**	**2.22**	**X**	**X**	**3.00**	**X**	**2.44**	**2.72**	**X**	**X**	**2.72**	**X**
Size of patch	**10**		10		10	10	**10**		10		10	10	**10**		10	
Connectedness	**10**	5 active ca	6		6	6	**10**		6		6	6	**10**		6	
Context	**10**	35%	6		6	6	**10**		6		6	6	**10**		6	
Ecological Corridors	**10**	within	10		10	10	**10**		10		10	10	**10**		10	
Role of site location to species overall population in the sta	**10**	2 ≥ level 3 c	5		5	5	**10**		5		5	5	**10**		5	
Threats to the species	**10**	moderate	5		5	5	**10**		5		5	5	**10**		5	
Site Context Score			42		42	42			42		42	42			42	
MAX Site Context Score	***X***	*X*	*60*	*X*	*60*	*60*	***X***	*X*	*60*	*X*	*60*	*60*	***X***	*X*	*60*	*X*
Site Context Score - out of 3	**X**	**X**	**2.10**	**X**	**2.10**	**2.10**	**X**	**X**	**2.10**	**X**	**2.10**	**2.10**	**X**	**X**	**2.10**	**X**
GHFF Foraging Tree Density Canopy cover	**10**	0	0	20	2	1	**10**	16	2	27	4	3	**10**	46	4	46
Species Stocking Rate Score			0		2	1			2		4	3			4	
MAX Species Stocking Rate Score	***X***	*X*	*10*	*X*	*10*	*10*	***X***	*X*	*10*	*X*	*10*	*10*	***X***	*X*	*10*	*X*
Species Stocking Rate Score - out of 3	**X**		**0.00**		**0.60**	**0.30**	**X**		**0.60**		**1.20**	**0.90**	**X**		**1.20**	
Total			**4.62**		**4.62**	**4.62**			**5.70**		**5.74**	**5.72**			**6.02**	

Assessment unit	**AU1**	**AU2**	**AU3**	**AU4**	**AU5**	**AU6**	**Total**
Toatal quality score	4.62	5.72	5.96	5.50	5.19	5.06	
Assessment unit area	7.69	21.93	9.59	20.39	181.09	10.15	250.84076
Toatal offset area	250.84	250.84	250.84	250.84	250.84	250.84	
Size weighting	0.03	0.09	0.04	0.08	0.72	0.04	1
Area weighted score	0.14	0.50	0.23	0.45	3.75	0.20	5.2682486
Rounded Modified Quality Habitat Assessment Score							5
Asessment unit area within the 150 ha offset	7.69	13.25	0.00	20.39	97.30	11.39	150.01
Toatal offset area	150	150	150	150	150	150	
Size weighting	0.05	0.09	0.00	0.14	0.65	0.08	1.00

Area weighted score	0.24	0.51	0.00	0.75	3.37	0.38	5.2401881
Rounded Modified Quality Habitat Assessment Score							5

ʔ mean of all Eucalyptus
† Value of 0.65 given as species listed as important winter f
* Assinged based on related species
ǂ middle of published range of Wt p*r

			Flower	**Timing of biological shortages**						Quality
AU1	Transect 7		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating and conception Dec-Mar	Migration paths All year	Fruit industries Aug-Mar	
	Eucalyptus crebra		0.65	x				x		1
	Corymbia citriodora		0.65	x	x			x	x	1
	Acacia sp.		0							
	Brachychiton populneus		0							
	Alphitonia excelsa		0							
	Eucalyptus melanophloia ǂ		0.5	x	x	x	**x**	x	x	
			0.3	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**2**

AU1	Transect 2020 T2							
Eucalyptus crebra	0.65	x				x		1
Brachychiton sp.	0							
Corymbia citriodora	0.65	x	x			x	x	1
Corymbia tesselaris	0.4			x	**x**	x	x	
Ficus rubignosa	0							
Acacia shirleyi	0							
	0.2833	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**2**

AU2	Transect 2							
Corymbia citriodora	0.65	x	x			x	x	1
Eucalyptus crebra	0.65	x				x		1
Lophostemon confertus	0.46		x	x	x	x	x	
Corymbia tesselaris	0.4			x	**x**	x	x	
*Angophera subvalentina**	0.38							
Corymbia intermedia	0.86							1
Acacia disparimma	0							
Eucalyptus tereticornis	0.65	x	x	x		x	x	1
Acacia fimbriata	0							
Allocasuarina torulosa	0							
Alphitonia excelsa	0							
Erythrina vespertilio	0							
Jagera pseudorhus	0							
Ficus rubignosa	0							
	0.2893	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**4**

AU2	Transect 2020 T5						
Corymbia citriodora	0.65	x	x			x	x	1
Lophostemon confertus	0.46		x	x	x	x	x	
Erythrina vespertilio	0							

Allocasuarina torulosa	0												
*Angophora woodsiana**	0.38												
Angophera subvalentina	0.38												
Acacia disparrima	0												
Corymbia intermedia	0.86					x		x		x		x	1
Alphitonia excelsa	0												
	0.3033	**yes**		**yes**		**yes**		**yes**		**yes**		**yes**	**2**
AU3	Transect 6												
Eucalyptus molucanna [3]	0.5					x		x		x		x	
Eucalyptus tereticornis	0.65												1
Corymbia citriodora	0.65	x		x						x		x	1
Eucalyptus melinophloia	0.5	x		x		x		**x**		x		x	
Lophostemon confertus	0.46			x		x		x		x		x	
Acacia disparimma	0												
Eucalyptus crebra	0.65												1
Angophera subvalentina	0.38												
	0.4738	**yes**		**yes**		**yes**		**yes**		**yes**		**yes**	**3**
AU3	Transect 2020 T3												
Corymbia citriodora	0.65	x		x						x		x	1
Eucalyptus teretcironis	0.65		x		x		x				x		x	1
Lophostemon confertus	0.46			x		x		x		x		x	
Allocasuarina torulosa	0												
Eucalyptus crebra	0.65	x								x			1
Acacia disparimma	0												
Eucalyptus molucanna	0.5					x		x		x		x	
	0.4157	**yes**		**yes**		**yes**		**yes**		**yes**		**yes**	**3**
AU4	Transect 8												
Eucalyptus tereticornis	0.65		x		x		x				x		x	1
Eucalyptus crebra	0.65	x								x				1
Corymbia citriodora	0.65	x		x						x		x		1
Brachychiton populneus	0													
Acacia disparimma	0													
Eucalyptus siderophloia	0.81		x		x		x		x		x		x	1
	0.46	**yes**		**yes**		**yes**		**yes**		**yes**		**yes**		**4**
AU4	Transect 9													
Corymbia intermedia	0.86					x		x		x		x		1
Lophostemon confertus	0.46			x		x		x		x		x		
Allocasuarina torulosa	0													
Jagera pseudorhus	0													
Mallotus philippensis	0													
Corymbia citriodora	0.65	x		x						x		x		1

		0.3283	**yes**		**yes**		**yes**		**yes**		**yes**		**2**
AU5	Transect 1												
Corymbia citriodora		0.65	x		x						x		1
Eucalyptus crebra		0.65	x								x		1
Corymbia tesselaris		0.4					x		**x**		x		
Brachychiton sp.		0											
		0.425	**yes**		**yes**		**yes**		**yes**		**yes**		**2**
AU5	Transect 3												
Corymbia citriodora		0.65	x		x						x		1
Eucalyptus crebra		0.65	x								x		1
Acacia disparimma		0											
Brachychiton sp.		0											
Petalostigma pubescens		0											
		0.1625	**yes**		**yes**		**no**		**no**		**yes**		**2**
AU5	Transect 4												
Corymbia citriodora		0.65	x		x						x		1
Eucalyptus crebra		0.65	x								x		1
Acacia disparimma		0											
Eucalyptus molucanna		0.5					x		x		x		
Eucalyptus tereticornis		0.65		x		x		x				x	1
Allocasuarina littoralis		0											
		0.4083	**yes**		**yes**		**yes**		**yes**		**yes**		**3**
AU5	Transect 5												
Corymbia citriodora		0.65	x		x						x		1
Eucalyptus crebra		0.65	x								x		1
Eucalyptus tereticornis		0.65		x		x		x				x	1
Acacia disparimma		0											
Eucalyptus melanophloia		0.5	x		x		x		**x**		x		
		0.49	**yes**		**yes**		**yes**		**yes**		**yes**		**3**
AU6	Transect 2020 T1												
Eucalyptus crebra		0.65	x								x		1
Corymbia intermedia		0.86					x		x		x		1
Lophostemon confertus		0.46			x		x		x		x		
Corymbia tesselaris		0.4					x		**x**		x		
Angophera subvalentina		0.38											
Acacia disparimma		0											
Eucalyptus tereticornis		0.65		x		x		x				x	1
Corymbia citriodora		0.65	x		x						x		1
Brachychiton sp.		0											
		0.45	**yes**		**yes**		**yes**		**yes**		**yes**		**2**

AU6	Transect 2020 T4							
Corymbia citriodora	0.65	x	x			x	x	1
Eucalyptus molucanna	0.5			x	x	x	x	
Eucalyptus crebra	0.65	x				x		1
	0.6	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**2**

- 12.9-10.3		AU 4 - REMNANT - 12.9-10.7						AU 5 - REMNANT - 12.9-10.5										AU	
2020 T3		OUT OF	Transect 8		Transect 9			OUT OF	Transect 1		Transect 3		Transect 4		Transect 5			OUT OF	Transect
Score	Mean Score	(X/X)	comment	Score	comment	Score	Mean Score	(X/X)	comment	Score	comment	Score	comment	Score	comment	Score	Mean Score	(X/X)	comment
20	20	**20**	cat B	20	cat B	20	20	**20**	cat B	20	cat B	20	cat B	20	cat B	20	20	**20**	Cat C
20	20	**20**	6	20	6	20	20	**20**	4	10	5	10	6	10	5	10	10	**20**	9
5	6.5	**10**	0.46	5	0.33	5	5	**10**	0.43	5	0.16	2	0.41	5	0.49	5	4.25	**10**	0.45
10	10	**10**	all	10	all	10	10	**10**	all	10	no Lact, no	7	all	10	all	10	9.25	**10**	all
5	5	**20**	4	10	2	5	7.5	**20**	2	5	2	5	3	5	3	5	5	**20**	2
5	5	**20**	20.00%	10	45.00%	5	7.5	**20**	10.00%	10	15.00%	10	15.00%	10	10.00%	10	10	**20**	45.00%
65	66.5			75		65	70			60		54		60		60	58.5		
100	*100*	***X***	*X*	*100*	*X*	*100*	*100*	***X***	*X*	*100*	*X*	*100*	*X*	*100*	*X*	*100*	*100*	***X***	*X*
2.60	**2.66**	**X**	**X**	**3.00**	**X**	**2.60**	**2.80**	**X**	**X**	**2.40**	**X**	**2.16**	**X**	**2.40**	**X**	**2.40**	**2.34**	**X**	**X**
10	10	**10**		10		10	10	**10**		10		10		10		10	10	**10**	
6	6	**10**		6		6	6	**10**		6		6		6		6	6	**10**	
6	6	**10**		6		6	6	**10**		6		6		6		6	6	**10**	
10	10	**10**		10		10	10	**10**		10		10		10		10	10	**10**	
5	5	**10**		5		5	5	**10**		5		5		5		5	5	**10**	
5	5	**10**		5		5	5	**10**		5		5		5		5	5	**10**	
42	42			42		42	42			42		42		42		42	42		
60	*60*	***X***	*X*	*60*	*X*	*60*	*60*	***X***	*X*	*60*	*X*	*60*	*X*	*60*	*X*	*60*	*60*	***X***	*X*
2.10	**2.10**	**X**	**X**	**2.10**	**X**	**2.10**	**2.10**	**X**	**X**	**2.10**	**X**	**2.10**	**X**	**2.10**	**X**	**2.10**	**2.10**	**X**	**X**
4	4	**10**	44	4	0	0	2	**10**	11	2	26	4	13	2	13	2	2.5	**10**	16
4	4			4		0	2			2		4		2		2	2.5		
10	*10*	***X***	*X*	*10*	*X*	*10*	*10*	***X***	*X*	*10*	*X*	*10*	*X*	*10*	*X*	*10*	*30*	***X***	*X*
1.20	**1.20**	**X**		**1.20**		**0.00**	**0.60**	**X**		**0.60**		**1.20**		**0.60**		**0.60**	**0.75**	**X**	
5.90	**5.96**			**6.30**		**4.70**	**5.50**			**5.10**		**5.46**		**5.10**		**5.10**	**5.19**		

6 - REGROWTH - 12.9-10.2			
2020 T1	Transect 2020 T4		
Score	comment	Score	Mean Score
10	Cat C	10	10
20	3	5	12.5
5	0.60	8	6.5
10	all	10	10
5	2	5	5
5	20.00%	10	7.5
55		48	51.5
100	*X*	*100*	*100*
2.20	**X**	**1.92**	**2.06**
10		10	10
6		6	6
6		6	6
10		10	10
5		5	5
5		5	5
42		42	42
60	*X*	*60*	*60*
2.10	**X**	**2.10**	**2.10**
2	31.58	4	3
2		4	3
10	*X*	*10*	*10*
0.60		**1.20**	**0.90**
4.90		**5.22**	**5.06**

Appendix D

Weed Transect Data

Lyons Property Ground Layer Transect (100M) 1 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**3.00**	***Lantana camara***	**Lantana**	**3.00**
3.00	3.50	*Lomandra longifolia*	Many Flowered Mat Rush	0.50
3.50	6.00	*Native Grasses*	Native Grasses	2.50
6.00	**15.00**	***Lantana montevidensis***	**Creeping Lantana**	**9.00**
15.00	**24.00**	***Lantana camara***	**Lantana**	**9.00**
24.00	**28.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
28.00	30.00	*Native Grasses*	Native Grasses	2.00
30.00	**40.00**	***Lantana montevidensis***	**Creeping Lantana**	**10.00**
40.00	48.00	*Native Grasses*	Native Grasses	8.00
48.00	**50.00**	***Lantana camara***	**Lantana**	**2.00**
50.00	**55.00**	***Lantana montevidensis***	**Creeping Lantana**	**5.00**
55.00	**58.00**	***Lantana camara***	**Lantana**	**3.00**
58.00	**65.00**	***Lantana montevidensis***	**Creeping Lantana**	**7.00**
65.00	66.00	*Bare Earth*	Bare Earth	1.00
66.00	68.00	*Leaf Litter*	Leaf Litter	2.00
68.00	**78.00**	***Lantana montevidensis***	**Creeping Lantana**	**10.00**
78.00	80.00	*Rock*	Rock	2.00
80.00	85.00	*Leaf Litter*	Leaf Litter	5.00
85.00	**90.00**	***Lantana camara***	**Lantana**	**5.00**
90.00	93.00	*Leaf Litter*	Leaf Litter	3.00
93.00	**100.00**	***Lantana montevidensis***	**Creeping Lantana**	**7.00**

Native/bare cover	26
Total Exotic/weed cover	74
Weeds of National Significance cover	22

North

South

East

West

Lyons Property Ground Layer Transect (100M) 2 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**4.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
4.00	6.00	*Heteropogon contortus*	Black Spear Grass	2.00
6.00	**8.00**	***Lantana camara***	**Lantana**	**2.00**
8.00	**11.00**	***Lantana montevidensis***	**Creeping Lantana**	**3.00**
11.00	13.00	*Heteropogon contortus*	Black Spear Grass	2.00
13.00	**19.00**	***Lantana montevidensis***	**Creeping Lantana**	**6.00**
19.00	22.00	*Native Grass*	Native Grass	3.00
22.00	**30.00**	***Lantana montevidensis***	**Creeping Lantana**	**8.00**
30.00	32.00	*Heteropogon contortus*	Black Spear Grass	2.00
32.00	**33.00**	***Lantana camara***	**Lantana**	**1.00**
33.00	40.00	*Heteropogon contortus*	Black Spear Grass	7.00
40.00	**43.00**	***Desmodium uncinatum***	**Silver-leaf Desmodium**	**3.00**
43.00	55.00	*Heteropogon contortus*	Black Spear Grass	12.00
55.00	60.00	*Leaf Litter*	Leaf Litter	5.00
60.00	62.00	*Native Grass*	Native Grass	2.00
62.00	65.00	*Eremophila debilis*	Winter Apple	3.00
65.00	100.00	*Heteropogon contortus*	Black Spear Grass	35.00

Native/bare cover	73
Total Exotic/weed cover	27
Weeds of National Significance cover	3

North

South

East

West

Lyons Property Ground Layer Transect (100M) 3 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	11.00	*Heteropogon contortus*	Black Spear Grass	11.00
11.00	**12.00**	***Lantana montevidensis***	**Creeping Lantana**	**1.00**
12.00	**16.00**	***Lantana camara***	**Lantana**	**4.00**
16.00	19.00	*Heteropogon contortus*	Black Spear Grass	3.00
19.00	**21.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
21.00	**23.00**	***Lantana camara***	**Lantana**	**2.00**
23.00	75.00	*Heteropogon contortus*	Black Spear Grass	52.00
75.00	**80.00**	***Lantana montevidensis***	**Creeping Lantana**	**5.00**
80.00	100.00	*Heteropogon contortus*	Black Spear Grass	20.00

Native/bare cover	86
Total Exotic/weed cover	14
Weeds of National Significance cover	6

North

South

East

West

Lyons Property Ground Layer Transect (100M) 4 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	4.00	*Heteropogon contortus*	Black Spear Grass	4.00
4.00	**6.00**	***Lantana camara***	**Lantana**	**2.00**
6.00	**8.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
8.00	**11.00**	***Lantana camara***	**Lantana**	**3.00**
11.00	**13.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
13.00	17.00	*Heteropogon contortus*	Black Spear Grass	4.00
17.00	**18.00**	***Lantana camara***	**Lantana**	**1.00**
18.00	21.00	*Heteropogon contortus*	Black Spear Grass	3.00
21.00	**22.00**	***Lantana camara***	**Lantana**	**1.00**
22.00	**25.00**	***Lantana montevidensis***	**Creeping Lantana**	**3.00**
25.00	28.00	*Heteropogon contortus*	Black Spear Grass	3.00
28.00	**30.00**	***Lantana montevidensis***	**Lantana**	**2.00**
30.00	**31.00**	***Desmodium intortum***	**Greenleaf Desmodium**	**1.00**
31.00	33.00	*Heteropogon contortus*	Black Spear Grass	2.00
33.00	35.00	*Leaf Litter*	Leaf Litter	2.00
35.00	**36.00**	***Desmodium intortum***	**Greenleaf Desmodium**	**1.00**
36.00	38.00	*Heteropogon contortus*	Black Spear Grass	2.00
38.00	**42.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
42.00	**43.00**	***Lantana camara***	**Lantana**	**1.00**
43.00	49.00	*Heteropogon contortus*	Black Spear Grass	6.00
49.00	50.00	*Eremophila debilis*	Winter Apple	1.00
50.00	**53.00**	***Lantana montevidensis***	**Creeping Lantana**	**3.00**
53.00	55.00	*Leaf Litter*	Leaf Litter	2.00
55.00	60.00	*Heteropogon contortus*	Black Spear Grass	5.00
60.00	**62.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
62.00	65.00	*Heteropogon contortus*	Black Spear Grass	3.00
65.00	**74.00**	***Lantana camara***	**Lantana**	**9.00**
74.00	**80.00**	***Lantana montevidensis***	**Creeping Lantana**	**6.00**
80.00	100.00	*Heteropogon contortus*	Black Spear Grass	20.00

Native/bare cover	57
Total Exotic/weed cover	43
Weeds of National Significance cove	19

North

South

East

West

Lyons Property Ground Layer Transect (100M) 5 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**2.00**	***Exotic Forbs***	**Exotic Forbs**	**2.00**
2.00	12.00	*Heteropogon contortus*	Black Spear Grass	10.00
12.00	13.00	*Eremophila debilis*	Winter Apple	1.00
13.00	20.00	*Heteropogon contortus*	Black Spear Grass	7.00
20.00	**24.00**	***Lantana camara***	**Lantana**	**4.00**
24.00	38.00	*Heteropogon contortus*	Black Spear Grass	14.00
38.00	**39.00**	***Lantana camara***	**Lantana**	**1.00**
39.00	42.00	*Heteropogon contortus*	Black Spear Grass	3.00
42.00	**44.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
44.00	59.00	*Heteropogon contortus*	Black Spear Grass	15.00
59.00	**60.00**	***Lantana camara***	**Lantana**	**1.00**
60.00	64.00	*Heteropogon contortus*	Black Spear Grass	4.00
64.00	**68.00**	***Melinis repens***	**Red Natal Grass**	**4.00**
68.00	74.00	*Heteropogon contortus*	Black Spear Grass	6.00
74.00	**75.00**	***Lantana camara***	**Lantana**	**1.00**
75.00	78.00	*Heteropogon contortus*	Black Spear Grass	3.00
78.00	**81.00**	***Melinis repens***	**Red Natal Grass**	**3.00**
81.00	**83.00**	***Lantana montevidensis***	**Creeping Lantana**	**2.00**
83.00	85.00	*Leaf Litter*	Leaf Litter	2.00
85.00	**89.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
89.00	90.00	*Heteropogon contortus*	Black Spear Grass	1.00
90.00	94.00	*Leaf Litter*	Leaf Litter	4.00
94.00	**98.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
98.00	**99.00**	***Lantana camara***	**Lantana**	**1.00**
99.00	100.00	*Heteropogon contortus*	Black Spear Grass	1.00

Native/bare cover	71
Total Exotic/weed cover	29
Weeds of National Significance cover	8

North

South

East

West

Lyons Property Ground Layer Transect (100M) 6 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	2.00	*Leaf Litter*	Leaf Litter	2.00
2.00	3.00	*Imperata cylzhlrica*	Blady grass	1.00
3.00	**9.00**	***Exotic forb***	**Exotic forb**	**6.00**
9.00	11.00	*Lomandra longifolia*	Many Flowered Mat Rush	2.00
11.00	**13.00**	***Lantana camara***	**Lantana**	**2.00**
13.00	15.00	*Lomandra longifolia*	Many Flowered Mat Rush	2.00
15.00	**18.00**	***Lantana camara***	**Lantana**	**3.00**
18.00	22.00	*Leaf Litter*	Leaf Litter	4.00
22.00	**26.00**	***Lantana camara***	**Lantana**	**4.00**
26.00	29.00	*Lomandra longifolia*	Many Flowered Mat Rush	3.00
29.00	**30.00**	***Exotic forb***	**Exotic forb**	**1.00**
30.00	33.00	*Cymbopogon refractus*	Barbed wire grass	3.00
33.00	**35.00**	***Lantana camara***	**Lantana**	**2.00**
35.00	40.00	*Lomandra longifolia*	Many Flowered Mat Rush	5.00
40.00	**45.00**	***Lantana camara***	**Lantana**	**5.00**
45.00	47.00	*Adiantum atroviride*	Maidenhair Fern	2.00
47.00	50.00	*Leaf Litter*	Leaf Litter	3.00
50.00	**54.00**	***Lantana camara***	**Lantana**	**4.00**
54.00	56.00	*Leaf Litter*	Leaf Litter	2.00
56.00	**66.00**	***Lantana camara***	**Lantana**	**10.00**
66.00	73.00	*Adiantum atroviride*	Maidenhair Fern	7.00
73.00	78.00	*Native grass*	Native grass	5.00
78.00	**85.00**	***Lantana camara***	**Lantana**	**7.00**
85.00	**100.00**	***Exotic forb***	**Exotic forb**	**15.00**

Native/bare cover	41
Total Exotic/weed cover	59
Weeds of National Significance cover	37

North

South

East

West

Lyons Property Ground Layer Transect (100M) 7 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**1.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
1.00	4.00	*Heteropogon contortus*	Black Spear Grass	3.00
4.00	**5.00**	***Melinis repens***	**Red Natal Grass**	**1.00**
5.00	6.00	*Bare ground*	Bare ground	1.00
6.00	9.00	*Heteropogon contortus*	Black Spear Grass	3.00
9.00	11.00	*Leaf Litter*	Leaf Litter	2.00
11.00	**13.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
13.00	15.00	*Heteropogon contortus*	Black Spear Grass	2.00
15.00	**18.00**	***Melinis repens***	**Red Natal Grass**	**3.00**
18.00	**33.00**	***Lantana montevidensis***	**Creeping lantana**	**15.00**
33.00	**40.00**	***Melinis repens***	**Red Natal Grass**	**7.00**
40.00	48.00	*Heteropogon contortus*	Black Spear Grass	8.00
48.00	**53.00**	***Lantana montevidensis***	**Creeping lantana**	**5.00**
53.00	56.00	*Heteropogon contortus*	Black Spear Grass	3.00
56.00	**57.00**	***Lantana camara***	**Lantana**	**1.00**
57.00	**68.00**	***Lantana montevidensis***	**Creeping lantana**	**11.00**
68.00	70.00	*Heteropogon contortus*	Black Spear Grass	2.00
70.00	**77.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
77.00	84.00	*Heteropogon contortus*	Black Spear Grass	7.00
84.00	**90.00**	***Lantana montevidensis***	**Creeping lantana**	**6.00**
90.00	100.00	*Heteropogon contortus*	Black Spear Grass	10.00

Native/bare cover	41
Total Exotic/weed cover	59
Weeds of National Significance cove	1

North

South

East

West

Lyons Property Ground Layer Transect (100M) 8 (22.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**5.00**	***Lantana camara***	**Lantana**	**5.00**
5.00	**8.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
8.00	**14.00**	***Lantana camara***	**Lantana**	**6.00**
14.00	15.00	*Imperata cylzhlrica*	Blady grass	1.00
15.00	**19.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
19.00	**23.00**	***Exotic forb***	**Exotic forb**	**4.00**
23.00	**26.00**	***Lantana camara***	**Lantana**	**3.00**
26.00	**30.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
30.00	31.00	*Lomandra longifolia*	Many Flowered Mat Rush	1.00
31.00	**38.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
38.00	**43.00**	***Lantana camara***	**Lantana**	**5.00**
43.00	**46.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
46.00	**49.00**	***Lantana camara***	**Lantana**	**3.00**
49.00	50.00	*Dianella caerulea*	Blue flax-lily	1.00
50.00	**53.00**	***Lantana camara***	**Lantana**	**3.00**
53.00	**56.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
56.00	57.00	*Capillipedium parviflorum*	Scented-top Grass	1.00
57.00	**68.00**	***Lantana montevidensis***	**Creeping lantana**	**11.00**
68.00	**100.00**	***Lantana camara***	**Lantana**	**32.00**

Native/bare cover	4
Total Exotic/weed cover	96
Weeds of National Significance cover	57

North

South

East

West

Lyons Property Ground Layer Transect (100M) 9 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**5.00**	***Lantana montevidensis***	**Creeping lantana**	**5.00**
5.00	**7.00**	***Lantana camara***	**Lantana**	**2.00**
7.00	8.00	*Leaf litter*	Leaf litter	1.00
8.00	**13.00**	***Lantana montevidensis***	**Creeping lantana**	**5.00**
13.00	**18.00**	***Lantana camara***	**Lantana**	**5.00**
18.00	19.00	*Eustrephus latifolius*	Wombat berry	1.00
19.00	**22.00**	***Lantana camara***	**Lantana**	**3.00**
22.00	**32.00**	***Lantana montevidensis***	**Creeping lantana**	**10.00**
32.00	**33.00**	***Lantana camara***	**Lantana**	**1.00**
33.00	**35.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
35.00	**42.00**	***Lantana camara***	**Lantana**	**7.00**
42.00	**43.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
43.00	**47.00**	***Lantana camara***	**Lantana**	**4.00**
47.00	**53.00**	***Lantana montevidensis***	**Creeping lantana**	**6.00**
53.00	**69.00**	***Lantana camara***	**Lantana**	**16.00**
69.00	**72.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
72.00	**73.00**	***Lantana camara***	**Lantana**	**1.00**
73.00	76.00	*Lomandra longifolia*	Many Flowered Mat Rush	3.00
76.00	**80.00**	***Lantana camara***	**Lantana**	**4.00**
80.00	84.00	*Leaf litter*	Leaf litter	4.00
84.00	85.00	*Grewia latifolia*	Dogs balls	1.00
85.00	**86.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
86.00	**90.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
90.00	**100.00**	***Lantana camara***	**Lantana**	**10.00**

Native/bare cover	10
Total Exotic/weed cover	90
Weeds of National Significance cove	53

North

South

East

West

Lyons Property Ground Layer Transect (100M) 10 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**4.00**	***Lantana camara***	**Lantana**	**4.00**
4.00	5.00	*Leaf litter*	Leaf litter	1.00
5.00	**23.00**	***Lantana camara***	**Lantana**	**18.00**
23.00	24.00	*Lomandra longifolia*	Many Flowered Mat Rush	1.00
24.00	28.00	*Rock*	Rock	4.00
28.00	**50.00**	***Lantana camara***	**Lantana**	**22.00**
50.00	**51.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
51.00	**54.00**	***Lantana camara***	**Lantana**	**3.00**
54.00	**58.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
58.00	**60.00**	***Lantana camara***	**Lantana**	**2.00**
60.00	**67.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
67.00	**69.00**	***Lantana camara***	**Lantana**	**2.00**
69.00	71.00	*Leaf litter*	Leaf litter	2.00
71.00	**78.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
78.00	**85.00**	***Lantana camara***	**Lantana**	**7.00**
85.00	87.00	*Leaf litter*	Leaf litter	2.00
87.00	**100.00**	***Lantana camara***	**Lantana**	**13.00**

Native/bare cover	10
Total Exotic/weed cover	90
Weeds of National Significance cover	71

North

South

East

West

Lyons Property Ground Layer Transect (100M) 11 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**2.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
2.00	**3.00**	***Melinis repens***	**Red Natal Grass**	**1.00**
3.00	**12.00**	***Lantana montevidensis***	**Creeping lantana**	**9.00**
12.00	14.00	*Heteropogon contortus*	Black Spear Grass	2.00
14.00	**18.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
18.00	19.00	*Heteropogon contortus*	Black Spear Grass	1.00
19.00	**20.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
20.00	24.00	*Heteropogon contortus*	Black Spear Grass	4.00
24.00	**32.00**	***Lantana camara***	**Lantana**	**8.00**
32.00	35.00	*Native grass*	Native grass	3.00
35.00	**46.00**	***Lantana montevidensis***	**Creeping lantana**	**11.00**
46.00	**50.00**	***Lantana camara***	**Lantana**	**4.00**
50.00	**54.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
54.00	**56.00**	***Lantana camara***	**Lantana**	**2.00**
56.00	**60.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
60.00	**64.00**	***Lantana camara***	**Lantana**	**4.00**
64.00	**67.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
67.00	**70.00**	***Lantana camara***	**Lantana**	**3.00**
70.00	**72.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
72.00	**84.00**	***Lantana camara***	**Lantana**	**12.00**
84.00	**100.00**	***Lantana montevidensis***	**Creeping lantana**	**16.00**

Native/bare cover	10
Total Exotic/weed cover	90
Weeds of National Significance cover	33

North

South

East

West

Lyons Property Ground Layer Transect (100M) 12 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**2.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
2.00	4.00	*Themeda triandra*	Kangaroo grass	2.00
4.00	**6.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
6.00	14.00	*Arisitida species*	Arisitida species	8.00
		Themeda triandra	Kangaroo grass	
14.00	**15.00**	***Lantana camara***	**Lantana**	**1.00**
15.00	17.00	*Leaf litter*	Leaf litter	2.00
17.00	22.00	*Themeda triandra*	Kangaroo grass	5.00
		Arisitida species	Arisitida species	
22.00	**28.00**	***Lantana montevidensis***	**Creeping lantana**	**6.00**
28.00	29.00	*Lomandra longifolia*	Many Flowered Mat Rush	1.00
29.00	37.00	*Arisitida species*	Arisitida species	8.00
		Heteropogon contortus	Black Spear Grass	
		Themeda triandra	Kangaroo grass	
37.00	**39.00**	***Lantana camara***	**Lantana**	**2.00**
39.00	**46.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
46.00	48.00	*Themeda triandra*	Kangaroo grass	2.00
48.00	**55.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
55.00	**56.00**	***Lantana camara***	**Lantana**	**1.00**
56.00	65.00	*Sida species*	Native Sida	9.00
		Heteropogon contortus	Black spear grass	
65.00	**66.00**	***Bidens pilosa***	**Cobblers pegs**	**1.00**
66.00	**74.00**	***Lantana montevidensis***	**Creeping lantana**	**8.00**
74.00	78.00	*Leaf litter*	Leaf litter	4.00
78.00	79.00	*Lomandra longifolia*	Many Flowered Mat Rush	1.00
79.00	84.00	*Leaf litter*	Leaf litter	5.00
84.00	86.00	*Plectranthus sp.*	Plectranthis	2.00
86.00	**90.00**	***Passiflora suberosa***	**Corky passion**	**4.00**
90.00	100.00	*Native grass*	Native grass	10.00

Native/bare cover	59
Total Exotic/weed cover	41
Weeds of National Significance cover	4

North

South

East

West

Lyons Property Ground Layer Transect (100M) 13 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	1.00	*Leaf litter*	Leaf litter	1.00
1.00	2.00	*Themeda triandra*	Kangaroo grass	1.00
2.00	4.00	*Leaf litter*	Leaf litter	2.00
4.00	7.00	*Themeda triandra*	Kangaroo grass	3.00
7.00	9.00	*Leaf litter*	Leaf litter	2.00
9.00	**10.00**	***Lantana camara***	**Lantana**	**1.00**
10.00	13.00	*Leaf litter*	Leaf litter	3.00
13.00	16.00	*Themeda triandra*	Kangaroo grass	3.00
16.00	**18.00**	***Lantana camara***	**Lantana**	**2.00**
18.00	21.00	*Leaf litter*	Leaf litter	3.00
21.00	**23.00**	***Lantana camara***	**Lantana**	**2.00**
23.00	24.00	*Lomandra longifolia*	Many Flowered Mat Rush	1.00
24.00	29.00	*Themeda triandra*	Kangaroo grass	5.00
29.00	33.00	*Leaf litter*	Leaf litter	4.00
33.00	**35.00**	***Lantana camara***	**Lantana**	**2.00**
35.00	40.00	*Leaf litter*	Leaf litter	5.00
40.00	**41.00**	***Lantana camara***	**Lantana**	**1.00**
41.00	45.00	*Native grasses*	Native grasses	4.00
45.00	**54.00**	***Lantana camara***	**Lantana**	**9.00**
54.00	**56.00**	***Desmodium intortum***	**Green leaf desmodium**	**2.00**
56.00	**60.00**	***Lantana camara***	**Lantana**	**4.00**
60.00	64.00	*Bare ground*	Bare ground	4.00
64.00	**68.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
68.00	71.00	*Lomandra longifolia*	Many Flowered Mat Rush	3.00
71.00	**76.00**	***Lantana montevidensis***	**Creeping lantana**	**5.00**
76.00	80.00	*Leaf litter*	Leaf litter	4.00
80.00	83.00	*Native forb*	Native forb	3.00
83.00	**90.00**	***Lantana camara***	**Lantana**	**7.00**
90.00	**92.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
92.00	94.00	*Themeda triandra*	Kangaroo grass	2.00
94.00	**100.00**	***Lantana camara***	**Lantana**	**6.00**

Native/bare cover	53
Total Exotic/weed cover	47
Weeds of National Significance cover	34

North

South

East

West

Lyons Property Ground Layer Transect (100M) 14 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**1.00**	***Melinis repens***	**Red Natal Grass**	**1.00**
1.00	14.00	*Heteropogon contortus*	Black Spear Grass	13.00
		Themeda triandra	Kangaroo grass	
		Aristida species	Aristida species	
14.00	**16.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
16.00	27.00	*Native grasses*	Native grasses	11.00
27.00	**30.00**	***Creeping lantana***	**Creeping lantana**	**3.00**
30.00	**31.00**	***Lantana camara***	**Lantana**	**1.00**
31.00	35.00	*Native grasses*	Native grasses	4.00
35.00	**36.00**	***Lantana camara***	**Lantana**	**1.00**
36.00	39.00	*Native grasses*	Native grasses	3.00
39.00	**41.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
41.00	48.00	*Native grasses*	Native grasses	7.00
48.00	**50.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
50.00	59.00	*Native grasses*	Native grasses	9.00
59.00	**60.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
60.00	66.00	*Native grasses*	Native grasses	6.00
66.00	**67.00**	***Lantana camara***	**Lantana**	**1.00**
67.00	74.00	*Native grasses*	Native grasses	7.00
74.00	78.00	*Leaf litter*	Leaf litter	4.00
78.00	**85.00**	***Lantana montevidensis***	**Creeping lantana**	**7.00**
85.00	100.00	*Heteropogon contortus*	Black Spear Grass	15.00
		Themeda triandra	Kangaroo grass	
		Aristida species	*Aristida species*	

Native/bare cover	79
Total Exotic/weed cover	21
Weeds of National Significance cover	3

North

South

East

West

Lyons Property Ground Layer Transect (100M) 15 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	1.00	*Leaf Litter*	Leaf litter	1.00
1.00	**6.00**	***Lantana camara***	**Lantana**	**5.00**
6.00	9.00	*Lomandra longifolia*	Many Flowered Mat Rush	3.00
9.00	**16.00**	***Lantana camara***	**Lantana**	**7.00**
16.00	19.00	*Capillipedium parviflorum*	Scented-top Grass	3.00
19.00	20.00	*Leaf litter*	Leaf litter	1.00
20.00	**22.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
22.00	**27.00**	***Lantana camara***	**Lantana**	**5.00**
27.00	**29.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
29.00	**35.00**	***Lantana camara***	**Lantana**	**6.00**
35.00	**36.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
36.00	**41.00**	***Lantana camara***	**Lantana**	**5.00**
41.00	42.00	*Native grasses*	Native grasses	1.00
42.00	43.00	*Leaf litter*	Leaf litter	1.00
43.00	**44.00**	***Lantana camara***	**Lantana**	**1.00**
44.00	46.00	*Native forbs*	Native forbs	2.00
46.00	53.00	*Leaf litter*	Leaf litter	7.00
53.00	56.00	*Native grasses*	Native grasses	3.00
56.00	**60.00**	***Lantana camara***	**Lantana**	**4.00**
60.00	63.00	*Lomandra longifolia*	Many Flowered Mat Rush	3.00
63.00	**66.00**	***Lantana camara***	**Lantana**	**3.00**
66.00	**68.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
68.00	71.00	*Native grasses*	Native grasses	3.00
71.00	**74.00**	***Lantana camara***	**Lantana**	**3.00**
74.00	75.00	*Native grasses*	Native grasses	1.00
75.00	**78.00**	***Lantana camara***	**Lantana**	**3.00**
78.00	82.00	*Leaf litter/native grass*	Leaf litter/native grass	4.00
82.00	**83.00**	***Lantana camara***	**Lantana**	**1.00**
83.00	86.00	*Leaf litter/native grass*	Leaf litter/native grass	3.00
86.00	**87.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
87.00	91.00	*Native grasses*	Native grasses	4.00
91.00	**95.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
95.00	100.00	*Native grasses*	Native grasses	5.00

Native/bare cover	45
Total Exotic/weed cover	55
Weeds of National Significance cover	43

North

South

East

West

Lyons Property Ground Layer Transect (100M) 16 (23.04.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**4.00**	***Lantana montevidensis***	**Creeping lantana**	**4.00**
4.00	7.00	*Leaf litter*	Leaf litter	3.00
7.00	9.00	*Plectranthus/Native grass*	Plectranthus/Native grass	2.00
9.00	14.00	*Leaf litter*	Leaf litter	5.00
14.00	17.00	*Native grasses*	Native Grasses	3.00
		Eustrephus latifolius	Wombat Berry	
17.00	22.00	*Leaf litter*	Leaf litter	5.00
22.00	27.00	*Heteropogon contortus*	Black Spear Grass	5.00
		Themeda triandra	Kangaroo grass	
27.00	**29.00**	***Lantana camara***	**Lantana**	**2.00**
29.00	30.00	*Heteropogon contortus*	Black Spear Grass	1.00
30.00	**40.00**	***Lantana montevidensis***	**Creeping lantana**	**10.00**
40.00	**42.00**	***Bidens pilosa***	**Cobbler's Pegs**	**2.00**
		Passiflora suberosa	**Corky passion**	
42.00	**45.00**	***Lantana camara***	**Lantana**	**3.00**
45.00	49.00	*Native grasses*	Native grasses	4.00
49.00	**50.00**	***Lantana camara***	**Lantana**	**1.00**
50.00	58.00	*Native grass, rock, Leaf litter*	Native grass, rock, Leaf litter	8.00
58.00	**59.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
59.00	66.00	*Native grasses, shrubs and leaf litter*	Native grasses and Leaf Litter	7.00
66.00	**72.00**	***Lantana camara***	**Lantana**	**6.00**
72.00	**77.00**	***Lantana montevidensis***	**Creeping lantana**	**5.00**
77.00	**79.00**	***Lantana camara***	**Lantana**	**2.00**
79.00	81.00	*Native grasses, forbs, leaf litter*	Native grasses, forbs, leaf litter	2.00
81.00	**83.00**	***Lantana camara***	**Lantana**	**2.00**
83.00	**85.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
85.00	**91.00**	***Lantana camara***	**Lantana**	**6.00**
91.00	94.00	*Native grasses, forbs, leaf litter*	Native grasses, forbs, leaf litter	3.00
94.00	**96.00**	***Lantana montevidensis***	**Creeping lantana**	**2.00**
96.00	100.00	*Native grasses, forbs, leaf litter*	Native grasses, forbs, leaf litter	4.00

Native/bare cover	52
Total Exotic/weed cover	48
Weeds of National Significance cover	22

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**3.00**	***Lantana montevidensis***	**Creeping lantana**	**3.00**
3.00	**10.00**	***Lantana camara***	**Lantana**	**7.00**
10.00	13.00	*Leaf Litter*	Leaf Litter	3.00
13.00	15.00	*Heteropogon contortus*	Black Spear Grass	2.00
15.00	**16.00**	***Lantana camara***	**Lantana**	**1.00**
16.00	25.00	*Heteropogon contortus*	Black Spear Grass	9.00
25.00	**30.00**	***Lantana montevidensis***	**Creeping Lantana**	**5.00**
30.00	**32.00**	***Lantana camara***	**Lantana**	**2.00**
32.00	**40.00**	***Lantana montevidensis***	**Creeping Lantana**	**8.00**
40.00	44.00	*Heteropogon contortus*	Black Spear Grass	4.00
44.00	50.00	*Leaf Litter*	Leaf Litter	6.00
50.00	51.00	*Heteropogon contortus*	Black Spear Grass	1.00
51.00	53.00	*Leaf Litter*	Leaf Litter	2.00
53.00	54.00	*Melinis repens*	Red Natal	1.00
54.00	**58.00**	***Lantana montevidensis***	**Creeping Lantana**	**4.00**
58.00	62.00	*Heteropogon contortus*	Black Spear Grass	4.00
62.00	66.00	*Desmodium species*	Native Desmodium	4.00
66.00	70.00	*Native Grasses*	Native Grasses	4.00
70.00	**88.00**	***Lantana montevidensis***	**Creeping Lantana**	**18.00**
88.00	**90.00**	***Lantana camara***	**Lantana**	**2.00**
90.00	93.00	*Heteropogon contortus*	Black Spear Grass	3.00
93.00	**100.00**	***Lantana camara***	**Lantana**	**7.00**

Native/bare cover	43
Total Exotic/weed cover	57
Weeds of National Significance cover	19

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**1.00**	***Lantana montevidensis***	**Creeping lantana**	**1.00**
		Capillipedium spicigerum	Scented Top Grass	
1.00	4.00	*Cymbopogon refractus*	Barbed Wire Grass	3.00
4.00	5.00	*Lomandra longifolia*	Many Flower Mat Rush	1.00
5.00	10.00	*Leaf Litter*	Leaf Litter	5.00
10.00	11.00	*Dianella caerulea*	Blue-flax Lily	1.00
11.00	18.00	*Leaf Litter*	Leaf Litter	7.00
18.00	20.00	*Lomandra longifolia*	Many Flower Mat Rush	2.00
20.00	25.00	*Leaf Litter*	Leaf Litter	5.00
25.00	27.00	*Cymbopogon refractus*	Barbed Wire Grass	2.00
27.00	28.00	***Passiflora suberosa***	**Corky Passion**	**1.00**
28.00	35.00	*Leaf Litter*	Leaf Litter	7.00
35.00	37.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
37.00	40.00	*Native grass*	Native grass	3.00
40.00	43.00	*Leaf Litter*	Leaf Litter	3.00
43.00	45.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
45.00	47.00	*Cymbopogon refractus*	Barbed Wire Grass	2.00
47.00	49.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
49.00	52.00	*Leaf Litter*	Leaf Litter	3.00
52.00	54.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
54.00	56.00	***Lantana camara***	**Lantana**	**2.00**
56.00	60.00	*Cymbopogon refractus*	Barbed Wire Grass	4.00
60.00	62.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
62.00	64.00	*Eremophila debilis*	Winter apple	2.00
64.00	68.00	*Cymbopogon refractus*	Barbed Wire Grass	4.00
68.00	71.00	*Leaf Litter*	Leaf Litter	3.00
71.00	74.00	***Lantana camara***	**Lantana**	**3.00**
74.00	76.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
76.00	84.00	*Native grass*	Native grass	8.00
84.00	86.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
86.00	90.00	*Leaf Litter*	Leaf Litter	4.00
90.00	93.00	***Lantana montevidensis***	**Creeping lantana**	**3.00**
93.00	100.00	*Cymbopogon refractus*	Barbed Wire Grass	7.00

Native/bare cover	76
Total Exotic/weed cover	24
Weeds of National Significance cover	5

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**1.00**	*Cymbopogon refractus*	Barbed Wire Grass	1.00
1.00	3.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
3.00	4.00	***Lantana camara***	**Lantana**	**1.00**
4.00	6.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
6.00	7.00	*Heteropogon contortus*	Black Spear Grass	1.00
7.00	11.00	***Lantana montevidensis***	**Creeping lantana**	**4.00**
11.00	13.00	***Lantana camara***	**Lantana**	**2.00**
13.00	14.00	*Heteropogon contortus*	Black Spear Grass	1.00
14.00	16.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
16.00	18.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
18.00	20.00	***Lantana camara***	**Lantana**	**2.00**
20.00	23.00	*Lomandra longifolia*	Many Flower Mat Rush	3.00
23.00	24.00	*Glycine microphylla*	Small-leaf Glycine	1.00
24.00	27.00	***Lantana montevidensis***	**Creeping lantana**	**3.00**
27.00	28.00	*Lomandra longifolia*	Many Flower Mat Rush	1.00
28.00	32.00	*Aristida vagans*	Threeawn Speargrass	4.00
32.00	37.00	*Leaf litter*	Leaf litter	5.00
37.00	40.00	***Passiflora suberosa***	**Corky Passion**	**3.00**
40.00	47.00	***Lantana camara***	**Lantana**	**7.00**
47.00	55.00	***Lantana montevidensis***	**Creeping lantana**	**8.00**
55.00	56.00	*Lomandra longifolia*	Many Flower Mat Rush	1.00
56.00	59.00	*Capillipedium parviflorum*	Scented-top Grass	3.00
59.00	61.00	*Cymbopogon refractus*	Barbed Wire Grass	2.00
61.00	75.00	***Lantana montevidensis***	**Creeping lantana**	**14.00**
75.00	80.00	***Lantana camara***	**Lantana**	**5.00**
80.00	83.00	*Native grasses*	Native grasses	3.00
83.00	100.00	***Lantana camara***	**Lantana**	**17.00**

Native/bare cover	26
Total Exotic/weed cover	74
Weeds of National Significance cover	34

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
		Cymbopogon refractus	Barbed Wire Grass	
0.00	**3.00**	*Aristida vagans*	Threeawn Speargrass	3.00
3.00	4.00	*Lomandra longifolia*	Many Flower Mat Rush	1.00
4.00	5.00	***Lantana camara***	**Lantana**	**1.00**
5.00	10.00	*Leaf litter*	Leaf litter	5.00
10.00	12.00	***Passiflora suberosa***	**Corky Passion**	**2.00**
		Cymbopogon refractus	Barbed Wire Grass	
12.00	18.00	*Heteropogon contortus*	Black Spear Grass	6.00
18.00	20.00	*Lomandra longifolia*	Many Flower Mat Rush	**2.00**
20.00	23.00	***Lantana camara***	**Lantana**	**3.00**
23.00	26.00	*Native grasses*	Native grasses	3.00
26.00	28.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
28.00	30.00	***Melinis repens***	**Red Natal Grass**	**2.00**
30.00	40.00	*Leaf litter*	Leaf litter	10.00
		Cymbopogon refractus	Barbed Wire Grass	
40.00	44.00	*Lomandra longifolia*	Many Flower Mat Rush	4.00
44.00	45.00	***Lantana montevidensis***	**Creeping lantana**	**1.00**
45.00	50.00	*Leaf litter*	Leaf litter	5.00
50.00	53.00	*Einadia trigonos*	Fishweed	3.00
53.00	57.00	*Leaf litter*	Leaf litter	4.00
57.00	63.00	*Cymbopogon refractus*	Barbed Wire Grass	6.00
63.00	70.00	*Leaf litter*	Leaf litter	7.00
70.00	75.00	*Native grasses*	Native grasses	5.00
75.00	80.00	*Leaf litter*	Leaf litter	5.00
80.00	84.00	*Cymbopogon refractus*	Barbed Wire Grass	4.00
84.00	90.00	*Leaf litter*	Leaf litter	6.00
90.00	94.00	*Leaf litter*	Leaf litter	4.00
94.00	100.00	*Leaf litter*	Leaf litter	6.00

Native/bare cover	87
Total Exotic/weed cover	13
Weeds of National Significance cover	4

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**4.00**	*Leaf litter*	Leaf litter	4.00
		Smilax australis	Barbed-wire Vine	
4.00	7.00	*Native grasses*	Native grasses	3.00
7.00	9.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
		Lobelia purpurascens	White Root	
9.00	11.00	*Plectranthus parviflorus*	Little Spurflower	2.00
11.00	12.00	*Desmodium rhytidophyllum*	Hairy Trefoil	1.00
12.00	13.00	*Lomandra longifolia*	Many Flower Mat Rush	1.00
13.00	15.00	*Leaf litter*	Leaf litter	2.00
15.00	19.00	***Lantana camara***	**Lantana**	**4.00**
19.00	20.00	***Ageratum houstonianum***	**Blue Billygoat Weed**	**1.00**
20.00	22.00	***Lantana camara***	**Lantana**	**2.00**
22.00	23.00	*Smilax australis*	Barbed-wire Vine	1.00
23.00	25.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
25.00	36.00	***Lantana camara***	**Lantana**	**11.00**
36.00	38.00	*Native grasses*	Native grasses	2.00
38.00	45.00	***Lantana camara***	**Lantana**	**7.00**
45.00	50.00	*Native grasses*	Native grasses	5.00
50.00	54.00	***Lantana montevidensis***	**Creeping lantana**	**4.00**
54.00	55.00	*Native grasses*	Native grasses	1.00
55.00	62.00	***Lantana montevidensis***	**Creeping lantana**	**7.00**
62.00	65.00	***Lantana camara***	**Lantana**	**3.00**
65.00	68.00	*Lomandra longifolia*	Many Flower Mat Rush	3.00
68.00	74.00	***Lantana montevidensis***	**Creeping lantana**	**6.00**
74.00	83.00	*Native grasses*	Native grasses	9.00
83.00	86.00	*Lomandra longifolia*	Many Flower Mat Rush	3.00
86.00	90.00	*Leaf litter*	Leaf litter	4.00
90.00	93.00	*Native grasses*	Native grasses	3.00
93.00	96.00	***Lantana camara***	**Lantana**	**3.00**
96.00	100.00	*Native grasses*	Native grasses	4.00

Native/bare cover	48
Total Exotic/weed cover	52
Weeds of National Significance cover	30

North

South

East

West

Lyons Property Ground Layer Transect (100M) 17 (14.05.2021)				
Start (m)	**Finish (m)**	***Species***	**Common Name**	**Total Coverage**
0.00	**2.00**	***Passiflora suberosa***	**Corky Passion**	**2.00**
2.00	7.00	*Leaf litter*	Leaf litter	5.00
7.00	13.00	***Lantana montevidensis***	**Creeping lantana**	**6.00**
13.00	20.00	*Leaf litter*	Leaf litter	7.00
20.00	21.00	*Heteropogon contortus*	Black Spear Grass	1.00
21.00	23.00	***Lantana montevidensis***	**Creeping lantana**	**2.00**
23.00	24.00	*Leaf litter*	Leaf litter	1.00
24.00	26.00	***Lantana camara***	**Lantana**	**2.00**
26.00	30.00	*Native grasses*	Native grasses	4.00
30.00	40.00	*Leaf litter*	Leaf litter	10.00
40.00	44.00	*Native grasses*	Native grasses	4.00
44.00	50.00	*Leaf litter*	Leaf litter	6.00
50.00	54.00	***Lantana camara***	**Lantana**	**4.00**
54.00	58.00	*Leaf litter*	Leaf litter	4.00
58.00	60.00	*Lomandra longifolia*	Many Flower Mat Rush	2.00
60.00	65.00	*Leaf litter*	Leaf litter	5.00
65.00	68.00	*Native grasses*	Native grasses	3.00
68.00	72.00	*Leaf litter*	Leaf litter	4.00
72.00	74.00	*Lomandra longifolia*	Many Flower Mat Rush	2.00
74.00	76.00	***Lantana camara***	**Lantana**	**2.00**
76.00	80.00	*Leaf litter*	Leaf litter	4.00
80.00	86.00	*Bare rock*	Bare Rock	6.00
86.00	87.00	*Native grasses*	Native grasses	1.00
87.00	100.00	*Leaf litter*	Leaf litter	13.00

Native/bare cover	82
Total Exotic/weed cover	18
Weeds of National Significance cover	3

North

South

East

West

Appendix E

Non-native Koala Predator Data

Lyons - Camera Trap Data

Camera #	Set up	Collected	Common name	Species	Detection	non-native koala predator
1	19/04/2021	13/05/2021	Macropod Sp.		1	
2	19/04/2021	13/05/2021	Torresian Crow	*Corvis orru*	1	
			Noisey miner	*Manorina melanocephala*	1	
3	19/04/2021	13/05/2021	Macropod Sp.		1	
			Dog	*Canis familiaris*	2	✓
			Red necked Wallaby	*Macropus rufogriseus*	1	
			Koala	*Phascolarctos cinereus*	1	
			Cow	*Bos taurus*	1	
			Common brush-tailed possum	*Trichosurus vulpecula*	1	
4	19/04/2021	13/05/2021	Macropod Sp.		1	
			Common brush-tailed possum	*Trichosurus vulpecula*	1	
			Pretty-face wallaby	*Macropus parryi*	1	
			European Hare	*Lepus europaeus*	1	
			Brush-tailed phascogale	*Phascogale tapoatafa*	1	
5	19/04/2021	13/05/2021	Dog	*Canis familiaris*	5	✓
			Pig	*sus scrofa*	1	
			Australian magpie	*Cracticus tibicen*	1	
			Macropod Sp.		1	
6	19/04/2021	13/05/2021	Dog	*Canis familiaris*	1	✓
7	19/04/2021	13/05/2021	Common brush-tailed possum	*Trichosurus vulpecula*	1	
			Brush-tailed phascogale	*Phascogale tapoatafa*	1	

Lyons - Camera 1

Lyons - Camera 2

Lyons - Camera 3

Lyons - Camera 4

Lyons - Camera 5

Lyons - Camera 6

Lyons - Camera 7

Appendix C

Preliminary Documentation Submission- Offsets Chapter

4. Proposed Offsets

Section 4 of this Preliminary Documentation has been completed by the Environmental offset provider (**EnviroCapital**).

4.1. Introduction

This environmental offset chapter has been prepared by EnviroCapital (EC) on behalf of Pointcorp, and is based on a briefing from the Saunders Havill Group. This chapter details the ecological characteristics of our Burnett Creek and Lyons land holdings and their suitability as offset sites for the MNES impacts at PointCorp's development site. EC works with the property owners to establish these rural land holdings as offset sites for the benefit of MNES. Alternatively, the owners would continue rural pursuits on the land.

EC is a Queensland owned and operated environmental offset provider with over 1500 hectares of offset assets located in South East Queensland. EC is endorsed by the Queensland Government's Department of State Development, Manufacturing, Infrastructure and Planning specifically for sourcing, procuring and securing Koala habitat offsets.

This chapter details the methodology used in the assessment of quantum impacts and offset areas. The assessment and Offset Assessment Guide (OAG) is detailed in the sections below.

A general suitability assessment of the offset sites against the EPBC offset policy criteria has been conducted and is present below in **Table 3.**

Table 3: General Suitability EPBC Offset Policy Criteria

No.	Offset Suitability Criteria	Burnett Creek and Lyons Offset Areas
1	*Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action*	The Offset Areas delivers a conservation gain for the Koala and Grey-headed Flying-fox through: a) Improving existing habitat for both protected matters by rehabilitating 301.3 ha of remnant and mixed regrowth vegetation. b) Introducing, funding and continually improving Offset Area Management Actions to reduce and manage threats (wild dogs, Lantana) in protected and created habitat areas. c) Averting the direct and indirect losses via declaring the land a Voluntary Declaration area for High Value Conservation under the *Vegetation Management Act 1999*. This removes future wholesale and selective clearing opportunities and through the management plan removes ongoing impacts caused by livestock intrusion into habitat areas. d) Provides a 301.3 ha environmental offset within a regional mapped biodiversity conservation corridor.
2	*be built around direct offsets but may include other compensatory measures*	The Offset Area includes legally securing the land area and undertaking necessary improvements to achieve a greater than 100% offset outcome for impacts calculated on the Heritage Park Project for GHFF (172%) and

		Koala Habitat (100%). The Offset Area is wholly achieved through direct delivery to land.
3	*be in proportion to the level of statutory protection that applies to the protected matter*	Both the Koala and the Grey-headed Flying-fox are scheduled within the EPBC Act as 'Vulnerable'. Under the International Union for Conservation of Nature data the probability of annual extinction is 0.2. This factor applies through the meta data of the Offset Guide assessment calculation sheets for which each species has been assessed as achieving greater than 100% offset through the proposed Offset Area.
4	*be of a size and scale proportionate to the residual impacts on the protected matter*	Direct and indirect impacts for the protected matters have been calculated at the impacts site using the Modified Habitat Quality Assessment (MHQA) for the Koala and the Grey-headed Flying-fox Foraging Habitat Assessment (FHA) methods. Within the Assessment Guide calculator, the Quantum Impact for each species is listed as: • Grey-headed Flying-fox (39.74 ha) • Koala (58.92 ha) To achieve and offset for both of these impacts the Offset Area provides a direct land-based outcome over 301.3 ha mixing existing habitat with created habitat outcomes.
5	*effectively account for and manage the risks of the offset not succeeding*	The Offset Area is a made up of two sites in a strategic location known to support both habitat an animals from the impacted protected matters. An Offset Management Plan will identify key risks to some or all of the offset principles and outcomes not being achieved Repetitive monitoring and survey replication will be a feature of the Offset Management Plan to ensure adaptive management changes are made as soon as identified and throughout the life of the offset.
6	*be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs*	If not used as a viable commercial environmental offset, grazing uses and forestry are the next most permissible land uses. Category B areas are protected under the *Vegetation Management Act 1999* however, this protection does not outright prohibit clearing of Koala habitat. However, this leads to a decrease to the overall risk of loss. In the low order remnant areas, classed as least concern and of concern vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within

		lower order remnant communities by achieving the acceptable solutions in the accepted development code and State Development Assessment Provisions module. Although this avenue to reduce the existing Koala habitat quality exists, there are protections in place under the *Vegetation Management Act* 1999 and these factors cause a decrease to the overall risk of loss. In the high order remnant areas, classed as endangered vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Clearing which triggers an application could result in a prohibition or environmental offset under the *Vegetation Management Act 1999* <u>Therefore, without the triggering of the EPBC Act and the Controlled Action Assessment the offset as proposed in the Offset Area Management Plan is not required for either of the protected matters and the offset site would not be protected in perpetuity for conservation purposes.</u>
7	*be efficient, effective, timely, transparent, scientifically*	Through conditions of approval the Offset Area will be legally secured prior to the commencement of any clearing on the Impact site. The Offset Area and its value (as finalised through the EPBC Act Approval) will be legally secured through a Voluntary Declaration (V-Dec) declared under the Queensland Government's *Vegetation Management Act 1999*. A V-Dec protects land and values and is binding on future owners. The declaration and management plan will be noted on the land title, which informs prospective buyers of current declarations and management plans and where copies are available. This information is important to the property market as future owners will be bound by the plan and declaration. The legally securing of the land will be made through declaring the area as having High Nature Conservation Values. The V-Dec will be lodged and legally secured by evidence of encumbrance on Registered Land Title prior to the commencement of any clearing works on the Impact Site. The Offset Area Management Plan (OMP) will schedule a list of existing or specifically designed scientific methodologies for the measuring of base line and improved outcomes for the protected matters. The OMP also requires the use of tertiary trained and experienced experts along

		with appropriately certified and experienced contractors for the implementation of a host of actions.
8	*have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced*	The Offset Site will be purchased and operated by EnviroCapital Pty Ltd. EnviroCapital Pty Ltd will resource the purchase of the land and fund all actions listed under the Approved Offset Area Management Plan. An executed legal contract (Offset Provider Deed) is in place outlining the legal and committed relationship of the funding and delivery of the offset outcomes. The Offset Site has been contracted to purchase subject to a conditional due-diligence period. Clearly articulated goals will be part of the Offset Management Plan for each proposed action within each Assessment unit. Collectively these goals link directly to the achievement of the overall *conservation gain* for the protected matters as designed, assessed and calculated through the selection and delivery of the Offset Area.

4.2. Methodology

The impact and the offset sites have been assessed using a modified version of the Queensland State Governments *"Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy"* Version 1.2 April 2017. The purpose of this guideline is to provide a methodology for proponents to determine the habitat quality of a site under the Queensland Environmental Offsets framework. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to Matters of National Environmental Significance (MNES).

4.3. Assessment Units

The variance in structure, function and quality of habitat on an impact or offset site is accounted for by delineating sites into assessment units (AUs). AUs are mapped to determine where the sample sites will be and how many are required to adequately assess the site's condition. AUs can be defined using desktop information but can be refined during field surveys where appropriate. In general, they should be relatively homogenous, defined by a distinct regional ecosystem or habitat type and distinct from other patches of vegetation on the site. The AUs identified are used in the assessment of habitat values for both koala and GHFF.

4.4. Koala modified habitat quality assessment

The traditional process for assessing terrestrial habitat quality recognises the following three (3) key indicators:

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

The modified habitat quality assessment (MHQA) for the koala combines the three (3) core indicators into two (2) (site condition and site context) with each being equally weighted at 30% of the final score. The balance of the weighting, 40%, has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate has been added to the MHQA to better incorporate MNES, and specifically the vulnerable *Phascolarctos cinereus* (Koala). The following subsections detail the methodology utilised to assess the site condition, site context and species stocking rate under the koala MHQA.

4.4.1 Site condition (30% weighting)

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

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

1. recruitment of woody perennial species in Ecologically Dominant Layer (EDL);
2. native plant species richness – trees;
3. native plant species richness – shrubs;
4. native plant species richness – grasses;
5. native plant species richness – forbs;
6. tree canopy height;
7. tree canopy cover;
8. shrub canopy cover;
9. native perennial grass cover;
10. organic litter;
11. large trees;
12. coarse woody debris;
13. non-native plant cover;
14. quality and availability of food and foraging habitat; and
15. quality and availability of shelters.

Assessment of the above condition characteristics do not differ from the traditional habitat quality assessment. Out of the 15 condition characteristics, only two species habitat index characteristics have been

added to better incorporate MNES; quality and availability of food and foraging habitat, and quality and availability of shelters.

4.4.2 Site context (30% weighting)

The site context assessment deals with the site and its surrounding landscape and adjacent land uses as these can directly influence the quality and security of habitat on-site. Site context is measured using a suite of attributes to describe the location of the habitat in relation to the surrounding landscape and the influence of its associated threats (*i.e.*, edge effects, environmental buffering, threatening processes). The assessment also considers the influence of adjacent vegetated areas and ecological corridors. Under the MHQA, site context is measured using the following seven steps:

1. patch size;
2. connectedness;
3. context;
4. ecological corridors;
5. role of site location to species overall population in the state;
6. threats to species; and
7. species mobility capacity.

Unlike 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, being Koala and GHFF habitat in this instance. Although remnant Eucalypt forest vegetation is classified as critical habitat (as defined under the EPBC Act assessment referral guidelines), Koalas are knowingly capable of utilising areas classified as non-remnant vegetation or high value regrowth under the VMA. Non-remnant and high value regrowth vegetation is vegetation that has not yet achieved characteristics to be classified as remnant status. Therefore, site context under the MHQA accounts for all surrounding potential Koala habitat rather than limiting to remnant vegetation.

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

4.4.3 Species stocking rate (40% weighting)

The traditional terrestrial habitat assessment does not incorporate the species stocking rate as an attribute however as the impacts and associated offset is associated with habitat for species protected under the EPBC Act (i.e. koala and Grey-headed Flying-fox) the MHQA incorporates species stocking rate as an attribute for measuring the habitat value of a site. Species stocking rates are estimates of species carrying capacity of the site at the time of undertaking the survey.

Species stocking rate is calculated using the following parameters:

- Species presence on or adjacent to the site
- Species usage of the site
- Approximate density of the species on the site

- Role/importance of species population on site

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

The SAT involves identifying a non-juvenile tree of any species within the subject site that is either observed to have a Koala or scats, or is known to be a food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed.

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

The SAT methodology is considered to be an accurate technique for estimating low-density Koala populations (Mossaz 2010). Research by Rhodes *et al*. (2015) found Koala density in South East Queensland council areas (excluding areas inland of Ipswich) to be approximately 0.07 Koalas/ha based on data collected from 2005 - 2015. Therefore, the SAT survey methodology is considered to provide an accurate determination on koala activity levels in South East Queensland.

Koala stocking rate scores are calculated using the SAT activity categories taken from the Australian Koala Foundation Koala activity level classification table by Phillips & Callaghan 2011 (**Table 4**).

Table 4: Koala Activity Level Classification (Phillips and Callaghan 2011)

Usage	East Coastal (low)	East Coastal (med-high)	Western (med-high)
Low	<9.5%	<22.5%	<35.8
Moderate	9.5-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

Categories are assigned as follows:

- Sites considered to be suitable or have high suitability for koalas are assigned the East Coastal (med-high) category;

- Sites considered to have low suitability are assigned the East Coastal (low) category; and
- The Western category does not apply to South East Queensland local government areas.

4.5. Grey-headed Flying-fox modified habitat quality assessment

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

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

The GHFF FHA tool combines the aspects of the three (3) core indicators and published scientific literature into two (2) (site condition and site context) with site condition being weighted with 40% and site context weighted at 30% of the final score. The balance of the weighting (30%) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate is based on 'foraging habitat' for GHFF rather than GHFF stocking rates (presence/absence of the species). This method was used as GHFF roosting camp or species presence was not observed on-site, however, suitable foraging habitat for the species was present. Therefore, the availability of foraging habitat 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.

4.5.1 Site Condition (40%)

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

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

- Non-native plant cover.

Assessment methodology of the above condition characteristics is outlined below:

- Vegetation condition – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment.
- Species richness (canopy trees) – This condition characteristic is assessed using a 100 m X 50 m plot following the contour of the land when possible. Within the plot, all canopy tree and subcanopy tree specimens are recorded. Non-GHFF foraging species are also documented.
- Flower scores (average) – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the flower score of the recorded canopy species. The individual score for each flowering GHFF foraging tree is then divided by the number of species recorded (GHFF foraging and non-GHFF foraging trees) to produce an average. The benchmark values for this condition characteristic have been derived from the findings published by Eby and Law (2008) (*Ranking the feeding habitat of Grey-headed flying foxes for conservation management*).
- Timing of biological shortages – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). It should be noted that this condition characteristic is weighted and 'food shortages' has been weighted heavier than the balance of the characteristics which are equal, as 'food shortages' is recognised as a major issue.
- Quality of foraging habitat – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017).

- Non-native plant cover – This condition characteristic is assessed using a 100 m X 50 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 50 m plot.

It should be noted that for on-ground assessment purposes, the 100 m X 50 m plot utilised for the GHFF FHA overlaps with the koala MHQA transects.

4.5.2 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 ecological corridors. Under the GHFF FHA, site context is measured using the following six (6) characteristics:

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

Assessment methodology of the above context characteristics is outlined below:

- Size of patch – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. The benchmark values for this context characteristic are those used in the traditional habitat quality assessment.
- Connectedness – This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring (11/17 – 11/18)) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government).
- Context – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the percentage of GHFF foraging habitat within a twenty (20) kilometre buffer of the site measured. This context characteristic is measured using GIS.
- Ecological corridors – This context characteristic is assessed using the traditional habitat quality assessment methodology which involves determining the proximity of the site to state, bioregional, regional or sub-regional corridors.
- Threats to species – This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site.

- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 30 km radius) – This context characteristic is assessed by analysing the number of active GHFF roost camps level 3 or greater within a 30 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) and active is defined as a site where GHFF have been identified in the previous 12 months.

4.5.3 Species Stocking Rate (30%)

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

The species stocking rate was assessed by using the percentage of trees reaching the Large Tree benchmark. Large trees are described as a measure for the provision of reliable foraging resources for wildlife, providing nectar, leaves and seeds (Biocondition manual). Large trees provide greater leaf material and nectar for foraging purposes than trees with low DBH, and so are a reliable indicator of provision of quality habitat for GHFF. Larger trees, on average flower more frequently, more intensely and for a longer period of time than small trees (Wilson and Bennett 1999, Wilson 2002). The presence of Large Trees is considered to be of significant importance in identifying optimal habitat for GHFF.

Large trees are assessed using the Modified Habitat Quality Assessment Transects and are an indicator for the potential for foraging tree density and food availability. The number of Large Trees is recorded and compared to the benchmark data for the relating Regional Ecosystem. This is converted into a percentage of the benchmark, and a score ascribed.

GHFF FHA scoring tables are provided as **Attachment 4**.

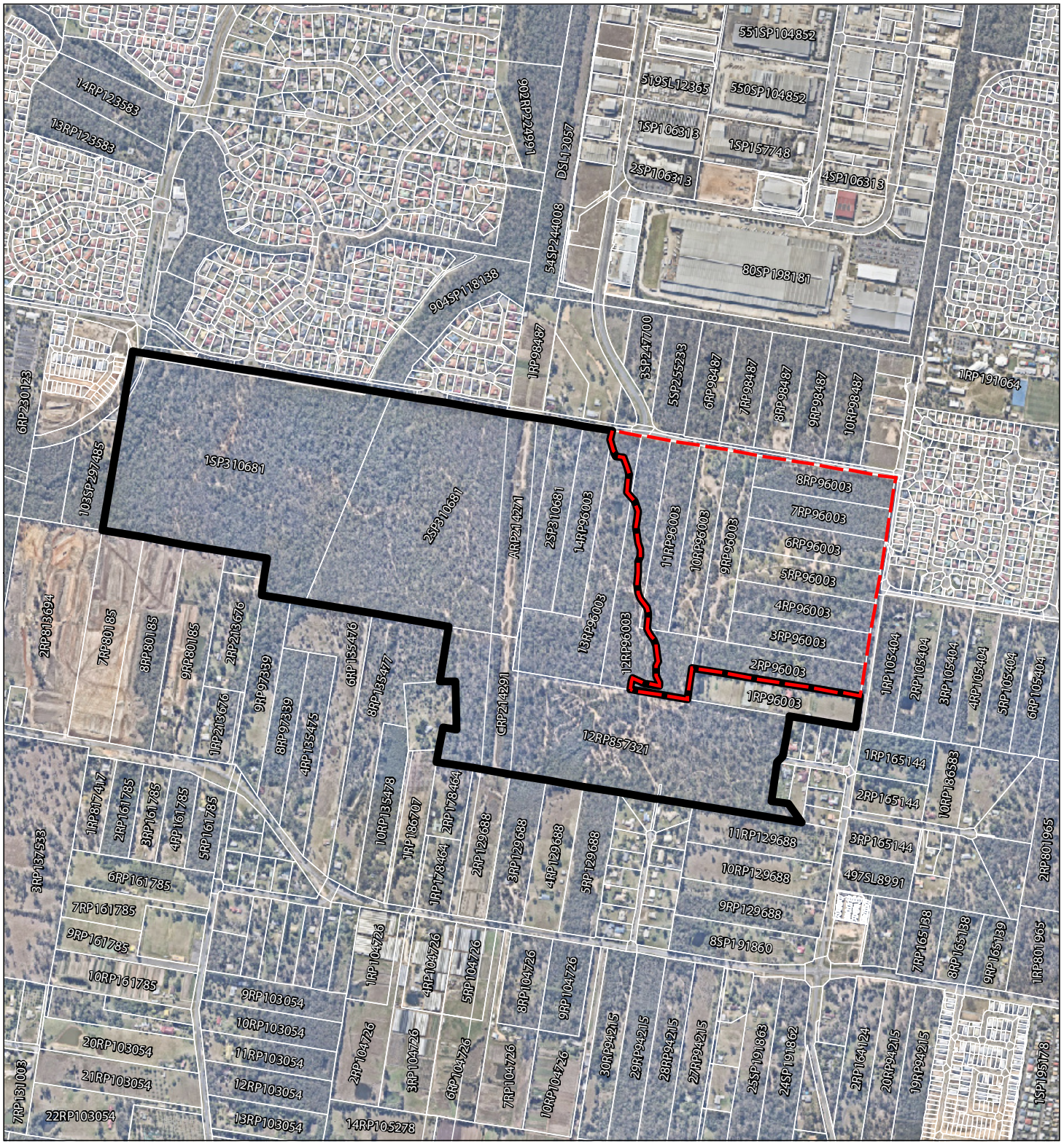
4.6. Background

To satisfy the environmental offset requirements for Pointcorp's impact on habitat critical to the survival of the Koala at the impact site (refer **Plan 1** and **Figure 4**), EC will legally secure, manage and improve land located at their Lyons and Burnett Creek sites (**Figure 5**). The Lyons offset site is located at the western-most edge of the Lyons Locality and Mt Perry (351 m) is the most notable feature on-site. Part of Mt Blaine (455 m) occupies the south-eastern corner of the site. The area is part of the Teviot Range. The Burnett Creek site is 49 kilometres south of the Lyons property and approximately 6 kilometres from the Queensland-New South Wales state border. Lyons is part of the Flinders Karawatha Corridor and both sites are located within the boundary of the South East Queensland Regional Plan — Regional Biodiversity Corridor (refer **Figure 6**).

In order to establish the quantum impact on habitat critical to the survival of the Koala, detailed ecological surveys of the impact site were undertaking utilising the modified habitat quality assessment (MHQA) tool outlined above. Following this survey, a number of detailed ecological surveys in accordance with the MHQA tool were completed over the Burnett Creek and Lyons offset sites, with results and data records included in **Appendix 2** of **Section 4**. This data was collated with historical ecological survey data and has been utilised to calculate the habitat value and improvement opportunities.

EC has entered into commercial terms to legally secure, improve and long-term manage 151.3 hectares of land at the Burnett Creek site (total 200 hectares) and 150 hectares of land at the Lyons site (total 301.3 hectares). Following the ecological field surveys, the sites were assessed against the MHQA tool and relevant components of AWE *EPBC Act Environmental Offset Policy* (2012) including analysis using the *Offset Assessment Guide* (OAG). The OAG indicates the Burnett Creek offset site will offset 39.85% of Pointcorp's 58.92 hectare quantum impact, while the Lyons offset site will offset 60.42% of Pointcorp's 58.92 hectare quantum impact for Koala. The Burnett Creek offset site will offset 86.69% of Pointcorp's 39.74 hectare quantum impact for the Grey-headed Flying-fox and the Lyons offset site will account for 86.14% of Pointcorp's 39.74 hectare quantum impact for the Grey-headed Flying fox. The total of the two offset sites 172.83% than adequately offsets the 39.74 hectare quantum of impact for the Grey-headed Flying-fox.

A summary of the impact site MHQA tool values and each offset site and the assessment against the MHQA tool, offset policy and assessment guide is provided below.



Legend

- Referral area
- Variation Area
- Qld DCDB

Figure 4

Impact Site Park Ridge

ENVIRO CAPITAL

File ref. 8392 E Figure 4 OMP PR Impact Site A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

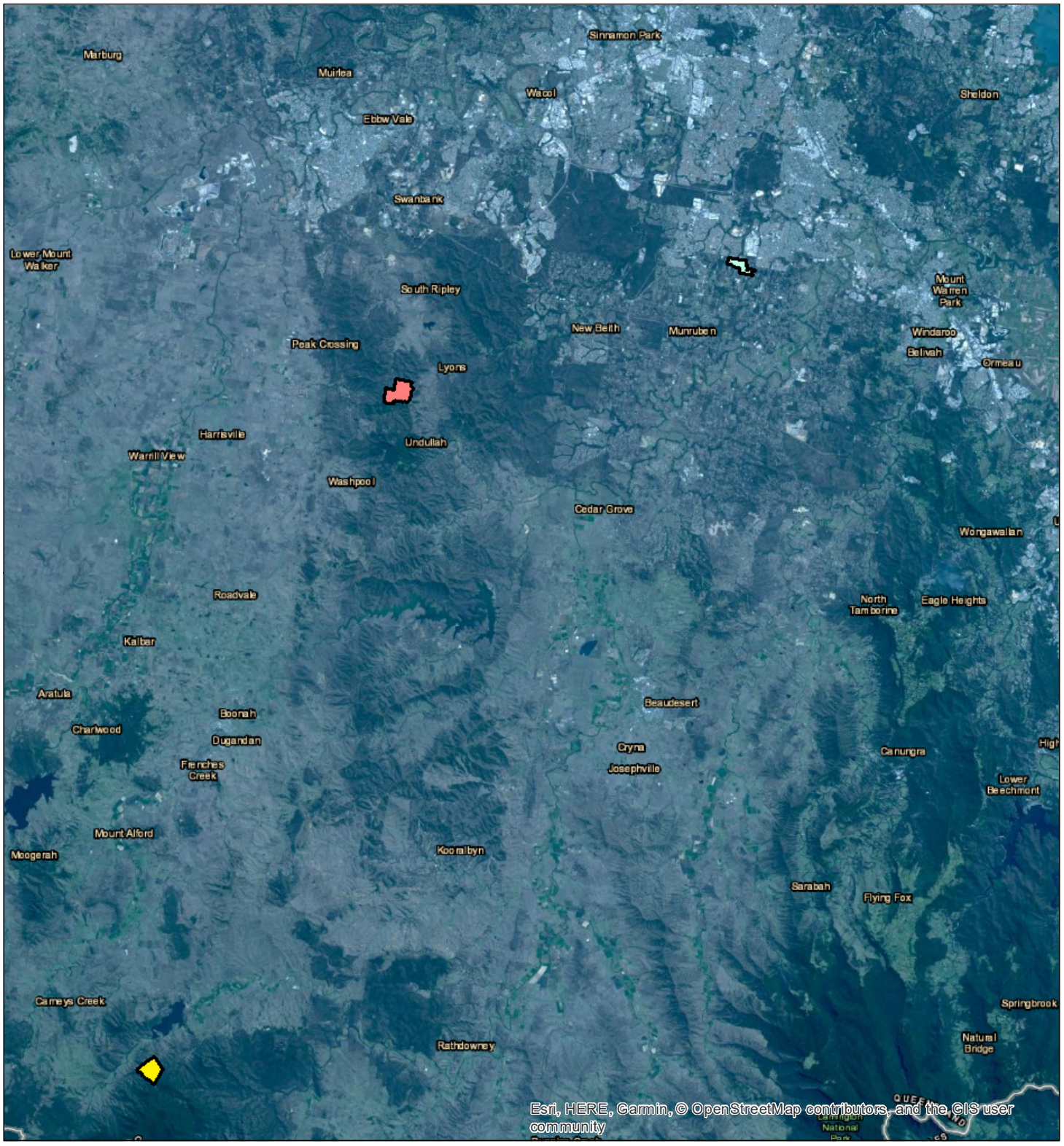
0 100 200 400 *m*

N

Scale (A4): 1:15,000 [GDA 1994 MGA Z56]

Pointcorp Heritage Park Pty Ltd

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)



Legend

- Impact site Park Ridge
- Lyons offset site
- Burnett Creek offset site

Figure 5

Offset Sites Relation to Impact Site

File ref. 8392 E Figure 5 OMP Offset Sites Context A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 5 10 15 *km*

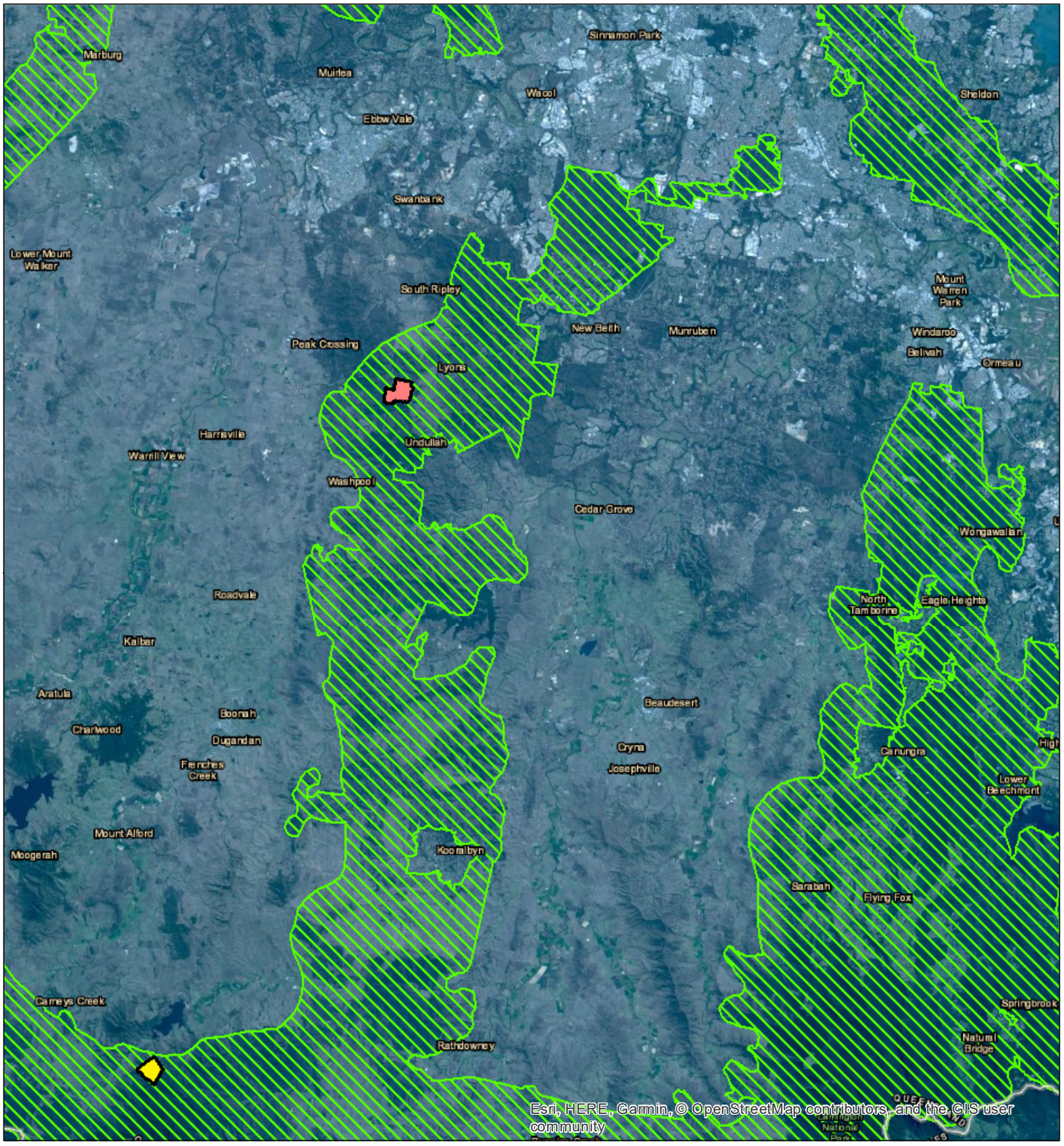
N

Scale (A4): 1:400,000 [GDA 1994 MGA Z56]

ENVIRO CAPITAL

Pointcorp Heritage Park Pty Ltd

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)



Legend

- Lyons offset site
- Burnett Creek offset site
- SEQ Regional biodiversity corridor (SEQRP 2017)

Figure 6

Offset Sites and South East Queensland Regional Plan - Regional Biodiversity Corridor

File ref. 8392 E Figure 6 OMP Offset Sites SEQRP A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 5 10 15 *km*

N

Scale (A4): 1:400,000 [GDA 1994 MGA Z56]

ENVIRO CAPITAL

Pointcorp Heritage Park Pty Ltd

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)

4.7. Impact Site General Description

The impact site is comprised of the referral area and a variation area that contains vegetation that will be indirectly impacted by the action. The impact site is located at Clarke Road and Green Road, Park Ridge and is located approximately 5.5 kilometres south west of Logan Central. The land comprises of the following cadastral allotments (refer **Figure 4**):

- Lot 1 on SP310681
- Lot 2 on SP310681
- Lot CRP on 214291
- Lot ARP on 214271
- Lot 1 on RP96003
- Lot 11 on RP96003
- Lot 12 on RP96003
- Lot 13 on RP96003
- Lot 14 on RP96003

The land tenure of each parcel is freehold and located in the Logan City local government area, where it is within the Park Ridge Structure Plan area. The land is designated for commercial, industrial and greenspace network uses and can be accessed via Clark Road from the east or Green Road from the north.

4.8. Offset Site General Descriptions

Burnett Creek is a former cattle grazing freehold property accessed via Burnett Creek Road. The property is adjacent to Mount Barney National Park and is identified as lot 100 on WD682 (refer **Figure 7**). The property area is approximately 200 hectares, however the offset is a subset of this as part of the property (49.25 hectares) is an offset for a third party.

The Burnett Creek offset site is part of a rural zoned parcel in the Scenic Rim local government area and is upstream of Maroon Dam. Surrounding land uses vary from conservation to rural pursuits including cattle grazing and cropping where topography is favourable.

The Lyons offset site is on the eastern boundary of the Teviot Range and is part of the Flinders Karawatha Corridor. Elevations across the site vary between 140 metres and 430 metres with high points associated with either Mt Perry (351 m) on-site or Mt Blaine (455 m) with its peak 40 metres south of the Lyons property boundary. The freehold property is identified as 7S312785 and is 259 hectares (refer **Figure 8**).

The Lyons property is zoned Rural Environmental Management under the Logan planning scheme and is on the western boundary of Council's jurisdiction. A shed is located on the southern boundary of the property and this area does not form part of the offset area.

4.9. Offset area mitigation and management measures

This section describes the mitigation and management actions and measures necessary to meet the identified environmental outcomes of the offset area. These measures are designed to minimise the risks associated with key threatening processes to the Koala and GHFF and maintain the quality of the habitat within the offset area.

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

The measures outlined in the following subsections are deemed to be suitable given the listed status of the Koala and GHFF, the size and scale of the offset and the focus on priority management actions, which are efficient, effective, 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 *Approved Conservation Advice for Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designatable Unit)* (Conservation Advice).

4.9.1 Management Action 1 – Legally secured the offset area

A VDEC will be placed over the offset areas to legally secure the conservation use on the land prior to the action commencing. The offset provider will continue to manage the offset area for the life of the approval.

Legally securing the offset area is listed in the Conservation Advice as a Priority Management Action, under "Habitat Loss, Disturbance and Modification".

4.9.2 Management Action 2 – Weeds of national significance management plan

The control of weeds is fundamental to improving biodiversity and the ecological condition of the habitat within the offset area. The historical land uses across the offset areas 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 in regards to Koala habitat values 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.

It is not possible to remove lantana from the offset area on a single occasion, as there will be a persistent seed bank that can 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). It is therefore important that the offset area is revisited following the initial treatment for follow-up weed control and to prevent seed set and dispersal.

4.9.3 Management Action 3 – Rehabilitation and regeneration management plan

Rehabilitation and regeneration is a 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. It also is a Priority Management Action listed under "Habitat Loss, Disturbance and Modification" of the Conservation Advice for the Koala. Rehabilitation aims to reinstate existing degraded areas and areas exposed as a result of management action 2 (weed removal), with Koala food and shelter trees and GHFF foraging trees consistent with the mapped regional ecosystem in that specific location.

Rehabilitation and Regeneration Management Plans (RRMPs) for Burnett Creek and Lyons will be developed prior to the action commencing. These plans will outline management actions, monitoring and maintenance of rehabilitation works on-site.

Key management actions will include:

- Replanting of Koala and GHFF food and habitat trees to infill open areas (where required).
- Assisted natural regeneration practises to expand patches of regrowth over weed and grass areas.

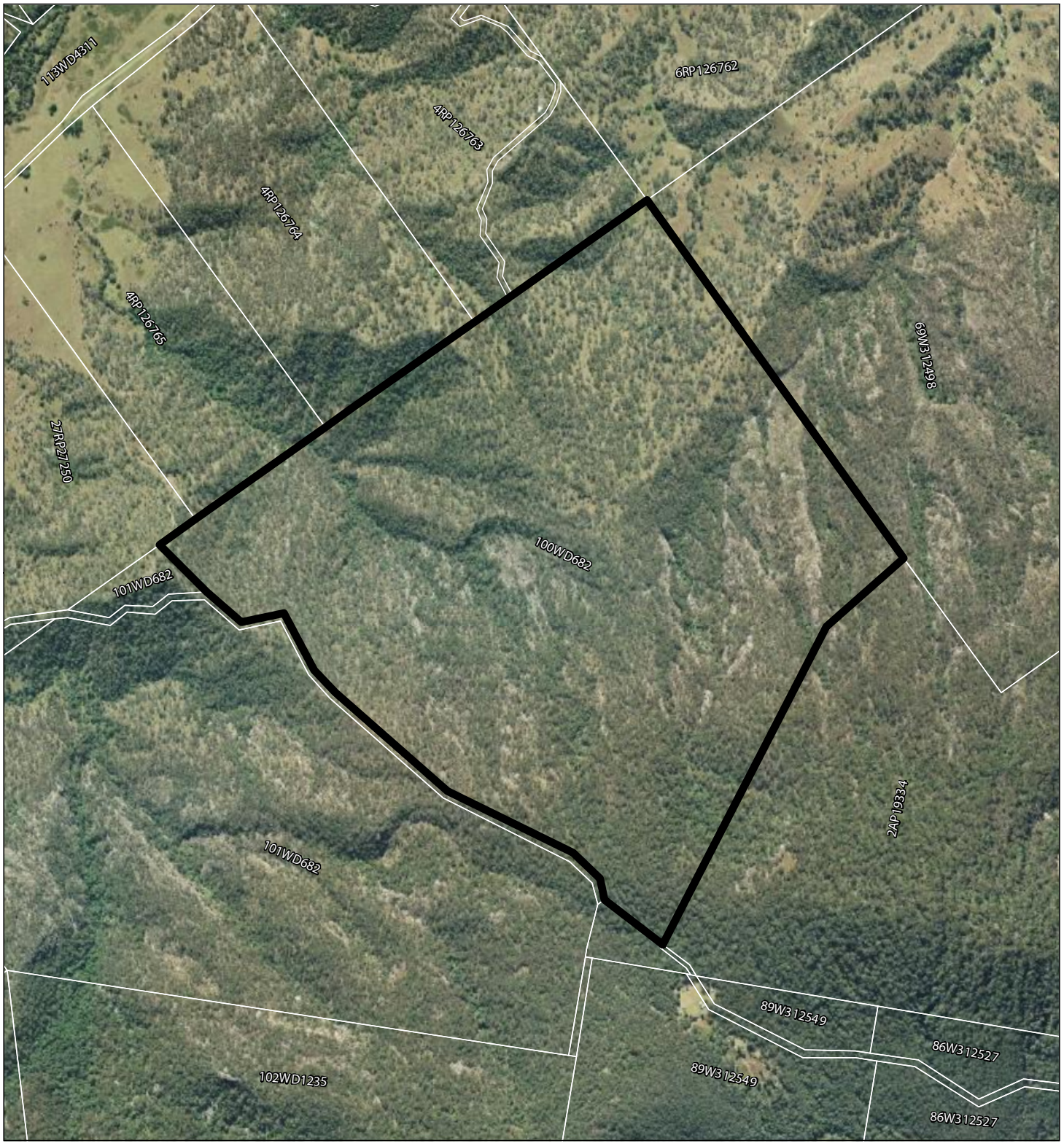
Within the mapped regrowth and remnant areas, natural regeneration is preferred to reconstruct the vegetation community. Where natural regeneration is unsuccessful, infill planting will be implemented to facilitate recovery.

4.9.4 Management Action 4 – Pest management plan

Feral or unwanted domestic dogs have been identified as a key threatening process under the EPBC Act, and are confirmed as a direct predation risk to Koalas. Managing animal predation is listed as a Priority Management Action under the Koala Conservation Advice. 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 pest animals 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. Pest animal control is to be undertaken in a humane manner. Annual pest monitoring is to be reported and included in the ACR.

A Pest Management Plan (PMP) will be developed for the Burnett Creek and Lyons offset sites prior to the action commencing. Key management measures for the control of feral or unwanted domestic dogs, feral cats and other detrimental pest species across the offset areas include:

- Development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed within 12 months of commencement of the action.
- Annual pest monitoring by a suitably qualified pest management contractor, with evidence of pest animals GPS recorded. Where there is evidence of pest animals, targeted trapping, baiting or shooting programs will be implemented by an independent suitably qualified pest management contractor. Where annual monitoring does not identify any feral or pest species, monitoring will reduce to 2 yearly.
- Participate cooperatively in pest management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective pest management in the locality of the offset areas. This includes working in conjunction with pest management occurring in:
    - The Mount Barney National Park protected area (Burnett Creek offset site).
    - Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting.
    - The Logan area (Lyons Offset site).
- Install signage at access points to inform any persons interacting with the area of feral animal control being undertaken within the offset site.



Legend

Burnett Creek offset site DCDB

Qld DCDB

Figure 7

Burnett Creek Offset Site

ENVIRO CAPITAL

File ref. 8392 E Figure 7 OMP BC Offset Site A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 100 200 400 *m*

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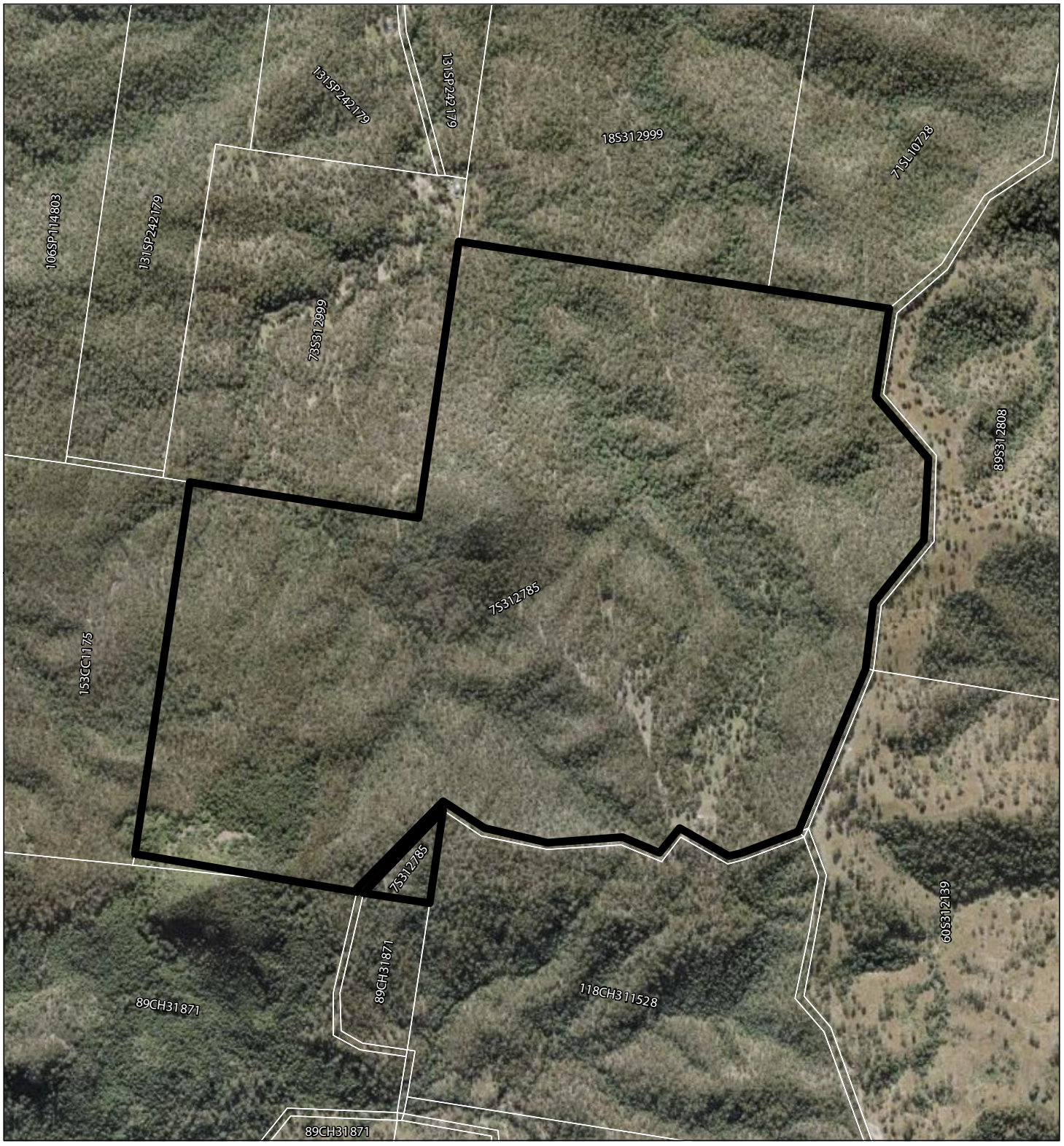
Scale (A4): 1:15,000 [GDA 1994 MGA Z56]

Pointcorp Heritage Park Pty Ltd

Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)



Legend

Lyons offset site DCDB

Qld DCDB

Figure 8

Lyons Offset Site

ENVIRO CAPITAL

File ref. 8392 E Figure 8 OMP L Offset Site A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 100 200 400 600 *m*

N

Scale (A4): 1:15,000 [GDA 1994 MGA Z56]

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Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)

4.10. Results

The following section of this chapter details the ecological survey findings and modified habitat quality assessment results for the impact and offset sites, while also providing EPBC offset assessment guideline calculator values and justifications for the two (2) offset sites.

4.11. Impact Site

4.11.1 Vegetation Areas — Summary

Ecological assessments over the referral area between 2016 and 2020 concluded that historical and contemporary disturbances on the site have had a clear impact on ecological value, including:

- Historical and contemporary logging activities have reduced the prevalence of dead stags and hollow logs for fauna habitat.
- Frequent fire has reduced the understory and impacted mature trees in areas of regrowth.
- Heavy use of the site by unlawful 4WDs and motorcycle riders has resulted in numerous tracks across the site causing significant damage to waterways, including change flow paths, obstructing flow and accelerating erosion.
- Rubbish dumped across the site, including domestic items, industrial items (building materials), abandoned vehicles and garden waste has created sources of weed infestation.
- Noise pollution from motorcycles and chainsaws is frequent, which has a negative effect on wildlife utilisation and visitation as well as impacts breeding cycles.

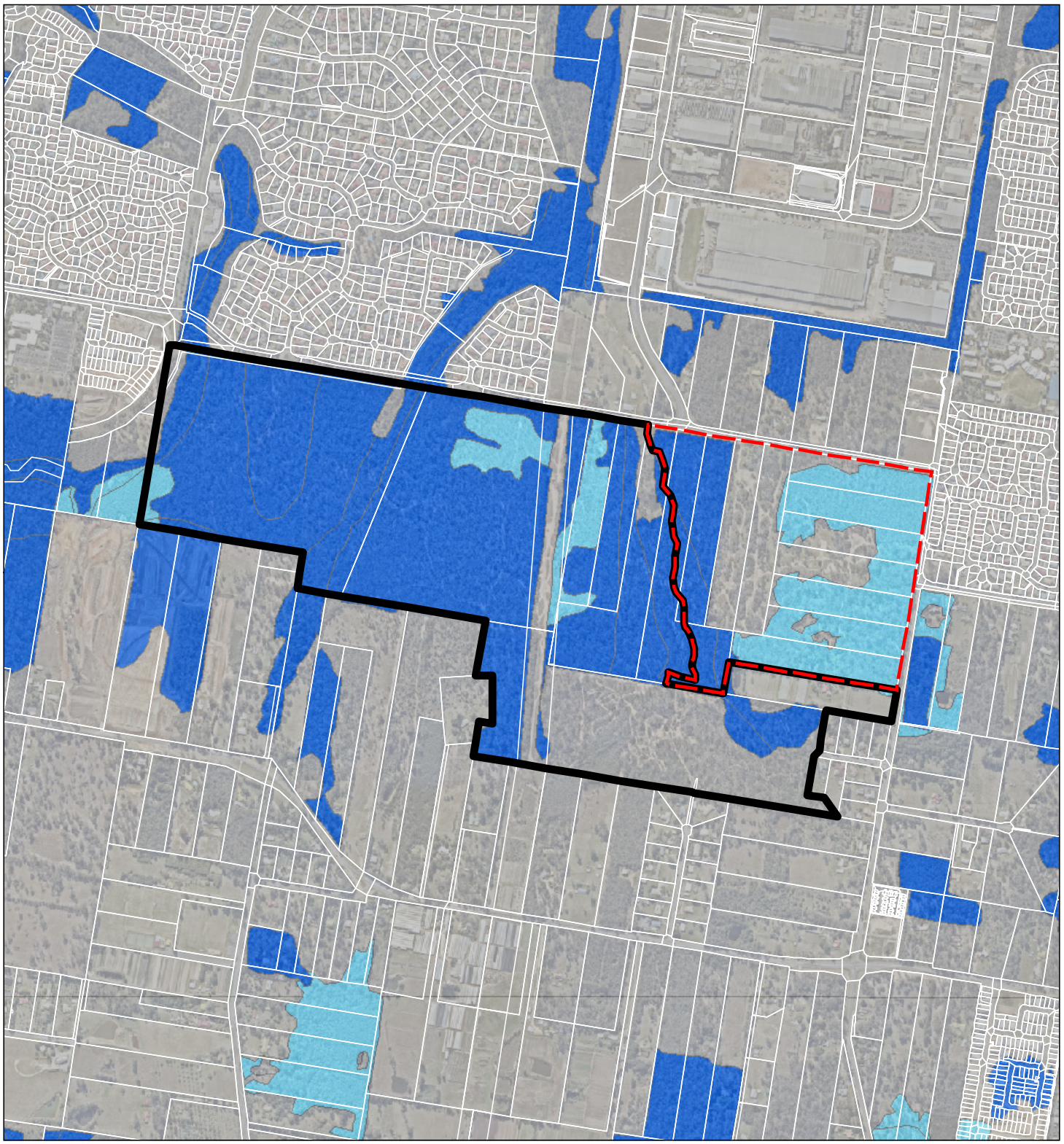
Continued frequent use of the area by unlawful 4WDs and motorcycles has retarded regrowth in relatively large areas of the site. Other parts of the site reflect maintained mowed grass and diminish value of the site as Koala habitat. No Koala sightings were recorded within the proposed expansion area. While Koala habitat is present on site, usage assessments determined low levels of Koala activity.

Although heavily disturbed, the impact site contains Koala critical habitat. For the purposes of assessment, the Koala critical habitat vegetation has been separated into four assessment units based on the remnant status (**Figure 9**) and regional ecosystem best describing the vegetation present (**Figure 10**) (**Plan 4**). Assessment Unit 1 (AU1) is remnant vegetation (Category B) best represented by the regional ecosystem 12.9-10.4 which is the dominant remnant vegetation community. Assessment Unit 1 covers 69.475 ha of the impacted critical Koala habitat and includes vegetation mapped as RE12.3.6 in the east of the referral area as on ground surveys indicated that the vegetation was more indicative of 12.9-10.4. Assessment Unit 2 (AU2) is the remnant vegetation of the regional ecosystem 12.9-10.12 which covers 5.13 ha if the impacted Koala critical habitat. Assessment Unit 3 (AU3) is the remnant vegetation in the regional ecosystem 12.3.11 within the central water way of the referral area and covers 3.12 ha. Assessment unit 4 (AU4) is the non-remnant

vegetation best described as regional ecosystem 12.9-10.4. Assessment unit 4 covers most of the southern and eastern portions of the impacted area and covers 40.12 ha. Modified Habitat Quality Assessments (MHQA) were undertaken within each of the assessment units following survey effort guideline (**Table 5**).

Table 5: Summary of Impact Site Assessment Units.

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)	# of Assessment Transects
AU1	Remnant	12.9-10.4	69.48	3
AU2	Remnant	12.9-10.12	5.13	2
AU3	Remnant	12.3.11	3.12	2
AU4	Non-remnant	12.9-10.4	40.12	4



Legend

- Referral area
- Variation Area
- Qld DCDB

Regulated Vegetation

- Category B
- Category C
- Category X

Figure 9

Impact Site Park Ridge
Category B, Category C
and Category X vegetation

File ref. 8392 E Figure 9 OMP PR Mapped Veg A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 200 400 *m*

N

Scale (A4): 1:15,000 [GDA 1994 MGA Z56]

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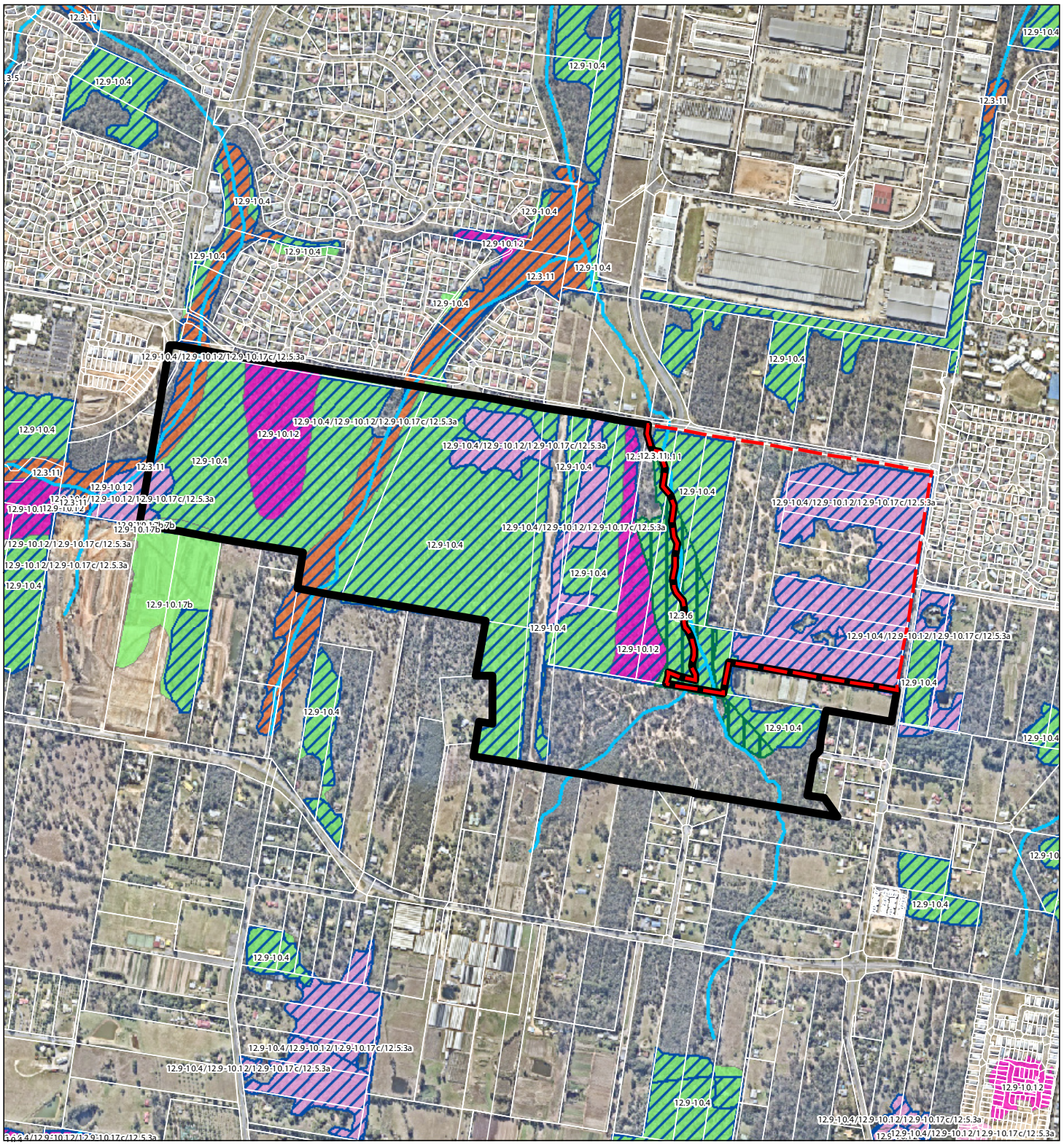
Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)



Legend

- Referral area
- Variation Area
- Qld DCDB
- VM Watercourses
- VM Essential Habitat
- VM Wetland

Regional Ecosystems mapping

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem

Figure 10

Impact Site Park Ridge
Mapped Regional Ecosystems

File ref. 8392 E Figure 10 OMP PR RVSM A
Date *9/03/2020*
Project *Clark Road, Park Ridge*

0 200 400 *m*

N

Scale (A4): 1:15,000 [GDA 1994 MGA Z56]

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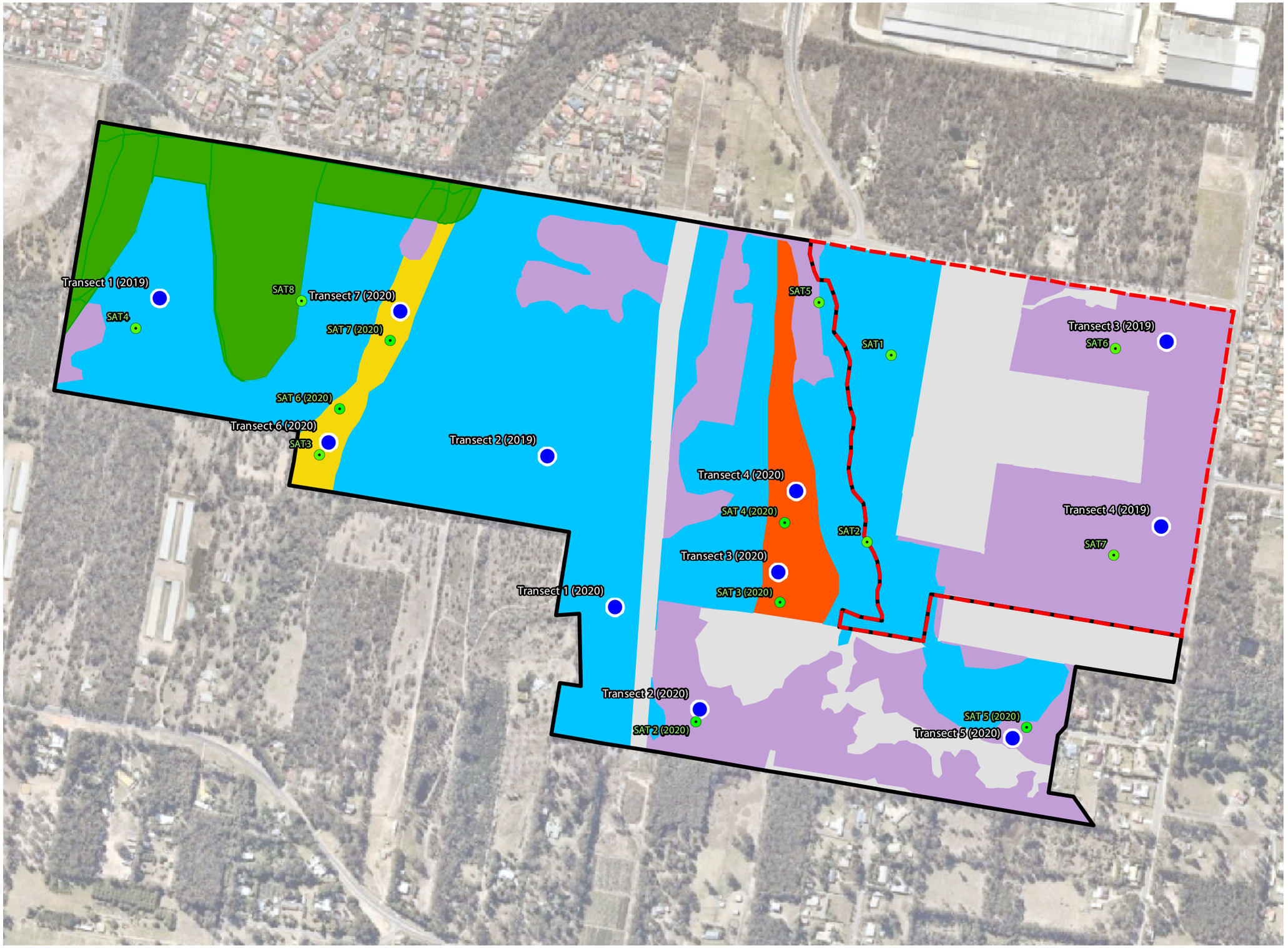
Layer Sources QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2019)

4. Impact Site Habitat Quality Survey



Legend

- Referral Area
- Qld DCDB
- Koala Critical Habitat functionally lost
- SAT survey
- Habitat quality transect
- Unit 1 - 69.48 ha
- Unit 2 - 5.13 ha
- Unit 3 - 3.12 ha
- Unit 4 - 40.12 ha
- Retention area - 12.96 ha
- Not Koala Critical Habitat

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
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4.11.2 Koala SAT Surveys

Results of Koala specific SAT surveys documented in the Ecological Assessment Report (SHG 2017) note that a total of eight (8) SAT surveys were completed across the impact site by SHG (2017). The SAT results have been supplemented with contemporary surveys in conjunction with the MHQA indicate that there were only low levels of Koala activity.

4.11.3 Grey-headed Flying-fox Site Context

The results of the Grey-headed Flying-fox site context analysis is present in **Plan 5**. The percentage of Grey-headed Flying-fox habitat within 20 km of the site is 40%. There are seven (7) active Grey-headed Flying-fox camps within 20 km of the site and one of these camps was assessed as being level 3 category population.

4.11.4 Offset Assessment Guide inputs and worksheet

The MHQA has been applied separately to the various assessment units across the site considering the many variables that influence the total habitat quality, site context and species stocking rate (refer **Table 6**). Refer to **Appendix 2** for the raw data of the modified MHQA.

Table 6: Impact Site Koala Modified Habitat Quality Assessment Tool

Attribute	Condition Characteristics	AU1 Score Cat B (RE12.9-10.4)	AU2 Score Cat B (RE12.9-10.12)	AU3 Score Cat B (RE12.3.11)	AU4 Score Cat C and X (RE12.9-10.4)
Site Condition (30%)	**Recruitment of woody perennial species in EDL**	5/5	5/5	5/5	4/5
	Native plant species richness – trees	5/5	2.5/5	5/5	5/5
	Native plant species richness – shrubs	2.5/5	2.5/5	2.5/5	2.5/5
	Native plant species richness – grasses	3.33/5	2.5/5	1.25/5	2.5/5
	Native plant species richness – forbs	2.5/5	2.5/5	2.5/5	2.5/5
	Tree canopy height	4/5	5/5	5/5	3.5/5
	Tree canopy cover	4/5	2.5/5	5/5	3.5/5
	Shrub canopy cover	3/5	1.5/5	0/5	4/5

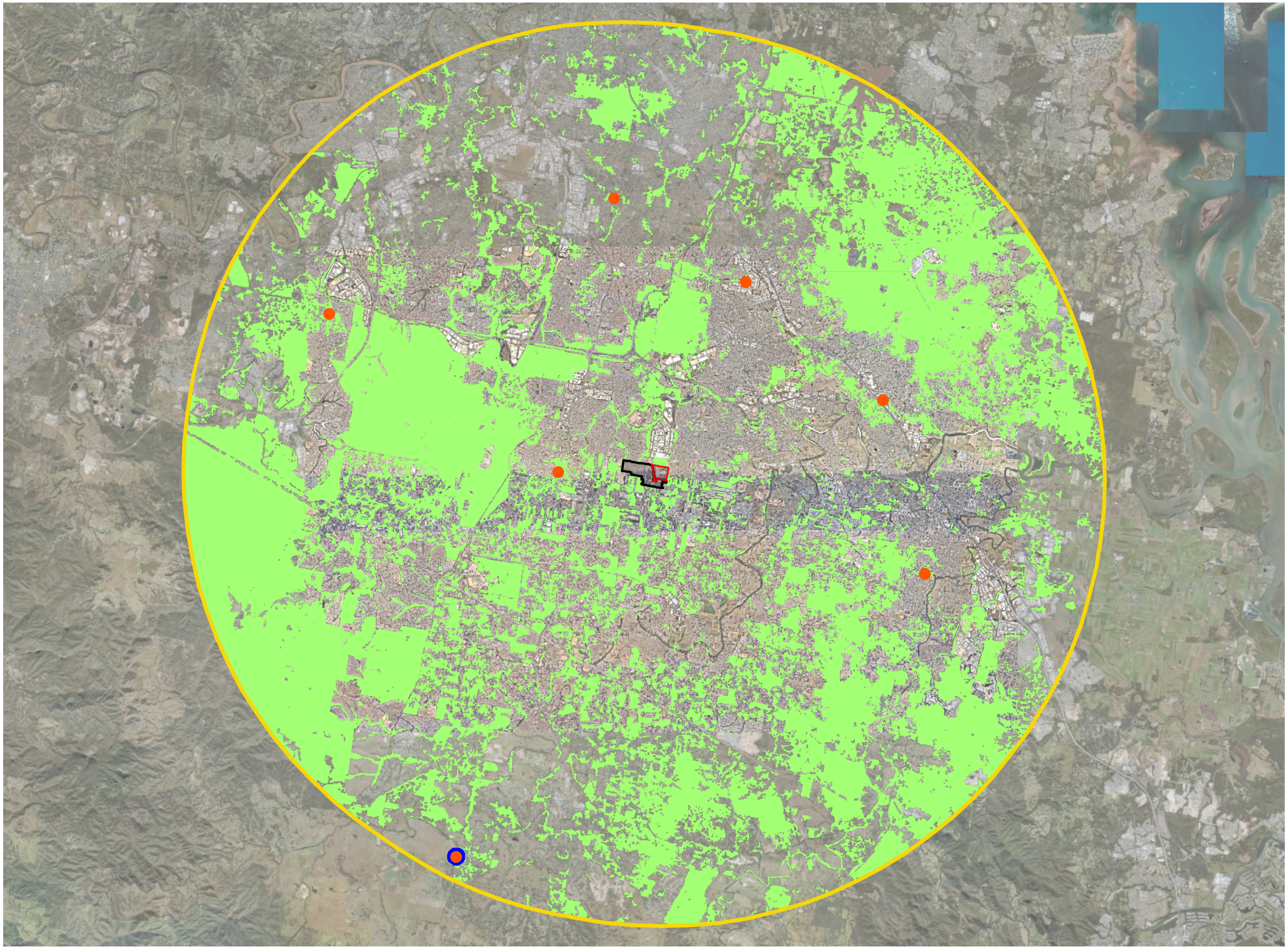
	Native grass cover	3/5	2/5	0.5/5	3/5
	Organic litter	5/5	3/5	1.5/5	5/5
	Large trees	5/15	5/15	5/5	3.5/5
	Coarse woody debris	2/5	1/5	3.5/5	3.5/5
	Non-native plant cover	5/10	10/10	5/5	5
	Quality and availability of food and foraging habitat	5/10	5/10	5/10	5/10
	Quality and availability of shelter habitat	5/10	5/10	5/10	5/10
	Site Condition Score	**59/100**	**55/100**	**52/100**	**59/100**
	Site Condition Score (out of 3)	**1.78**	**1.66**	**1.55**	**1.77**
Site Context (30%)	**Size of the patch**	5/10	5/10	5/10	5/10
	Connectedness	2/5	2/5	2/5	2/5
	Context	2/5	2/5	2/5	2/5
	Ecological corridors	0/6	0/6	0/6	0/6
	Role of site location to species overall population in the State	4/5	4/5	4/5	4/5
	Threats to the species	1/15	1/15	1/15	1/15
	Species mobility capacity	4/10	4/10	4/10	4/10
	Site Context Score	**18/56**	**18/56**	**18/56**	**18/56**
	Site Context Score (out of 3)	**0.96**	**0.96**	**0.96**	**0.96**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	10	10	10	10
	Species usage of the site (habitat type & evidenced usage)	10	10	10	10
	Approximate density (per ha)	10	10	10	10
	Role/importance of species population on site	**5**	**5**	**5**	**5**
	Species Stocking Rate Score	**35/70**	**35/70**	**35/70**	**35/70**
	Species Stocking Rate Score (out of 4)	**2**	**2**	**2**	**2**

Site Condition Score	**1.78**	**1.66**	**1.55**	**1.77**
Site Context Score	**0.96**	**0.96**	**0.96**	**0.96**
Species Stocking Rate Score	**2**	**2**	**2**	**2**
Habitat Quality Score	**4.74**	**4.61**	**4.51**	**4.73**
Assessment unit area (ha)	**69.475**	**5.132**	**3.124**	**40.116**
Total impact area (ha)	**117.84**	**117.84**	**117.84**	**117.84**
Assessment Unit size weighting	**0.59**	**0.04**	**0.03**	**0.34**
Weighted Habitat Quality Score	**2.8**	**0.2**	**0.12**	**1.61**
Impact site score	**4.69 (rounded to 5)**			

Table 7. Impact Site Grey-headed Flying-fox Habitat Quality

Attribute	Condition characteristics	AU1 Score **Cat B** (RE12.9-10.4)	AU2 Score **Cat B** (RE12.9-10.12)	AU3 Score **Cat B** (RE12.3.11)
Site Condition (40 %)	Vegetation Condition	20/20	20/20	20/20
	Species Richness	16.67/20	15/20	20/20
	Flower Score	7/10	5/10	8/10
	Timing of Biological Shortages	10/10	10/10	10/10
	Quality of Foraging Habitat	8.33/20	5/20	10/20
	Non-native Plant Cover	10/20	20/20	10.5/20
	Site condition score	72/100	75/100	78.5/100
	Site condition score (out of 4)	2.88	3	3.14
Site Context (30 %)	Size of the patch	5/10	5/10	5/10
	Connectedness	10/10	10/10	10/10
	Context	6/10	6/10	6/10
	Ecological corridors	0/10	0/10	0/10
	Role of site location to species overall population in the State	5/10	5/10	5/10
	Threats to the species	1/10	1/10	1/10
	Site context score	27/60	27/60	27/60
	Site context score (out of 3)	1.35	1.35	1.35
Species Stocking Rate (30 %)	GHFF large trees	2.67/10	4/10	2/10
	Species stocking rate score	2.67/10	4/10	2/10
	Species stocking rate score (out of 3)	0.8	1.2	0.6
Total quality score		5.03	5.55	5.09
Assessment unit area		69.48	5.13	3.12
Total impact area		77.73	77.73	77.73
Size Weighting		0.89	0.07	0.04
Area weighted score		4.5	0.37	0.20
Total (out of 10)		**5.07 (rounded to 5)**		

5. Impact Site Grey-headed Flying-fox Site Context



NOTES
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Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
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Issue	Date	Description	Drawn	Checked
A	11/03/2020	Preliminary	TC	AR

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4.12. Burnett Creek

The Burnett Creek property (L100/WD682) contains approximately 176 hectares. To satisfy the offset of another project (Ripley Projects Pty Ltd's 31.40 quantum impact) and offset area consisting of the non-remnant vegetation in the north east and a small portion (10.00 hectares) of 'least concern' RE12.9-10.2 has been used. The remaining area of the property will be utilised to partially satisfy the offset requirement for the Park Ridge Development. Below is a summary of the Burnett Creek property as a whole. Only Habitat Quality data relating to the Park Ridge Development is presented is this document (**Plan 6**). Observations made during the ecological surveys of the Burnett Creek property confirmed that the species observed throughout the mapped remnant vegetation are consistent with the benchmark RE and therefore the benchmarks are to be used to assess the quality of habitat using the MHQA technique.

4.12.1 Vegetation Areas — Summary

The Burnett Creek property (L100/WD682) contains approximately 176 hectares of remnant vegetation, with a small pocket of land in the northern extent of the is non-remnant (Category X) which is most likely to be mapped as such due to the Property Map of Assessable Vegetation certified across the land. This PMAV 'locked in' the Category X designation, however, field investigations in ecological surveys confirmed this vegetation has regrowth characteristics.

The vegetation communities across the site were predominantly devoid of weed infestations and appeared to be relatively intact. The Burnett Creek offset area contains three (3) separate regional ecosystem communities, that have been separated into three (3) Assessment Units (**Plan 6**). Assessment Unit (AU1) is remnant vegetation of the regional ecosystem 12.8.20 covering 59.99 ha in the central portion of the site. Assessment Unit 2 (AU2) is the remnant vegetation of the regional ecosystem 12.9-10.2 in the north west of the site covering 70.42 ha. Assessment Unit 3 (AU3) is remnant vegetation of the regional ecosystem 12.11.3 located in the southern portion of the site and covers 20.89 ha. Modified Habitat Quality Assessments (MHQA) were undertaken within each of the assessment units following survey effort guideline (**Table 8**).

Table 8: Summary of Burnett Creek Offset Site Assessment Units.

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)	# of Assessment Transects
AU1	Remnant	12.8.20	59.99	3
AU2	Remnant	12.9-10.2	70.42	3
AU3	Remnant	12.11.3	20.89	2

4.12.2 Koala SAT Surveys

Koala specific SAT surveys have been conducted across the offset site usually in conjunction with a habitat quality transect. The results indicate only low levels of Koala activity. The raw data is presented in **Appendix 1** of this section (**Section 4**).

4.12.3 Grey-headed Flying-fox Site Context

The results of the Grey-headed Flying-fox site context analysis for the Burnett Creek offset site is presented in **Plan 7**. The percentage of Grey-headed Flying-fox habitat within 20 km of the site is 56%. There are no (0) active Grey-headed Flying-fox camps within 20 km of the site. A level three (3) category camp is active in Moore Park, Kyogle approximately 55 km from Burnett Creek.

4.12.4 Offset Assessment Guide inputs and worksheet

The MHQA has been applied separately to the various assessment units across the site considering the many variables that influence the total habitat quality, site context and species stocking rate. **Table 9** presents the data for the Koala and **Table 10** present the data inputs for the Grey-headed Flying-fox**.** Refer to **Appendix 2** of this Section for the raw data of the modified MHQA.

Table 9: Burnett Creek Koala Modified Habitat Quality Assessment Tool

Attribute	**Condition Characteristics**	**AU1 Score** Cat B **(RE12.8.20)**	**AU2 Score** Cat B **(RE12.9-10.2)**	**AU3 Score** Cat B **(RE12.11.3)**
Site Condition (30%)	Recruitment of woody perennial species in EDL	3.67/5	2/5	0/5
	Native plant species richness – trees	3.33/5	3.33/5	3.75/5
	Native plant species richness – shrubs	2.5/5	1.67/5	1.25/5
	Native plant species richness – grasses	2.5/5	3.33/5	2.5/5
	Native plant species richness – forbs	2.5/5	2.5/5	1.25/5
	Tree canopy height	5/5	5/5	5/5
	Tree canopy cover	4/5	4.17/5	4.5/5
	Shrub canopy cover	5/5	4.33/5	3/5
	Native grass cover	4.33/5	3.67/5	5/5
	Organic litter	3/5	4.33/5	3/5
	Large trees	3.33/15	5/15	7.5/5
	Coarse woody debris	2/5	4/5	2/5
	Non-native plant cover	8.33/10	8.33/10	7.5/10

	Quality and availability of food and foraging habitat	10/10	10/10	10/10
	Quality and availability of shelter habitat	10/10	10/10	10/10
	Site Condition Score	**70/100**	**72/100**	**68.75/100**
	Site Condition Score (out of 3)	**2.09**	**2.15**	**2.06**
Site Context (30%)	**Size of the patch**	10/10	10/10	10/10
	Connectedness	5/5	5/5	5/5
	Context	5/5	5/5	5/5
	Ecological corridors	6/6	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	5/5
	Threats to the species	7/15	7/15	7/15
	Species mobility capacity	10/10	10/10	10/10
	Site Context Score	**48/56**	**48/56**	**48/56**
	Site Context Score (out of 3)	**2.57**	**2.57**	**2.57**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	10	10	10
	Species usage of the site (habitat type & evidenced usage)	10	10	10
	Approximate density (per ha)	10	10	10
	Role/importance of species population on site	**5**	**5**	**5**
	Species Stocking Rate Score	**35/70**	**35/70**	**35/70**
	Species Stocking Rate Score (out of 4)	**2**	**2**	**2**
Site Condition Score		**2.09**	**2.15**	**2.06**
Site Context Score		**2.57**	**2.57**	**2.57**
Species Stocking Rate Score		**2**	**2**	**2**
Habitat Quality Score		**6.66**	**6.72**	**6.63**
Assessment unit area (ha)		**60**	**70.42**	**20.89**
Total offset area (ha)		**151.3**	**151.3**	**151.3**
Assessment Unit size weighting		**0.40**	**0.47**	**0.14**
Weighted Habitat Quality Score		**2.64**	**3.13**	**0.92**

Impact site score	**6.68 (rounded to 7)**

Table 10: Burnett Creek Offset Site Grey-headed Flying-fox Habitat Quality

Attribute	Condition characteristics	AU1 Score **Cat B** (RE12.9-10.4)	AU2 Score **Cat B** (RE12.9-10.12)	AU3 Score **Cat B** (RE12.3.11)
Site Condition (40 %)	Vegetation Condition	20/20	20/20	20/20
	Species Richness	11.67/20	13.3/20	15/20
	Flower Score	6/10	6/10	5/10
	Timing of Biological Shortages	10/10	10/10	8.75/10
	Quality of Foraging Habitat	3.33/20	5/20	5/20
	Non-native Plant Cover	16.67/20	16.67/20	20/20
	Site condition score	67.67/100	71/100	73.75/100
	Site condition score (out of 4)	2.71	2.84	2.95
Site Context (30 %)	Size of the patch	c	10/10	10/10
	Connectedness	0/10	0/10	0/10
	Context	6/10	6/10	6/10
	Ecological corridors	10/10	10/10	10/10
	Role of site location to species overall population in the State	0/10	0/10	0/10
	Threats to the species	5/10	5/10	5/10
	Site context score	31/60	31/60	31/60
	Site context score (out of 3)	1.55	1.55	1.55
Species Stocking Rate (30 %)	GHFF large trees	2/10	2/10	5/10
	Species stocking rate score	0.6/10	2/10	5/10
	Species stocking rate score (out of 3)	0.6	0.6	1.5
Total quality score		4.86	4.99	6.00
Assessment unit area		60	70.42	20.89
Total offset area		151.3	151.3	151.3
Size Weighting		0.40	0.47	0.14
Area weighted score		1.93	2.32	0.83
Total (out of 10)		**5.08 (rounded to 5)**		

7. Burnett Creek Site Grey-headed Flying-fox Site Context

Legend

- Burnett Creek offset area
- 20km Context buffer
- Percentage of GHFF habitat in 20km context area from Referral Area is 56%
- GHFF roost camp - active in last 12 months (no records)
- GHFF roost camp - level 3 =< population within last 12 months (no records)

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2020

ENVIRO CAPITAL

0 2,000 4,000 6,000 m

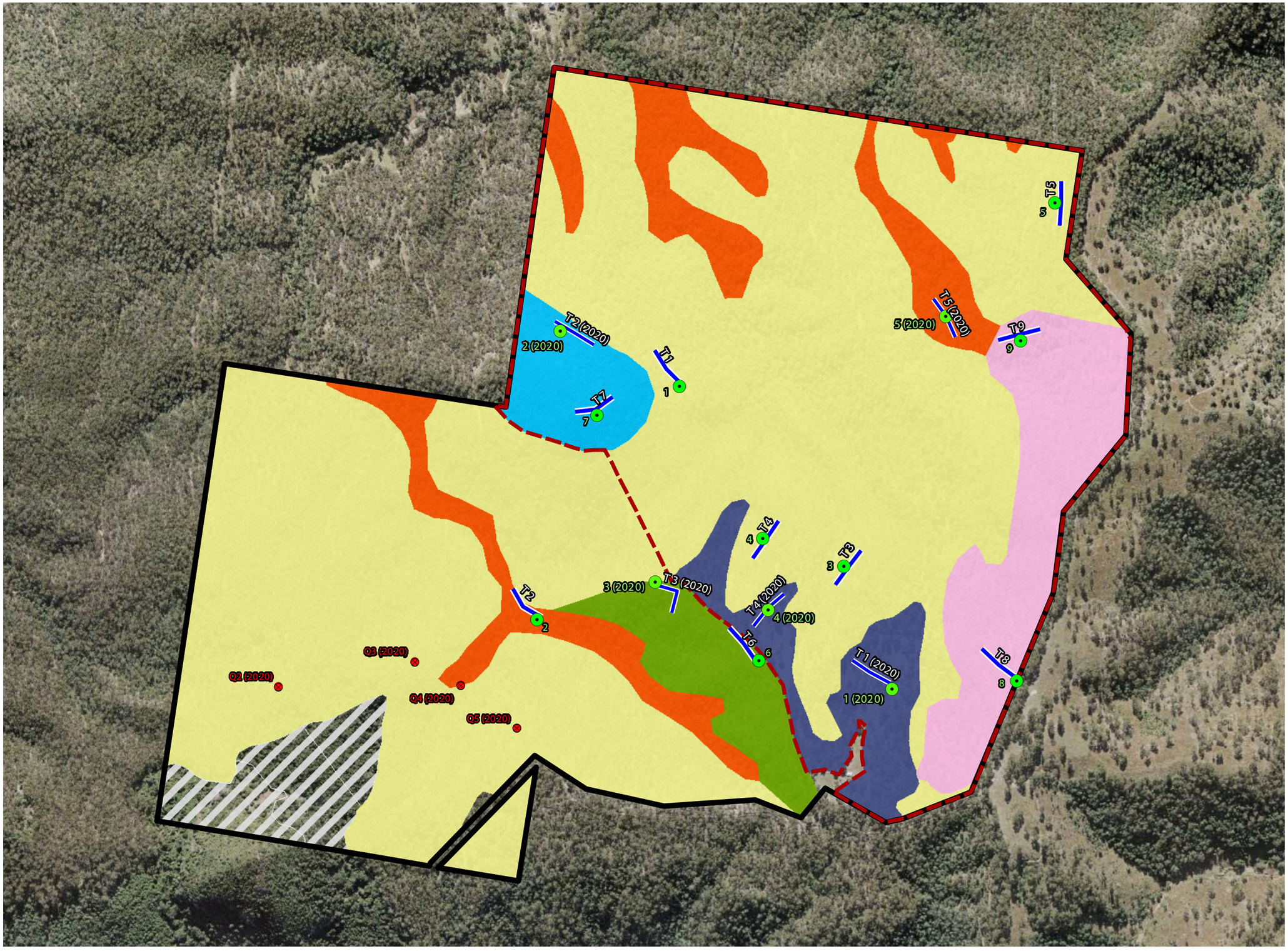
Transverse Mercator | GDA 1994 | Zone 56 | 1:185,000 @ A3

N

Issue	Date	Description	Drawn	Checked
A	11/03/2020	Preliminary	TC	AR

Pointcorp Heritage Park Pty Ltd

8. Lyons Site Habitat Quality Survey



Legend

- Offset site DCDB
- Qld DCDB
- Proposed offset area (150 ha)
- Vegetation observation site
- Habitat quality transects
- SAT survey
- Unit 1 - 7.69 ha
- Unit 2 - 21.93 ha
- Unit 3 - 9.59 ha
- Unit 4 - 20.49
- Unit 5 - 178.85 ha
- Unit 6 - 11.39 ha
- Not Koala critical habitat

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
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ENVIRO CAPITAL

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Transverse Mercator | GDA 1994 | Zone 56 | 18,500 @ A3

N

Issue	Date	Description	Drawn	Checked
A	11/03/2020	Preliminary	TC	AR

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4.13. Burnett Creek — Summary of Averted Loss

The averted loss attribute is influenced by several factors, each of which can have a different weighting/level of loss depending on the land to which it pertains. For example, development in remnant vegetation may require assessment under the *Vegetation Management Act 1999* however, under the *Planning Act 2016* an exemption may be invoked and consequently the former no longer prevents the vegetation from being cleared. Conversely, the highest levels of protection under the *Vegetation Management Act 1999* — the Category A designation — cannot be unheeded when considering development under the *Planning Act 2016* and will in nearly 100% of cases preclude development from occurring.

The following diagram illustrates how key factors influence the value of 'with' and 'without' offset averted loss percentages for the Burnett Creek property. Risk of loss percentages are not nominated on this diagram as these fluctuate across the site and are interdependent with other risk of loss factors.

Risk of loss factor									
Low ◄----------									----------► ***High***
Factor: Protections under the *Vegetation Management Act 1999*									
◄----------									----------►
Category A	<	Category B	<	Category C		<		Category X	
Factor: Protections under the *Planning Act 2016*									
◄----------									----------►
Prohibited development	<	Impact assessable development	<	Code assessable development	<	Accepted development	<	Exempt development	
Factor: Protections under the planning scheme (zoning, codes, policies and self-assessable opportunities)									
◄----------									----------►
Prohibited development	<	Impact assessable development	<	Code assessable development	<	Accepted development	<	Exempt development	
Factor: Historical land use									
◄----------									----------►
Land use that did not clear vegetation (e.g., natural area)				<				Agricultural production — vegetation clearing as part of routine management	
Factor: Influences from adjoining land uses									
◄----------									----------►
Surrounded by Category A / National Park / Conservation Estate under active management				<				Surrounded by rural activities (adjacent clearing, threats are ongoing and new)	

Factor: Existing threat management		
Successful and ongoing pest management programme	<	Pests known to occur, non-existent ongoing management

For the Burnett Creek property, each of the above-mentioned factors vary in weighting due to site specific factors. Specifically under the *Vegetation Management Act 1999*, 151.3 hectares of the offset land is Category B whilst the Within Category B areas, the vegetation is classified as either least concern or of concern regional ecosystems, and each of these correlate to another suite of protection levels under the act. This variability must be taken into account for when assigning a single risk of loss percentage to the whole of the offset land.

Once the offset land is legally secured by way of a Voluntary Declaration under the *Vegetation Management Act 1999*, the protection — Category B protected, will be replaced with the Category A classification that will apply over 100% of the offset area. With this classification in place, land management activities are severely restricted and only those stipulated in the approved offset management plan are permissible. Any other development activities on the land that could be approved or are exempt under the *Planning Act 2016* will require land owner's consent (either formally or informally) which would be a contravention of the certified Voluntary Declaration and the approved offset management plan under the EPBC Act.

The planning scheme zoning classifies the site as *rural* and accordingly supports typical rural land use activities such as animal husbandry. Cattle grazing has historically occurred at the property at varying intensities — generally influenced by economic and climatic variables. Consequently, the ongoing impacts to juvenile Koala trees as part of the rural use are a factor that must be considered in the risk of loss assessment.

Surrounding land uses are a combination of natural areas (National Park) and lands used for animal husbandry and cropping. Management regimes across these lands are inherently different and the threats to on-site Koala habitat from weeds and wild animals will require property-specific management in order to reduce their presence and extent of adverse impacts. Once in place, management actions are expected to remedy the historical adverse impacts that would otherwise continue to increase if no action is taken.

4.14. Offset Assessment Guide inputs and worksheet

The Modified Habitat Quality Assessment (MHQA) has been applied separately to the various assessment units across the site considering the many variables that influence the total habitat quality and species stocking rate (refer to **Tables 11-13**). The raw data of the MHQA is included in **Appendix 2**. The OAG inputs are justified in **Table 19** below. Together, these tables detail how the offset as a whole will deliver a gain in Koala habitat.

An overall OAG worksheet has been prepared and is included below. The OAG indicates the Burnett Creek offset site will offset 39.85% of Park Ridge Development's 58.92 hectares quantum impact.

A similar analysis of the impacts to Grey-headed Flying Fox foraging habitat were conducted and are presented in **Tables 14-16** with an OAG worksheet presented as **Table 19**. The Burnett Creek offset contributes to 86.69% for the total impact on the Grey Headed Flying Fox

Table 11: Burnett Creek Koala MHQA Tool (Assessment Unit 1: RE 12.8.20)

Attribute	Condition Characteristics	Assessment Unit 1 (RE12.8.20)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	3.67/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	3.33/5		5/5
	Native plant species richness – shrubs	2.5/5		2.5/5
	Native plant species richness – grasses	2.5/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4/5		5/5
	Shrub canopy cover	5/5		5/5
	Native grass cover	4.33/5		4.3/5
	Organic litter	3/5		3/5
	Large trees	3.33/15		10/15
	Coarse woody debris	2/5		5/10
	Non-native plant cover	8.33/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**70/100**		**87/100**
	Site Condition Score (out of 3)	**2.09**		**2.62**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	5/5		5/5
	Context	5/5		5/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15

	Species mobility capacity	10/10		10/10
	Site Context Score	**48/56**		**56/56**
	Site Context Score (out of 3)	**2.57**		**3.00**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	**5**		**5**
Species Stocking Rate Score		**35/70**		**45/70**
Species Stocking Rate Score (out of 4)		**2**		**2.57**
Site Condition Score		**2.09**		**2.62**
Site Context Score		**2.57**		**3.00**
Species Stocking Rate Score		**2**		**2.57**
Habitat Quality Score		**6.66**		**8.19**
Assessment unit area (ha)		**60**		**60**
Total offset area (ha)		**151.3**		**151.3**
Assessment Unit size weighting		**0.40**		**0.40**
Weighted Habitat Quality Score		**2.64**		***3.25***

Table 12: Burnett Creek Koala MHQA Tool (Assessment Unit 2: RE 12.9-10.2)

Attribute	Condition Characteristics	Assessment Unit 2 (RE12.9-10.2)	Values Increase 'WITH' Offset	Future score
	Recruitment of woody perennial species in EDL	2/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required	5/5

Site Condition (30%)	Native plant species richness – trees	3.33/5	(Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – shrubs	1.67/5		2.5/5
	Native plant species richness – grasses	3.33/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4.17/5		5/5
	Shrub canopy cover	4.33/5		4.33/5
	Native grass cover	3.67/5		3.67/5
	Organic litter	4.33/5		4.33/5
	Large trees	5/15		10/15
	Coarse woody debris	4/5		5/5
	Non-native plant cover	8.33/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**72/100**		**87/100**
	Site Condition Score (out of 3)	**2.15**		**2.62**
Site Context (30%)	Size of the patch	**10/10**	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	**10/10**
	Connectedness	**5/5**		**5/5**
	Context	**5/5**		**5/5**
	Ecological corridors	**6/6**		**6/6**
	Role of site location to species overall population in the State	**5/5**		**5/5**
	Threats to the species	**7/15**		**15/15**
	Species mobility capacity	**10/10**		**10/10**
	Site Context Score	**48/56**		**56/56**
	Site Context Score (out of 3)	**2.57**		**3.00**

Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	**10**		10
	Approximate density (per ha)	**10**		**20**
	Role/importance of species population on site	**5**		**5**
Species Stocking Rate Score		35/70		**45/70**
Species Stocking Rate Score (out of 4)		2		**2.57**
Site Condition Score		2.15		2.62
Site Context Score		2.57		3.00
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.72		*8.19*
Assessment unit area (ha)		70.42		70.42
Total offset area (ha)		151.3		151.3
Assessment Unit size weighting		0.47		0.47
Weighted Habitat Quality Score		**3.13**		***3.81***

Table 13: Burnett Creek Koala MHQA Tool (Assessment Unit 3: RE 12.11.3)

Attribute	Condition Characteristics	Assessment Unit 3 (RE 12.11.3)	Values Increase 'WITH' Offset	Future Score
Site Condition (30%)	Recruitment of woody perennial species in EDL	0/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	3.75/5		5/5
	Native plant species richness – shrubs	1.25/5		1.25/5

	Native plant species richness – grasses	2.5/5		5/5
	Native plant species richness – forbs	1.25/5		1.25/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4.5/5		5/5
	Shrub canopy cover	3/5		3/5
	Native grass cover	5/5		5/5
	Organic litter	3/5		3/5
	Large trees	7.5/15		12.5/15
	Coarse woody debris	2/5		5/5
	Non-native plant cover	7.5/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**68.75/100**		**86/100**
	Site Condition Score (out of 3)	**2.06**		**2.58**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	**10/10**
	Connectedness	5/5		**5/5**
	Context	5/5		**5/5**
	Ecological corridors	6/6		**6/6**
	Role of site location to species overall population in the State	5/5		**5/5**
	Threats to the species	7/15		**15/15**
	Species mobility capacity	10/10		**10/10**
	Site Context Score	**48/56**		**56/56**
	Site Context Score (out of 3)	**2.57**		**3.00**
Species Stocking Rate (40%)	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos).	10

	Species usage of the site (habitat type & evidenced usage)	**10**	Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Approximate density (per ha)	**10**		**20**
	Role/importance of species population on site	**5**		**5**
Species Stocking Rate Score		**35/70**		**45/70**
Species Stocking Rate Score (out of 4)		**2**		**2.57**
Site Condition Score		**2.06**		2.58
Site Context Score		**2.57**		3.00
Species Stocking Rate Score		**2**		2.57
Habitat Quality Score		**6.63**		*8.15*
Assessment unit area (ha)		**20.89**		20.89
Total offset area (ha)		**151.3**		151.3
Assessment Unit size weighting		**0.14**		0.14
Weighted Habitat Quality Score		**0.92**		***1.13***

Table 14: Burnett Creek Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 1)

Attribute	Condition Characteristics	AU 1 (RE 12.8.20)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	11.67/20		11.67/20
	Flower score	6/10		6/10
	Timing of biological shortages	10/10		10/10
	Quality of foraging habitat	3.33/20		3.33/20
	Non-native plant cover	16.67/20		20/20
	Site Condition Score	67.67/100		71/100
	Site Condition Score (out of 4)	2.71		2.84
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	0/10		0/10
	Context	6/10		6/10
	Ecological corridors	6/10		6/10
	Role of site location to species overall population in the State	0/10		0/10
	Threats to the species	5/10		10/10
	Site Context Score	31/60		**36/60**
	Site Context Score (out of 3)	1.55		**1.8**
Species Stocking Rate (30%)	Presence of large trees	**2/10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**6/10**
	Species Stocking Rate Score (out of 3)	0.6		1.8
Total quality score		4.86		6.44
Assessment unit area		60		60
Total offset area		151.3		151.3
Size Weighting		0.40		0.40
Area weighted score		1.93		2.6

Table 15: Burnett Creek Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 2)

Attribute	Condition Characteristics	AU 2 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	13.33/20		13.33/20
	Flower score	6/10		6/10
	Timing of biological shortages	10/10		10/10
	Quality of foraging habitat	5/20		3.33/20
	Non-native plant cover	16.67/20		20/20
	Site Condition Score	71/100		74.33/100
	Site Condition Score (out of 4)	2.84		2.97
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
Site Context (30%)	Connectedness	0/10		0/10
	Context	6/10		6/10
	Ecological corridors	6/10		6/10
	Role of site location to species overall population in the State	0/10		0/10
	Threats to the species	5/10		10/10
	Site Context Score	31/60		**36/60**
	Site Context Score (out of 3)	1.55		**1.8**
Species Stocking Rate (30%)	Presence of large trees	**2/10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**6/10**
	Species Stocking Rate Score (out of 3)	0.6		1.8
Total quality score		4.99		6.57
Assessment unit area		70.42		70.42
Total offset area		151.3		151.3
Size Weighting		0.47		0.47
Area weighted score		2.322		3.059

Table 16: Burnett Creek Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 3)

Attribute	Condition Characteristics	AU 3 (RE 12.11.3)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	15/20		15/20
	Flower score	5/10		5/10
	Timing of biological shortages	8.75/10		8.75/10
	Quality of foraging habitat	5/20		5/20
	Non-native plant cover	20/20		20/20
	Site Condition Score	73.75/100		73.75/100
	Site Condition Score (out of 4)	2.95		2.95
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	0/10		0/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	0/10		0/10
	Threats to the species	5/10		10/10
	Site Context Score	31/60		**36/60**
	Site Context Score (out of 3)	1.55		**1.8**
Species Stocking Rate (30%)	Presence of large trees	**5/10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**9/10**
	Species Stocking Rate Score (out of 3)	0.6		1.5
Total quality score		6.00		7.45
Assessment unit area		20.9		20.9
Total offset area		151.3		151.3
Size Weighting		0.14		0.14
Area weighted score		0.83		1.03

Table 17: Burnett Creek Koala Offset Site Future Score Summary

Attribute	AU1	AU2	AU3
Site Condition Score	2.62	2.62	2.58
Site Context Score	3.00	3.00	3.00
Species Stocking Rate Score	2.57	2.57	2.57
Habitat Quality Score	*8.19*	*8.19*	*8.15*
Assessment unit area (ha)	60	70.42	20.9
Total offset area (ha)	151.3	151.3	151.3
Assessment Unit size weighting	0.40	0.47	0.14
Weighted Habitat Quality Score	***3.25***	***3.81***	***1.13***
Burnett Creek site score		**8.19 (rounded to 8)**	

Table 18: Burnett Creek Grey-headed Flying-fox Offset Site Future Score Summary

Attribute	AU1	AU2	AU3
Site Condition Score	2.84	2.97	2.95
Site Context Score	1.8	1.8	1.8
Species Stocking Rate Score	1.8	1.8	1.8
Habitat Quality Score	6.44	6.57	7.45
Assessment unit area (ha)	60	70.42	20.9
Total offset area (ha)	151	151.3	151
Assessment Unit size weighting	0.40	0.47	0.14
Weighted Habitat Quality Score	2.6	3.059	1.03
Burnett Creek site score		**6.64 (rounded to 7)**	

Table 19: Burnett Creek Koala and GHFF Offset Assessment Guide Calculator Values Justification

Attribute	Value	Justification (Summary)
Time over which loss is averted	20 years	– For the Burnett Creek offset site the *Voluntary Declaration* — the highest protection category under the *Vegetation Management Act 1999* — will legally secure the land and is proposed to be in place for a minimum of ten years. – The 20-year period is sufficient time for the large majority of the offset land to return to a self-sustaining Koala habitat area (with assistance).
Time until Ecological Benefit	20 years	– The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. – Although a large proportion of the offset area will improve to the future quality scores before the 20-year time mark, this figure was used to increase the confidence that future quality scores will be achieved.
Start Quality	7 (Koala) 5 (GHFF)	– Refer to score derived above in Table 11-13 and Table 14-16 for Koala and Grey-headed Flying-fox respectively
Future Quality (without)	7 (Koala) 5 (GHFF)	– Refer to score derived above in Table 11-13 and Table 14-16 for Koala and Grey-headed Flying-fox respectively
Future Quality (With)	8 (Koala) 7 (GHFF)	– Refer to score derived above in Table 11-13 and Table 14-16 for Koala and Grey-headed Flying-fox respectively
Risk of Loss (Without)	10%	– The level of Koala habitat protections under State legislation varies across the site. – If not used as a viable commercial environmental offset, grazing uses and forestry are the next most permissible land uses. – Category B areas are protected under the *Vegetation Management Act 1999* however, this protection does not outright prohibit clearing of Koala habitat. However, this leads to a decrease to the overall risk of loss. – In the low order remnant areas, classed as least concern and of concern vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within lower order remnant communities by achieving the acceptable solutions in the accepted development code and State Development Assessment Provisions module. Although this avenue to reduce the existing Koala habitat quality exists, there are protections in place under the *Vegetation Management Act* 1999 and these factors cause a decrease to the overall risk of loss. – In the high order remnant areas, classed as endangered vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Clearing which triggers an application could result in a prohibition or environmental offset under the *Vegetation Management Act 1999*. These factors cause a decrease to the overall risk of loss.
Risk of Loss (With)	0%	– The offset land will be legally secured using a *Voluntary Declaration* which certifies the land as protected under the *Vegetation Management Act 1999*. This legislative instrument regulates new controls on the land as stipulated in the offset management plan and is attached to the land title. Regardless of owner or zoning, the *Voluntary Declaration* will ensure regenerating and reinstated values are protected up to the maturity where other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	95%	– *Voluntary Declarations* are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and Commonwealth Government approvals. Other EPBC Act offset within the region have been secured with a *Voluntary Declaration* and subsequently approved. – There is high confidence that the certification of a *Voluntary Declaration* and resulting restriction placed on title will bring necessary regulation to protect Koala habitat values to be reinstated within the offset area.
Confidence in result (Quality)	95%	– All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be engaged using AS2124 – contract clauses which will include establishment and replacement periods for replanted stock. Employing a suitably qualified third party to complete this work has a positive impact on the confidence in result however this type of work has inherent risks. – The remnant areas predominantly involve weed removal and assisted natural regeneration within the canopy of existing remnant vegetation. This has a positive effect on the confidence in result compared to non-remnant management areas.

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	Pointcorp	**Area**	117.8	Hectares	AR
			Quality	**5**	Scale 0-10	
			Total quantum of impact	58.92	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	58.92	Adjusted hectares	Burnett Creek	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	151.3	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	0%	15.13	95%	14.37	13.81	23.48	39.85%	No		
									Future area without offset (adjusted hectares)	136.2	**Future area with offset (adjusted hectares)**	151.3								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**7**	**Future quality without offset (scale of 0-10)**	**7**	**Future quality with offset (scale of 0-10)**	**8**	1.00	95%	0.95	0.91				
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																			

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	Pointcorp	**Area**	79.47	Hectares	AR
			Quality	**5**	Scale 0-10	
			Total quantum of impact	39.74	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	39.74	Adjusted hectares	Burnett Creek	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	151.3	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	0%	15.13	95%	14.37	13.81	34.53	86.89%	No		
									Future area without offset (adjusted hectares)	136.2	**Future area with offset (adjusted hectares)**	151.3								
					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)**	**7**	2.00	95%	1.90	1.83				
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																			

4.15. Lyons

As previously stated, the Lyons property contains approximately 241 hectares of remnant vegetation, 19 hectares of regrowth vegetation and 0.84 hectares of non-remanent vegetation. However, to satisfy the offset requirements for the Park Ridge Development, 58.92 hectares quantum impact, 150 hectares of the Lyons property is necessary to offset 60.42% of the impact. Additional offset land will be sourced for the remaining required offset at Burnett Creek as discussed above.

4.15.1 Vegetation Areas — Summary

Most of the property is mapped as containing vegetation communities on land zone 9-10, described as fine to coarse grained sedimentary rocks. Various vegetation communities are represented across four (4) regional ecosystem communities with most of the site representing the Least Concern RE12.9-10.2, dominated by *Corymbia citriodora* (Spotted Gum). Introduced species dominated by *Lantana camara* (Lantana) within the shrub layer and *Lantana montevidensis* (Creeping Lantana) within the ground layer were representative throughout the site within various patches with areas containing previous clearing for access tracks and some logging activities containing greater density of introduced species.

The gully lines contain represent Least Concern Re12.9-10.17 which is described as a complex regional ecosystem community because of the diversity of stringybarks, grey gums, ironbarks and spotted gums. Species recorded throughout most of the gully lines were identified as *Eucalyptus siderophloia* (Grey Ironbark), *Eucalyptus major* (Grey Gum), and *Eucalyptus acmenoides* (White Mahogany). It is noted that each gully line also contained a high density of *Lophostemon confertus* (Brush Box) both within the sub-canopy and canopy layers. *Lantana camara* (Lantana) was largely representative within most of the gully lines, particularly towards the lower portions of the site.

Generally, species representative of Of Concern RE12.9-10.7, including *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow Leaf Ironbark) as well as species representative of Of Concern RE12.9-10.3, including *Eucalyptus molluccana* (Gum Topped Box) were largely identified towards the eastern portion of the site. This area runs along a ridge line that runs north south and located largely on a slope that is west facing. Although some patches of *Lantana camara* (Lantana) and *Lantana montevidensis* (Creeping Lantana) were noted throughout this portion of the site, other introduced species were largely confined to the ground layers including introduced pastoral grasses.

Observations made during the ecological surveys of the Lyons property confirmed that the species observed throughout the mapped remnant vegetation were generally consistent with the mapped regional ecosystem. Where vegetation was inconsistent with the mapped RE, polygons have been created to define the extent of the RE (**Plan 8**). The Lyons property is larger than the area needed to satisfy the offset requirements for the Park Ridge Development as stated above. Site quality information was collected from the Lyons property as a

whole. The data collected on the various RE across the property as a whole has been used to score the specific area proposed offset area.

A portion of not Koala habitat is located in the south west of the property mapped as Least Concern RE12.8.4 and an Of Concern RE12.8.20 located along the western property boundary. The Least Concern RE12.8.4 is described as a complex notophyll vine forest with scattered Araucaria bidwillii and Araucaria cunninghmii. This vegetation community forms on igneous rocks, predominantly from flood basalts forming extensive plains and occasional low scarps. Field investigations confirmed the landzone characteristics with the balance of the polygon mapped outside of the property boundary and includes a steep slope that originally formed because of faulting. Flora species representing this vegetation community were also identified throughout the field investigations. Least Concern RE12.8.20 contains typical land zone characteristics as the previous polygon however contains a different flora species mix.

4.15.2 Assessment Unit Summary

Across the entire Lyons property, six (6) assessment units have been identified (**Table 20**). Five of these assessment units are present within the proposed offset area (**Plan 8**). Assessment units areas are provided for the whole of the Lyons property as well as for the proposed offset area. Assessment Unit 1 (AU1) is the vegetation of regional ecosystem 12.8.20 which covers 7.69 ha in the west of the property and is wholly within the proposed offset area. Assessment Unit 2 (AU2) is the vegetation of the regional ecosystem 12.9-10.17 which is present in the gully lines across the property and covers 21.93 ha. Within the proposed offset area assessment unit 2 covers 13.25 ha. Assessment Unit 3 (AU3) is the vegetation within the regional ecosystem 12.9-10.3 which covers 9.59 ha in the southern portion of the property. Assessment Unit 3 is wholly outside of the proposed offset area and is given a weighting of 0 in MHQA calculations for the proposed offset. Assessment Unit 4 is vegetation of the regional ecosystem 12.9-10.7 which covers 20.49 ha on the eastern border of the property. This assessment unit is wholly within the proposed offset area. Assessment unit 5 is the vegetation in the regional ecosystem 12.9-10.2 and is the dominant vegetation on the property covering 178.85 ha. Within the proposed offset area, assessment unit 5 covers 97.30 ha. Assessment Unit 6 is the regrowth vegetation of the regional ecosystem 12.9-10.2 which covers 11.39 ha of the property. Assessment unit 6 is wholly within the proposed offset area.

Table 20: Summary of Lyons Offset site assessment units

Assessment Unit	Vegetation Status	Regional Ecosystem	Area Across Property (ha)	Area Within Proposed Offset (ha)	# of Assessment Transects
AU1	Remnant	12.8.20	7.69	7.69	2
AU2	Remnant	12.9-10.17	21.93	13.25	2
AU3	Remnant	12.9-10.3	9.59	0	2

AU4	Remnant	12.9-10.7	20.39	20.39	2
AU5	Remnant	12.9-10.2	163.01	97.30	4
AU6	Regrowth	12.9-10.2	11.39	11.39	2

4.15.3 Koala SAT Surveys

Koala specific SAT surveys were conducted across the offset area in conjunction with the MHQA indicate that there were only low levels of Koala activity. The raw data for SAT surveys is presented in **Appendix 1** for this section (**Section 4**).

4.15.4 Grey-headed Flying-fox Site Context

The results of the Grey-headed Flying-fox site context analysis for the Lyons offset site is presented in **Plan 9**. The percentage of Grey-headed Flying-fox habitat within 20 km of the site is 35%. There are five (5) active Grey-headed Flying-fox camps within 20 km of the site. Two (2) of the active camps have been categorised as level three (3) category populations in the past 12 months.

4.15.5 Offset Assessment Guide inputs and worksheet

The MHQA has been applied separately to the various assessment units across the site considering the many variables that influence the total habitat quality, site context and species stocking rate. **Table 21** presents the data for the Koala and **Table 22** present the data inputs for the Grey-headed Flying-fox. Refer to **Appendix 2** of this Section for the raw data of the modified MHQA.

Table 21: Lyons Offset Site Koala Modified Habitat Quality Assessment Tool

Attribute	**Condition Characteristics**	**AU1 Score** Cat B **(RE12.8.20)**	**AU2 Score** Cat B **(RE12.9-10.17)**	**AU3 Score** Cat B **(RE12.9-10.3)**	**AU4 Score** Cat B **(RE12.9-10.7)**	**AU5 Score** Cat B **(RE12.9-10.2)**	**AU6 Score** Cat C **(RE12.9-10.2)**
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	4/5	4/5	0/5	3/5	4/5
	Native plant species richness – trees	2.5/5	5/5	5/5	5/5	3.13/5	3.75/5
	Native plant species richness – shrubs	2.5/5	2.5/5	2.5/5	1.25/5	1.88/5	1.25/5
	Native plant species richness – grasses	3.75/5	2.5/5	2.5/5	2.5/5	2.5/5	3.75/5

	Native plant species richness – forbs	2.5/5	2.5/5	2.5/5	1.25/5	1.25/5	2.5/5
	Tree canopy height	5/5	5/5	5/5	5/5	5/5	5/5
	Tree canopy cover	4.5/5	4.5/5	4.5/5	4/5	5/5	3.75
	Shrub canopy cover	1.5/5	4/5	5/5	3/5	5/5	5/5
	Native grass cover	2/5	0.5/5	1/5	2/5	3/5	1/5
	Organic litter	5/5	3/5	5/5	4/5	5/5	4/5
	Large trees	2.5/15	5/15	5/15	2.5/15	5/15	5/15
	Coarse woody debris	5/5	1/5	2/5	5/5	4.25	3.5/5
	Non-native plant cover	2.5/10	10/10	4/10	5/10	5/10	4/10
	Quality and availability of food and foraging habitat	10/10	10/10	10/10	10/10	10/10	10/10
	Quality and availability of shelter habitat	10/10	10/10	10/10	10/10	10/10	10/10
	Site Condition Score	**63/100**	**62/100**	**68/100**	**61/100**	**69/100**	**67/100**
	Site Condition Score (out of 3)	**1.90**	**1.86**	**2.04**	**1.82**	**2.07**	**2.00**
Site Context (30%)	**Size of the patch**	10/10	10/10	10/10	10/10	10/10	10/10
	Connectedness	4/5	4/5	4/5	4/5	4/5	4/5
	Context	4/5	4/5	4/5	4/5	4/5	4/5
	Ecological corridors	6/6	6/6	6/6	6/6	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	5/5	5/5	5/5	5/5
	Threats to the species	7/15	7/15	7/15	7/15	7/15	7/15
	Species mobility capacity	10/10	10/10	10/10	10/10	10/10	10/10
	Site Context Score	**46/56**	**46/56**	**46/56**	**46/56**	**46/56**	**46/56**
	Site Context Score (out of 3)	**2.46**	**2.46**	**2.46**	**2.46**	**2.46**	**2.46**
Species Stocking	**Presence detected on or adjacent to site (neighbouring**	10	10	10	10	10	10

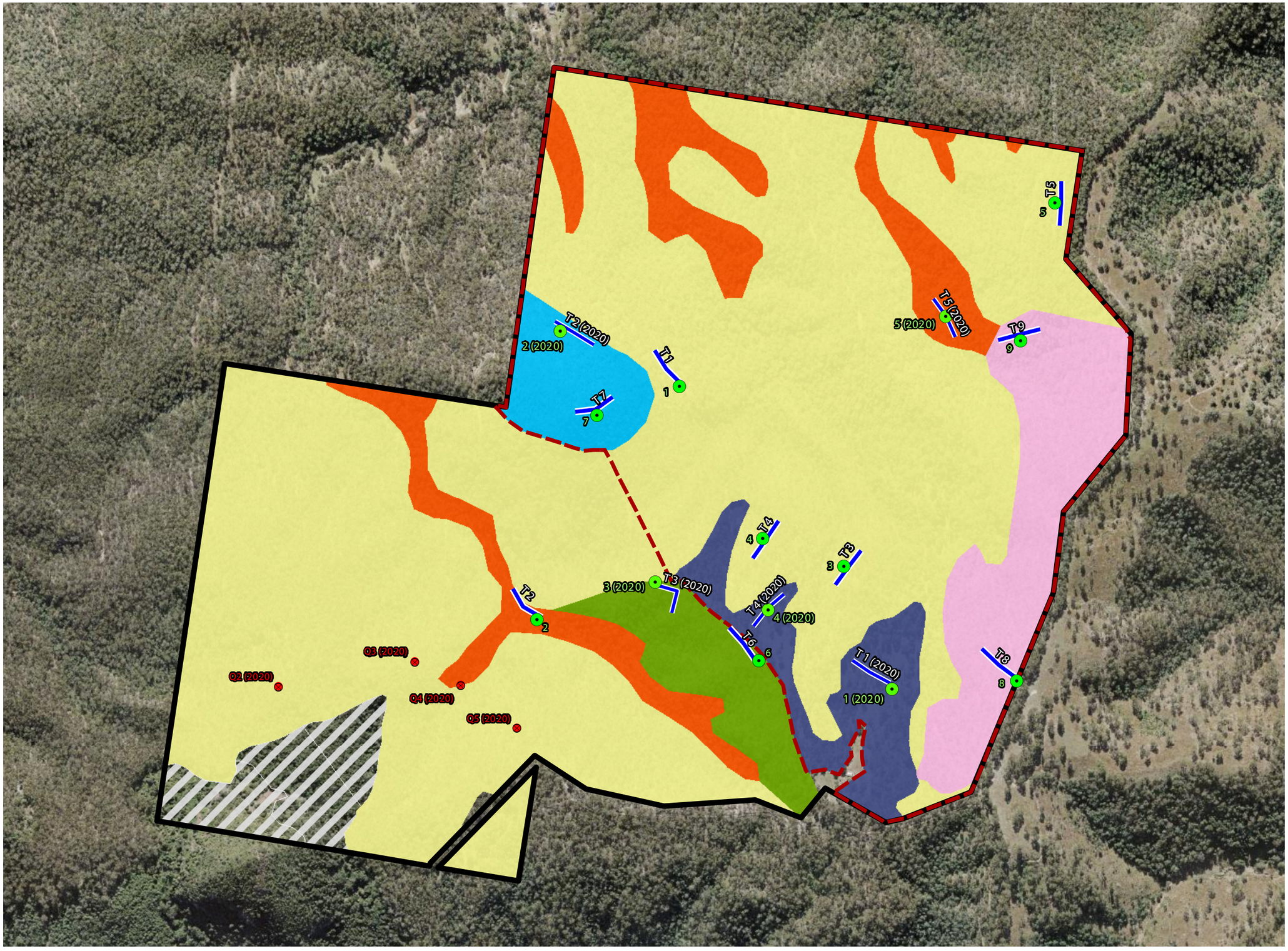
Rate (40%)	**property with connecting habitat)**						
	Species usage of the site (habitat type & evidenced usage)	10	10	10	10	10	10
	Approximate density (per ha)	10	10	10	10	10	10
	Role/importance of species population on site	5	5	5	5	5	5
	Species Stocking Rate Score	35/70	35/70	35/70	35/70	35/70	35/70
	Species Stocking Rate Score (out of 4)	2	2	2	2	2	2
Site Condition Score		1.90	1.86	2.04	1.82	2.07	2.00
Site Context Score		2.46	2.46	2.46	2.46	2.46	2.46
Species Stocking Rate Score		2	2	2	2	2	2
Habitat Quality Score		6.36	6.32	6.50	6.28	6.53	6.46
Assessment unit area across property		7.69	21.93	9.59	20.39	163.01	11.39
Total impact area (ha)		234.00	234.00	234.00	234.00	234.00	234.00
Assessment Unit size weighting		0.03	0.09	0.04	0.09	0.70	0.05
Weighted Habitat Quality Score		**0.21**	**0.59**	**0.27**	**0.55**	**4.55**	**0.31**
Habitat Quality score across property		**6.48 (rounded to 6)**					
Assessment unit area proposed offset area only		7.69	13.25	0.00	20.39	97.30	11.39
Total impact area (ha)		150.01	150.01	150.01	150.01	150.01	150.01
Assessment Unit size weighting		0.05	0.09	0.00	0.14	0.65	0.08
Weighted Habitat Quality Score		**0.33**	**0.56**	**0.00**	**0.85**	**4.24**	**0.49**
Habitat Quality score in proposed offset		**6.47 (rounded to 6)**					

Table 22: Lyons Offset Site Grey-headed Flying-fox Habitat Quality

Attribute	Condition characteristics	AU1 Score **Cat B** (RE12.8.20)	AU2 Score **Cat B** (RE12.9-10.17)	AU3 Score **Cat B** (RE12.9-10.3)	AU4 Score **Cat B** (RE12.9-10.7)	AU5 Score **Cat B** (RE12.9-10.2)	AU6 Score **Cat C** (RE12.9-10.2)
Site Condition (40 %)	Vegetation Condition	20/20	20/20	20/20	20/20	20/20	10/20
	Species Richness	20/20	20/20	20/20	20/20	10/20	12.5/20
	Flower Score	5/10	5/10	6.5/10	5/10	4.25/10	6.5/10
	Timing of Biological Shortages	10/10	10/10	10/10	10/10	9.25/10	10/10
	Quality of Foraging Habitat	5/20	7.5/20	5/20	7.5/10	5/10	5/20
	Non-native Plant Cover	20/20	5.5/20	5/20	7.5/10	10/10	7.5/20
	Site condition score	55.5/100	68/100	66.5/100	70/100	58.5/100	51.5/100
	Site condition score (out of 4)	2.22	2.72	2.66	2.8	2.34	2.06
Site Context (30 %)	Size of the patch	10/10	10/10	10/10	10/10	10/10	10/10
	Connectedness	6/10	6/10	6/10	6/10	6/10	6/10
	Context	6/10	6/10	6/10	6/10	6/10	6/10
	Ecological corridors	10/10	10/10	10/10	10/10	10/10	10/10
	Role of site location to species overall population in the State	5/10	5/10	5/10	5/10	5/10	5/10
	Threats to the species	5/10	5/10	5/10	5/10	5/10	5/10
	Site context score	42/60	42/60	42/60	42/60	42/60	42/60
	Site context score (out of 3)	2.10	2.10	2.10	2.10	2.10	2.10
Species Stocking Rate (30 %)	GHFF large trees	1/10	3/10	4/10	2/10	2.5/10	3/10
	Species stocking rate score	1/10	3/10	4/10	2/10	2.5/10	3/10
	Species stocking rate score (out of 3)	0.3	0.9	1.2	0.6	0.75	0.9
Total quality score		4.62	5.72	5.96	5.50	5.19	5.06
Assessment unit area across the property		7.69	21.93	9.59	20.39	163.01	11.39
Total offset area		234	234	234	234	234	234
Size Weighting		0.03	0.09	0.04	0.09	0.70	0.05
Area weighted score		0.15	0.54	0.24	0.48	3.62	0.25
Total (out of 10) across Lyons property		**5.27 (rounded to 5)**					

Assessment unit area within proposed offset	7.69	13.25	0.00	20.39	97.30	11.39
Total offset area	150	150	150	150	150	150
Size Weighting	0.05	0.09	0.00	0.14	0.65	0.08
Area weighted score	0.24	0.51	0.00	0.75	3.37	0.38
Total (out of 10) proposed offset area	**5.24 (rounded to 5)**					

8. Lyons Site Habitat Quality Survey



Legend

- Offset site DCDB
- Qld DCDB
- Proposed offset area (150 ha)
- Vegetation observation site
- Habitat quality transects
- SAT survey
- Unit 1 - 7.69 ha
- Unit 2 - 21.93 ha
- Unit 3 - 9.59 ha
- Unit 4 - 20.49
- Unit 5 - 178.85 ha
- Unit 6 - 11.39 ha
- Not Koala critical habitat

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2020

*This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

ENVIRO CAPITAL

0 100 200 300 m

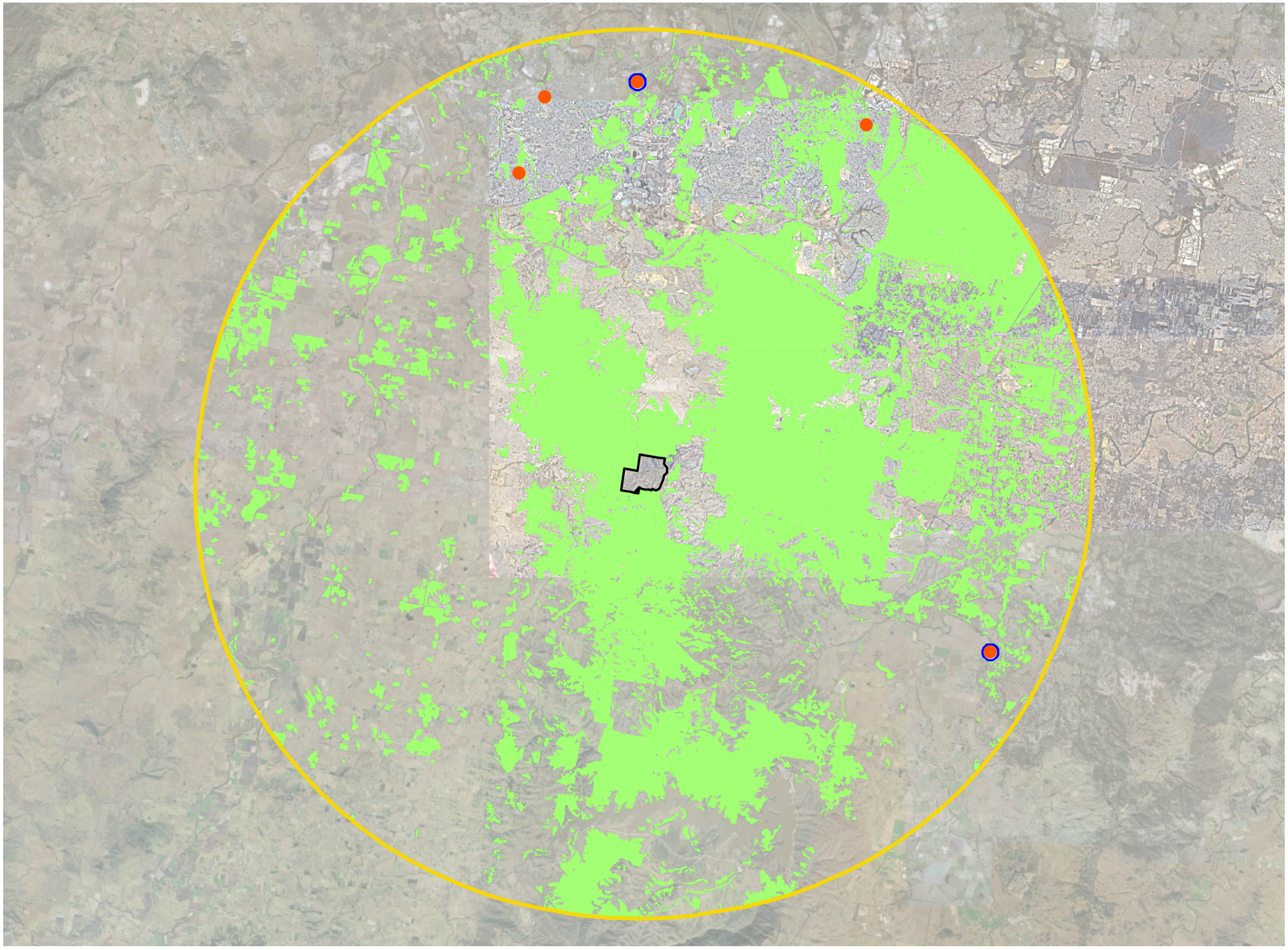
Transverse Mercator | GDA 1994 | Zone 56 | 18,500 @ A3

N

Issue	Date	Description	Drawn	Checked
A	11/03/2020	Preliminary	TC	AR

Pointcorp Heritage Park Pty Ltd

9. Lyons Site Grey-headed Flying-fox Site Context



Legend

- Offset site DCDB
- 20km Context buffer
- Percentage of GHFF habitat in 20km context area from Referral Area is 35%
- GHFF roost camp - active in last 12 months
- GHFF roost camp - level 3 & 4 population within last 12 months

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
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0 2,000 4,000 6,000 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:180,000 @ A3

N

Issue	Date	Description	Drawn	Checked
A	11/03/2020	Preliminary	TC	AR

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4.16. Lyons — Summary of Averted Loss

The averted loss attribute is influenced by several factors, each of which can have a different weighting/level of loss depending on the land to which it pertains. For example, development in remnant vegetation may require assessment under the *Vegetation Management Act 1999* however, under the *Planning Act 2016* an exemption may be invoked and consequently the former no longer prevents the vegetation from being cleared. Conversely, the highest levels of protection under the *Vegetation Management Act 1999* — the Category A designation — cannot be unheeded when considering development under the *Planning Act 2016* and will in nearly 100% of cases preclude development from occurring.

The following diagram illustrates how key factors influence the value of 'with' and 'without' offset averted loss percentages for the Lyons property. Risk of loss percentages are not nominated on this diagram as these fluctuate across the site and are interdependent with other risk of loss factors.

Risk of loss factor					
Low ◄----------					----------► ***High***
Factor: Protections under the *Vegetation Management Act 1999*					
◄----------					----------►
Category A <	Category B <	Category C	<		Category X
Factor: Protections under the *Planning Act 2016*					
◄----------					----------►
Prohibited development <	Impact assessable development <	Code assessable development <	Accepted development <		Exempt development
Factor: Protections under the planning scheme (zoning, codes, policies and self-assessable opportunities)					
◄----------					----------►
Prohibited development <	Impact assessable development <	Code assessable development <	Accepted development <		Exempt development
Factor: Historical land use					
◄----------					----------►
Land use that did not clear vegetation (e.g., natural area)		<			Agricultural production — vegetation clearing as part of routine management
Factor: Influences from adjoining land uses					
◄----------					----------►
Surrounded by Category A / National Park / Conservation Estate <u>under active management</u>		<			Surrounded by rural activities (adjacent clearing, threats are ongoing and new)

Factor: Existing threat management		
Successful and ongoing pest management programme	<	Pests known to occur, non-existent ongoing management

For the Lyons property, each of the above-mentioned factors vary in weighting due to site specific factors. Specifically, under the *Vegetation Management Act 1999*, 115.88 hectares of the offset land is Category B whilst the Within Category B areas, the vegetation is classified as either least concern or of concern regional ecosystems, and each of these correlate to another suite of protection levels under the act. This variability must be taken into account for when assigning a single risk of loss percentage to the whole of the offset land.

Once the offset land is legally secured by way of a Voluntary Declaration under the *Vegetation Management Act 1999*, the protection — Category B protected, will be replaced with the Category A classification that will apply over 100% of the offset area. With this classification in place, land management activities are severely restricted and only those stipulated in the approved offset management plan are permissible. Any other development activities on the land that could be approved or are exempt under the *Planning Act 2016* will require land owner's consent (either formally or informally) which would be a contravention of the certified Voluntary Declaration and the approved offset management plan under the EPBC Act.

The planning scheme zoning classifies the site as *rural* and accordingly supports typical rural land use activities such as animal husbandry. Cattle grazing has historically occurred at the property at varying intensities — generally influenced by economic and climatic variables. Consequently, the ongoing impacts to juvenile Koala trees as part of the rural use are a factor that must be considered in the risk of loss assessment.

Surrounding land uses are a combination of natural areas (National Park) and lands used for animal husbandry and cropping. Management regimes across these lands are inherently different and the threats to on-site Koala habitat from weeds and wild animals will require property-specific management in order to reduce their presence and extent of adverse impacts. Once in place, management actions are expected to remedy the historical adverse impacts that would otherwise continue to increase if no action is taken.

4.17. Offset Assessment Guide inputs and worksheet

The Modified Habitat Quality Assessment (MHQA) has been applied separately to the various assessment units across the site considering the many variables that influence the total habitat quality and species stocking rate (refer to **Tables 23-28**). The raw data of the MHQA is included in **Appendix 2**. The OAG inputs are justified in **Table 37** below. Together, these tables detail how the offset as a whole will deliver a gain in Koala habitat.

An overall OAG worksheet has been prepared and is included below. The OAG indicates the Lyons offset site will offset 60.42% of Park Ridge Development's 58.92 hectares quantum impact.

A similar analysis of the impacts to Grey-headed Flying Fox foraging habitat were conducted and are presented in Tables 29-34 with an OAG worksheet presented as **Table 37**. The Burnett Creek offset contributes to 86.14% for the total impact on the Grey Headed Flying Fox

Table 23: Lyons Koala Modified Habitat Quality Assessment Tool: (Assessment Unit 1)

Attribute	Condition Characteristics	Assessment Unit 1 (RE12.8.20)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	2.5/5		5/5
	Native plant species richness – shrubs	2.5/5		2.5/5
	Native plant species richness – grasses	3.75/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4.5/5		4.5/5
	Shrub canopy cover	1.5/5		1.5/5
	Native grass cover	2/5		2/5
	Organic litter	5/5		5/5
	Large trees	2.5/15		10/15
	Coarse woody debris	5/5		5/5
	Non-native plant cover	2.5/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**63/100**		**83/100**
	Site Condition Score (out of 3)	**1.90**		**2.49**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		1.90		2.49
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.36		*7.73*
Assessment unit area (property) (ha)		7.69		7.69
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.03		0.03
Weighted Habitat Quality Score (property)		**0.21**		***0.26***
Assessment unit area (proposed offset area) (ha)		**7.69**		**7.69**
Weighted Habitat Quality Score (proposed offset area) (ha)		**0.33**		***0.41***

Table 24: Lyons Koala Modified Habitat Quality Assessment Tool: (Assessment Unit 2)

Attribute	Condition Characteristics	Assessment Unit 2 (RE 12.9-10.17)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	5/5		5/5
	Native plant species richness – shrubs	2.5/5		2.5/5
	Native plant species richness – grasses	2.5/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4.5/5		4.5/5
	Shrub canopy cover	4/5		4/5
	Native grass cover	0.5/5		0.5/5
	Organic litter	3/5		3/5
	Large trees	5/15		10/15
	Coarse woody debris	1/5		1/5
	Non-native plant cover	10/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**62/100**		**78/100**
	Site Condition Score (out of 3)	**1.86**		**2.34**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	**10**	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		1.86		2.34
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Assessment unit area (property) (ha)		6.32		*7.80*
Total offset area (property) (ha)		21.93		21.93
Assessment Unit size weighting (property)		234		234
Assessment Unit size weighting		0.09		0.09
Weighted Habitat Quality Score (property)		**0.59**		***0.73***
Assessment unit area (proposed offset area) (ha)		13.25		13.25
Weighted Habitat Quality Score (proposed offset area) (ha)		**0.33**		***0.69***

Table 25: Lyons Koala Modified Habitat Quality Assessment Tool: (Assessment Unit 3)

Attribute	Condition Characteristics	Assessment Unit 3 (RE 12.9-10.3)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	5/5		5/5
	Native plant species richness – shrubs	2.5/5		2.5/5
	Native plant species richness – grasses	2.5/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4.5/5		4.5/5
	Shrub canopy cover	5/5		5/5
	Native grass cover	1/5		1/5
	Organic litter	5/5		5/5
	Large trees	5/15		10/15
	Coarse woody debris	2/5		2/5
	Non-native plant cover	4/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**68/100**		**83/100**
	Site Condition Score (out of 3)	**2.04**		**2.48**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		2.04		2.48
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.50		*7.94*
Assessment unit area (property) (ha)		9.59		9.59
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.04		0.04
Weighted Habitat Quality Score (property)		**0.27**		***0.33***
Assessment unit area (proposed offset area) (ha)		**0**		**0**
Weighted Habitat Quality Score (proposed offset area) (ha)		**0**		**0**

Table 26: Lyons Koala Modified Habitat Quality Assessment Tool: (Assessment Unit 4)

Attribute	Condition Characteristics	Assessment Unit 4 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	0/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	5/5		5/5
	Native plant species richness – shrubs	1.25/5		2.5/5
	Native plant species richness – grasses	2.5/5		2.5/5
	Native plant species richness – forbs	1.25/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	4/5		4/5
	Shrub canopy cover	3/5		3/5
	Native grass cover	2/5		2/5
	Organic litter	4/5		4/5
	Large trees	2.5/15		10/15
	Coarse woody debris	5/5		5/5
	Non-native plant cover	5/5		10/5
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**61/100**		**83/100**
	Site Condition Score (out of 3)	**1.82**		**2.49**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		1.82		2.49
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.28		*7.95*
Assessment unit area (property) (ha)		20.39		20.39
Total offset area (property) (ha)		234.00		234.00
Assessment Unit size weighting (property)		0.09		0.09
Weighted Habitat Quality Score (property)		**0.55**		***0.69***
Assessment unit area (proposed offset area) (ha)		20.39		20.39
Weighted Habitat Quality Score (proposed offset area) (ha)		**0.85**		**1.08**

Table 27: Lyons Koala Modified Habitat Quality Assessment Tool: (Assessment Unit 5)

Attribute	Condition Characteristics	Assessment Unit 5 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	3/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	3.13/5		5/5
	Native plant species richness – shrubs	1.88/5		2.5/5
	Native plant species richness – grasses	2.5/5		2.5/5
	Native plant species richness – forbs	1.25/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	5/5		5/5
	Shrub canopy cover	5/5		5/5
	Native grass cover	3/5		3/5
	Organic litter	5/5		5/5
	Large trees	5/15		10/15
	Coarse woody debris	4.25		4.25
	Non-native plant cover	5/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**69/100**		**87/100**
	Site Condition Score (out of 3)	**2.07**		**2.67**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		2.07		2.62
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.53		*8.08*
Assessment unit area (property) (ha)		163.01		163.01
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.70		0.70
Weighted Habitat Quality Score (property)		**4.55**		***5.63***
Assessment unit area (proposed offset area) (ha)		97.30		97.30
Weighted Habitat Quality Score (proposed offset area) (ha)		**4.24**		***5.24***

Table 28: Lyons Modified Habitat Quality Assessment Tool: Koala (Assessment Unit 6 Regrowth)

Attribute	Condition Characteristics	Assessment Unit 6 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future score
Site Condition (30%)	Recruitment of woody perennial species in EDL	4/5	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5
	Native plant species richness – trees	3.75/5		5/5
	Native plant species richness – shrubs	1.25/5		2.5/5
	Native plant species richness – grasses	3.75/5		5/5
	Native plant species richness – forbs	2.5/5		2.5/5
	Tree canopy height	5/5		5/5
	Tree canopy cover	3.75		3.75
	Shrub canopy cover	5/5		5/5
	Native grass cover	1/5		1/5
	Organic litter	4/5		4/5
	Large trees	5/15		10/15
	Coarse woody debris	3.5/5		3.5/5
	Non-native plant cover	4/10		10/10
	Quality and availability of food and foraging habitat	10/10		10/10
	Quality and availability of shelter habitat	10/10		10/10
	Site Condition Score	**67/100**		**82/100**
	Site Condition Score (out of 3)	**2.00**		**2.47**
Site Context (30%)	Size of the patch	10/10	As part of the offset pest management (Action 4) a 'Pest Management Programme' will be implemented whereby the adopted methods and intensities adjust to maximise removal of wild dogs from the offset site. This programme will work in conjunction with pest management occurring: – The Mount Barney National Park protected area – Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting It is concluded that during the offset period the land will improve from the current status to an extremely low potential for wild dog attack /kill. There is no vehicle strike threat within this offset site.	10/10
	Connectedness	4/5		4/5
	Context	4/5		4/5
	Ecological corridors	6/6		6/6
	Role of site location to species overall population in the State	5/5		5/5
	Threats to the species	7/15		15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	**46/56**		**54/56**
	Site Context Score (out of 3)	**2.46**		**2.89**

Species Stocking Rate (40%)	Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on Koala habitat is reduced. The management actions to be implemented across the remnant areas are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This reduction and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the Koala population and surge toward the Koala carrying capacity of the site.	10
	Species usage of the site (habitat type & evidenced usage)	10		10
	Approximate density (per ha)	10		**20**
	Role/importance of species population on site	5		**5**
	Species Stocking Rate Score	35/70		**45/70**
	Species Stocking Rate Scorer (out of 4)	2		**2.57**
Site Condition Score		2.00		2.47
Site Context Score		2.46		2.89
Species Stocking Rate Score		2		2.57
Habitat Quality Score		6.46		*7.93*
Assessment unit area (property) (ha)		11.39		11.39
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.05		0.05
Weighted Habitat Quality Score (property)		**0.31**		***0.39***
Assessment unit area (proposed offset area) (ha)		11.39		11.39
Weighted Habitat Quality Score (proposed offset area) (ha)		**0.49**		***0.60***

Table 29: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 1)

Attribute	Condition Characteristics	AU 1 (RE 12.8.20)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	10/20		10/20
	Flower score	4.25/10		5/10
	Timing of biological shortages	9.25/10		10/10
	Quality of foraging habitat	5/20		5/20
	Non-native plant cover	10/20		20/20
	Site Condition Score	58.5/100		70/100
	Site Condition Score (out of 4)	2.34		2.80
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**
Species Stocking Rate (30%)	Presence of large trees	1/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**5/10**
	Species Stocking Rate Score (out of 3)	0.3		1.5
Total quality score		4.62		6.65
Assessment unit area (property) (ha)		7.69		7.69
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.03		0.03
Weighted Habitat Quality Score (property)		0.15		0.22

Assessment unit area (proposed offset area) (ha)	7.69		7.69
Weighted Habitat Quality Score (proposed offset area) (ha)	0.24		0.34

Table 30: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 2)

Attribute	Condition Characteristics	AU 2 (RE 12.9-10.17)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	20/20		20/20
	Flower score	5/10		5/10
	Timing of biological shortages	10/10		10/10
	Quality of foraging habitat	7.5/20		7.5/20
	Non-native plant cover	5.5/20		20/20
	Site Condition Score	68/100		82.5/100
	Site Condition Score (out of 4)	2.72		3.3
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**
Species Stocking Rate (30%)	Presence of large trees	3/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**7/10**
	Species Stocking Rate Score (out of 3)	0.9		2.1

Total quality score	5.72			7.75
Assessment unit area (property) (ha)	21.9			21.9
Total offset area (property) (ha)	234.00			234
Assessment Unit size weighting (property)	0.09			0.09
Weighted Habitat Quality Score (property)	0.54			0.73
Assessment unit area (proposed offset area) (ha)	13.25			13.25
Weighted Habitat Quality Score (proposed offset area) (ha)	0.51			0.68

Table 31: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 3)

Attribute	Condition Characteristics	AU 3 (RE 12.9-10.3)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	20/20		20/20
	Flower score	6.5/10		6.5/10
	Timing of biological shortages	10/10		10/10
	Quality of foraging habitat	5/20		5/20
	Non-native plant cover	5/20		20/20
	Site Condition Score	66.5/100		66.5/100
	Site Condition Score (out of 4)	2.66		2.66
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**

Species Stocking Rate (30%)	Presence of large trees	4/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**8/10**
	Species Stocking Rate Score (out of 3)	1.2		2.4
Total quality score		5.96		8.01
Assessment unit area (property) (ha)		9.59		9.59
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.04		0.04
Weighted Habitat Quality Score (property)		0.24		0.33
Assessment unit area (proposed offset area) (ha)		0		0
Weighted Habitat Quality Score (proposed offset area) (ha)		0		0

Table 32: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 4)

Attribute	Condition Characteristics	AU 4 (RE 12.9-10.7)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	20/20		20/20
	Flower score	5/10		5/10
	Timing of biological shortages	10/10		10/10
	Quality of foraging habitat	7.5/10		7.5/10
	Non-native plant cover	7.5/10		20/10
	Site Condition Score	70/100		82.5/100
	Site Condition Score (out of 4)	2.8		3.3
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10

	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**
Species Stocking Rate (30%)	Presence of large trees	2/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**6/10**
	Species Stocking Rate Score (out of 3)	0.6		1.8
Total quality score		5.50		7.45
Assessment unit area (property) (ha)		20.39		20.4
Total offset area (property) (ha)		234.00		234
Assessment Unit size weighting (property)		0.09		0.09
Weighted Habitat Quality Score (property)		0.48		0.65
Assessment unit area (proposed offset area) (ha)		20.39		20.39
Weighted Habitat Quality Score (proposed offset area) (ha)		0.75		1.01

Table 33: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 5)

Attribute	Condition Characteristics	AU 5 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	20/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	20/20
	Species richness	10/20		10/20
	Flower score	4.25/10		4.25/10
	Timing of biological shortages	9.25/10		9.25/10
	Quality of foraging habitat	5/10		5/10
	Non-native plant cover	10/10		20/10
	Site Condition Score	58.5/100		68.5/100
	Site Condition Score (out of 4)	2.34		2.74

Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**
Species Stocking Rate (30%)	Presence of large trees	2.5/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**6.5/10**
	Species Stocking Rate Score (out of 3)	0.75		1.95
Total quality score		5.19		7.04
Assessment unit area (property) (ha)		163.01		163
Total offset area (property) (ha)		234.00		234
Assessment Unit size weighting (property)		0.70		0.7
Weighted Habitat Quality Score (property)		3.62		4.9
Assessment unit area (proposed offset area) (ha)		97.30		97.30
Weighted Habitat Quality Score (proposed offset area) (ha)		3.37		4.57

Table 34: Lyons Grey-headed Flying-fox Foraging Habitat Assessment (Assessment Unit 6)

Attribute	Condition Characteristics	AU 6 (RE 12.9-10.2)	Values Increase 'WITH' Offset	Future Score
Site Condition (40%)	Vegetation condition	10/20	The site condition is proposed to undergo weed removal management (Action 2), rehabilitation management where required (Action 3). Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition	20/20
	Species richness	12.5/20		12.5/20
	Flower score	6.5/10		6.5/10

	Timing of biological shortages	10/10	across the offset area. Implementation of these management actions throughout the assessment unit in accordance with the Offset Management Plan will support the transition to intact 'remnant' vegetation communities across the offset sites and improve GHFF foraging habitat.	10/10
	Quality of foraging habitat	5/20		5/20
	Non-native plant cover	7.5/20		20/20
	Site Condition Score	51.5/100		74/100
	Site Condition Score (out of 4)	2.06		2.96
Site Context (30%)	Size of the patch	10/10	Site context characteristics for the GHFF are only proposed to increase with a decrease in the threats to the GHFF, particularly with a reduction in the risk of habitat removal As the size of the patch, connectedness, context, ecological corridors and role of the site location to species overall population in the state are characteristics assessed at a larger scale and encompass external factors, the ability to improve these characteristics through an offset is limited.	10/10
	Connectedness	6/10		6/10
	Context	6/10		6/10
	Ecological corridors	10/10		10/10
	Role of site location to species overall population in the State	5/10		5/10
	Threats to the species	5/10		10/10
	Site Context Score	42/60		47/60
	Site Context Score (out of 3)	2.10		**2.35**
Species Stocking Rate (30%)	Presence of large trees	3/10	Through the implementation of the Offset Management Plan and the following management actions, the threatening processes that would otherwise advance in extent and severity of impact on GHFF foraging habitat is reduced. The management actions to be implemented across the assessment area are: - Action 2: Weeds of National Significance (reduction and management); - Action 3: Rehabilitation and regeneration management; - Action 4: Vertebrate Pest Management (primarily targeting wild dogs and dingos). These management actions and monitoring regime over the 20-year loss averted period is reasonably anticipated to lead an increase in the GHFF foraging habitat.	**7/10**
	Species Stocking Rate Score (out of 3)	0.9		2.1
Total quality score		5.06		7.41
Assessment unit area (property) (ha)		11.39		11.39
Total offset area (property) (ha)		234		234
Assessment Unit size weighting (property)		0.05		0.049
Weighted Habitat Quality Score (property)		0.25		0.361
Assessment unit area (proposed offset area) (ha)		11.39		11.39
Weighted Habitat Quality Score (proposed offset area) (ha)		0.38		0.56

Table 35: Lyons Koala Offset Site Future Score Summary

Attribute	AU1	AU2	AU3	AU4	AU5	AU6
Site Condition Score	2.49	2.34	2.48	2.49	2.62	2.47
Site Context Score	2.89	2.89	2.89	2.89	2.89	2.89
Species Stocking Rate Score	2.57	2.57	2.57	2.57	2.57	2.57
Habitat Quality Score	*7.95*	*7.80*	*7.94*	*7.95*	*8.08*	*7.93*
Assessment unit area (property (ha)	7.69	21.93	9.59	20.39	163.01	11.39
Total offset area property(ha)	234	234	234	234	234	234
Assessment Unit size weighting	0.03	0.09	0.04	0.09	0.70	0.05
Weighted Habitat Quality Score	***0.26***	***0.73***	***0.33***	***0.69***	***5.63***	***0.39***
Lyons property score			**8.03 (rounded to 8)**			
Assessment unit area (proposed offset) (ha)	7.69	13.25	0.00	20.39	97.30	11.39
Total offset area (proposed offset) (ha)	150.	150.	150.	150.	150.	150.
Assessment Unit size weighting	0.05	0.09	0.00	0.14	0.65	0.08
Weighted Habitat Quality Score	***0.41***	***0.69***	***0.00***	***1.08***	***5.24***	***0.60***
Lyons proposed offset score			**8.02 (rounded to 8)**			

Table 36: Lyons Creek Grey-headed Flying-fox Offset Site Future Score Summary

Attribute	AU1	AU2	AU3	AU4	AU5	AU6
Site Condition Score	2.8	3.3	3.26	3.3	2.74	2.96
Site Context Score	2.35	2.35	2.35	2.35	2.35	2.35
Species Stocking Rate Score	1.5	2.1	2.4	1.8	1.95	2.1
Habitat Quality Score	6.65	7.75	8.01	7.45	7.04	7.41
Assessment unit area (property (ha)	7.69	21.9	9.594	20.4	163	11.39
Total offset area property(ha)	234	234	234	234	234	234
Assessment Unit size weighting	0.03	0.09	0.041	0.09	0.7	0.049
Weighted Habitat Quality Score	0.22	0.73	0.328	0.65	4.9	0.361
Lyons property score			**7.19 (rounded to 7)**			

Assessment unit area (proposed offset) (ha)	7.69	13.2	0	20.4	97.3	11.39
Total offset area (proposed offset) (ha)	150	150	150	150	150	150
Assessment Unit size weighting	0.05	0.09	0	0.14	0.65	0.076
Weighted Habitat Quality Score	0.34	0.68	0	1.01	4.57	0.563
Lyons proposed offset score				**7.17 (rounded to 7)**		

Table 37: Lyons Koala and GHFF Offset Assessment Guide Calculator Values Justification

Attribute	Value	Justification (Summary)
Time over which loss is averted	20 years	– For the Lyons offset site the *Voluntary Declaration* — the highest protection category under the *Vegetation Management Act 1999* — will legally secure the land and is proposed to be in place for a minimum of ten years. – The 20-year period is sufficient time for the large majority of the offset land to return to a self-sustaining Koala habitat area (with assistance).
Time until Ecological Benefit	20 years	– The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. – Although a large proportion of the offset area will improve to the future quality scores before the 20-year time mark, this figure was used to increase the confidence that future quality scores will be achieved.
Start Quality	6 (Koala) 5 (GHFF)	– Refer to score derived above in Tables 23-28 and Tables 29-34 for Koala and Grey-headed Flying-fox respectively
Future Quality (without)	6 (Koala) 5 (GHFF)	– Refer to score derived above in Tables 23-28 and Tables 29-34 for Koala and Grey-headed Flying-fox respectively
Future Quality (With)	8 (Koala) 7 (GHFF)	– Refer to score derived above in Tables 23-28 and Tables 29-34 for Koala and Grey-headed Flying-fox respectively
Risk of Loss (Without)	10%	– The level of Koala habitat protections under State legislation varies across the site. – If not used as a viable commercial environmental offset, grazing uses and forestry are the next most permissible land uses. These factors cause a large increase to the overall risk of loss. – Category B areas are protected under the *Vegetation Management Act 1999* however, this protection does not outright prohibit clearing of Koala habitat. However, this leads to a decrease to the overall risk of loss. – In the low order remnant areas, classed as least concern and of concern vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within lower order remnant communities by achieving the acceptable solutions in the accepted development code and State Development Assessment Provisions module. Although this avenue to reduce the existing Koala habitat quality exists, there are protections in place under the *Vegetation Management Act* 1999 and these factors cause a decrease to the overall risk of loss. – In the high order remnant areas, classed as endangered vegetation communities and on rural land a permit is required to clear this vegetation type with the exception of works which are exempt or noted as acceptable development (which includes native forest practice). Clearing which triggers an application could result in a prohibition or environmental offset under the *Vegetation Management Act 1999*. These factors cause a decrease to the overall risk of loss.
Risk of Loss (With)	0%	– The offset land will be legally secured using a *Voluntary Declaration* which certifies the land as protected under the *Vegetation Management Act 1999*. This legislative instrument regulates new controls on the land as stipulated in the offset management plan and is attached to the land title. Regardless of owner or zoning, the *Voluntary Declaration* will ensure regenerating and reinstated values are protected up to the maturity where other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	95%	– *Voluntary Declarations* are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and Commonwealth Government approvals. An EPBC Act offset secured with a *Voluntary Declaration* was approved on the land to the immediate north of the Natural Bridge at Flinders. – There is high confidence that the certification of a *Voluntary Declaration* and resulting restriction placed on title will bring necessary regulation to protect Koala habitat values to be reinstated within the offset area.
Confidence in result (Quality)	95%	– All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be engaged using AS2124 – contract clauses which will include establishment and replacement periods for replanted stock. Employing a suitably qualified third party to complete this work has a positive impact on the confidence in result however this type of work has inherent risks. – The remnant areas predominantly involve weed removal within the canopy of existing remnant vegetation. This has a positive effect on the confidence in result compared to non-remnant management areas.

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	Pointcorp	**Area**	117.8	Hectares	AR
			Quality	**5**	Scale 0-10	
			Total quantum of impact	58.92	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	58.92	Adjusted hectares	Lyons Koala	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	150	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	0%	15.00	95%	14.25	13.69	35.60	60.42%	No		
									Future area without offset (adjusted hectares)	135.0	**Future area with offset (adjusted hectares)**	150.0								
					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)**	**8**	2.00	95%	1.90	1.83				
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																			

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	Pointcorp	**Area**	79.47	Hectares	AR
			Quality	**5**	Scale 0-10	
			Total quantum of impact	39.74	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	39.74	Adjusted hectares	Lyons GHFF	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	150	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	0%	15.00	95%	14.25	13.69	34.23	86.14%	No		
									Future area without offset (adjusted hectares)	135.0	**Future area with offset (adjusted hectares)**	150.0								
					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	95%	1.90	1.83				
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																			

Appendix 1
SAT survey data (offset sites)

Park Ridge Impact Site SAT Survey Raw Data

SAT 1 2016				
Date:	**5th august 2016**		**Project No.:**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	340	Yes
2	*Eucalyptus racemosa*	Scribbly Gum	740	Yes
3	*Eucalyptus racemosa*	Scribbly Gum	560	No
4	*Corymbia intermedia*	Pink Bloodwood	170	No
5	*Corymbia intermedia*	Pink Bloodwood	500	No
6	*Eucalyptus racemosa*	Scribbly Gum	400	No
7	*Eucalyptus racemosa*	Scribbly Gum	350	No
8	*Corymbia intermedia*	Pink Bloodwood	180	No
9	*Eucalyptus seeana*	Narrow-leaved Red Gum	260	No
10	*Eucalyptus seeana*	Narrow-leaved Red Gum	150	No
11	*Eucalyptus racemosa*	Scribbly Gum	490	No
12	*Corymbia intermedia*	Pink Bloodwood	180	No
13	*Eucalyptus seeana*	Narrow-leaved Red Gum	240	No
14	*Angophora leiocarpa*	Smooth-barked Apple	140	No
15	*Eucalyptus racemosa*	Scribbly Gum	130	No
16	*Eucalyptus seeana*	Narrow-leaved Red Gum	420	No
17	*Corymbia intermedia*	Pink Bloodwood	120	No
18	*Eucalyptus seeana*	Narrow-leaved Red Gum	210	No
19	*Lophostemon suaveolens*	Swamp Box	190	No
20	*Eucalyptus seeana*	Narrow-leaved Red Gum	200	No
21	*Eucalyptus seeana*	Narrow-leaved Red Gum	530	No
22	*Corymbia intermedia*	Pink Bloodwood	330	No
23	*Corymbia intermedia*	Pink Bloodwood	280	No
24	*Corymbia intermedia*	Pink Bloodwood	180	No
25	*Corymbia intermedia*	Pink Bloodwood	300	No
26	*Eucalyptus seeana*	Narrow-leaved Red Gum	790	Yes
27	*Eucalyptus seeana*	Narrow-leaved Red Gum	500	No
28	*Corymbia intermedia*	Pink Bloodwood	190	No
29	*Corymbia intermedia*	Pink Bloodwood	210	No
30	*Eucalyptus racemosa*	Scribbly Gum	730	No

SAT 2 2016				
Date:	**5th august 2016**		**Project No.:**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	660	Yes
2	*Corymbia intermedia*	Pink Bloodwood	130	No
3	*Corymbia intermedia*	Pink Bloodwood	100	No
4	*Melaleuca quinquenervia*	Broad-leaved Paperbark	250	No

5	*Corymbia intermedia*	Pink Bloodwood	160	No
6	*Corymbia intermedia*	Pink Bloodwood	190	No
7	*Corymbia intermedia*	Pink Bloodwood	100	No
8	*Corymbia intermedia*	Pink Bloodwood	100	No
9	*Lophostemon suaveolens*	Swamp Box	250	No
10	*Eucalyptus tereticornis*	Forest Red Gum	620	No
11	*Lophostemon suaveolens*	Swamp Box	250	No
12	*Melaleuca quinquenervia*	Broad-leaved Paperbark	300	No
13	*Lophostemon suaveolens*	Swamp Box	190	No
14	*Melaleuca quinquenervia*	Broad-leaved Paperbark	220	No
15	*Eucalyptus tereticornis*	Forest Red Gum	520	Yes
16	*Lophostemon suaveolens*	Swamp Box	180	No
17	*Corymbia intermedia*	Pink Bloodwood	180	No
18	*Melaleuca quinquenervia*	Broad-leaved Paperbark	220	Yes
19	*Lophostemon suaveolens*	Swamp Box	220	No
20	*Corymbia intermedia*	Pink Bloodwood	270	No
21	*Eucalyptus tereticornis*	Forest Red Gum	450	No
22	*Eucalyptus tereticornis*	Forest Red Gum	600	No
23	*Corymbia intermedia*	Pink Bloodwood	140	No
24	*Lophostemon suaveolens*	Swamp Box	260	No
25	*Acacia concurrens*	Black Wattle	130	No
26	*Eucalyptus tereticornis*	Forest Red Gum	410	No
27	*Melaleuca quinquenervia*	Broad-leaved Paperbark	200	No
28	*Melaleuca quinquenervia*	Broad-leaved Paperbark	260	No
29	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	No
30	*Lophostemon suaveolens*	Swamp Box	210	No

SAT 3 2016				
Date:	**5th august 2016**		**Project No.:**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Eucalyptus siderophloia*	Grey Ironbark	300	Yes
2	*Eucalyptus tereticornis*	Forest Red Gum	340	No
3	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	No
4	*Corymbia intermedia*	Pink Bloodwood	140	No
5	*Eucalyptus siderophloia*	Grey Ironbark	320	No
6	*Eucalyptus siderophloia*	Grey Ironbark	350	No
7	*Eucalyptus siderophloia*	Grey Ironbark	200	No
8	*Eucalyptus siderophloia*	Grey Ironbark	240	No
9	*Eucalyptus tereticornis*	Forest Red Gum	190	No
10	*Eucalyptus siderophloia*	Grey Ironbark	500	No
11	*Eucalyptus tereticornis*	Forest Red Gum	300	No
12	*Eucalyptus siderophloia*	Grey Ironbark	260	No
13	*Eucalyptus siderophloia*	Grey Ironbark	410	No
14	*Eucalyptus siderophloia*	Grey Ironbark	300	No

15	*Lophostemon suaveolens*	Swamp Box	120	No
16	*Eucalyptus tereticornis*	Forest Red Gum	250	No
17	*Melaleuca quinquenervia*	Broad-leaved Paperbark	209	No
18	*Eucalyptus siderophloia*	Grey Ironbark	300	No
19	*Eucalyptus siderophloia*	Grey Ironbark	260	No
20	*Eucalyptus siderophloia*	Grey Ironbark	450	No
21	*Eucalyptus siderophloia*	Grey Ironbark	380	No
22	*Eucalyptus siderophloia*	Grey Ironbark	300	No
23	*Eucalyptus tereticornis*	Forest Red Gum	380	No
24	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	No
25	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	No
26	*Lophostemon suaveolens*	Swamp Box	150	No
27	*Eucalyptus siderophloia*	Grey Ironbark	230	No
28	*Eucalyptus seeana*	Narrow-leaved Red Gum	190	No
29	*Corymbia intermedia*	Pink Bloodwood	210	No
30	*Melaleuca quinquenervia*	Broad-leaved Paperbark	170	No

SAT 4 2016				
Date:	**5th august 2016**		**Project No.:**	
No.	**Species Name**	**Common name**	**DBH**	**Scats**
1	*Eucalyptus siderophloia*	Grey Ironbark	960	Yes
2	*Corymbia intermedia*	Pink Bloodwood	200	No
3	*Corymbia intermedia*	Pink Bloodwood	260	No
4	*Corymbia intermedia*	Pink Bloodwood	290	Yes
5	*Allocasuarina littoralis*	Black She-oak	190	No
6	*Eucalyptus acmenoides*	White Mahogany	180	No
7	*Corymbia intermedia*	Pink Bloodwood	200	No
8	*Corymbia intermedia*	Pink Bloodwood	210	No
9	*Eucalyptus acmenoides*	White Mahogany	220	No
10	*Corymbia intermedia*	Pink Bloodwood	270	No
11	*Corymbia intermedia*	Pink Bloodwood	140	No
12	*Allocasuarina littoralis*	Black She-oak	150	No
13	*Corymbia citriodora*	Spotted Gum	310	No
14	*Eucalyptus acmenoides*	White Mahogany	320	No
15	*Eucalyptus acmenoides*	White Mahogany	160	No
16	*Corymbia intermedia*	Pink Bloodwood	220	No
17	*Eucalyptus seeana*	Narrow-leaved Red Gum	160	No
18	*Corymbia intermedia*	Pink Bloodwood	300	No
19	*Eucalyptus siderophloia*	Grey Ironbark	210	No
20	*Corymbia intermedia*	Pink Bloodwood	200	No
21	*Eucalyptus acmenoides*	White Mahogany	180	No
22	*Corymbia citriodora*	Spotted Gum	290	No
23	*Eucalyptus acmenoides*	White Mahogany	180	No
24	*Corymbia citriodora*	Spotted Gum	650	No

25	*Corymbia citriodora*	Spotted Gum	230	No
26	*Allocasuarina littoralis*	Black She-oak	190	No
27	*Allocasuarina littoralis*	Black She-oak	180	No
28	*Allocasuarina littoralis*	Black She-oak	110	No
29	*Corymbia citriodora*	Spotted Gum	140	No
30	*Corymbia intermedia*	Pink Bloodwood	260	No

SAT 1 2017				
Date:	**22/06/2017**		**Project No.: 8392**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Eucalyptus seeana*	Narrow-leaved Red Gum	450	Yes
2	*Corymbia intermedia*	Pink Bloodwood	290	Yes
3	*Eucalyptus seeana*	Narrow-leaved Red Gum	170	No
4	*Eucalyptus seeana*	Narrow-leaved Red Gum	300	No
5	*Acacia leiocalyx*	Early Black Wattle	120	No
6	*Acacia concurrens*	Black Wattle	110	No
7	*Eucalyptus seeana*	Narrow-leaved Red Gum	390	No
8	*Eucalyptus seeana*	Narrow-leaved Red Gum	350	No
9	*Corymbia intermedia*	Pink Bloodwood	150	No
10	*Corymbia intermedia*	Pink Bloodwood	140	No
11	*Eucalyptus seeana*	Narrow-leaved Red Gum	160	No
12	*Eucalyptus seeana*	Narrow-leaved Red Gum	280	No
13	*Eucalyptus seeana*	Narrow-leaved Red Gum	260	No
14	*Eucalyptus seeana*	Narrow-leaved Red Gum	200	No
15	*Eucalyptus seeana*	Narrow-leaved Red Gum	270	No
16	*Eucalyptus seeana*	Narrow-leaved Red Gum	170	No
17	*Corymbia intermedia*	Pink Bloodwood	390	Yes
18	*Eucalyptus seeana*	Narrow-leaved Red Gum	200	No
19	*Eucalyptus seeana*	Narrow-leaved Red Gum	180	No
20	*Acacia leiocalyx*	Early Black Wattle	100	No
21	*Corymbia intermedia*	Pink Bloodwood	340	No
22	*Eucalyptus seeana*	Narrow-leaved Red Gum	520	No
23	*Melaleuca quinquenervia*	Broad-leaved Paperbark	260	No
24	*Corymbia intermedia*	Pink Bloodwood	120	No
25	*Corymbia intermedia*	Pink Bloodwood	230	No
26	*Acacia leiocalyx*	Early Black Wattle	130	No
27	*Acacia leiocalyx*	Early Black Wattle	150	No
28	*Eucalyptus seeana*	Narrow-leaved Red Gum	160	No
29	*Melaleuca quinquenervia*	Broad-leaved Paperbark	150	No
30	*Acacia disparrima*	Hickory Wattle	110	No

SAT 2 2017			
Date:	**22/06/2017**		**Project No.: 8392**

No.	Species Name	Common Name	DBH	Scats
1	*Corymbia intermedia*	Pink Bloodwood	410	Yes
2	*Eucalyptus racemosa*	Scribbly Gum	240	No
3	*Eucalyptus racemosa*	Scribbly Gum	230	Yes
4	*Corymbia intermedia*	Pink Bloodwood	140	No
5	*Corymbia intermedia*	Pink Bloodwood	150	No
6	*Eucalyptus racemosa*	Scribbly Gum	130	No
7	*Acacia leiocalyx*	Early Black Wattle	150	No
8	*Corymbia intermedia*	Pink Bloodwood	140	No
9	*Corymbia intermedia*	Pink Bloodwood	140	No
10	*Acacia leiocalyx*	Early Black Wattle	180	No
11	*Eucalyptus racemosa*	Scribbly Gum	200	No
12	*Corymbia intermedia*	Pink Bloodwood	180	No
13	*Corymbia intermedia*	Pink Bloodwood	140	No
14	*Eucalyptus racemosa*	Scribbly Gum	190	No
15	*Corymbia intermedia*	Pink Bloodwood	130	No
16	*Corymbia intermedia*	Pink Bloodwood	120	No
17	*Corymbia intermedia*	Pink Bloodwood	120	Yes
18	*Acacia leiocalyx*	Early Black Wattle	120	No
19	*Eucalyptus racemosa*	Scribbly Gum	140	No
20	*Corymbia intermedia*	Pink Bloodwood	290	No
21	*Corymbia intermedia*	Pink Bloodwood	280	No
22	*Eucalyptus racemosa*	Scribbly Gum	110	No
23	*Eucalyptus racemosa*	Scribbly Gum	190	No
24	*Corymbia intermedia*	Pink Bloodwood	120	No
25	*Eucalyptus racemosa*	Scribbly Gum	120	No
26	*Angophora woodsiana*	Rough-barked Apple	210	No
27	*Corymbia intermedia*	Pink Bloodwood	280	No
28	*Eucalyptus racemosa*	Scribbly Gum	210	No
29	*Eucalyptus racemosa*	Scribbly Gum	200	No
30	*Eucalyptus racemosa*	Scribbly Gum	120	No

SAT 3 2017				
Date:	**22/06/2017**		**Project No.: 8392**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	600	Yes
2	*Eucalyptus siderphloia*	Grey Ironbark	900	Yes
3	*Acacia leiocalyx*	Early Black Wattle	160	Yes
4	*Corymbia intermedia*	Pink Bloodwood	340	No
5	*Acacia leiocalyx*	Early Black Wattle	160	No
6	*Acacia leiocalyx*	Early Black Wattle	200	No
7	*Corymbia intermedia*	Pink Bloodwood	710	No
8	*Pinus elliottii*	Slash Pine	600	No

9	*Corymbia intermedia*	Pink Bloodwood	110	No
10	*Corymbia intermedia*	Pink Bloodwood	130	No
11	*Corymbia intermedia*	Pink Bloodwood	190	No
12	*Corymbia intermedia*	Pink Bloodwood	170	No
13	*Eucalyptus siderphloia*	Grey Ironbark	140	No
14	*Corymbia intermedia*	Pink Bloodwood	160	No
15	*Corymbia intermedia*	Pink Bloodwood	160	No
16	*Corymbia intermedia*	Pink Bloodwood	150	No
17	*Corymbia intermedia*	Pink Bloodwood	140	Yes
18	*Corymbia intermedia*	Pink Bloodwood	140	No
19	*Eucalyptus siderphloia*	Grey Ironbark	130	No
20	*Eucalyptus siderphloia*	Grey Ironbark	160	No
21	*Corymbia intermedia*	Pink Bloodwood	150	No
22	*Acacia concurrens*	Black Wattle	140	No
23	*Corymbia intermedia*	Pink Bloodwood	160	No
24	*Corymbia intermedia*	Pink Bloodwood	180	No
25	*Eucalyptus siderphloia*	Grey Ironbark	150	No
26	*Corymbia intermedia*	Pink Bloodwood	140	No
27	*Eucalyptus siderphloia*	Grey Ironbark	140	No
28	*Acacia leiocalyx*	Early Black Wattle	200	No
29	*Eucalyptus siderphloia*	Grey Ironbark	130	No
30	*Corymbia intermedia*	Pink Bloodwood	140	No

SAT 4 2017				
Date:	**23/06/2017**		**Project No.: 8392**	
No.	**Species Name**	**Common Name**	**DBH**	**Scats**
1	*Eucalyptus acmenoides*	White Mahogany	380	Yes
2	*Eucalyptus siderophloia*	Grey Ironbark	240	No
3	*Eucalyptus seeana*	Narrow-leaved Red Gum	200	No
4	*Corymbia intermedia*	Pink Bloodwood	450	No
5	*Eucalyptus seeana*	Narrow-leaved Red Gum	300	No
6	*Eucalyptus acmenoides*	White Mahogany	400	No
7	*Corymbia intermedia*	Pink Bloodwood	370	No
8	*Lophostemon suaveolens*	Swamp Box	200	No
9	*Angophora leiocarpa*	Smooth-barked Apple	200	No
10	*Corymbia intermedia*	Pink Bloodwood	180	No
11	*Eucalyptus seeana*	Narrow-leaved Red Gum	300	No
12	*Eucalyptus siderophloia*	Grey Ironbark	450	No
13	*Lophostemon suaveolens*	Swamp Box	120	No
14	*Lophostemon suaveolens*	Swamp Box	160	No
15	*Corymbia intermedia*	Pink Bloodwood	190	No
16	*Corymbia intermedia*	Pink Bloodwood	230	No
17	*Corymbia intermedia*	Pink Bloodwood	190	No

18	*Corymbia intermedia*	Pink Bloodwood	350	No
19	*Corymbia intermedia*	Pink Bloodwood	260	No
20	*Eucalyptus acmenoides*	White Mahogany	230	No
21	*Lophostemon suaveolens*	Swamp Box	200	No
22	*Eucalyptus acmenoides*	White Mahogany	270	No
23	*Eucalyptus seeana*	Narrow-leaved Red Gum	110	No
24	*Corymbia intermedia*	Pink Bloodwood	170	No
25	*Eucalyptus siderophloia*	Grey Ironbark	220	No
26	*Eucalyptus acmenoides*	White Mahogany	440	No
27	*Eucalyptus acmenoides*	White Mahogany	250	No
28	*Eucalyptus seeana*	Narrow-leaved Red Gum	270	No
29	*Eucalyptus acmenoides*	White Mahogany	400	No
30	*Eucalyptus acmenoides*	White Mahogany	320	No

SAT 2 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Corymbia intermedia*	Pink Bloodwood	220	N
2	*Angopera leiocarpa*	Smooth Barked Apple	250	N
3	*Eucalyptus racemosa*	Scribbly Gum	530	N
4	*Allocasuarina littoralis*	Black Sheoak	330	N
5	*Angopera leiocarpa*	Smooth Barked Apple	290	N
6	*Melaleuca quinqueneria*	Broad-leaved Paperbark	310	N
7	*Allocasuarina littoralis*	Black Sheoak	260	N
8	*Corymbia intermedia*	Pink Bloodwood	250	N
9	*Eucalyptus racemosa*	Scribbly Gum	590	N
10	*Melaleuca quinqueneria*	Broad-leaved Paperbark	260	N
11	*Melaleuca quinqueneria*	Broad-leaved Paperbark	190	N
12	*Corymbia intermedia*	Pink Bloodwood	230	N
13	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	230	N
14	*Corymbia intermedia*	Pink Bloodwood	340	N
15	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	280	N
16	*Eucalyptus racemosa*	Scribbly Gum	700	N
17	*Eucalyptus racemosa*	Scribbly Gum	320	N
18	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	250	N
19	*Melaleuca quinqueneria*	Broad-leaved Paperbark	270	N
20	*Eucalyptus racemosa*	Scribbly Gum	430	N
21	*Eucalyptus racemosa*	Scribbly Gum	350	N
22	*Corymbia intermedia*	Pink Bloodwood	120	N
23	*Corymbia intermedia*	Pink Bloodwood	120	N
24	*Corymbia intermedia*	Pink Bloodwood	130	N
25	*Corymbia intermedia*	Pink Bloodwood	120	N
26	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	130	N
27	*Angopera leiocarpa*	Smooth Barked Apple	120	N
28	*Eucalyptus racemosa*	Scribbly Gum	360	Y
29	*Corymbia intermedia*	Pink Bloodwood	210	N
30	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	110	N
			Total	**1**

SAT 3 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	260	N
2	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	240	N
3	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	220	N
4	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	300	N
5	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	150	N
6	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	230	N
7	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	230	N
8	*Corymbia intermedia*	Pink Bloodwood	140	N
9	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	250	N
10	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	220	N
11	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	160	Y
12	*Corymbia intermedia*	Pink Bloodwood	340	N
13	*Allocasuarina littoralis*	Forest Sheoak	120	N
14	*Allocasuarina littoralis*	Forest Sheoak	130	N
15	*Allocasuarina littoralis*	Forest Sheoak	110	N
16	*Corymbia intermedia*	Pink Bloodwood	260	N
17	*Corymbia intermedia*	Pink Bloodwood	150	N
18	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	150	N
19	*Corymbia intermedia*	Pink Bloodwood	140	N
20	*Angophera leiocarpa*	Smooth Barked Apple	230	Y
21	*Corymbia intermedia*	Pink Bloodwood	400	N
22	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	240	N
23	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	100	N
24	*Corymbia intermedia*	Pink Bloodwood	150	N
25	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	210	N
26	*Allocasuarina littoralis*	Forest Sheoak	120	N
27	*Lophostemon sauveolans*	Swamp Box	110	N
28	*Corymbia intermedia*	Pink Bloodwood	120	N
29	*Corymbia intermedia*	Pink Bloodwood	200	N
30	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	150	N
			Total	**2**

SAT 4 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	520	N
2	*Lophostemon sauveolans*	Swamp Box	510	N
3	*Lophostemon sauveolans*	Swamp Box	180	N
4	*Corymbia intermedia*	Pink Bloodwood	170	N
5	*Acacia leiocalyx*	Early-flowering Black Wattle	120	N
6	*Acacia leiocalyx*	Early-flowering Black Wattle	110	N
7	*Acacia leiocalyx*	Early-flowering Black Wattle	110	N
8	*Acacia leiocalyx*	Early-flowering Black Wattle	180	N
9	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	400	N
10	*Acacia leiocalyx*	Early-flowering Black Wattle	150	N
11	*Lophostemon sauveolans*	Swamp Box	150	N
12	*Melaleuca quinquenervia*	Broad-leaved Paperbark	240	N
13	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	250	N
14	*Lophostemon sauveolans*	Swamp Box	160	N
15	*Corymbia intermedia*	Pink Bloodwood	400	N
16	*Corymbia intermedia*	Pink Bloodwood	220	N
17	*Eucalyptus racemosa*	Scribbly Gum	500	N
18	*Lophostemon sauveolans*	Swamp Box	200	N
19	*Acacia leiocalyx*	Early-flowering Black Wattle	140	N
20	*Eucalyptus racemosa*	Scribbly Gum	300	N
21	*Lophostemon sauveolans*	Swamp Box	100	N
22	*Corymbia intermedia*	Pink Bloodwood	360	N
23	*Corymbia intermedia*	Pink Bloodwood	110	N
24	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	330	N
25	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	190	N
26	*Lophostemon sauveolans*	Swamp Box	400	N
27	*Corymbia intermedia*	Pink Bloodwood	110	N
28	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	400	N
29	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	230	N
30	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	110	N
			Total	**0**

SAT 5 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Corymbia intermedia*	Pink Bloodwood	280	N
2	*Corymbia intermedia*	Pink Bloodwood	410	N
3	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	110	N
4	*Eucalyptus siderophloia*	Grey Ironbark	110	N
5	*Eucalyptus siderophloia*	Grey Ironbark	100	N
6	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	130	N
7	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	420	N
8	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	300	N
9	*Corymbia intermedia*	Pink Bloodwood	270	N
10	*Eucalyptus acmenoides*	White Mahogony	600	N
11	*Corymbia intermedia*	Pink Bloodwood	210	N
12	*Corymbia intermedia*	Pink Bloodwood	300	N
13	*Eucalyptus acmenoides*	White Mahogony	310	N
14	*Corymbia intermedia*	Pink Bloodwood	150	N
15	*Corymbia intermedia*	Pink Bloodwood	320	N
16	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	120	N
17	*Corymbia intermedia*	Pink Bloodwood	110	N
18	*Corymbia intermedia*	Pink Bloodwood	100	N
19	*Corymbia intermedia*	Pink Bloodwood	350	N
20	*Eucalyptus racemosa*	Scribbly Gum	110	N
21	*Eucalyptus racemosa*	Scribbly Gum	100	N
22	*Eucalyptus racemosa*	Scribbly Gum	540	N
23	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	620	N
24	*Eucalyptus acmenoides*	White Mahogony	50	N
25	*Corymbia intermedia*	Pink Bloodwood	170	N
26	*Corymbia intermedia*	Pink Bloodwood	310	N
27	*Eucalyptus racemosa*	Scribbly Gum	540	N
28	*Corymbia intermedia*	Pink Bloodwood	330	N
29	*Eucalyptus seeana*	Narrow-leaved Forest Red Gum	320	Y
30	*Corymbia intermedia*	Pink Bloodwood	400	N
			Total	**1**

SAT 6 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus seeana*	Narrow-leaved Red Gum	230	N
2	*Lophostemon suaveolens*	Swamp Box	130	N
3	*Eucalyptus siderophloia*	Grey Ironbark	180	N
4	*Corymbia intermedia*	Pink Bloodwood	160	N
5	*Corymbia intermedia*	Pink Bloodwood	210	N
6	*Allocasuarina littoralis*	Black She-oak	160	N
7	*Corymbia intermedia*	Pink Bloodwood	150	N
8	*Corymbia intermedia*	Pink Bloodwood	200	N
9	*Corymbia intermedia*	Pink Bloodwood	190	N
10	*Lophostemon suaveolens*	Swamp Box	190	N
11	*Corymbia intermedia*	Pink Bloodwood	160	N
12	*Lophostemon suaveolens*	Swamp Box	160	N
13	*Corymbia intermedia*	Pink Bloodwood	280	N
14	*Eucalyptus siderophloia*	Grey Ironbark	140	N
15	*Corymbia intermedia*	Pink Bloodwood	200	N
16	*Angophora leiocarpa*	Smooth-barked Apple	160	N
17	*Corymbia intermedia*	Pink Bloodwood	180	N
18	*Lophostemon suaveolens*	Swamp Box	170	N
19	*Allocasuarina littoralis*	Black She-oak	130	N
20	*Corymbia intermedia*	Pink Bloodwood	230	N
21	*Eucalyptus tereticornis*	Forest Red Gum	320	N
22	*Angophora leiocarpa*	Smooth-barked Apple	140	N
23	*Corymbia intermedia*	Pink Bloodwood	140	N
24	*Allocasuarina littoralis*	Black She-oak	260	N
25	*Corymbia intermedia*	Pink Bloodwood	160	N
26	*Corymbia intermedia*	Pink Bloodwood	100	N
27	*Corymbia intermedia*	Pink Bloodwood	130	N
28	*Corymbia intermedia*	Pink Bloodwood	110	N
29	*Angophora leiocarpa*	Smooth-barked Apple	180	N
30	*Angophora leiocarpa*	Smooth-barked Apple	110	N
			Total	**0**

SAT 7 (2020) Impact area				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus tereticornis*	Forest Red Gum	630	N
2	*Corymbia intermedia*	Pink Bloodwood	220	N
3	*Melaleuca quinquenervia*	Broad-leaved Paperbark	220	N
4	*Lophostemon suaveolens*	Swamp Box	160	N
5	*Corymbia intermedia*	Pink Bloodwood	170	N
6	*Lophostemon suaveolens*	Swamp Box	230	N
7	*Melaleuca quinquenervia*	Broad-leaved Paperbark	150	N
8	*Lophostemon suaveolens*	Swamp Box	190	N
9	*Corymbia intermedia*	Pink Bloodwood	260	N
10	*Corymbia intermedia*	Pink Bloodwood	230	N
11	*Melaleuca quinquenervia*	Broad-leaved Paperbark	280	N
12	*Melaleuca quinquenervia*	Broad-leaved Paperbark	270	N
13	*Melaleuca quinquenervia*	Broad-leaved Paperbark	170	N
14	*Lophostemon suaveolens*	Swamp Box	280	N
15	*Melaleuca quinquenervia*	Broad-leaved Paperbark	260	N
16	*Melaleuca quinquenervia*	Broad-leaved Paperbark	280	N
17	*Lophostemon suaveolens*	Swamp Box	200	N
18	*Corymbia intermedia*	Pink Bloodwood	220	N
19	*Eucalyptus seeana*	Narrow-leaved Red Gum	190	N
20	*Corymbia intermedia*	Pink Bloodwood	160	N
21	*Corymbia intermedia*	Pink Bloodwood	150	N
22	*Allocasuarina littoralis*	Black She-oak	190	N
23	*Eucalyptus tereticornis*	Forest Red Gum	360	N
24	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	N
25	*Melaleuca quinquenervia*	Broad-leaved Paperbark	170	N
26	*Melaleuca quinquenervia*	Broad-leaved Paperbark	160	N
27	*Corymbia intermedia*	Pink Bloodwood	280	N
28	*Corymbia intermedia*	Pink Bloodwood	180	N
29	*Corymbia intermedia*	Pink Bloodwood	290	N
30	*Corymbia intermedia*	Pink Bloodwood	200	N
			Total	**0**

Burnett Creek Offset site SAT Survey Raw data

SAT 1				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus dura*	Smooth-branched Ironbark	200	Nil
2	*Eucalyptus dura*	Smooth-branched Ironbark	190	Nil
3	*Eucalyptus dura*	Smooth-branched Ironbark	160	Nil
4	*Eucalyptus dura*	Smooth-branched Ironbark	300	Nil
5	*Eucalyptus dura*	Smooth-branched Ironbark	310	Nil
6	*Eucalyptus dura*	Smooth-branched Ironbark	230	Nil
7	*Eucalyptus dura*	Smooth-branched Ironbark	290	Nil
8	*Eucalyptus dura*	Smooth-branched Ironbark	250	Nil
9	*Eucalyptus dura*	Smooth-branched Ironbark	290	Nil
10	*Eucalyptus dura*	Smooth-branched Ironbark	260	Nil
11	*Eucalyptus dura*	Smooth-branched Ironbark	190	Nil
12	*Eucalyptus dura*	Smooth-branched Ironbark	320	Nil
13	*Eucalyptus dura*	Smooth-branched Ironbark	220	Nil
14	*Eucalyptus dura*	Smooth-branched Ironbark	320	Nil
15	*Eucalyptus dura*	Smooth-branched Ironbark	280	Nil
16	*Eucalyptus dura*	Smooth-branched Ironbark	390	Nil
17	*Eucalyptus dura*	Smooth-branched Ironbark	250	Nil
18	*Eucalyptus dura*	Smooth-branched Ironbark	320	Nil
19	*Eucalyptus dura*	Smooth-branched Ironbark	310	Nil
20	*Eucalyptus dura*	Smooth-branched Ironbark	150	Nil
21	*Eucalyptus dura*	Smooth-branched Ironbark	200	Nil
22	*Eucalyptus acmenoides*	White Mahogany	490	Nil
23	*Eucalyptus dura*	Smooth-branched Ironbark	280	Nil
24	*Eucalyptus dura*	Smooth-branched Ironbark	350	Nil
25	*Corymbia trachyphloia*	Brown Bloodwood	110	Nil
26	*Eucalyptus dura*	Smooth-branched Ironbark	280	Nil
27	*Eucalyptus dura*	Smooth-branched Ironbark	280	Nil
28	*Allocasuarina littorlais*	Black Sheoak	120	Nil
29	*Corymbia citriodora*	Spotted Gum	320	Nil
30	*Eucalyptus dura*	Smooth-branched Ironbark	190	Nil
Total Recorded				**0**
Percentage Recorded				**0%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 2				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus dura*	Smooth-branched Ironbark	460	Nil
2	*Eucalyptus acmenoides*	White Mahogany	300	Nil
3	*Eucalyptus dura*	Smooth-branched Ironbark	490	Nil
4	*Eucalyptus acmenoides*	White Mahogany	490	Nil
5	*Eucalyptus acmenoides*	White Mahogany	390	Nil
6	*Eucalyptus dura*	Smooth-branched Ironbark	180	Nil
7	*Eucalyptus dura*	Smooth-branched Ironbark	190	Nil
8	*Corymbia citriodora*	Spotted Gum	420	Nil
9	*Eucalyptus dura*	Smooth-branched Ironbark	160	Nil
10	*Corymbia trachyphloia*	Brown Bloodwood	320	Nil

11	*Eucalyptus acmenoides*	White Mahogany	280	Nil
12	*Eucalyptus acmenoides*	White Mahogany	360	Nil
13	*Eucalyptus acmenoides*	White Mahogany	450	Nil
14	*Eucalyptus acmenoides*	White Mahogany	300	Nil
15	*Corymbia citriodora*	Spotted Gum	480	Nil
16	*Eucalyptus acmenoides*	White Mahogany	240	Nil
17	*Eucalyptus acmenoides*	White Mahogany	270	Nil
18	*Corymbia trachyphloia*	Brown Bloodwood	300	Nil
19	*Eucalyptus acmenoides*	White Mahogany	240	Nil
20	*Eucalyptus acmenoides*	White Mahogany	500	Nil
21	*Eucalyptus acmenoides*	White Mahogany	290	Nil
22	*Corymbia trachyphloia*	Brown Bloodwood	360	Nil
23	*Corymbia trachyphloia*	Brown Bloodwood	310	Nil
24	*Eucalyptus dura*	Smooth-branched Ironbark	210	Nil
25	*Eucalyptus acmenoides*	White Mahogany	450	Nil
26	*Eucalyptus dura*	Smooth-branched Ironbark	280	Nil
27	*Eucalyptus acmenoides*	White Mahogany	290	Nil
28	*Corymbia trachyphloia*	Brown Bloodwood	200	Nil
29	*Eucalyptus acmenoides*	White Mahogany	260	Nil
30	*Eucalyptus acmenoides*	White Mahogany	210	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 3				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Coymbia citriodora*	Spotted Gum	210	Nil
2	*Coymbia citriodora*	Spotted Gum	230	Nil
3	*Coymbia citriodora*	Spotted Gum	160	Nil
4	*Coymbia citriodora*	Spotted Gum	280	Nil
5	*Coymbia citriodora*	Spotted Gum	150	Nil
6	*Eucalyptus crebra*	Narrow-leaved Ironbark	280	Nil
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
8	*Corymbia trachyphloia*	Brown Bloodwood	210	Scat
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	260	Nil
10	*Allocasuarina torulosa*	Forest Oak	280	Nil
11	*Eucalyptus crebra*	Narrow-leaved Ironbark	360	Scat
12	*Eucalyptus crebra*	Narrow-leaved Ironbark	310	Nil
13	*Allocasuarina torulosa*	Forest Oak	140	Nil
14	*Coymbia citriodora*	Spotted Gum	170	Nil
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	Nil
16	*Eucalyptus acmenoides*	White Mahogany	210	Nil
17	*Coymbia citriodora*	Spotted Gum	200	Nil
18	*Corymbia trachyphloia*	Brown Bloodwood	150	Nil
19	*Corymbia trachyphloia*	Brown Bloodwood	320	Nil
20	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
21	*Coymbia citriodora*	Spotted Gum	220	Nil
22	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
23	*Corymbia intermedia*	Pink Bloodwood	270	Nil
24	*Corymbia intermedia*	Pink Bloodwood	300	Nil
25	*Eucalyptus crebra*	Narrow-leaved Ironbark	480	Nil
26	*Eucalyptus acmenoides*	White Mahogany	210	Nil

27	*Coymbia citriodora*	Spotted Gum	310	Nil
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	410	Nil
29	*Coymbia citriodora*	Spotted Gum	190	Nil
30	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	Nil
Total Recorded				**2**
Percentage Recorded				**6.66%**
Total Koala Use (Based on East Coast Medium-High)				**Low**

SAT 4				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Corymbia citriodora*	Spotted Gum	320	Scat
2	*Corymbia citriodora*	Spotted Gum	300	Scat
3	*Corymbia citriodora*	Spotted Gum	360	Nil
4	*Eucalyptus crebra*	Narrow-leaved Ironbark	190	Nil
5	*Corymbia citriodora*	Spotted Gum	380	Scat
6	*Corymbia citriodora*	Spotted Gum	210	Nil
7	*Corymbia citriodora*	Spotted Gum	120	Nil
8	*Corymbia citriodora*	Spotted Gum	330	Nil
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	210	Nil
10	*Corymbia citriodora*	Spotted Gum	200	Nil
11	*Corymbia citriodora*	Spotted Gum	390	Nil
12	*Corymbia citriodora*	Spotted Gum	280	Nil
13	*Corymbia citriodora*	Spotted Gum	520	Nil
14	*Corymbia citriodora*	Spotted Gum	200	Nil
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	10	Nil
16	*Corymbia citriodora*	Spotted Gum	210	Scat
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	150	Nil
18	*Corymbia citriodora*	Spotted Gum	280	Nil
19	*Corymbia citriodora*	Spotted Gum	260	Nil
20	*Corymbia citriodora*	Spotted Gum	450	Nil
21	*Corymbia citriodora*	Spotted Gum	270	Nil
22	*Corymbia citriodora*	Spotted Gum	110	Nil
23	*Corymbia citriodora*	Spotted Gum	300	Nil
24	*Corymbia citriodora*	Spotted Gum	360	Nil
25	*Corymbia citriodora*	Spotted Gum	180	Nil
26	*Corymbia citriodora*	Spotted Gum	270	Nil
27	*Corymbia citriodora*	Spotted Gum	210	Nil
28	*Corymbia citriodora*	Spotted Gum	380	Nil
29	*Eucalyptus crebra*	Narrow-leaved Ironbark	150	Scat
30	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	Scat
Total Recorded				**6**
Percentage Recorded				**20.00%**
Total Koala Use (Based on East Coast Medium-High)				**low**

SAT 5				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus microcorys*	Tallowwood	460	Scat
2	*Eucalyptus carnea*	Broad-leaved White Mahogany	450	Nil
3	*Corymbia citriodora*	Spotted Gum	550	Nil

4	*Eucalyptus acmenoides*	White Mahogany	300	Scat
5	*Eucalyptus carnea*	Broad-leaved White Mahogany	410	Nil
6	*Eucalyptus carnea*	Broad-leaved White Mahogany	280	Scat
7	*Eucalyptus propinqua*	Grey Gum	310	Nil
8	*Eucalyptus carnea*	Broad-leaved White Mahogany	450	Nil
9	*Allocasuarina torulosa*	Forest She-oak	200	Nil
10	*Eucalyptus acmenoides*	White Mahogany	160	Nil
11	*Eucalyptus acmenoides*	White Mahogany	320	Nil
12	*Eucalyptus acmenoides*	White Mahogany	420	Nil
13	*Eucalyptus acmenoides*	White Mahogany	480	Nil
14	*Eucalyptus siderophloia*	Grey Ironbark	200	Nil
15	*Eucalyptus siderophloia*	Grey Ironbark	360	Nil
16	*Eucalyptus propinqua*	Grey Gum	400	Nil
17	*Eucalyptus acmenoides*	White Mahogany	310	Nil
18	*Allocasuarina torulosa*	Forest She-oak	130	Nil
19	*Eucalyptus propinqua*	Grey Gum	320	Nil
20	*Eucalyptus microcorys*	Tallowwood	160	Nil
21	*Eucalyptus microcorys*	Tallowwood	180	Nil
22	*Eucalyptus acmenoides*	White Mahogany	300	Nil
23	*Eucalyptus microcorys*	Tallowwood	650	Nil
24	*Eucalyptus siderophloia*	Grey Ironbark	180	Nil
25	*Eucalyptus acmenoides*	White Mahogany	180	Nil
26	*Eucalyptus acmenoides*	White Mahogany	280	Nil
27	*Eucalyptus acmenoides*	White Mahogany	160	Scat
28	*Eucalyptus acmenoides*	White Mahogany	130	Nil
29	*Eucalyptus propinqua*	Grey Gum	400	Nil
30	*Eucalyptus propinqua*	Grey Gum	310	Scat
Total Recorded				**5**
Percentage Recorded				**16.60%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 6				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus acmenoides*	White Mahogany	230	Nil
2	*Eucalyptus acmenoides*	White Mahogany	380	Nil
3	*Eucalyptus acmenoides*	White Mahogany	380	Nil
4	*Eucalyptus acmenoides*	White Mahogany	360	Nil
5	*Corymbia intermedia*	Pink Bloodwood	200	Nil
6	*Corymbia intermedia*	Pink Bloodwood	490	Nil
7	*Eucalyptus acmenoides*	White Mahogany	510	Nil
8	*Eucalyptus microcorys*	Tallowood	200	Nil
9	*Eucalyptus microcorys*	Tallowood	230	Nil
10	*Eucalyptus microcorys*	Tallowood	250	Nil
11	*Allcasuarina torulosa*	Forest Sheoak	180	Nil
12	*Eucalyptus acmenoides*	White Mahogany	320	Nil
13	*Eucalyptus acmenoides*	White Mahogany	320	Nil
14	*Corymbia intermedia*	Pink Bloodwood	570	Nil
15	*Eucalyptus acmenoides*	White Mahogany	160	Nil
16	*Eucalyptus microcorys*	Tallowood	220	Nil
17	*Allcasuarina torulosa*	Forest Sheoak	200	Nil
18	*Eucalyptus acmenoides*	White Mahogany	300	Nil
19	*Eucalyptus microcorys*	Tallowood	360	Nil

20	*Eucalyptus acmenoides*	White Mahogany	260	Nil
21	*Eucalyptus microcorys*	Tallowood	620	Nil
22	*Eucalyptus microcorys*	Tallowood	250	Nil
23	*Eucalyptus acmenoides*	White Mahogany	180	Nil
24	*Eucalyptus acmenoides*	White Mahogany	580	Nil
25	*Eucalyptus acmenoides*	White Mahogany	200	Nil
26	*Eucalyptus acmenoides*	White Mahogany	720	Nil
27	*Corymbia intermedia*	Pink Bloodwood	250	Nil
28	*Eucalyptus acmenoides*	White Mahogany	290	Nil
29	*Eucalyptus acmenoides*	White Mahogany	350	Nil
30	*Corymbia intermedia*	Pink Bloodwood	260	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 7				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus acmenoides*	White Mahogany	210	Nil
2	*Eucalyptus acmenoides*	White Mahogany	260	Nil
3	*Eucalyptus acmenoides*	White Mahogany	200	Nil
4	*Corymbia citriodora*	Spotted Gum	310	Nil
5	*Eucalyptus crebra*	Narrow-leaved Ironbark	210	Nil
6	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	420	Nil
8	*Corymbia citriodora*	Spotted Gum	360	Nil
9	*Corymbia citriodora*	Spotted Gum	130	Nil
10	*Eucalyptus crebra*	Narrow-leaved Ironbark	120	Nil
11	*Corymbia citriodora*	Spotted Gum	270	Nil
12	*Eucalyptus acmenoides*	White Mahogany	260	Scat
13	*Corymbia citriodora*	Spotted Gum	140	Nil
14	*Eucalyptus acmenoides*	White Mahogany	420	Nil
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	Nil
16	*Eucalyptus crebra*	Narrow-leaved Ironbark	270	Nil
17	*Corymbia citriodora*	Spotted Gum	250	Nil
18	*Corymbia citriodora*	Spotted Gum	530	Nil
19	*Eucalyptus crebra*	Narrow-leaved Ironbark	180	Nil
20	*Corymbia trachyphloia*	Brown Bloodwood	200	Nil
21	*Corymbia citriodora*	Spotted Gum	300	Nil
22	*Corymbia citriodora*	Spotted Gum	220	Nil
23	*Corymbia citriodora*	Spotted Gum	320	Nil
24	*Eucalyptus crebra*	Narrow-leaved Ironbark	180	Nil
25	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
26	*Corymbia citriodora*	Spotted Gum	210	Nil
27	*Corymbia citriodora*	Spotted Gum	280	Nil
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
29	*Eucalyptus crebra*	Narrow-leaved Ironbark	190	Nil
30	*Eucalyptus acmenoides*	White Mahogany	220	Nil
Total Recorded				**1**
Percentage Recorded				**3.33%**
Total Koala Use (Based on East Coast Medium-High)				**Low Use**

SAT 1 (2020) Burnett Creek				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus dura*	Gum-topped Ironbark	320	N
2	*Eucalyptus dura*	Gum-topped Ironbark	140	N
3	*Eucalyptus dura*	Gum-topped Ironbark	260	N
4	*Eucalyptus dura*	Gum-topped Ironbark	160	N
5	*Eucalyptus dura*	Gum-topped Ironbark	160	N
6	*Corymbia trachyphloia*	Brown Bloodwood	420	N
7	*Eucalyptus dura*	Gum-topped Ironbark	190	N
8	*Eucalyptus carnea*	Thick-leaved Mahogony	260	N
9	*Eucalyptus dura*	Gum-topped Ironbark	160	N
10	*Eucalyptus dura*	Gum-topped Ironbark	100	N
11	*Eucalyptus carnea*	Thick-leaved Mahogony	260	N
12	*Eucalyptus dura*	Gum-topped Ironbark	170	N
13	*Corymbia trachyphloia*	Brown Bloodwood	130	N
14	*Corymbia trachyphloia*	Brown Bloodwood	200	N
15	*Eucalyptus dura*	Gum-topped Ironbark	270	N
16	*Eucalyptus dura*	Gum-topped Ironbark	310	N
17	*Eucalyptus dura*	Gum-topped Ironbark	290	N
18	*Eucalyptus dura*	Gum-topped Ironbark	400	N
19	*Corymbia trachyphloia*	Brown Bloodwood	160	N
20	*Eucalyptus carnea*	Thick-leaved Mahogony	180	N
21	*Corymbia trachyphloia*	Brown Bloodwood	290	N
22	*Eucalyptus dura*	Gum-topped Ironbark	360	N
23	*Corymbia trachyphloia*	Brown Bloodwood	400	N
24	*Eucalyptus dura*	Gum-topped Ironbark	300	N
25	*Eucalyptus dura*	Gum-topped Ironbark	290	N
26	*Eucalyptus dura*	Gum-topped Ironbark	100	N
27	*Eucalyptus dura*	Gum-topped Ironbark	160	N
28	*Eucalyptus dura*	Gum-topped Ironbark	300	N
29	*Eucalyptus dura*	Gum-topped Ironbark	290	N
30	*Eucalyptus dura*	Gum-topped Ironbark	100	N
			Total	0

Lyons Offset Site SAT Survey Raw Data

SAT 1				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus crebra*	Narrow-leaved Ironbark	240	Nil
2	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	Nil
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	200	Nil
4	*Brachychiton rupestris*	Narrow-leaved Bottle Tree	130	Nil
5	*Corymbia citriodora*	Spotted Gum	270	Nil
6	*Corymbia citriodora*	Spotted Gum	160	Nil
7	*Corymbia citriodora*	Spotted Gum	2000	Nil
8	*Corymbia citriodora*	Spotted Gum	180	Nil
9	*Corymbia tesselaris*	Moreton Bay Ash	110	Nil
10	*Eucalyptus crebra*	Spotted Gum	280	Nil
11	*Corymbia citriodora*	Spotted Gum	130	Nil
12	*Corymbia citriodora*	Narrow-leaved Ironbark	300	Nil
13	*Eucalyptus crebra*	Narrow-leaved Ironbark	280	Nil
14	*Corymbia citriodora*	Spotted Gum	190	Nil
15	*Corymbia citriodora*	Spotted Gum	190	Nil
16	*Corymbia citriodora*	Spotted Gum	200	Nil
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	Nil
18	*Corymbia citriodora*	Spotted Gum	100	Nil
19	*Eucalyptus crebra*	Narrow-leaved Ironbark	150	Nil
20	*Corymbia citriodora*	Spotted Gum	120	Scat
21	*Corymbia citriodora*	Spotted Gum	180	Nil
22	*Eucalyptus crebra*	Narrow-leaved Ironbark	360	Nil
23	*Corymbia citriodora*	Spotted Gum	190	Nil
24	*Corymbia citriodora*	Spotted Gum	160	Nil
25	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	Nil
26	*Corymbia citriodora*	Spotted Gum	390	Nil
27	*Corymbia citriodora*	Spotted Gum	250	Nil
28	*Eucalyptus crebra*	Narrow-leaved Ironbark	160	Nil
29	*Eucalyptus crebra*	Narrow-leaved Ironbark	150	Nil
30	*Corymbia citriodora*	Spotted Gum	290	Nil
Total Recorded				**1**
Percentage Recorded				**3%**
Total Koala Use (Based on East Coast Medium-High)				**low**

SAT 2				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	Lophostemon confertus	Brush Box	280	Nil
2	Lophostemon confertus	Brush Box	120	Nil
3	Corymbia citrodora	Spotted Gum	130	Nil
4	Corymbia intermedia	Pink Bloodwood	300	Nil
5	Corymbia citrodora	Spotted Gum	100	Nil
6	Corymbia citrodora	Spotted Gum	240	Nil
7	Corymbia intermedia	Pink Bloodwood	110	Nil
8	Corymbia citrodora	Spotted Gum	130	Nil
9	Eucalyptus tereticornis	Forest Red Gum	300	Nil
10	Lophostemon confertus	Brush Box	110	Nil
11	Corymbia citrodora	Spotted Gum	160	Nil

12	Corymbia citrodora	Spotted Gum	150	Nil
13	Corymbia citrodora	Spotted Gum	600	Nil
14	Corymbia citrodora	Spotted Gum	100	Nil
15	Corymbia intermedia	Pink Bloodwood	130	Nil
16	Angophera subvalentina	Broad-leaved Apple	130	Nil
17	Corymbia intermedia	Pink Bloodwood	110	Nil
18	Lophostemon confertus	Brush Box	140	Nil
19	Angophera subvalentina	Broad-leaved Apple	160	Nil
20	Corymbia citrodora	Spotted Gum	180	Nil
21	Corymbia citrodora	Spotted Gum	280	Nil
22	Corymbia intermedia	Pink Bloodwood	170	Nil
23	Lophostemon confertus	Brush Box	330	Nil
24	Lophostemon confertus	Brush Box	160	Nil
25	Allocasuarina torulosa	Forest Oak	150	Nil
26	Coymbia citriodora	Spotted Gum	160	Nil
27	Angophera subvalentina	Broad-leaved Apple	300	Nil
28	Jagera pseudorhus	Foambark	150	Nil
29	Erythrina vespertilio	Bat Wing Coral Tree	480	Nil
30	Coymbia citriodora	Spotted Gum	120	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 3				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	280	Nil
2	*Corymbia citriodora*	Spotted Gum	120	Nil
3	*Corymbia citriodora*	Spotted Gum	130	Nil
4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
5	*Corymbia citriodora*	Spotted Gum	100	Nil
6	*Corymbia citriodora*	Spotted Gum	240	Nil
7	*Corymbia citriodora*	Spotted Gum	110	Nil
8	*Corymbia citriodora*	Spotted Gum	130	Nil
9	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
10	*Corymbia citriodora*	Spotted Gum	110	Nil
11	*Corymbia citriodora*	Spotted Gum	160	Nil
12	*Corymbia citriodora*	Spotted Gum	150	Nil
13	*Corymbia citriodora*	Spotted Gum	600	Nil
14	*Corymbia citriodora*	Spotted Gum	100	Nil
15	*Corymbia citriodora*	Spotted Gum	130	Nil
16	*Corymbia citriodora*	Spotted Gum	130	Nil
17	*Corymbia citriodora*	Spotted Gum	110	Nil
18	*Corymbia citriodora*	Spotted Gum	140	Nil
19	*Corymbia citriodora*	Spotted Gum	160	Nil
20	*Corymbia citriodora*	Spotted Gum	180	Nil
21	*Corymbia citriodora*	Spotted Gum	280	Nil
22	*Corymbia citriodora*	Spotted Gum	170	Nil
23	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	330	Nil
24	*Corymbia citriodora*	Spotted Gum	160	Nil
25	*Corymbia citriodora*	Spotted Gum	150	Nil
26	*Corymbia citriodora*	Spotted Gum	160	Nil
27	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
28	*Corymbia citriodora*	Spotted Gum	150	Nil

29	*Corymbia citriodora*	Spotted Gum	480	Nil
30	*Corymbia citriodora*	Spotted Gum	120	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Low**

SAT 4				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus tereticornis*	Forest Red Gum	260	Nil
2	*Corymbia citriodora*	Spotted Gum	140	Nil
3	*Eucalyptus molucanna*	Gum Topped Box	290	Scat
4	*Corymbia citriodora*	Spotted Gum	320	Nil
5	*Eucalyptus molucanna*	Gum Topped Box	110	Nil
6	*Corymbia citriodora*	Spotted Gum	110	Nil
7	*Corymbia citriodora*	Spotted Gum	130	Nil
8	*Eucalyptus molucanna*	Gum Topped Box	100	Nil
9	*Corymbia citriodora*	Spotted Gum	310	Nil
10	*Corymbia citriodora*	Spotted Gum	250	Nil
11	*Corymbia citriodora*	Spotted Gum	100	Nil
12	*Eucalyptus molucanna*	Gum Topped Box	230	Nil
13	*Corymbia citriodora*	Spotted Gum	130	Nil
14	*Corymbia citriodora*	Spotted Gum	100	Nil
15	*Corymbia citriodora*	Spotted Gum	160	Nil
16	*Corymbia citriodora*	Spotted Gum	180	Nil
17	*Corymbia citriodora*	Spotted Gum	100	Nil
18	*Corymbia citriodora*	Spotted Gum	230	Nil
19	*Corymbia citriodora*	Spotted Gum	100	Nil
20	*Corymbia citriodora*	Spotted Gum	190	Nil
21	*Corymbia citriodora*	Spotted Gum	240	Nil
22	*Corymbia citriodora*	Spotted Gum	150	Nil
23	*Corymbia citriodora*	Spotted Gum	120	Nil
24	*Corymbia citriodora*	Spotted Gum	100	Nil
25	*Corymbia citriodora*	Spotted Gum	160	Nil
26	*Corymbia citriodora*	Spotted Gum	190	Nil
27	*Corymbia citriodora*	Spotted Gum	130	Nil
28	*Corymbia citriodora*	Spotted Gum	150	Nil
29	*Corymbia citriodora*	Spotted Gum	400	Nil
30	*Corymbia citriodora*	Spotted Gum	110	Nil
Total Recorded				**1**
Percentage Recorded				**3.33%**
Total Koala Use (Based on East Coast Medium-High)				**low**

SAT 5				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	230	Nil
2	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	280	Nil
3	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	Nil
5	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
6	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	640	Nil
7	*Corymbia citriodora*	Spotted Gum	260	Nil

8	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	130	Nil
9	*Corymbia citriodora*	Spotted Gum	300	Nil
10	*Corymbia citriodora*	Spotted Gum	120	Nil
11	*Corymbia citriodora*	Spotted Gum	110	Nil
12	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	330	Nil
13	*Corymbia citriodora*	Spotted Gum	180	Nil
14	*Corymbia citriodora*	Spotted Gum	360	Nil
15	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	230	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	400	Nil
17	*Corymbia citriodora*	Spotted Gum	420	Nil
18	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	160	Nil
19	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	150	Nil
20	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
21	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	400	Nil
22	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	230	Nil
23	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
24	*Eucalyptus tereticornis*	Forest Red Gum	410	Nil
25	*Corymbia citriodora*	Spotted Gum	170	Nil
26	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	220	Nil
27	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	320	Nil
28	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	Nil
29	*Corymbia citriodora*	Spotted Gum	280	Nil
30	*Corymbia citriodora*	Spotted Gum	270	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 6				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus molucanna*	Gum Topped Box	480	Nil
2	*Eucalyptus molucanna*	Gum Topped Box	400	Nil
3	*Eucalyptus molucanna*	Gum Topped Box	400	Nil
4	*Eucalyptus molucanna*	Gum Topped Box	360	Nil
5	*Eucalyptus molucanna*	Gum Topped Box	550	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	270	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	320	Nil
8	*Eucalyptus molucanna*	Gum Topped Box	100	Nil
9	*Eucalyptus molucanna*	Gum Topped Box	300	Nil
10	*Eucalyptus molucanna*	Gum Topped Box	600	Nil
11	*Eucalyptus molucanna*	Gum Topped Box	100	Nil
12	*Eucalyptus molucanna*	Gum Topped Box	300	Nil
13	*Eucalyptus tereticornis*	Forest Red Gum	140	Nil
14	*Eucalyptus molucanna*	Gum Topped Box	500	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	400	Nil
16	*Eucalyptus molucanna*	Gum Topped Box	510	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	120	Nil
18	*Eucalyptus molucanna*	Gum Topped Box	100	Nil
19	*Eucalyptus molucanna*	Gum Topped Box	200	Nil
20	*Eucalyptus molucanna*	Gum Topped Box	210	Nil
21	*Corymbia citriodora*	Forest Red Gum	350	Nil
22	*Eucalyptus molucanna*	Gum Topped Box	180	Nil
23	*Eucalyptus molucanna*	Gum Topped Box	180	Nil
24	*Angophera subvalentina*	Broad-leaved Apple	180	Nil

25	*Eucalyptus molucanna*	Gum Topped Box	160	Nil
26	*Eucalyptus molucanna*	Gum Topped Box	400	Nil
27	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
28	*Eucalyptus molucanna*	Gum Topped Box	100	Nil
29	*Eucalyptus molucanna*	Gum Topped Box	180	Nil
30	*Eucalyptus molucanna*	Gum Topped Box	300	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 7				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Acacia sp.*		160	Nil
2	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	Nil
3	*Acacia sp.*		140	Nil
4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	220	Nil
5	*Acacia sp.*		150	Nil
6	*Acacia sp.*		160	Nil
7	*Acacia sp.*		120	Nil
8	*Acacia sp.*		150	Nil
9	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	220	Nil
10	*Acacia sp.*		130	Nil
11	*Corymbia citriodora*	Spotted Gum	250	Nil
12	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	120	Nil
13	*Acacia sp.*		130	Nil
14	*Acacia sp.*		100	Nil
15	*Acacia sp.*		110	Nil
16	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	160	Nil
17	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	100	Nil
18	*Acacia sp.*		110	Nil
19	*Acacia sp.*		130	Nil
20	*Corymbia citriodora*	Spotted Gum	200	Nil
21	*Corymbia citriodora*	Spotted Gum	110	Nil
22	*Corymbia citriodora*	Spotted Gum	590	Nil
23	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	110	Nil
24	*Corymbia citriodora*	Spotted Gum	390	Nil
25	*Eucalyptus melanophloia*	Silver-leaved Ironbark	110	Nil
26	*Acacia sp.*		110	Nil
27	*Acacia sp.*		120	Nil
28	*Acacia sp.*		100	Nil
29	*Acacia sp.*		110	Nil
30	*Acacia sp.*		130	Nil
Total Recorded				**0**
Percentage Recorded				**0.00%**
Total Koala Use (Based on East Coast Medium-High)				**Nil**

SAT 8				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
2	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	490	Nil
3	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	410	Nil

4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	510	Nil
5	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	380	Nil
6	*Eucalyptus siderophloia*	Grey Ironbark	520	Nil
7	*Corymbia citriodora*	Spotted Gum	180	Scat
8	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	280	Nil
9	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	260	Scat
10	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	190	Nil
11	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	350	Nil
12	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	100	Nil
13	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	290	Nil
14	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	140	Nil
15	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	380	Nil
16	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
17	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	Nil
18	*Eucalyptus tereticornis*	Forest Red Gum	380	Nil
19	*Eucalyptus tereticornis*	Forest Red Gum	510	Nil
20	*Eucalyptus siderophloia*	Grey Ironbark	300	Nil
21	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
22	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
23	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	320	Nil
24	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	300	Nil
25	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	180	Nil
26	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	200	Nil
27	*Eucalyptus siderophloia*	Grey Ironbark	310	Nil
28	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	260	Nil
29	*Eucalyptus tereticornis*	Forest Red Gum	220	Nil
30	*Eucalyptus tereticornis*	Forest Red Gum	450	Nil
Total Recorded				**2**
Percentage Recorded				**6.66%**
Total Koala Use (Based on East Coast Medium-High)				**low**

SAT 9				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scat Recorded**
1	*Corymbia citriodora*	Spotted Gum	410	Nil
2	*Allocasuarina torulosa*	Forest Sheoak	100	Scat
3	*Corymbia citriodora*	Spotted Gum	120	Scat
4	*Eucalyptus melanophloia*	Silver-leaved Ironbarl	210	Scat
5	*Eucalyptus melanophloia*	Silver-leaved Ironbarl	150	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	160	Nil
7	*Allocasuarina torulosa*	Forest Sheoak	100	Nil
8	*Eucalyptus tereticornis*	Forest Red Gum	500	Nil
9	*Corymbia citriodora*	Spotted Gum	160	Nil
10	*Eucalyptus tereticornis*	Forest Red Gum	620	Scat
11	*Corymbia citriodora*	Spotted Gum	300	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	580	Nil
13	*Allocasuarina torulosa*	Forest Sheoak	130	Nil
14	*Corymbia citriodora*	Spotted Gum	400	Nil
15	*Allocasuarina torulosa*	Forest Sheoak	100	Nil

16	*Corymbia citriodora*	Spotted Gum	390	Nil
17	*Corymbia citriodora*	Spotted Gum	270	Nil
18	*Corymbia citriodora*	Spotted Gum	450	Nil
19	*Corymbia citriodora*	Spotted Gum	480	Nil
20	*Corymbia citriodora*	Spotted Gum	320	Nil
21	*Corymbia citriodora*	Spotted Gum	300	Nil
22	*Corymbia citriodora*	Spotted Gum	320	Nil
23	*Allocasuarina torulosa*	Forest Sheoak	100	Nil
24	*Corymbia citriodora*	Spotted Gum	200	Nil
25	*Corymbia citriodora*	Spotted Gum	130	Nil
26	*Corymbia citriodora*	Spotted Gum	160	Nil
27	*Corymbia citriodora*	Spotted Gum	150	Nil
28	*Corymbia citriodora*	Spotted Gum	290	Nil
29	*Eucalyptus tereticornis*	Forest Red Gum	190	Nil
30	*Corymbia citriodora*	Spotted Gum	120	Nil
Total Recorded				**4**
Percentage Recorded				**13.33%**
Total Koala Use (Based on East Coast Medium-High)				**low**

SAT 1 (2020) Lyons				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	560	N
2	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	600	N
3	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	100	N
4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	160	N
5	*Corymbia citriodora*	Spotted Gum	490	N
6	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	160	N
7	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	150	N
8	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	N
9	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	180	N
10	*Corymbia citriodora*	Spotted Gum	110	N
11	*Corymbia citriodora*	Spotted Gum	140	N
12	*Corymbia citriodora*	Spotted Gum	150	N
13	*Corymbia citriodora*	Spotted Gum	150	N
14	*Corymbia intermedia*	Pink Bloodwood	310	N
15	*Corymbia citriodora*	Spotted Gum	460	N
16	*Corymbia citriodora*	Spotted Gum	110	N
17	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	260	N
18	*Corymbia citriodora*	Spotted Gum	500	N
19	*Corymbia citriodora*	Spotted Gum	180	N
20	*Corymbia intermedia*	Pink Bloodwood	290	N
21	*Eucalyptus tereticornis*	Forest Red Gum	110	N
22	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	130	N
23	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	140	N
24	*Corymbia intermedia*	Pink Bloodwood	400	N
25	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	500	N
26	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	390	N
27	*Brachychiton sp.*		300	N
28	*Brachychiton sp.*		510	N
29	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	220	N
30	*Corymbia intermedia*	Pink Bloodwood	220	N
			Total	0

SAT 2 (2020) Lyons				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	400	N
2	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	430	N
3	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	110	N
4	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	450	N
5	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	130	N
6	*Corymbia citriodora*	Spotted Gum	440	N
7	*Corymbia citriodora*	Spotted Gum	200	N
8	*Corymbia citriodora*	Spotted Gum	210	N
9	*Corymbia citriodora*	Spotted Gum	430	N
10	*Corymbia citriodora*	Spotted Gum	420	N
11	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	280	N
12	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	180	N
13	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	160	N
14	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	210	N
15	*Corymbia citriodora*	Spotted Gum	270	N
16	*Acacia shirleyi*	Lancewood	120	N
17	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	430	N
18	*Acacia shirleyi*	Lancewood	110	N
19	*Acacia shirleyi*	Lancewood	100	N
20	*Acacia shirleyi*	Lancewood	120	N
21	*Acacia shirleyi*	Lancewood	130	N
22	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	230	N
23	*Acacia shirleyi*	Lancewood	100	N
24	*Acacia shirleyi*	Lancewood	110	N
25	*Acacia shirleyi*	Lancewood	100	N
26	*Acacia shirleyi*	Lancewood	130	N
27	*Acacia shirleyi*	Lancewood	140	N
28	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	220	N
29	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	230	N
30	*Acacia shirleyi*	Lancewood	100	N
			Total	**0**

SAT 3 (2020) Lyons				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Eucalyptus tereticornis*	Forest Red Gum	250	N
2	*Corymbia citriodora*	Spotted Gum	390	N
3	*Acacia disparimma*	Hickory Wattle	200	N
4	*Eucalyptus molucanna*	Gum-topped Box	260	N
5	*Corymbia citriodora*	Spotted Gum	130	N
6	*Eucalyptus molucanna*	Gum-topped Box	330	N
7	*Corymbia citriodora*	Spotted Gum	320	N
8	*Eucalyptus molucanna*	Gum-topped Box	140	N
9	*Eucalyptus molucanna*	Gum-topped Box	150	N
10	*Corymbia citriodora*	Spotted Gum	130	N
11	*Eucalyptus tereticornis*	Forest Red Gum	160	N
12	*Corymbia citriodora*	Spotted Gum	150	N
13	*Corymbia citriodora*	Spotted Gum	240	N
14	*Corymbia citriodora*	Spotted Gum	250	N
15	*Corymbia citriodora*	Spotted Gum	200	N
16	*Eucalyptus molucanna*	Gum-topped Box	180	N
17	*Eucalyptus molucanna*	Gum-topped Box	290	N
18	*Corymbia citriodora*	Spotted Gum	100	N
19	*Eucalyptus molucanna*	Gum-topped Box	150	N
20	*Corymbia citriodora*	Spotted Gum	300	N
21	*Eucalyptus molucanna*	Gum-topped Box	360	N
22	*Eucalyptus molucanna*	Gum-topped Box	180	N
23	*Eucalyptus molucanna*	Gum-topped Box	380	Y
24	*Corymbia citriodora*	Spotted Gum	210	N
25	*Corymbia citriodora*	Spotted Gum	180	N
26	*Eucalyptus molucanna*	Gum-topped Box	270	N
27	*Allocasuarina torulosa*	Forest She Oak	160	N
28	*Corymbia citriodora*	Spotted Gum	200	N
29	*Corymbia citriodora*	Spotted Gum	220	N
30	*Corymbia citriodora*	Spotted Gum	260	N
			Total	**1**

SAT 4 (2020) Lyons				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Corymbia citriodora*	Spotted Gum	310	N
2	*Eucalyptus molucanna*	Gum-topped Box	400	N
3	*Corymbia citriodora*	Spotted Gum	190	N
4	*Corymbia citriodora*	Spotted Gum	200	N
5	*Corymbia citriodora*	Spotted Gum	260	N
6	*Corymbia citriodora*	Spotted Gum	100	N
7	*Corymbia citriodora*	Spotted Gum	140	N
8	*Eucalyptus molucanna*	Gum-topped Box	100	N
9	*Eucalyptus molucanna*	Gum-topped Box	130	N
10	*Eucalyptus molucanna*	Gum-topped Box	160	N
11	*Corymbia citriodora*	Spotted Gum	100	N
12	*Corymbia citriodora*	Spotted Gum	180	N
13	*Corymbia citriodora*	Spotted Gum	400	N
14	*Corymbia citriodora*	Spotted Gum	250	N
15	*Corymbia citriodora*	Spotted Gum	110	N
16	*Corymbia citriodora*	Spotted Gum	510	N
17	*Corymbia citriodora*	Spotted Gum	210	N
18	*Corymbia citriodora*	Spotted Gum	110	N
19	*Corymbia citriodora*	Spotted Gum	140	N
20	*Corymbia citriodora*	Spotted Gum	100	N
21	*Corymbia citriodora*	Spotted Gum	130	N
22	*Corymbia citriodora*	Spotted Gum	100	N
23	*Eucalyptus molucanna*	Gum-topped Box	400	Y
24	*Eucalyptus molucanna*	Gum-topped Box	360	N
25	*Eucalyptus molucanna*	Gum-topped Box	600	N
26	*Eucalyptus molucanna*	Gum-topped Box	300	N
27	*Eucalyptus molucanna*	Gum-topped Box	310	N
28	*Eucalyptus molucanna*	Gum-topped Box	290	N
29	*Corymbia citriodora*	Spotted Gum	130	N
30	*Eucalyptus molucanna*	Gum-topped Box	130	N
			Total	**1**

SAT 5 (2020) Lyons				
Tree Number	**Species**	**Common Name**	**DBH (mm)**	**Scat (Y/N)**
1	*Corymbia citriodora*	Spotted Gum	380	N
2	*Corymbia citriodora*	Spotted Gum	420	N
3	*Lophostemon confertus*	Brush Box	490	N
4	*Corymbia citriodora*	Spotted Gum	360	N
5	*Corymbia citriodora*	Spotted Gum	460	N
6	*Corymbia citriodora*	Spotted Gum	180	N
7	*Allocasuarina torulosa*	Forest She Oak	160	N
8	*Lophostemon confertus*	Brush Box	320	N
9	*Lophostemon confertus*	Brush Box	300	N
10	*Eucalyptus crebra*	Narrow-leaved Grey Ironbark	260	N
11	*Lophostemon confertus*	Brush Box	210	N
12	*Lophostemon confertus*	Brush Box	180	N
13	*Corymbia citriodora*	Spotted Gum	300	N
14	*Angophera woodsiana*	Smudgy Apple	140	N
15	*Corymbia citriodora*	Spotted Gum	300	N
16	*Angophera woodsiana*	Rough-barked Apple	160	N
17	*Corymbia citriodora*	Spotted Gum	410	N
18	*Corymbia citriodora*	Spotted Gum	170	N
19	*Corymbia citriodora*	Spotted Gum	170	N
20	*Angophera woodsiana*	Smudgy Apple	180	N
21	*Corymbia citriodora*	Spotted Gum	420	N
22	*Lophostemon confertus*	Brush Box	310	N
23	*Lophostemon confertus*	Brush Box	230	N
24	*Corymbia citriodora*	Spotted Gum	420	N
25	*Lophostemon confertus*	Brush Box	480	N
26	*Lophostemon confertus*	Brush Box	180	N
27	*Corymbia intermedia*	Pink Bloodwood	480	N
28	*Allocasuarina torulosa*	Forest She Oak	120	N
29	*Allocasuarina torulosa*	Forest She Oak	130	N
30	*Corymbia citriodora*	Spotted Gum	130	N
			Total	**0**

Appendix 2
MHQA and Bio Condition raw data

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☑	An Offset Site	☐	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Offset Downs	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.9-10.4	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 1: *Eucalyptus racemosa* dominated with *Corymbia citriodora* and C. intermedia, E. carnea and E. fibrosa. Transect 2 *Corymbia intermedia* and *Eucalyptus racemosa* dominated with *Angophora leiocarpa*

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

Tree species richness:			
Total number of species	13		
Scientific Name	*Eucalyptus racemosa*	Common Name	Scribbly Gum
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus fibrosa*	Common Name	Broad-leaved Red Ironbark
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Allocasuarina littoralis*	Common Name	Black She-oak
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Lophostemon sauveolans*	Common Name	Swamp Box
Scientific Name	*Eucalyptus seeana*	Common Name	Narrow-leaved Red Gum
Scientific Name	*Eucalyptus racemosa*	Common Name	Scribbly Gum
Scientific Name	*Eucalyptus fibrosa*	Common Name	Broad-leaved Red Ironbark
Scientific Name	*Allocasuarina littoralis*	Common Name	Black She-oak
Scientific Name	*Eucalyptus seeana*	Common Name	Narrow-leaved Red Gum
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Lophostemon sauveolans*	Common Name	Swamp Box
Scientific Name	*Melaleuca quinquenervia*	Common Name	Broad-leaved Paperbark
Scientific Name	*Acacia concurrens*	Common Name	Black Wattle
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood

Shrub species richness:			
Total number of species	4		
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Acacia concurrens*	Common Name	Black Wattle
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Leptospermum liversidgei*	Common Name	Lemon-scented Tea Tree
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Entolasia stricta*	Common Name	Wiry Panic
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Aristida vagans*	Common Name	Threeawn Speargrass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Aristida vagans*	Common Name	Threeawn Speargrass
Scientific Name	*Entolasia stricta*	Common Name	Wiry Panic
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass

Forbs and others (non grass ground) species richness:			
Total number of species	12		
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Cyanthillium cinereum*	Common Name	Vernonia
Scientific Name	*Desmodium varians*	Common Name	Slender Tick Trefoil
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Parsonia straminea*	Common Name	Monkey Rope
Scientific Name	*Boronia polygalifolia*	Common Name	Dwarf Boronia
Scientific Name	*Lepidosperma laterale*	Common Name	Variable Swordsedge
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lilly
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Sago Flower
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia

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

Total percentage cover within plot	5.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Senna pendula*	Common Name	Easter Cassia
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Gamochaeta pensylvanica*	Common Name	Cudweed
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	226.50		
1	1.20		
2	1.70		
3	1.00		
4	2.50		
5	3.20		
6	6.80		
7	2.40		
8	1.10		
9	1.50		
10	5.30		
11	2.10		
12	3.00		
13	1.20		
14	1.40		
15	2.50		
16	1.40		
17	1.00		
18	6.00		
19			
20			

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	32.50%	2.50%	2.50%	7.50%	30.00%	15.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	40.00%	72.50%	75.00%	52.50%	35.00%	55.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	250
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

Median Tree Canopy Height Measurements	Canopy:	21.00	Sub-canopy:	7.50	Emergent:	

Number of ecologically dominant layer species regenerating:	100

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	42.75%	Sub-canopy:	35.75%	Emergent:	
Shrub canopy cover %	3.40%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	2 - >10% - <50%	2 - >10% to 30% remnant		1- Not within
SCORE	10	2	2		0

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1	Phascolarctos cinereus	koala	SL	Description	*1 - High threat level (ie likely to result in death, irreversible damage)*	*2 - Moderate*	*2 - Moderate*	*2 - Highly restricted (51% - 75% reduction)*	1 - Not or unlikely to be critical to species' survival*
				Score	3	5	5	6	2
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score	3.00	5.00	5.00	6.00	2.00

Attach Landscape Photos Here

Transect 1

North

Transect 2

South

East

West

(FORM COMPLETE)

Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: QLD Environmental Offsets

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☑	An Offset Site	☐	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach:	Rapid approach	☐	Standard Approach	☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property		Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.4	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 3: Regrowth dominated by *Eucalyptus racemosa* , *Corymbia intermedia* , with *Angophora leiocarpa* and *Lophostemon sauveolans* . Transect 4: Eucalyptus racemosa and Corymbia intermedia dominated regrowth with E. siderophloia

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Eucalyptus racemosa*	Common Name	Scribbly Gum
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon sauveolans*	Common Name	Swamp Box
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Melaleuca quinquenervia*	Common Name	Broad-leaved Paperbark
Scientific Name	*Allocasuarina littoralis*	Common Name	Black She-oak
Scientific Name	*Eucalyptus racemosa*	Common Name	Scribbly Gum
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon sauveolans*	Common Name	Swamp Box
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Acacia concurrens*	Common Name	Black Wattle
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Melaleuca quinquenervia*	Common Name	Broad-leaved Paperbark
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple

Shrub species richness:			
Total number of species	3		
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Leptospermum liversidgei*	Common Name	Variable Swordsedge
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Brachychiton acerifolius*	Common Name	Flame Tree
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	5		
Scientific Name	*Eragrostis brownii*	Common Name	Brown's Lovegrass
Scientific Name	*Aristida vagans*	Common Name	Threeawn Speargrass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Entolasia stricta*	Common Name	Wiry Panic
Scientific Name	*Aristida vagans*	Common Name	Threeawn Speargrass
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	11		
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name	*Gahnia aspera*	Common Name	Saw Sedge
Scientific Name	*Lepidosperma laterale*	Common Name	Variable Swordsedge
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lilly
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Sago Flower
Scientific Name	*Lepidosperma laterale*	Common Name	Variable Swordsedge
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Sago Flower
Scientific Name	*Gahnia aspera*	Common Name	Saw Sedge
Scientific Name	*Glycine tabacina*	Common Name	Variable Glycine
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Cyanthillium cinereum*	Common Name	Vernonia
Scientific Name	*Hibbertia vestita*	Common Name	Golden Guinea Flower

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

Total percentage cover within plot	27.50%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Pinus elliotii*	Common Name	Slash Pine
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion Vine
Scientific Name	*Asparagus aethipicus*	Common Name	Ground Asparagus Fern
Scientific Name	*Syagrus romanzoffiana*	Common Name	Cocos Palm
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	219.50		
1	1.80		
2	6.80		
3	4.20		
4	1.00		
5	2.30		
6	6.40		
7	7.60		
8	1.20		
9	2.30		
10	1.00		
11	4.80		
12	4.50		
13			
14			

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	15.00%	5.00%	12.50%	37.50%	37.50%	21.50%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	62.50%	85.00%	80.00%	47.50%	45.00%	64.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	250
Number of large eucalypt trees:	4	Number of large non eucalypt trees:	0
Total Number Large Trees:	4		

Median Tree Canopy Height Measurements	Canopy:	17.00	Sub-canopy:	5.50	Emergent:	

Number of ecologically dominant layer species regenerating:	90

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	35.40%	Sub-canopy:	12.00%	Emergent:	
Shrub canopy cover %	3.35%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	2 - >10% - <50%	2 - >10% to 30% remnan		1- Not within
SCORE	10	2	2		0

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☑ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1	Phascolarctos cinereus	koala	SL	Description	*1 - High threat level (ie likely to result in death, irreversible damage)*	*1 - Poor*	*1 - Poor*	*2 - Highly restricted (51% - 75% reduction)*	1 - Not or unlikely to be critical to species' survival"
				Score	3	3	3	6	1
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score	3.00	3.00	3.00	6.00	1.00

Attach Landscape Photos Here

Transect 3

North

Transect 4

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact area

Part B - Site Data

Property	Impact area	Date	14/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.9-10.4	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

2020 T1 E. siderophloia, E. racemosa dominated with C. intermedia and A. leiocarpa

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Eucalyptus siderophloia*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Eucalyptus racemosa*	**Common Name**	Scribbly Gum
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Angophera leiocarpa*	**Common Name**	Smooth Barked Apple
Scientific Name	*Banksia integrifolia*	**Common Name**	Coastal Banksia
Scientific Name	*Lophostemon sauveolans*	**Common Name**	Swamp Box
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Acacia leiocalyx*	**Common Name**	Early-flowering Black Wattle
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
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	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
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	8		
Scientific Name	*Lomandra multiflora*	**Common Name**	Mat Rush
Scientific Name	*Goodenia rotundifolia*	**Common Name**	Star Goodenia
Scientific Name	*Gahnia aspera*	**Common Name**	Rough Saw Sedge
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Chrysocephalum apiculatum*	**Common Name**	Yellow Buttons
Scientific Name	*Hibertia vestita*	**Common Name**	Hairy Guinea-Flower
Scientific Name	*Phyllanthus similis*	**Common Name**	Native Phyllanthus
Scientific Name	*Calochlaena dubia*	**Common Name**	Soft Bracken

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

Total percentage cover within plot	6.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Cassytha pubescens*	**Common Name**	Devils Twine

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

Total Length of Course Woody Debris (Meters):	96.00		
1	5.20	26	
2	4.40	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	15%	15%	2%	15%	20%	13%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	30%	5%	3%	0%	5%	9%
Native shrubs	0%	0%	0%	0%	10%	2%
Non-native grass	0%	0%	0%	0%	0%	0%
Non native forbs and shrubs	5%	0%	0%	0%	0%	1%
Litter	50%	80%	60%	85%	45%	64%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	0%	0%	35%	0%	20%	11%
Cryptogram	0%	0%	0%	0%	0%	0%

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

Eucalypt Large tree DBH benchmark used :	510	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

E. sid	530, 510
E. racemosa	670

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	39.80	Sub-canopy:	7.00	Emergent:	
Shrub canopy cover %	8.30					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	10.70	12.50	1.80	T2	12.30	17.30	5.00
T1	23.50	27.80	4.30	T2	22.90	24.90	2.00
T1	36.10	39.00	2.90	T2			
T1	43.40	46.80	3.40	T2			
T1	48.50	63.50	15.00	T2			
T1	64.80	68.80	4.00	T2			
T1	77.70	86.10	8.40	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	19.20	21.10	1.90	**Shrub**			
Shrub	26.40	29.10	2.70	**Shrub**			
Shrub	40.50	42.60	2.10	**Shrub**			
Shrub	51.30	52.90	1.60	**Shrub**			

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
Eucalyptus siderophloia	16
Eucalyptus racemosa	4
Corymbia intermedia	11

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact area

Part B - Site Data

Property	impact area	Date	24/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.3.11	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T6 Eucalyptus tereticornis dominated with E. siderophloia and Corymbia intermedia. Allocasuarina littoralis and Melaleuca quinquenervia in sub-canopy.

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus tereticornis* (EDL dom) [R]	**Common Name**	Forest Red Gum
Scientific Name	*Eucalyptus siderophloia* (EDL dom) [R]	**Common Name**	Grey Ironbark
Scientific Name	*Corymbia intermedia* (EDL dom) [R]	**Common Name**	Pink Bloodwood
Scientific Name	*Melaleuca quinquenervia*	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Angophora leiocarpa*	**Common Name**	Smooth-barked Apple
Scientific Name	*Allocasuarina littoralis*	**Common Name**	Black She-oak
Scientific Name	*Lophostemon suaveolens*	**Common Name**	Swamp Box
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Melaleuca quinquenervia*	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush 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	4		
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Aristida leptopoda*	**Common Name**	White Speargrass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
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	9		
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	*Phyllanthus microcladus*	**Common Name**	Small-leaved Phyllanthus
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax-lily
Scientific Name	*Gahnia aspera*	**Common Name**	Saw Sedge
Scientific Name	*Viola hederacea*	**Common Name**	Native Violet
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total percentage cover within plot	3.00%		
Scientific Name	*Cyanthillium cinereum*	**Common Name**	Vernonia

Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Setaria sphacelata*	Common Name	South African Pigeon Grass
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 E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	406.00		
1	8.00	26	
2	1.20	27	
3	1.10	28	
4	0.50	29	
5	3.00	30	
6	2.50	31	
7	2.50	32	
8	3.00	33	
9	3.00	34	
10	6.00	35	
11	2.00	36	

12	2.50	37	
13	2.50	38	
14	1.50	39	
15	1.30	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	5.00%	0.00%	15.00%	7.00%	25.00%	10.40%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	
Native forbs and other species	15.00%	15.00%	5.00%	2.00%	8.00%	9.00%
Native shrubs	0.00%	0.00%	0.00%	6.00%	0.00%	1.20%
Non-native grass	0.00%	10.00%	0.00%	0.00%	0.00%	2.00%
Non native forbs and shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	
Litter	0.00%	75.00%	75.00%	85.00%	62.00%	59.40%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	
Bare Ground	80.00%	0.00%	5.00%	0.00%	5.00%	18.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	360
Number of large eucalypt trees:	1	Number of large non eucalypt trees:	0
Total Number Large Trees:	1		

C. intermedia	500

Median Tree Canopy Height Measurements	Canopy:	20.00	Sub-canopy:	6.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	49.10%	Sub-canopy:	43.50%	Emergent:	
Shrub canopy cover %	1.10%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	2.70%	6.60%	3.90%	T2	3.90%	5.30%	1.40%
T1	17.40%	25.30%	7.90%	T2	9.30%	10.80%	1.50%
T1	28.20%	36.00%	7.80%	T2	15.20%	18.90%	3.70%
T1	43.00%	49.20%	6.20%	T2	23.40%	36.80%	13.40%
T1	49.80%	53.20%	3.40%	T2	47.40%	44.40%	-3.00%
T1	58.80%	65.40%	6.60%	T2	50.20%	53.00%	2.80%
T1	70.40%	72.30%	1.90%	T2	55.70%	66.30%	10.60%
T1	74.20%	81.30%	7.10%	T2	68.50%	73.10%	4.60%
T1	87.90%	90.80%	2.90%	T2	83.80%	88.70%	4.90%
T1	98.60%	100.00%	1.40%	T2	91.40%	95.00%	3.60%
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	75.80%	76.90%	1.10%	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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
Eucalyptus siderophloia	12
Corymbia intermedia	9
Eucalyptus tereticornis	5
Lophostmeon suaveolens	4
Angophora leiocarpa	1
Melaleuca quinquenervia	3

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact area

Part B - Site Data

Property	Impact area	Date	14/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.12	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T3 E. seeana dominated C. intermedia, L. sauveolans

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Lophostemon sauveolans*	**Common Name**	Swamp Box
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Allocasurina littoralis*	**Common Name**	Black Sheoak
Scientific Name	*Melaleuca quinquenervia*	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Eucalyptus seeana*	**Common Name**	Narrow-leaved Forest Red Gum
Scientific Name	*Acacia leiocalyx*	**Common Name**	Early Black Wattle
Scientific Name	*Acacia disparrima*	**Common Name**	Hickory Wattle
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Lomatia silaifolia*	**Common Name**	Crinkle Bush
Scientific Name	Melaleuca linariifolia	**Common Name**	Snow in Summer
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
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	2		
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
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:			
Total number of species	5		
Scientific Name	*Lomandra multiflora*	**Common Name**	Mat Rush
Scientific Name	*Goodenia rotundifolia*	**Common Name**	Star Goodenia
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Gahnia aspera*	**Common Name**	Rough Saw Sedge
Scientific Name	*Hybanthus stellarioides*	**Common Name**	Spade Flower
Scientific Name		**Common Name**	

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

Total percentage cover within plot	2.00%		
Scientific Name	*Hypochaeris radicata*	**Common Name**	Flat Weed
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Scientific Name		Common Name	
Scientific Name		Common Name	
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): ha	97.00		
1	3.40	26	
2	2.70	27	
3	0.80	28	
4	0.60	29	
5	2.20	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	5%	2%	10%	10%	10%	7%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	10%	0%	10%	20%	20%	12%
Native shrubs	0%	0%	0%	5%	0%	1%
Non-native grass	0%	0%	0%	0%	0%	0%
Non native forbs and shrubs	0%	0%	0%	0%	0%	0%
Litter	75%	98%	80%	65%	70%	78%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	10%	0%	0%	0%	0%	2%
Cryptogram	0%	0%	0%	0%	0%	0%

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

Eucalypt Large tree DBH benchmark used :	400	Non- Eucalypt Large tree DBH benchmark used:	250
Number of large eucalypt trees:	5	Number of large non eucalypt trees:	5
Total Number Large Trees:	10		

C. intermedia	410, 400	M. quinn	300, 290, 270, 250, 270	
E. seeana	400, 430			
L. suav	400			

Median Tree Canopy Height Measurements	Canopy:	20.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	57.40	Sub-canopy:	7.00	Emergent:	
Shrub canopy cover %	0.70					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	15.10	20.40	5.30	T2	30.10	33.80	3.70
T1	22.60	27.00	4.40	T2	71.40	73.50	2.10
T1	29.10	38.20	9.10	T2	79.20	80.40	1.20
T1	41.20	48.20	7.00	T2			
T1	52.00	58.80	6.80	T2			
T1	62.20	64.30	2.10	T2			
T1	66.80	75.00	8.20	T2			
T1	76.50	78.40	1.90	T2			
T1	82.60	89.60	7.00	T2			
T1	94.40	100.00	5.60	T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	26.50	27.20	0.70	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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
Melaleuca quinquenervia	18
Lophostemon sauveolans	12
Corymbia intermedia	15
Eucalyptus seeana	33

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact area

Part B - Site Data

Property	Impact area	Date	14/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.12	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T4 E seeana, C intermedia dominated with L sauveolans

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Lophostemon sauveolans*	**Common Name**	Swamp Box
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Allocasurina littoralis*	**Common Name**	Black Sheoak
Scientific Name	*Melaleuca quinquenervia*	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Eucalyptus seeana*	**Common Name**	Narrow-leaved Forest Red Gum
Scientific Name	*Acacia leiocalyx*	**Common Name**	Early-flowering Black She Oak
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	2		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Acacia leiocalyx*	**Common Name**	Early-flowering Black She Oak
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	3		
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
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	10		
Scientific Name	*Lomandra multiflora*	**Common Name**	Mat Rush
Scientific Name	*Goodenia rotundifolia*	**Common Name**	Star Goodenia
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Gahnia aspera*	**Common Name**	Rough Saw Sedge
Scientific Name	*Cyanthillium cinereum*	**Common Name**	Vernonia
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Eustrephjus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Hybanthus stellarioides*	**Common Name**	Spade Flower
Scientific Name	*Tricoryne elatior*	**Common Name**	Yellow Rush-lily
Scientific Name	*Parsonia straminea*	**Common Name**	Monkey Rope

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

Total percentage cover within plot	2.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
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	

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

Total Length of Course Woody Debris (Meters):	17.00		
1	1.70	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	40%	20%	10%	5%	5%	16%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	40%	5%	20%	15%	15%	19%
Native shrubs	0%	0%	0%	0%	0%	0%
Non-native grass	0%	0%	0%	0%	0%	0%
Non native forbs and shrubs	0%	0%	0%	0%	0%	0%
Litter	20%	75%	70%	80%	80%	65%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	0%	0%	0%	0%	0%	0%
Cryptogram	0%	0%	0%	0%	0%	0%

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

Eucalypt Large tree DBH benchmark used :	400	Non- Eucalypt Large tree DBH benchmark used:	250
Number of large eucalypt trees:	5	Number of large non eucalypt trees:	0
Total Number Large Trees:	5		

C. inter	450, 440,
E. seeana	430, 400, 400

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	50.30	Sub-canopy:	16.20	Emergent:	
Shrub canopy cover %	3.10					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	3.1	3.1	T2	0.0	6.7	6.7
T1	14.5	21.4	6.9	T2	8.9	11.1	2.2
T1	25.1	26.3	1.2	T2	72.5	77.2	4.7
T1	28.1	36.1	8.0	T2	86.7	89.3	2.6
T1	39.7	42.3	2.6	T2			
T1	45.2	52.3	7.1	T2			
T1	54.6	60.6	6.0	T2			
T1	82.1	88.4	6.3	T2			
T1	89.1	98.2	9.1	T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	48.20	50.10	1.90	**Shrub**			
Shrub	88.30	89.50	1.20	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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
Melaleuca quinquenervia	3
Lophostemon sauveolans	45
Corymbia intermedia	22
Eucalyptus seeana	24

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact Area

Part B - Site Data

Property	Impact Area	Date	14/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
4		12.9-10.4	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T2 Non-remnant regrowth. E. racemosa and C. intermedia

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus siderophloia*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Angophera leiocarpa*	**Common Name**	Smooth Barked Apple
Scientific Name	*Melaleuca quinquenervia*	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Eucalyptus seeana*	**Common Name**	Narrow-leaved Forest Red Gum
Scientific Name	*Allocasuarina littoralis*	**Common Name**	Black Sheoak
Scientific Name	*Eucalyptus racemosa*	**Common Name**	Scribbly Gum
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Leptospermum liversidgei*	**Common Name**	Lemon-scented Tea Tree
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
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	2		
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
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:			
Total number of species	6		
Scientific Name	*Lomandra multiflora*	**Common Name**	Mat Rush
Scientific Name	*Goodenia rotundifolia*	**Common Name**	Star Goodenia
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Chrysocephalum apiculatum*	**Common Name**	Yellow Buttons
Scientific Name	*Lomandra longifolia*	**Common Name**	Many-flowered Mat Rush
Scientific Name		**Common Name**	

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

Total percentage cover within plot	3.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
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	

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

Total Length of Course Woody Debris (Meters):	75.00		
1	3.20	26	
2	3.70	27	
3	0.60	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	20.00%	10.00%	10.00%	15.00%	15.00%	14.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	10.00%	15.00%	5.00%	10.00%	15.00%	11.00%
Native shrubs	5.00%	0.00%	0.00%	0.00%	5.00%	2.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Litter	50.00%	70.00%	85.00%	75.00%	65.00%	69.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	15.00%	5.00%	0.00%	0.00%	0.00%	4.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	510	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

E. race	560, 510, 1020

Median Tree Canopy Height Measurements	Canopy:	12.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	26.50	Sub-canopy:	30.20	Emergent:	
Shrub canopy cover %	15.40					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	6.10	14.10	8.00	T2	14.50	15.70	1.20
T1	32.90	34.80	1.90	T2	29.80	31.20	1.40
T1	40.80	46.50	5.70	T2	41.90	45.10	3.20
T1	77.60	79.40	1.80	T2	48.10	60.40	12.30
T1	87.20	96.30	9.10	T2	63.30	66.40	3.10
T1				T2	68.60	70.40	1.80
T1				T2	73.40	74.60	1.20
T1				T2	78.70	80.60	1.90
T1				T2	82.60	84.70	2.10
T1				T2	87.40	88.40	1.00
T1				T2	99.00	100.00	1.00
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	15.90	16.80	0.90	**Shrub**	28.20	31.30	3.10
Shrub	17.90	18.80	0.90	**Shrub**	32.80	36.10	3.30
Shrub	21.20	21.40	0.20	**Shrub**	37.80	42.70	4.90
Shrub	23.60	24.50	0.90	**Shrub**	86.10	87.30	1.20

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
Melaleuca quinquenervia	6
Eucalyptus racemosa	5
Corymbia intermedia	12
Angophera leiocarpa	2
Eucalyptus seeana	12

(FORM COMPLETE)

Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: QLD Environmental Offsets

Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Impact area

Part B - Site Data

Property	Impact area	Date	24/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.3.11	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T7 Eucalyptus tereticornis dominated with E. siderophloia, Melaleuca quinquenevia and Corymbia intermedia. Allocasuarina littoralis in subcanopy

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Eucalyptus tereticornis* (EDL)	**Common Name**	Forest Red Gum
Scientific Name	*Corymbia intermedia* (EDL dom) [R]	**Common Name**	Pink Bloodwood
Scientific Name	*Melaleuca quinquenervia* (EDL dom) [R]	**Common Name**	Broad-leaved Paperbark
Scientific Name	*Lophostemon suaveolens* (EDL)	**Common Name**	Swamp Box
Scientific Name	*Allocasuarina littoralis*	**Common Name**	Black She-oak
Scientific Name	*Melaleuca linariifolia*	**Common Name**	Snow in Summer
Scientific Name	*Eucalyptus siderophloia* (EDL dom) [R]	**Common Name**	Grey Ironbark
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	2		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Acacia leiocalyx*	**Common Name**	Early Flowering Black Wattle
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	1		
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
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:			
Total number of species	5		
Scientific Name	*Philydrum lanuginosum*	**Common Name**	Woolly Frogmouth
Scientific Name	*Lomandra multiflora*	**Common Name**	Many Flowered Mat Rush
Scientific Name	*Lomandra longifolia*	**Common Name**	Long-leaved Matrush
Scientific Name	*Desmodium varians*	**Common Name**	Slender Tick Trefoil
Scientific Name	*Hibbertia vestita*	**Common Name**	Hairy Guinea-flower
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total percentage cover within plot	60.00%		
Scientific Name	*Setaria sphacelata*	**Common Name**	South African Pigeon Grass

Scientific Name	*Cyperus polystachyos*	Common Name	Bunchy Sedge
Scientific Name	*Lantana camara*	Common Name	Lantana
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 E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	141.00		
1	1.00	26	
2	2.00	27	
3	2.00	28	
4	2.00	29	
5	3.00	30	
6	1.50	31	
7	2.60	32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	3.00%	0.00%	0.00%	5.00%	1.60%
Non native forbs and shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Litter	0.00%	0.00%	0.00%	5.00%	0.00%	1.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	100.00%	97.00%	100.00%	95.00%	95.00%	97.40%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	360
Number of large eucalypt trees:	2	Number of large non eucalypt trees:	0
Total Number Large Trees:	2		

E.sid	460
C. intermedia	480

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	46.70%	Sub-canopy:	17.00%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	2.10%	5.20%	3.10%	T2	35.70%	40.10%	4.40%
T1	9.90%	26.80%	16.90%	T2	49.60%	50.40%	0.80%
T1	29.10%	35.60%	6.50%	T2	76.40%	82.10%	5.70%
T1	65.20%	69.20%	4.00%	T2	87.40%	93.50%	6.10%
T1	70.40%	86.60%	16.20%	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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	4
Melaleuca quinquenervia	14
Corymbia intermedia	4
Eucalyptus tereticornis	2
Eucalyptus siderphloia	4

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	impact area

Part B - Site Data

Property	Impact area	Date	14/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
4		12.9-10.4	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
2020 T5 non remnant regorwth. C intermedia and E racemosa

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Lophostemon sauveolans*	**Common Name**	Swamp Box
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Eucalyptus siderophloia*	**Common Name**	Grey Ironbark
Scientific Name	*Eucalyptus racemosa*	**Common Name**	Scribbly Gum
Scientific Name	*Eucalyptus seeana*	**Common Name**	Narrow-leaved Forest Red Gum
Scientific Name	*Eucalyptus acmenoides*	**Common Name**	White Mahogony
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Eucalyptus seeana*	**Common Name**	Narrow-leaved Forest Red 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**	

Grass species richness:			
Total number of species	3		
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
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	8		
Scientific Name	*Lomandra multiflora*	**Common Name**	Mat Rush
Scientific Name	*Goodenia rotundifolia*	**Common Name**	Star Goodenia
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Phyllanthus virgatus*	**Common Name**	Creeping Phyllanthus
Scientific Name	*Gymnostachys anceps*	**Common Name**	Settlers Flax
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Chrysocephalum apiculatum*	**Common Name**	Yellow Buttons
Scientific Name	*Hybanthus stellarioides*	**Common Name**	Spade Flower
Scientific Name		**Common Name**	

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

Total percentage cover within plot	8.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Heliotropium amplexicaule*	**Common Name**	Blue Heliotrope
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
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 E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	14.00		
1	1.40	26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10%	15%	30%	5%	10%	14%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	50%	15%	30%	75%	25%	39%
Native shrubs	25%	10%	0%	0%	5%	8%
Non-native grass	0%	0%	0%	0%	0%	0%
Non native forbs and shrubs	0%	0%	0%	0%	5%	1%
Litter	15%	60%	30%	20%	55%	36%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	0%	0%	10%	0%	0%	2%
Cryptogram	0%	0%	0%	0%	0%	0%

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

Eucalypt Large tree DBH benchmark used :	510	Non- Eucalypt Large tree DBH benchmark used:	250
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

E. race	570, 630
C. intermedia	510
E. acmen	520
E. seeana	530, 610

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	23.60	Sub-canopy:	42.60	Emergent:	
Shrub canopy cover %	2.50					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	38.30	42.90	4.60	T2	4.50	10.10	5.60
T1	48.10	67.10	19.00	T2	14.20	16.70	2.50
T1				T2	22.60	23.70	1.10
T1				T2	29.10	34.90	5.80
T1				T2	36.30	40.90	4.60
T1				T2	42.40	44.90	2.50
T1				T2	66.40	76.40	10.00
T1				T2	78.60	82.70	4.10
T1				T2	84.70	86.40	1.70

T1				**T2**	88.90	90.40	1.50
T1				**T2**	93.60	95.30	1.70
T1				**T2**	98.50	100.00	1.50
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	65.90	66.50	0.60	**Shrub**			
Shrub	86.30	87.30	1.00	**Shrub**			
Shrub	89.90	90.80	0.90	**Shrub**			
Shrub				**Shrub**			

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
Eucalyptus acmenoides	1
Lophostemon sauveolans	3
Corymbia intermedia	9
Eucalyptus seeana	9
Eucalyptus racemosa	2

(FORM COMPLETE)

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Habitat Quality Site Assessment Template…….. **PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD**

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- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** …… **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 1 and 2 - mapped as RE12.8.20/12.8.19

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Eucalyptus dura*	Common Name	Smooth-branched Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Brachychiton sp.*	Common Name	
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Euccalyptus dura*	Common Name	Smooth-branched Ironbark
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Angophera leiocarpa*	Common Name	Smooth-barked Apple
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Alyxia ruscifolia*	Common Name	Chain Fruit
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Gleichenia dicarpa*	Common Name	Coral Fern
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Plectranthus sp.*	Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Panicum decompsitum*	Common Name	Native Millet
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Panicum decompsitum*	Common Name	Native Millet
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	9		
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Drynaria sp.*	Common Name	Basket Fern
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Lepidosperma sp.*	Common Name	
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Rice Flower
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Pomacx umbellata*	Common Name	Pomax
Scientific Name	*Phylanthes?*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern

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

Total percentage cover within plot	2.50%		
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Bidens pillosa*	Common Name	Cobblers Pegs
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 F - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	334.50		
1	4.00	26	
2	0.50	27	
3	15.00	28	
4	6.00	29	
5	12.00	30	
6	0.50	31	
7	0.80	32	
8	0.60	33	
9	8.00	34	
10	6.00	35	
11	4.00	36	
12	9.00	37	
13	0.50	38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	70.00%	47.50%	57.50%	50.00%	35.00%	52.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	20.00%	12.50%	10.00%	35.00%	16.50%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	4	Number of large non eucalypt trees:	0
Total Number Large Trees:	4		

Median Tree Canopy Height Measurements	Canopy:	18.50	Sub-canopy:	7.50	Emergent:	

Number of ecologically dominant layer species regenerating:	56

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	56.40%	Sub-canopy:	11.90%	Emergent:	
Shrub canopy cover %	16.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: QLD Environmental Offsets

Habitat Quality Site Assessment Template…….. **PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD**

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- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** …… **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.11.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 6 and Transect 5 - mapped RE12.9/10.17

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus microcorys*	Common Name	Tallowood
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Eucalyptus propinqua*	Common Name	Grey Gum
Scientific Name	*Eucalyptus microcorys*	Common Name	Tallowood
Scientific Name	*Eucalyptus acmenoides*	Common Name	White Mahogany
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	Lophostemon confertus	Common Name	Brush Box
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Persoonia sp.*	Common Name	Geebung
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Lomatia silaifolia*	Common Name	Crinkle Bush
Scientific Name	*Brachychiton sp.?*	Common Name	Spiky Leaf?
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear 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	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Pteridium*	Common Name	Bracken Fern
Scientific Name	*Sida acuta*	Common Name	Small Sida
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Lomandra multiflora*	Common Name	Many-flowered Mat Rush
Scientific Name	*Ozothamnus diosmifolius*	Common Name	Rice Flower
Scientific Name	*Desmodium sp.*	Common Name	Hairy Desmodium
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Hybanthus stellarioides*	Common Name	Spade Flower
Scientific Name	*Dianella careula*	Common Name	Blue Flax-lily

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

Total percentage cover within plot	0.00%		
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	

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

Total Length of Course Woody Debris (Meters):	918.00		
1	6.00	26	14.50
2	8.20	27	5.00
3	4.50	28	6.00
4	0.60	29	0.60
5	0.50	30	0.50
6	0.50	31	0.80
7	8.00	32	0.50
8	12.40	33	1.50
9	15.20	34	
10	1.40	35	
11	9.50	36	
12	15.20	37	
13	6.20	38	
14	7.00	39	
15	10.00	40	
16	0.50	41	
17	10.00	42	
18	3.00	43	
19	8.50	44	
20	1.00	45	
21	6.00	46	
22	5.30	47	
23	6.50	48	
24	2.00	49	
25	6.20	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	42.50%	60.00%	42.50%	45.00%	22.50%	42.50%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	25.00%	17.50%	30.00%	32.50%	40.00%	29.00%

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

Eucalypt Large tree DBH benchmark used :	400	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	28	Number of large non eucalypt trees:	0
Total Number Large Trees:	28		

Median Tree Canopy Height Measurements	Canopy:	21.50	Sub-canopy:	13.00	Emergent:	

Number of ecologically dominant layer species regenerating:	76

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	74.80%	Sub-canopy:	29.60%	Emergent:	
Shrub canopy cover %	9.30%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template.....

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☐	An Offset Site	☐	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach:	Rapid approach	☐	Standard Approach	☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Burnett Creek	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 3, 4 and 7

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Angophera subvalentina*	Common Name	Broad-leaved Apple
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leved Ironbark
Scientific Name	*Corymbia trachyphloia*	Common Name	Brown Bloodwood
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest Sheoak
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum

Shrub species richness:			
Total number of species	7		
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Breynia oblongifolia*	Common Name	Coffee Bush
Scientific Name	*Dodonaea viscosa*	Common Name	Hop Bush
Scientific Name	*Ficus coronata*	Common Name	Sandpaper Fig
Scientific Name	*Drynaria*	Common Name	Basket Fern
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Persoonia*	Common Name	Geebung
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	7		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Scented Top?*	Common Name	
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Scented Top?*	Common Name	
Scientific Name	*Oplismenus sp.*	Common Name	Basket Grasss
Scientific Name	*Panicum decompositum*	Common Name	Native Millet
Scientific Name	*Aristida sp.*	Common Name	
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	*Panicum decompositum*	Common Name	Native Millet
Scientific Name	*Aristida sp.*	Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	9		
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Lobelia purpurescens*	Common Name	White Root
Scientific Name	*Vigna unguiculata*	Common Name	Cow Pea
Scientific Name	*Lepidosperma sp.*	Common Name	
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Vigna unguiculata*	Common Name	Cow Pea
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Desmodium sp.*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Lepidosperma sp.*	Common Name	

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

Total percentage cover within plot	2.60%		
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Bidens Pillosa*	Common Name	Cobblers Pegs
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	456.33		
1	0.50	26	6.80
2	0.50	27	
3	0.50	28	
4	8.00	29	
5	8.20	30	
6	8.00	31	
7	12.30	32	
8	8.60	33	
9	14.80	34	
10	0.80	35	
11	0.50	36	
12	14.00	37	
13	3.60	38	
14	8.20	39	
15	8.00	40	
16	0.50	41	
17	3.00	42	
18	4.80	43	
19	1.00	44	
20	7.50	45	
21	3.00	46	
22	2.60	47	
23	3.00	48	
24	2.20	49	
25	6.00	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	50.00%	41.60%	40.00%	50.00%	58.30%	47.98%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	23.30%	28.30%	23.30%	16.60%	21.60%	22.62%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	5	Number of large non eucalypt trees:	0
Total Number Large Trees:	5		

Median Tree Canopy Height Measurements	Canopy:	22.60	Sub-canopy:	12.30	Emergent:	

Number of ecologically dominant layer species regenerating:	71

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	62.10%	Sub-canopy:	24.70%	Emergent:	
Shrub canopy cover %	33.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Burnett Creek

Part B - Site Data

Property		Date	28/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

T1 - Rock/Eucalypt Forest

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

Tree species richness:			
Total number of species	3		
Scientific Name	*Eucalyptus dura*	**Common Name**	Smooth-branched Ironbark
Scientific Name	*Corymbia trachyphloia*	**Common Name**	Brown Bloodwood
Scientific Name	*Eucalyptus carnea*	**Common Name**	Thick-leaved Mahogony
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	3		
Scientific Name	*Xanthorrhoea sp.*	**Common Name**	Grass Tree
Scientific Name	*Salonaum ellipticum*	**Common Name**	Potato Bush
Scientific Name	*Allocasuarina littoralis*	**Common Name**	Black She-oak
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	*Poaceae sp.*	**Common Name**	Tussock Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
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	7		
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax-lily
Scientific Name	*Desmodium sp.*	**Common Name**	Hairy Desmodium
Scientific Name	*Drynaria sp.*	**Common Name**	Basket Fern
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Lepidosperma sp.*	**Common Name**	
Scientific Name	*Hardenbergia violacea*	**Common Name**	Native Sarsparilla
Scientific Name	*Ozothamnus diosmifolius*	**Common Name**	Rice Flower

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

Total percentage cover within plot	2.00%		
Scientific Name	*Tradescantia zebrina*	**Common Name**	Wandering Jew
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 E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	271.00		
1	6.20	26	
2	0.60	27	
3	1.20	28	
4	5.10	29	
5	0.20	30	
6	0.50	31	
7	1.00	32	
8	0.80	33	
9	8.00	34	
10	0.50	35	
11	3.00	36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	10.00%	0.00%	0.00%	60.00%	14.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	10.00%	15.00%	5.00%	20.00%	10.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Litter	0.00%	30.00%	10.00%	0.00%	10.00%	10.00%
Rock	80.00%	40.00%	70.00%	95.00%	10.00%	59.00%
Bare Ground	20.00%	10.00%	5.00%	0.00%	0.00%	7.00%
Cryptogram						0.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	0	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

Median Tree Canopy Height Measurements	Canopy:	20.00	Sub-canopy:	8.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	26.70	Sub-canopy:	6.90	Emergent:	
Shrub canopy cover %	17.60					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	1.40	8.10	6.70	T2	57.20	63.00	5.80
T1	8.80	12.10	3.30	T2	92.00	93.10	1.10
T1	28.20	37.50	9.30	T2			
T1	92.60	100.00	7.40	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	1.70	3.10	1.40	**Shrub**	31.30	32.40	1.10
Shrub	3.70	4.80	1.10	**Shrub**	38.40	39.20	0.90
Shrub	7.30	7.90	0.60	**Shrub**	44.30	45.40	1.10
Shrub	8.90	9.60	0.70	**Shrub**	57.20	58.00	0.80
Shrub	10.40	11.90	1.50	**Shrub**	62.00	63.00	1.00
Shrub	13.40	17.40	4.00	**Shrub**	80.60	81.80	1.20
Shrub	26.30	27.30	1.00	**Shrub**	97.70	98.90	1.20

Part I: GHFF Stem Count

Species Name	Stem Count
Eucalyptus dura	35
Corymbia trachyphloia	14
Eucalyptus carnea	2
Allocasuarina littoralis	1

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template.....

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☐	An Offset Site	☑	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum					
WGS 84 ☐	0m Mark	Zone	Easting	Northing	
GDA 94 ☐					
	50m Mark	Zone	Easting	Northing	
Plot bearing			Recorders	DH and LC	

Site description and Location (including details of discrete polygons within the assessment unit)
T7 - top of hill in landzone 8

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Acacia sp.*	Common Name	
Scientific Name	*Brachychiton populneus*	Common Name	Kurrajong
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Eucalyptus melinophloia*	Common Name	Silver-leaved Ironbark
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	*Solanum sp.*	Common Name	
Scientific Name	*Gahnia aspera*	Common Name	Rough Saw Sedge
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Aristida leptopoda*	Common Name	*White Speargrass*
Scientific Name	*Cymbopogon refractus*	Common Name	*Barbed Wire Grass*
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:			
Total number of species	11		
Scientific Name	*Lomandra longifolia*	Common Name	
Scientific Name	*Clematicissus opaca*	Common Name	Grape Vine
Scientific Name	*Plectranthus sp.*	Common Name	
Scientific Name	*Sida cordifolia*	Common Name	Flannel Weed
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Smilax australis*	Common Name	Barbed Wire Vine
Scientific Name	*Blechnum neohollandicum*	Common Name	Prickly Rasp Fern
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Xerochrysum viscosum*	Common Name	Native Daisy
Scientific Name	*Drynaria rigidula*	Common Name	Basket Fern
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot	5.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
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 F - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters):	717.00		
1	5.00	26	
2	10.00	27	
3	6.30	28	
4	3.50	29	
5	5.50	30	
6	4.30	31	
7	0.50	32	
8	6.00	33	
9	0.80	34	
10	3.00	35	
11	7.00	36	
12	3.20	37	
13	7.00	38	
14	0.60	39	
15	9.00	40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	5.00%	20.00%	10.00%	10.00%	10.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	30.00%	25.00%	10.00%	40.00%	30.00%	27.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	0	Number of large non eucalypt trees:	0
Total Number Large Trees:			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	14.00	Emergent:	

Number of ecologically dominant layer species regenerating:	67

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	35.90%	Sub-canopy:	48.20%	Emergent:	
Shrub canopy cover %	3.70%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template.....

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for: **An Impact Site** ☐ **An Offset Site** ☐ **an Advanced Offset Site** ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.17	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 2 - 12.9-10.17a. Waterway vegetation consistant with RE12.9-10.17a.

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

Tree species richness:			
Total number of species	14		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus tereticornis*	**Common Name**	Forest Red Gum
Scientific Name	*Acacia fimbriata*	**Common Name**	Fringed Wattle
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Erythrina vespertilio*	**Common Name**	Batwing Coral Tree
Scientific Name	*Jagera pseudorhus*	**Common Name**	Foambark
Scientific Name	*Ficus rubignosa*	**Common Name**	Rusty Fig

Shrub species richness:			
Total number of species	2		
Scientific Name	*Citrus sp.*	**Common Name**	
Scientific Name	*Dodonaea viscosa*	**Common Name**	Hop Bush
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	4		
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Aristida calycina*	**Common Name**	Dark Aristida
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
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	11		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax-Lily
Scientific Name	*Glycine sp.*	**Common Name**	Small Glycine
Scientific Name	*Clematicissus opaca*	**Common Name**	Forest Grape
Scientific Name	*Desmodium sp.*	**Common Name**	
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Doodia aspera*	**Common Name**	Prickly Rasp Fern
Scientific Name	*Smilax australis*	**Common Name**	Barbed Wire Vine
Scientific Name	*Cassytha pubescens*	**Common Name**	Devils Twine
Scientific Name	*Adiantum sp.*	**Common Name**	Maidenhair Fern

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

Total percentage cover within plot	15.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion
Scientific Name	*Melinis repens*	**Common Name**	Red Natal
Scientific Name	*Ageratina riparia*	**Common Name**	Mist Flower
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total Length of Course Woody Debris (Meters):	49.00		
1	3.40	26	
2	1.50	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	5.00%	10.00%	20.00%	15.00%	5.00%	11.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	80.00%	70.00%	60.00%	40.00%	50.00%	60.00%

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

Eucalypt Large tree DBH benchmark used :	430	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	14.00	Emergent:	

Number of ecologically dominant layer species regenerating:	60

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	66.20%	Sub-canopy:	52.90%	Emergent:	
Shrub canopy cover %	12.30%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED

NO ☐ PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Habitat Quality Site Assessment Template.....

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☐	An Offset Site	☐	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 6 - Mapped 12.9-10.2/12.9-10.7. Species consistant with 12.9-10.3

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

Tree species richness:			
Total number of species	8		
Scientific Name	*Eucalyptus molucanna*	Common Name	Gum-topped Box
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus melinophloia*	Common Name	Silver-leaved Ironbark
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Angophera subvalentina*	Common Name	Broad-leaved Apple
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species	3		
Scientific Name		Common Name	Slender Wattle
Scientific Name		Common Name	Sally Wattle
Scientific Name		Common Name	White Cedar
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	*Aristida sp.*	Common Name	
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Panicum sp.*	Common Name	
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear 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	

Forbs and others (non grass ground) species richness:			
Total number of species	9		
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-Lily
Scientific Name	*Cassytha pubescens*	Common Name	Devils Twine
Scientific Name	*Eremophila debilis*	Common Name	Winter Apple
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Wahlenbergia sp.*	Common Name	
Scientific Name	*Glycine sp.*	Common Name	Small Glycine
Scientific Name	Plectranthus sp.	Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot	45.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Jacaranda mimosifolia*	Common Name	Jacaranda
Scientific Name	*Sporobolus sp.*	Common Name	Rats Tail Grass
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Bidens pillosa*	Common Name	Cobblers Peg
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	141.00		
1	5.00	26	
2	4.30	27	
3	4.80	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	15.00%	10.00%	5.00%	5.00%	5.00%	8.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	75.00%	85.00%	80.00%	85.00%	75.00%	80.00%

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

Eucalypt Large tree DBH benchmark used :	450	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	12	Number of large non eucalypt trees:	0
Total Number Large Trees:	12		

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	13.00	Emergent:	

Number of ecologically dominant layer species regenerating:	50

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	86.40%	Sub-canopy:	23.40%	Emergent:	
Shrub canopy cover %	11.50%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site	☐	An Offset Site	☐	an Advanced Offset Site	☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach:	Rapid approach	☐	Standard Approach	☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
4		12.9-10.7	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing				Recorders	

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 8 - Mapped RE12.9-10.2/12.9-10.7 in upper catchment. Transect 9 - Gully line vegetation

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

Tree species richness:			
Total number of species	11		
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Brachychiton populneus*	Common Name	Kurrajong
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus siderophloia*	Common Name	Grey Ironbark
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	Common Name	Brush Box
Scientific Name	*Allocasuarina torulosa*	Common Name	Forest She Oak
Scientific Name	*Jagera pseudorhus*	Common Name	Foam Bark
Scientific Name	*Mallotus philippensis*	Common Name	Red Kamala
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum

Shrub species richness:			
Total number of species	3		
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Grewia retusifolia*	Common Name	Dogs Balls
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	8		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida sp.*	Common Name	
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Chloris sp.*	Common Name	Windmill Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Sida cordifolia*	Common Name	Flannel Weed
Scientific Name	*Smilax australis*	Common Name	Barbed Wire Vine
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Adiantum sp.*	Common Name	Maidenhair Fern
Scientific Name	*Nephrolepis cordifolia*	Common Name	Fishbone Fern
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat berry
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Gymnostachys anceps*	Common Name	Settlers Flax
Scientific Name	*Drynaria sp.*	Common Name	Basket Fern

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

Total percentage cover within plot	32.50%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Opuntia sp.*	Common Name	Prickly Pear
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	296.50		
1	3.50	26	
2	2.00	27	
3	0.60	28	
4	8.00	29	
5	6.00	30	
6	8.00	31	
7	10.00	32	
8	1.20	33	
9	20.00	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 G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	30.00%	25.00%	50.00%	30.00%	35.00%	34.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	37.50%	52.50%	25.00%	45.00%	30.00%	38.00%

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

Eucalypt Large tree DBH benchmark used :	390	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	7	Number of large non eucalypt trees:	1
Total Number Large Trees:	8		

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	16.00	Emergent:	

Number of ecologically dominant layer species regenerating:	7

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	59.70%	Sub-canopy:	37.10%	Emergent:	
Shrub canopy cover %	14.20%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging	Quality and availability of shelter	Species mobility capacity	Role of site location to overall
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: QLD Environmental Offsets

Habitat Quality Site Assessment Template.....

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site ☐	An Offset Site ☐	an Advanced Offset Site ☐

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Case reference		Project Name	

Part B – Nominated Approach (FOR IMPACT SITE ONLY)

Please Select Your Nominated approach: Rapid approach ☐ Standard Approach ☑

ii) **Standard Assessment** ..... **(COMPLETE REMAINDER OF FORM)**

Part C - Site Data

Property	Lyons	Date	

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
5		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

Datum		0m Mark	Zone	Easting	Northing
WGS 84	☐				
GDA 94	☐	50m Mark	Zone	Easting	Northing
Plot bearing			Recorders		

Site description and Location (including details of discrete polygons within the assessment unit)
Transect 5 - Mapped RE12.9-10.2/RE12.9-10.7. Elements of both Res but most representative of RE12.9-10.2. Transect 4 - Mapped RE12.9-10.7/RE12.9-10.3/RE12.9-10.17. Transect 3 - Mapped RE12.9-10.2/RE12.9-10.17a/RE12.9-10.7/RE12.9-10.3. Transect 1 - Mapped RE12.9-10.2/RE12.9-10.7

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

Tree species richness:			
Total number of species	10		
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Brachychiton sp.*	Common Name	
Scientific Name	*Petalostigma pubescens*	Common Name	Quinine Bush
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus moluccanna*	Common Name	Gum-topped Box
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Allocasuarina littoralis*	Common Name	Black Sheoak
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Acacia disparimma*	Common Name	Hickory Wattle
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver-leaf Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia tesselaris*	Common Name	Moreton Bay Ash
Scientific Name	*Brachychiton sp.*	Common Name	

Shrub species richness:			
Total number of species	7		
Scientific Name	*Jacksonia scoparia*	Common Name	Dogwood
Scientific Name	*Ficus coronata*	Common Name	Sand Paper Fig
Scientific Name	*Acacia elongata*	Common Name	Slender Wattle
Scientific Name	*Acacia fimbriata*	Common Name	Fringed Wattle
Scientific Name	*Acacia melanoxylon*	Common Name	Sally Wattle
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Acacia melanoxylon*	Common Name	Sally Wattle
Scientific Name	*Acacia fimbriata*	Common Name	Fringed Wattle
Scientific Name	*Breynia oblongifolia*	Common Name	Coffee Bush
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	12		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Panicum sp.*	Common Name	
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Sporobolus creber*	Common Name	Slender Rats Tail Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Xanthorrhoea*	Common Name	Grass Tree
Scientific Name	*Pristida sp.*	Common Name	
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Chloris sp.*	Common Name	Windmill Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Aristida
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass

Forbs and others (non grass ground) species richness:			
Total number of species	13		
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Lomandra longifolia*	Common Name	Mat Rush
Scientific Name	*Gahnia aspera*	Common Name	Rough Saw Sedge
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Goodentia rotundfolia*	Common Name	Star Goodenia
Scientific Name	*Glossocardia bidens*	Common Name	Native Cobbler Peg
Scientific Name	*Glycine sp.*	Common Name	
Scientific Name	*Eustrephus latifolius*	Common Name	Wombat Berry
Scientific Name	*Lobelia purpurescens*	Common Name	White Root
Scientific Name	*Cyperus gracilis*	Common Name	Slender Flat Sedge
Scientific Name	*Hardenbergia violacea*	Common Name	Native Sarsparilla
Scientific Name	*Desmodium sp.*	Common Name	
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Lomandra multiflora*	Common Name	Many-flowered Mat Rush
Scientific Name	*Plectranthus sp.*	Common Name	

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

Total percentage cover within plot	12.50%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Conyza bonariensis*	Common Name	Flaxleaf Fleabane
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion
Scientific Name	*Optunia sp.*	Common Name	Prickly Pear
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Oxalis sp.*	Common Name	Wood Sorrel
Scientific Name	*Lantan montevidensis*	Common Name	*Creeping Lantana*
Scientific Name	*Opuntia sp.*	Common Name	*Prickly Pear*
Scientific Name	*Passiflora suberosa*	Common Name	*Corky Passion*
Scientific Name	*Senecio madagascariensis*	Common Name	*Fireweed*

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

Total Length of Course Woody Debris (Meters):	470.50		
1	4.00	26	6.60
2	3.80	27	10.00
3	4.50	28	12.00
4	3.60	29	14.50
5	2.70	30	3.20
6	8.00	31	0.50
7	0.50	32	8.30
8	2.00	33	0.60
9	10.00	34	8.00
10	3.50	35	0.80
11	5.00	36	0.60
12	0.50	37	1.00
13	1.30	38	3.00
14	0.50	39	9.00
15	2.50	40	
16	14.00	41	
17	6.30	42	
18	4.50	43	
19	4.20	44	
20	10.00	45	
21	6.00	46	
22	0.50	47	
23	0.50	48	
24	8.50	49	
25	3.20	50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	11.25%	11.25%	28.75%	8.75%	11.25%	14.25%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	50.00%	50.00%	51.25%	57.50%	58.75%	53.50%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

Median Tree Canopy Height Measurements	Canopy:	19.50	Sub-canopy:	11.50	Emergent:	

Number of ecologically dominant layer species regenerating:	69

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	84.86%	Sub-canopy:	25.35%	Emergent:	
Shrub canopy cover %	6.78%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION					
SCORE					

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES ☐ **PLEASE COMPLETE SPECIES HABITAT INDEX DETAILS BELOW AND THEN ATTACH LANDSCAPE PHOTOS AND SUBMIT AS DIRECTED**

NO ☐ **PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED**

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1				Description					
				Score					
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score					

Attach Landscape Photos Here

North

South

East

West

(FORM COMPLETE)

Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: QLD Environmental Offsets

Habitat Quality Site Assessment Template……..

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
1		12.8.20	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T2 - Rocky steep slope, NE facing

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

Tree species richness:			
Total number of species	6		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Ficus rubignosa*	**Common Name**	Rusty Fig
Scientific Name	*Acacia shirleyi*	**Common Name**	Lancewood
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	4		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Acacia shirleyi*	**Common Name**	Lancewood
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name	*Ficus coronata*	**Common Name**	Sand Paper Fig
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	6		
Scientific Name	*Eragrostis brownii*	**Common Name**	Browns Love Grass
Scientific Name	*Entolasia stricta*	**Common Name**	Wiry Panic
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	6		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Drynaria rigidula*	**Common Name**	Basket Fern
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak Fern
Scientific Name	*Lomandra multiflora*	**Common Name**	Many-flowered Mat Rush
Scientific Name	*Plectranthus parviflorus*	**Common Name**	
Scientific Name	*Cyperus gracilis*	**Common Name**	Slender Flat Sedge
Scientific Name		**Common Name**	

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

Total percentage cover within plot	80.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Prickly Pear
Scientific Name	*Tradescantia zebrina*	**Common Name**	Wandering Jew

Scientific Name	*Oxalis corniculata*	Common Name	Creeping Woodsorrel
Scientific Name	*Physalis angulata*	Common Name	Goose Berry
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	737.00		
1	3.20	26	
2	11.00	27	
3	13.00	28	
4	4.10	29	
5	2.00	30	
6	2.00	31	
7	3.50	32	
8	5.00	33	
9	3.10	34	
10	4.00	35	
11	2.50	36	

12	0.50	37	
13	0.80	38	
14	0.50	39	
15	10.00	40	
16	8.50	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	15.00%	15.00%	5.00%	5.00%	10.00%	10.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	40.00%	50.00%	40.00%	15.00%	50.00%	39.00%
Litter	15.00%	15.00%	30.00%	25.00%	15.00%	20.00%
Rock	10.00%	10.00%	10.00%		20.00%	12.50%
Bare Ground	20.00%	10.00%	15.00%	55.00%	5.00%	21.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	490	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	1	Number of large non eucalypt trees:	1
Total Number Large Trees:	2		

C. citro	530
Bratchychiton	400

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	11.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	76.80	Sub-canopy:	31.10	Emergent:	
Shrub canopy cover %	1.50					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	8.40	8.40	T2	6.20	12.50	6.30
T1	8.40	16.80	8.40	T2	21.20	24.00	2.80
T1	29.60	36.80	7.20	T2	31.10	32.60	1.50
T1	39.30	47.30	8.00	T2	36.00	38.90	2.90
T1	52.00	59.40	7.40	T2	46.00	50.00	4.00
T1	59.40	65.40	6.00	T2	54.80	59.40	4.60
T1	66.00	70.40	4.40	T2	65.00	68.30	3.30
T1	70.40	75.20	4.80	T2	82.40	86.60	4.20
T1	76.00	89.30	13.30	T2	98.50	100.00	1.50
T1	91.10	100.00	8.90	T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	71.00	72.50	1.50	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	21/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2		12.9-10.17	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T5 - remnant, gully vegetation (12.9-10.17a)

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Erythrina vespertilio*	**Common Name**	Bat's Wing Coral Tree
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She-oak
Scientific Name	*Angophora woodsiana*	**Common Name**	Rough-barked Apple
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Acacia disparrima*	**Common Name**	Hickory Wattle
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Mallotus phillipensis*	**Common Name**	Red Kamala
Scientific Name	*Grewia latifolia*	**Common Name**	Dogs Balls
Scientific Name	*Xanthorrhoea*	**Common Name**	Grass Tree
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	5		
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Sporobolus creber*	**Common Name**	Native Rparamatta Grass
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	11		
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Cheilanthes distans*	**Common Name**	Bristle Cloak fern
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Murdannia graminea*	**Common Name**	Slug Herb
Scientific Name	*Lomandra multiflora*	**Common Name**	Many Flowered Mat Rush
Scientific Name	*Phyllanthus microcladus*	**Common Name**	Small Leaved Phyllanthus
Scientific Name	*Dionella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Eremophila debilis*	**Common Name**	Winter Apple
Scientific Name	*Desmodium rhytidophyllumn*	**Common Name**	Hairy Desmodium

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

Total percentage cover within plot	75.00%

Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Tradescantia fluminensis*	**Common Name**	Wandering Jew
Scientific Name	*Cida cordifolia*	**Common Name**	Flannel Weed
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Oxalis corniculata*	**Common Name**	Creeping Woodsorrel
Scientific Name	*Rubus sp.*	**Common Name**	Wild Raspberry
Scientific Name	*Dichondra repens*	**Common Name**	Kidney Weed
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):	**923.00**		
1	5.50	**26**	6.50
2	6.50	**27**	4.30
3	1.40	**28**	
4	1.20	**29**	
5	1.00	**30**	
6	0.60	**31**	
7	2.50	**32**	
8	8.00	**33**	
9	10.00	**34**	
10	1.40	**35**	
11	4.80	**36**	

12	13.50	37	
13	0.50	38	
14	7.50	39	
15	1.40	40	
16	1.80	41	
17	1.60	42	
18	0.50	43	
19	0.60	44	
20	5.20	45	
21	0.70	46	
22	0.90	47	
23	1.20	48	
24	1.40	49	
25	1.80	50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	0.00%	10.00%	10.00%	0.00%	4.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	5.00%	10.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	3.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	
Non native forbs and shrubs	35.00%	70.00%	5.00%	10.00%	100.00%	44.00%
Litter	65.00%	30.00%	80.00%	67.00%	0.00%	48.40%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	0.00%	0.00%	0.00%	0.00%	0.00%	
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	430	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	4	Number of large non eucalypt trees:	1
Total Number Large Trees:	5		

L. confertus	450	560
C. inter	490	
C. citro	680	

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	14.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	59.80	Sub-canopy:	28.70	Emergent:	
Shrub canopy cover %	8.20					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	2.10	2.10	T2	10.00	17.50	7.50
T1	6.20	15.90	9.70	T2	57.60	60.80	3.20
T1	17.70	22.10	4.40	T2	61.20	64.50	3.30
T1	22.10	31.40	9.30	T2	71.20	75.90	4.70
T1	33.00	42.40	9.40	T2	77.60	82.60	5.00
T1	42.40	50.50	8.10	T2	90.30	95.30	5.00
T1	50.50	54.90	4.40	T2			
T1	87.60	95.30	7.70	T2			
T1	95.30	100.00	4.70	T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	2.60	3.40	0.80	**Shrub**	62.90	64.00	1.10
Shrub	8.00	8.70	0.70	**Shrub**	64.00	65.00	1.00
Shrub	29.10	30.00	0.90	**Shrub**	91.60	92.60	1.00
Shrub	52.00	53.10	1.10	**Shrub**	95.30	96.90	1.60

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

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Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3		12.9-10.3	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.
Site description and Location (including details of discrete polygons within the assessment unit)
T3 - Steep SW facing slope

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

Tree species richness:			
Total number of species	7		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus teretcironis*	**Common Name**	Forest Red Gum
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus molucanna*	**Common Name**	Gum-toppped Box
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	4		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Allocasuarina torulosa*	**Common Name**	Forest She Oak
Scientific Name	*Jacksonia scoparia*	**Common Name**	Dogwood
Scientific Name	*Acacia salicina*	**Common Name**	Sally Wattle
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	5		
Scientific Name	*Agrostis avenacea*	**Common Name**	Fairy Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Themeda triandra*	**Common Name**	Kangaroo Grass
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	10		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Plectranthus parviflorus*	**Common Name**	Little Spurflower
Scientific Name	*Glossocarsia bidens*	**Common Name**	Native Cobbler Peg
Scientific Name	*Adiantum sp.*	**Common Name**	Maidenhair Fern
Scientific Name	*Ere,ophilia debilis*	**Common Name**	Winter Apple
Scientific Name	*Lobelia purpurescens*	**Common Name**	White Root
Scientific Name	*Hybanthus stellarioidea*	**Common Name**	Spade Flower

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

Total percentage cover within plot	30.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Prickly Pear

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

Total Length of Course Woody Debris (Meters):	124.00		
1	3.40	26	
2	1.00	27	
3	1.00	28	
4	3.00	29	
5	4.00	30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	15.00%	15.00%	10.00%	5.00%	11.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	5.00%	5.00%	2.00%
Native shrubs	0.00%		0.00%	0.00%	0.00%	0.00%
Non-native grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non native forbs and shrubs	15.00%	10.00%	15.00%	5.00%	10.00%	11.00%
Litter	65.00%	65.00%	65.00%	70.00%	75.00%	68.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	10.00%	10.00%	5.00%	10.00%	5.00%	8.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	450	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

E. tere	520	510	510
E. moll	540	460	490
C. citro			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	11.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	75

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	55.20	Sub-canopy:	34.80	Emergent:	
Shrub canopy cover %	10.30					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	3.40	3.40	T2	4.90	6.10	1.20
T1	3.40	6.30	2.90	T2	10.70	17.10	6.40
T1	10.90	18.50	7.60	T2	23.50	27.60	4.10
T1	21.50	26.00	4.50	T2	30.40	35.00	4.60
T1	28.00	35.00	7.00	T2	44.10	47.30	3.20
T1	43.70	51.00	7.30	T2	52.00	56.20	4.20
T1	56.80	61.20	4.40	T2	80.40	84.00	3.60
T1	63.10	68.00	4.90	T2	85.00	92.50	7.50
T1	71.30	76.00	4.70	T2			
T1	79.00	84.00	5.00	T2			

T1	92.50	96.00	3.50	**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	21.40	22.20	0.80	**Shrub**	63.40	64.30	0.90
Shrub	25.00	26.50	1.50	**Shrub**	66.30	68.00	1.70
Shrub	30.60	31.60	1.00	**Shrub**	83.30	84.90	1.60
Shrub	52.00	53.00	1.00	**Shrub**	95.00	96.80	1.80

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

(FORM COMPLETE)

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Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	20/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
6		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

T1 - Non remnant. Patchy vegetation with open grazing area. Some exposed rocks

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

Tree species richness:			
Total number of species	9		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Corymbia intermedia*	**Common Name**	Pink Bloodwood
Scientific Name	*Lophostemon confertus*	**Common Name**	Brush Box
Scientific Name	*Corymbia tesselaris*	**Common Name**	Moreton Bay Ash
Scientific Name	*Angophera subvalentina*	**Common Name**	Broad-leaved Apple
Scientific Name	*Acacia disparimma*	**Common Name**	Hickory Wattle
Scientific Name	*Eucalyptus tereticornis*	**Common Name**	Forest Red Gum
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Brachychiton sp.*	**Common Name**	
Scientific Name		**Common Name**	

Shrub species richness:			
Total number of species	3		
Scientific Name	*Alphitonia excelsa*	**Common Name**	Soap Tree
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey Ironbark
Scientific Name	*Melia azedarach*	**Common Name**	White Cedar
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	7		
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Aristida calycina*	**Common Name**	Dark Aristida
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wiregrass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
Scientific Name	*Agrostis avenacea*	**Common Name**	Fairy Grass
Scientific Name	*Panicum decompositum*	**Common Name**	Native Millet
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Forbs and others (non grass ground) species richness:			
Total number of species	5		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Cyperus gracilis*	**Common Name**	Slender Flat Sedge
Scientific Name	*Lomandra longifolia*	**Common Name**	Mat Rush
Scientific Name	*Phyllanthes sp.*	**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total percentage cover within plot	45.00%		
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Sida cordifolia*	**Common Name**	Flannel Weed
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Opuntia sp.*	**Common Name**	Pear Tree
Scientific Name	*Gomphocarpus physocarpus*	**Common Name**	Balloon Cotton

Scientific Name	*Setaria sp.*	Common Name	Rats Tail Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	451.00		
1	7.20	26	
2	6.00	27	
3	8.10	28	
4	4.20	29	
5	0.60	30	
6	1.00	31	
7	1.00	32	
8	7.50	33	
9	3.00	34	
10	6.50	35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	0.00%	10.00%	0.00%	5.00%	5.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	5.00%	0.00%	10.00%	0.00%	3.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	5.00%	0.00%	0.00%	35.00%	80.00%	24.00%
Non native forbs and shrubs	5.00%	90.00%	10.00%	30.00%	10.00%	29.00%
Litter	75.00%	0.00%	5.00%	10.00%	0.00%	18.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	5.00%	5.00%	70.00%	15.00%	5.00%	20.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	3	Number of large non eucalypt trees:	0
Total Number Large Trees:	3		

C. citro	380
C. inter	610
E. crebra	670

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	12.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	30

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	32.60	Sub-canopy:	31.40	Emergent:	
Shrub canopy cover %	3.90					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.00	1.60	1.60	T2	13.40	17.50	4.10
T1	13.00	29.70	16.70	T2	17.50	21.20	3.70
T1	31.40	32.60	1.20	T2	55.60	61.50	5.90
T1	49.30	55.60	6.30	T2	63.00	69.50	6.50
T1	61.50	68.30	6.80	T2	82.80	89.00	6.20
T1				T2	95.00	100.00	5.00
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	0.90	1.70	0.80	**Shrub**	95.00	95.80	0.80
Shrub	26.30	27.10	0.80	**Shrub**			
Shrub	27.40	28.40	1.00	**Shrub**			
Shrub	29.80	30.30	0.50	**Shrub**			

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

(FORM COMPLETE)

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Habitat Quality Site Assessment Template……..

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

- Complete form (Environmental Offsets Delivery Form 1– Notice of Election and Advanced Offsets Details)
- Complete any other forms relevant to your application
- Provide the mandatory supporting information identified on the forms as being required to accompany your application

This form is useful for undertaking a **habitat quality analysis** of an impact and/or offset/advanced offset site.
Please note that this form should be completed individually for each assessment unit under consideration.

Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Job Number		Project Name	Lyons

Part B - Site Data

Property	Lyons	Date	22/02/2020

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
6		12.9-10.2	Southeast Queensland

Landscape Photo- Please attach or insert north, south, east and west photos in the spaces provided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.

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

T4 - non remnant 12.9-10.2, uphill of dam, scattered trees/grazing area

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

Tree species richness:			
Total number of species	3		
Scientific Name	*Corymbia citriodora*	**Common Name**	Spotted Gum
Scientific Name	*Eucalyptus molucanna*	**Common Name**	Gum-toppped Box
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey 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**	

Shrub species richness:			
Total number of species	1		
Scientific Name	*Eucalyptus crebra*	**Common Name**	Narrow-leaved Grey 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**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Grass species richness:			
Total number of species	4		
Scientific Name	*Aristida latifolia*	**Common Name**	Feathertop Wire Grass
Scientific Name	*Cymbopogon refractus*	**Common Name**	Barbed Wire Grass
Scientific Name	*Heteropogon contortus*	**Common Name**	Black Spear Grass
Scientific Name	*Imperata cylindrica*	**Common Name**	Blady Grass
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	8		
Scientific Name	*Eustrephus latifolius*	**Common Name**	Wombat Berry
Scientific Name	*Glycine sp.*	**Common Name**	
Scientific Name	*Dianella caerulea*	**Common Name**	Blue Flax Lily
Scientific Name	*Fimbristylis sp.*	**Common Name**	Fringe Rush
Scientific Name		**Common Name**	Arrow leaf
Scientific Name	*Glossocarsia bidens*	**Common Name**	Native Cobbler Peg
Scientific Name	*Phyllanthes sp.*	**Common Name**	
Scientific Name	*Eremophilia debilis*	**Common Name**	Winter Apple
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	*Opuntia sp.*	**Common Name**	Prickly Pear
Scientific Name	*Lantana montevidensis*	**Common Name**	Creeping Lantana
Scientific Name	*Heliotropium amplexicaule*	**Common Name**	Blue Heliotrope
Scientific Name	*Passiflora suberosa*	**Common Name**	Corky Passion Flower
Scientific Name	*Cyperus polystachyos*	**Common Name**	Bunchy Sedge
Scientific Name	*Cida cordifolia*	**Common Name**	Flannel Weed
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

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

Total Length of Course Woody Debris (Meters):	**157.00**		
1	1.30	**26**	
2	0.70	**27**	
3	3.60	**28**	
4	10.10	**29**	
5		**30**	
6		**31**	
7		**32**	
8		**33**	
9		**34**	
10		**35**	
11		**36**	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10.00%	5.00%	5.00%	5.00%	5.00%	6.00%
Native other grass	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native forbs and other species	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Native shrubs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Non-native grass	75.00%	35.00%	5.00%	5.00%	65.00%	37.00%
Non native forbs and shrubs	10.00%	10.00%	10.00%	5.00%	15.00%	10.00%
Litter	5.00%	20.00%	40.00%	75.00%	10.00%	30.00%
Rock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bare Ground	0.00%	30.00%	40.00%	10.00%	15.00%	19.00%
Cryptogram	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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

Eucalypt Large tree DBH benchmark used :	380	Non- Eucalypt Large tree DBH benchmark used:	200
Number of large eucalypt trees:	6	Number of large non eucalypt trees:	0
Total Number Large Trees:	6		

C. citro	450			
E. moll	710	530	750	450
E. crebra	550			

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	12.00	Emergent:	

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	56.00	Sub-canopy:	0.00	Emergent:	
Shrub canopy cover %	3.20					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	2.50	17.70	15.20	T2			
T1	42.00	54.80	12.80	T2			
T1	66.00	77.10	11.10	T2			
T1	83.10	100.00	16.90	T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			
T1				T2			

T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			
T1				**T2**			

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	25.30	27.50	2.20	**Shrub**			
Shrub	80.60	81.60	1.00	**Shrub**			
Shrub				**Shrub**			
Shrub				**Shrub**			

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

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