

Offset Management Plan

Ripley Road Residential Development (Hayfield) (Peak Crossing & Burnett Creek offset sites)

Prepared for: EnviroCapital the offset provider for Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust

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Executive summary

The Ripley Road Development (Hayfield) was referred under the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) on 22 November 2017 and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to sections 18 and 18A (*listed threatened species and communities*) (reference EPBC 2017/8095). Approval was issued on 12 February 2019. The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*), both listed as 'vulnerable' under the EPBC Act.

As part of the application process and in consultation with the Department of Agriculture, Water and Environment (DAWE, the Department), formerly the Department of the Environment and Energy (DoEE), an offset strategy was developed to compensate for the impacts from clearing 62.79 hectares (ha) of habitat critical to the survival of the Koala and Grey-headed Flying-fox foraging habitat (Environmental Offsets Chapter prepared by EnviroCapital within the Preliminary Documentation submission, dated 31 September 2018) (refer **Appendix A**).

Condition 9 and 10 of the approval stipulates that the approval holder must submit a Koala and Grey-headed Flying-fox Offset Management Plan for the Minister's written approval within 6 months of the commencement of the action. The Offset Management Plan must address both the Peak Crossing and Burnett Creek offset sites, and be prepared in accordance with the Department's Environmental Management Plan Guidelines, and the *EPBC Act Environmental Offset Policy* (2012) and include:

- a. Mitigation and management measures to achieve the outcomes required under conditions 4, 5, 6, 7 and 8;
- b. An assessment of the risks to achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and risk management strategies that will be applied;
- c. An annual monitoring program that measures the progress of achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and includes:
 - i. results of the baseline surveys required under condition 3;
 - ii. measurable, timebound performance indicators including 5, 10 and 15 year milestone achievements, from the date of commencement of the action, of the specific outcomes required by conditions 4, 5, 6, 7 and 8;
 - iii. completion criteria to determine when and how the outcomes required by conditions 4, 5, 6,7 and 8 have been fully achieved;
 - iv. the timing, methods and frequency of monitoring to detect changes in the performance indicators;
 - v. reporting and review mechanisms;
 - vi. trigger values for corrective actions; and
 - vii. proposed corrective actions, if the trigger values are reached.



This Offset Management Plan has the purpose of providing high level guidance for the creation and implementation of offset mechanisms. The primary offset mechanisms include:

- The dedication as an offset of 109.76 ha of land at the Peak Crossing site and 49.25 ha of land at the Burnett Creek site (total of 159.01 ha) constituting Koala habitat and Grey-headed Flying-fox foraging habitat.
- Rehabilitation and revegetation works to improve the condition of the offset areas.
- Baseline surveys;
- Monitoring and reporting to ensure that the offset area achieves and maintains the completion criteria.
- Adaptive management is applied to mitigate unforeseen risks and incorporate new information as it becomes available.

The implementation of these offset mechanisms will create a self-sustaining, continuous conservation area of high-quality Koala habitat and Grey-headed Flying-fox foraging habitat.



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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
OMP	Offset Management Plan
PMAV	Property Map of Assessable Vegetation
NNPMP	Non-native predator management plan
RAI	Relative Abundance Index
RE	Regional Ecosystem
RMP	Rehabilitation and Regeneration Management Plan
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 Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust (the Proponent) to prepare an Offset Management Plan (OMP) for the 352-396 Ripley Road development, located at Ripley in South East Queensland (SEQ). The approved action entails residential development with open space, conservation and a small commercial precinct, on approximately 109 hectares (ha) on Lot 3 on SP237241.

The Ripley Road Development was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2017 and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to sections 18 and 18A (listed threatened species and communities) (reference EPBC 2017/8095). The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (GHFF) (*Pteropus poliocephalus*), both listed as 'vulnerable' under the EPBC Act.

As part of the Preliminary Documentation requirements, a proposal was developed to compensate for the impacts of clearing 62.79 ha of habitat critical to the survival of the Koala and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC 2017/8095 approval. The offset includes the dedication and rehabilitation of a total of 159.01 ha of vegetation constituting Koala habitat and GHFF foraging habitat.

The project was approved under the EPBC Act subject to conditions on 12 February 2019 with effect until 30 January 2041. Condition 9 and 10 of the approval requires that the approval holder must submit a Koala and GHFF OMP for the Minister's written approval. The OMP must address both the Peak Crossing and Burnett Creek offset sites, and be prepared in accordance with the Department's Environmental Management Plan Guidelines, and the *EPBC Act Environmental Offset Policy* (2012) (EOP) and include:

- a. <u>Mitigation and management measures</u> to achieve the outcomes required under conditions 4, 5, 6, 7 and 8;
- b. An assessment of the risks to achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and risk management strategies that will be applied;
- c. An <u>annual monitoring program</u> that measures the progress of achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and includes:
 - i. results of the baseline surveys required under condition 3;
 - ii. measurable, timebound performance indicators including 5, 10 and 15 year milestone achievements, from the date of commencement of the action, of the specific outcomes required by conditions 4, 5, 6, 7 and 8;
 - iii. completion criteria to determine when and how the outcomes required by conditions 4, 5, 6,7 and 8 have been fully achieved;
 - iv. the timing, methods and frequency of monitoring to detect changes in the performance Indicators;



- v. reporting and review mechanisms;
- vi. trigger values for corrective actions; and
- vii. proposed corrective actions, if the trigger values are reached.

Post-approval, the two (2) offset sites, Peak Crossing and Burnett Creek, were legally secured and notification of commencement of the Action was provided to DAWE. The Action commenced on 15t March 2019. The Queensland Department of Natural Resources, Mines and Energy (DNRME), now Department of Resources (DoR), officially certified and declared the offset sites as areas of high nature conservation value using the Voluntary Declaration process on 20 March 2019. DAWE was notified on the 1 April 2019. Non-compliances are addressed within the Annual Compliance Report.

This OMP has been developed to satisfy the requirements of the conditions of approval accompanying the controlled action determination and the 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.

Commonwealth Reference	EPBC 2017/8095
Approval Holder	Jolifields Development Pty Ltd & The Trustee for Morehampton Capital & Trustee for the Goldfields QLD Trust
ABN	60 371 946 969
Project Name on the Approval	Ripley Road Residential Development, Ripley Valley Queensland
Approved Action	To construct a residential development on approximately 109 ha on Lot 3 SP237241, Ripley Valley, Queensland.
Controlling Provision(s)	Listed threated species and communities (sections 18 & 18A)
Approval Date	12 February 2019
Expiry Date of the Approval	30 January 2041
Date of Commencement of the Action	15 March 2019
Address	Ripley Road, Ripley Valley
Local Government Area	Ipswich City Council

Table 1: Approval Details

1.1. Offset site summary

Two (2) offset sites were identified and secured to achieve the 159.01 ha offset required under the EPBC Act approval. The Peak Crossing offset site is located in the Scenic Rim Regional Council local government area (LGA), directly south of an existing secured Koala offset project and adjacent to Flinders Peak (a mountain in the Teviot Range). The Burnett Creek site is also located in the Scenic Rim Regional LGA, 46 kilometres (km) south of the Peak Crossing offset site and approximately 6 km from the Queensland-New South Wales state border.



Both sites are zoned rural under the respective planning schemes, and located within the boundaries of the Flinders Karawatha Corridor and South East Queensland Regional Plan — Regional Biodiversity Corridor. The site context in relation to the offset is shown on **Figure 1** and **Figure 2**, and aerial imagery is shown on **Figure 3** and **Figure 4**. Key details relating to Peak Crossing offset site and Burnett Creek offset site are in **Table 2** and **Table 3**, respectively.

Address	583 Mount Flinders Road, Peak Crossing
Lot / Plan	Lot 172 on CH312424 Part Lot 173 on CH312424 Part Lot 151 on RP892014
Area	109.76 ha
Tenure	Freehold
Local government area	Scenic Rim Regional Council
Declared	20 March 2019
Table 3: Burnett Creek offset site summary	
Table 3: Burnett Creek offset site summary Address Address	Burnett Creek Road, Burnett Creek
Table 3: Burnett Creek offset site summary Address Lot / Plan	Burnett Creek Road, Burnett Creek Part Lot 100 on WD682
Table 3: Burnett Creek offset site summary Address Lot / Plan Area	Burnett Creek Road, Burnett Creek Part Lot 100 on WD682 49.25 ha
Table 3: Burnett Creek offset site summary Address Lot / Plan Area Tenure	Burnett Creek Road, Burnett Creek Part Lot 100 on WD682 49.25 ha Freehold
Table 3: Burnett Creek offset site summary Address Lot / Plan Area Tenure Local government area	Burnett Creek Road, Burnett Creek Part Lot 100 on WD682 49.25 ha Freehold Scenic Rim Regional Council

Table 2: Peak Crossing offset site summary

1.2. Environmental outcomes and objectives

The object of this OMP 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 environmental outcomes to be achieved through implementing the OMP for the offset area are:

- Increase in the number of available Koala food trees at both offset sites, that is:
 - Establishment of at least 15,000 new Koala food trees at the Peak Crossing offset site, and at least 2,500 new Koala food trees at the Burnett Creek offset site (planting to be completed within 5 years of commencement of action);
 - o Survival over the life of the approval of at least 90% of the plantings at both offset sites; and
 - 20% increase in the number of Koala food trees and GHFF foraging trees at the Peak Crossing offset site, and 5% increase in the number of Koala food trees and GHFF foraging trees at the



Burnett Creek offset site (within 15 years of the date of the baseline Koala food tree and GHFF foraging tree surveys).

- Removal of at least 90% of non-native plants from both offset sites, relative to the baseline (to be completed within 10 years of commencement of action, and maintained until the 20% and 5% increase in food/foraging trees above has been met).
- Increase of at least 50% of Koala density at both of the offset sites, relative to the baseline (within 15 years of the date of the baseline Koala density surveys).
- Reduction in the number of non-native Koala predators over both the offset sites, relative to the baseline (maintained for 9 consecutive years from the date of completion of the baseline survey of non-native Koala predators).

This OMP 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 OMP 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 OMP

Section 1: Introduction Section 2: Offset Property Values and Offset Suitability



Offset Management Plan

Section 3: Offset Key Performance Criteria and Completion Criteria Section 4: Management Framework Section 5: Monitoring Actions Section 6: Monitoring and Reporting Schedule Section 7: Adaptive Management and Limitations Section 8: Reference List

Appendices: Appendix A: Risk Assessment Appendix B: Baseline Survey Report Appendix C: Preliminary Documentation Submission- Offsets Chapter





Figure 1	ENVIRO CAPITAL
Site Context - Peaks Crossing	PTY LTD
File ref. 9694 E Figure 1 BL2021 Site Context PC A Date 3/06/2021 Project Peaks Crossing (Natural Bridge)	St saunders havili group
0 0.5 1 2 3 4 5 km Scale (A4): 1:150,000 [GDA 1994 MGA Z 56]	THESE PLANSHAVEREEN RREFARED FOR THEEXCLUSVE USE OF THE CLEWT. SANDOB SHAVLGGOUP COMOUTA CEPT REF OVOSAULTY OR ANY USE OF OR RELINCE LEVOL THE CONTRITS OF THESE DRAWING BY ANY THRD MRTY.





Legend				
	Site DCDB		ENVIRO	
	Site VDEC	Figure 3	CAPITAL PTY ITD	
	Qld DCDB	Site Aerial -		
		Peaks Crossing		
		File ref. 9694 E Figure 3 BL2021 Site Aerial PC A Date 3/06/2021 Project Peaks Crossing (Natural Bridge)	Shavill group	
		0 50 100 200 300 400 500 m Scale (A4): 1:15,000 [GDA 1994 MGA Z 56]	THESE PLA NSHAVEBEEN PREPARED FOR THEEXCLUS VE USE OF THE CENT. SAUNDB SHAFL CLRO UF CANNOT ACCEPT PEO VOSBULT FOR ANY USE OF OR BUNKEC FUON THE CONTRUTS OF THESE DRAWING BY ANY THIRD HARTY.	
ayer Source	: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021, Aerial (Nearmap 2	020)		



Legend		
Site DCDB	Figure 4	ENVIRO
Site VDEC	rigure 4	
Qld DCDB	Site Aerial -	
	Burnett Creek	
	<i>File ref.</i> 9694 E Figure 4 BL2021 Site Aerial BC A <i>Date</i> 3/06/2021	SS saunders
	Project Burnett Creek Road, Burnett Creek	group
	0 50 100 200 300 400 m ▲	
	Scale (A4): 1:15,000 [GDA 1994 MGA Z 56]	THESE PLANSHAVEBEEN PREPARED FOR THEEXCLUSVE USE OF THE CLENT. SAUNDRS HAVILLGROUP CANNOT ACCEPT REPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY.
Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 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	Q-
1	
Full name	Andrew Davies
Γ	
Position	Principal Environmental Scientist
ſ	
Organisation	Saunders Havill Group (ABN 24 144 972 949)
ſ	
Date	22 April 2021





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

Table 4: OMP Compliance with Conditions of Approval

Condition	Plan Reference	
Offset Management Plan		
 10. The Koala and Grey-headed Flying-fox Offset Management Plan must include: a. a description of the offset, including location, size, condition, environmental values present and surrounding land uses; 	Section 2 of the OMP describes the offset site in detail, including the location, size, condition, environmental values, surrounding land uses and offset suitability.	
 b. details to demonstrate how the offset compensates for the impact to Koala habitat and Grey-headed Flying-fox foraging habitat, in accordance with the EPBC Act Environmental Offset Policy 	 Section 2.3 of the OMP discussed the offset area calculation and how the offset compensates for the impact to koala habitat and GHFF foraging habitat. Section 2.5 and Table 5 of the OMP outlines the suitability of the offset in accordance with the EPBC Act Environmental Offset Policy (2012). 	



Condition		Plan Reference	
c.	details of how the offset area will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the Koala and Grey-headed Flying-fox	Section 2.2 of the OMP discusses the offset area values and location within a Regional Biodiversity Corridor, demonstrating the offset will provide connectivity to other habitats and contribute to a large strategic offset for the Koala and GHFF.	
d.	maps and shapefiles to clearly define the location and boundaries of the offset area, accompanied by offset attributes;	Figure 3 and Figure 4 provided within the report clearly define the location and boundaries of the offset area.	
		Shapefiles and offset attributes will be provided with the submission of this document.	
e.	Mitigation and management measures to achieve the outcomes required under conditions 4, 5, 6, 7 and 8 risk management	Section 4.1-4.6 of the OMP outlines the complete management framework to achieve the outcomes required under conditions 4, 5, 6, and 8.	
	strategies` that will be applied;	Section 4.7 of the OMP provides a summary of all the management actions, performance criteria monitoring/surveys methodology and how which approval condition each achieves.	
f.	An assessment of the risks to achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and risk management strategies that will be applied;	The monitoring and reporting schedule, provided in Section 6 of the OMP. The implementation of this schedule will identify any performance outcomes which are not on track/or have not been achieved and the corrective action to be undertaken following identification.	
		Appendix A of the OMP provides a risk assessment of potential risks, likelihood of occurrence and management actions to mitigate potential impacts.	
g.	An annual monitoring program that measures the progress of achieving the outcomes required under conditions 4, 5, 6, 7 and 8 and includes:	Section 5 of the OMP outlines the monitoring actions to be undertaken throughout the approval period.	
	7 and 6 and includes.	Section 6 of the OMP provides a monitoring and reporting schedule.	
	i. Results of the baseline surveys required under condition 3;	Sections 3.2-3.6 of the OMP provides the key performance criteria and a summary of baseline survey results. Appendix B of the OMP, the Baseline Survey Report, provides survey methodologies and detailed results.	



Condition		Plan Reference
ii.	Measurable, timebound performance indicators including 5, 10 and 15 year milestone achievements, from the date of commencement of the action, of the specific outcomes required by conditions 4, 5, 6, 7, and 8;	Section 3 of the OMP provides the key performance criteria necessary for each of the outcomes required at each milestone by approval conditions 4, 5, 6, 7 and 8.
iii.	Completion criteria determined when and how the outcomes required by conditions 4, 5, 6, , and 8 have been fully achieved;	Section 3.2-3.6 of the OMP provides the key performance criteria necessary for each of the outcomes required by approval conditions 4, 5, 6, 7 and 8.
		Section 3.7 of the OMP outlines the completion of the management period.
		Section 4.7 of the OMP provides a summary of all the management actions, performance criteria monitoring/surveys methodology and how which approval condition each achieves
iv.	The timing, methods and frequency of monitoring to detect changes in the performance indicators;	Section 6 of the OMP, the monitoring and reporting schedule, details the timing, methods and frequency of monitoring and reporting to detect changes in the performance indicators and triggers for corrective actions.
v.	Reporting and review mechanisms;	Section 6 of the OMP, the monitoring and reporting schedule, details the timing, methods and frequency of monitoring and reporting to detect changes in the performance indicators and triggers for corrective actions.
vi.	Trigger values for corrective actions;	Section 3.8 outlines the corrective action triggers.
	and	Section 6, the monitoring and reporting schedule, details the timing, methods and frequency of monitoring and reporting to detect changes in the performance indicators and triggers for corrective actions.
vii.	Proposed corrective actions, if the trigger values are reached	Section 6 of the OMP, the monitoring and reporting schedule, details the timing, methods and frequency of monitoring to detect changes in the performance indicators and triggers for corrective actions.



Condition	Plan Reference	
h. evidence of how management measures and corrective actions take into account and are consistent with relevant conservation advices, recovery plans and threat abatement plans for the Koala and Grey- headed Flying-fox.	Section 8 of the OMP demonstrates how the management measures and corrective actions take into account and are consistent with relevant conservation advices, recovery plans and threat abatement plans for the Koala and GHFF.	



2. Offset Site Suitability

As detailed section 1.1, two (2) offset sites have been identified for the secured to achieve the 159.01 ha offset required under the EPBC Act approval:

- Peak Crossing (109.76 ha); and
- Burnett Creek (49.25 ha).

The suitability of these sites area discussed within this section of the OMP.

2.1. Bioregional context

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

2.2. Offset area values

The offset areas form part of the South East Queensland Regional Plan — Regional Biodiversity Corridor which spans from the Noosa headland in the north, down to Mount Barney and Lamington National Park on the Queensland border. The corridor aims to encompass large tracts of vegetation, terrestrial connectivity, aquatic connectivity, species richness, diversity and refugia, ecosystem representation and uniqueness and climate resilience areas (Queensland Government 2017).

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

The offset areas will conserve freehold land within the South East Queensland Regional Plan — Regional Biodiversity Corridor, linking remnant habitat and habitat incorporating legally bound environmental offset areas. This linkage provides a valuable contiguous habitat corridor, ensuring the possibility of habitat fragmentation is minimised and improving the connectivity of Koala and GHFF habitat within SEQ, contributing to the future protection and persistence of the two species. The offset areas possess high conservation values and through the management actions proposed in this OMP, the properties will provide



biodiversity offsets that ensure an ecological gain on the residual impacts resulting from the impact site which aligns with offset principle 1 of the EOP.

2.3. Offset area calculation

As per condition 2 of the EPBC approval (EPBC 2017/8095), the Proponent must not clear more than 62.79 ha of Koala and GHFF habitat within the project site. The Offset Assessment Guide (OAG) (DoEE 2012) was used in consultation with DAWE to identify a total quantum of impact of 31.35 ha. The details of how the offset areas were identified is outlined in the Offsets Chapter within the Preliminary Documentation which has been included as **Appendix A**.

The offset area calculation was determined through the application of the Modified Habitat Quality Assessment (MHQA) scores for the impact site and proposed offset site. The MHQA is a modified version of the Queensland Government *"Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy"* Version 1.2 April 2017. The 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%) relates to a third indicator which is independent of the traditional habitat quality assessment, being species stocking rate has been added to the MHQA to better incorporate Matters of National Environmental Significance (MNES), and for the purpose of this report, the vulnerable-listed Koala MNES.

Implementation of the MHQA to determine the quality of Koala habitat at the impact and offset sites resulted in a score of 5 out of 10 for the impact site and a score of 7 out of 10 for both offset sites. The offset sites are expected to improve, and maintain a habitat quality score of 9 out of 10 for the lifetime of the offset through the implementation of rehabilitation and management measures over the period of the EPBC Act approval and legally binding the land via a Voluntary Declaration (VDEC) under the *Vegetation Management Act 1999* (Qld).

2.4. Koala and GHFF habitat offset areas

2.4.1 Peak Crossing

The offset land vegetation at Peak Crossing comprises high to low quality non-remnant and remnant vegetation. The non-remnant land ranges from cleared grazing and slashed grass areas through to valuable Koala regrowth patches, while the remnant vegetation ranges from highly degraded through to intact (see **Figure 5**). A general vegetation description, and site photos, are provided within **Appendix A**. The offset suitability of the non-remnant and remnant vegetation are also summarised within **Appendix A**.

The MHQA was applied separately to the 'non-remnant' and 'remnant' vegetation across the site, considering the many variables that influence the total habitat quality and species stocking rate. The OAG indicates the Peak Crossing offset site (109.76 ha of land) constitutes 80.38% of the project's impact offset, and includes non-remnant vegetation (69.64 ha) and remnant vegetation (40.12 ha).



2.4.2 Burnett Creek

The Burnett Creek property (L100/WD682) contains approximately 176 ha of remnant vegetation, with a small pocket of land in the northern extent being non-remnant (Category X) which is due to the Property Map of Assessable Vegetation (PMAV) certified across the land (refer **Figure 6**). This PMAV 'locked in' the Category X designation, and field investigations during ecological surveys confirmed this vegetation is non-remnant with regrowth characteristics.

The vegetation communities across the site (remnant and non-remnant) were predominantly devoid of weed infestations and appeared to be relatively intact. The entire Burnett Creek property contains three (3) separate regional ecosystem communities, being 'least concern' RE12.9-10.2, composite 'least concern' RE12.11.3/RE12.910.17e and composite 'of concern' RE12.8.20/RE12.8.19. A general vegetation description and site photos are provided within **Appendix A**.

As above, the MHQA was applied separately to the 'non-remnant' and 'remnant' vegetation across the site, with consideration to the many variables that influence the total habitat quality and species stocking rate. The OAG calculations indicated the Burnett Creek offset site (49.25 ha of overall 176 ha of land) constitutes 25.58% of the project's impact offset. This offset area utilises the non-remnant vegetation (24.25 ha) and a small portion of 'least concern' RE12.9-10.2 (10 ha).

2.5. Suitability analysis

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

The implementation of this OMP will enhance Koala habitat and GHFF foraging habitat through improvements to habitat and a reduction in key threats. Management objectives were developed to reflect the requirements of the EOP (refer **Table 5**).





Legend			
Site DCDB	Regional Ecosystems mapping	Figure F	
Site VDEC	Category A or B area containing endangered regional ecosystems	Figure 5	CAPITAL
Qld DCDB	Category A or B area containing of concern regional ecosystems	Regulated Vegetation	PTY LTD
VM Watercourses	Category A or B area that is a least concern regional ecosystem	Peaks Crossing	
VM Essential Habitat	Category C area containing		
VM Wetland	Category C area containing of concern regional ecosystems	File ref. 9694 E Figure 5 BL2021 RVSM PC A Date 3/06/2021 Project Peaks Crossing (Natural Bridge)	
	least concern regional ecosystem	0 50 100 200 300 400 500 m	THESE PLANSHAVEBEEN PREPARED FOR THEEXCLUS VE USE OF THE CLENT SAVIDBESTAVLLGROUP CAMOUT AC CEPT REP ONSBUTY FOR ANY USE OF OR RELAYCE UPON THE

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2021, Aerial (Nearmap 2020)



Legend **Regional Ecosystems mapping** Site DCDB **ENVIRO** Figure 6 Category A or B area containing CAPITAL Site VDEC endangered regional ecosystems PTY LTD Regulated Vegetation Category A or B area containing Qld DCDB of concern regional ecosystems Supporting Map -Category A or B area that is a VM Watercourses Burnett Creek least concern regional ecosystem VM Essential Habitat Category C area containing endangered regional ecosystems saunders File ref. 9694 E Figure 6 BL2021 RVSM BC A VM Wetland Category C area containing havill Date 3/06/2021 of concern regional ecosystems group Project Burnett Creek Road, Burnett Creek Category C area that is a least concern regional ecosystem Ν 0 50 100 200 300 400 500 m THESE PLANSHAVEBEEN PREPARED FOR THEEXCLUSIVE USE OF THE CLENT. SAUNDER SHAVILLG ROUP CANNOT ACCEPT REPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY. Scale (A4): 1:15,000 [GDA 1994 MGAZ 56]

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

EOP Requirements	Delivery		
Suitable offsets must:			
Deliver an overall conservation outcome that improves or maintains the viability of the protected matter	The offset area will directly contribute to the ongoing viability of the Koala (<i>Phascolarctos cinereus</i>) and GHFF (<i>Pteropus poliocephalus</i>). Protection and management of the offset area in accordance with this OMP aims to deliver an overall conservation and net gain in Koala habitat and GHFF foraging habitat. Prior to the EPBC Act approval for the impact, the offset areas were not protected or managed for conservation outcomes. This OMP and management actions within will support regeneration and restoration of habitat, contributing to a connected corridor with reduced threats. In doing so, the OMP aims to encourage the use of restored and new areas of habitat by both species through increased Koala food tree and GHFF foraging trees, removal of weeds and reduction in predators. The proposed offset aims to contribute to the resilience of both the Koala and GHFF by increasing landscape connectivity provided through the protection of the offset properties.		
Be built around direct offsets but may include other compensatory measures	The offset is built around direct offsets and provides a 105.94% offset of the 31.35 ha quantum impact. The offset sites were legally secured for conservation purposes prior to the impact occurring, and will endure for the duration of the impact. Legally securing and managing the offset area in accordance with this OMP protects the areas from incompatible land uses and contributes to the viability of the Koala and GHFF.		
Be in proportion to the level of statutory protection that applies to the protected matter	The OAG lists the probability of annual extinction of the Koala and GHFF as 0.2%. This use of this measurement in the OAG ensures that the appropriate level of statutory protection is applied.		
	All threats to Koalas outlined in the Department's Species Profile and Threats Database (SPRAT) and EPBC Act referral guidelines for the Vulnerable Koala (Koala referral guidelines), and identified recovery actions for the GHFF have been addressed within this OMP.		
Be of a size and scale proportionate to the residual impacts on the protected matter	The permanent protection and management for the lifetime of the approval will deliver a conservation gain adequately compensating for the 31.35ha quantum impact. The total offset area for protection and management is 159.01 ha, delivering a 105.94% offset and satisfying the 90% minimum direct offset area.		

Table 5: Offset Suitability Analysis

Management actions outlined within this OMP aim to protect and enhance Koala habitat and GHFF foraging habitat, compensating for and exceeding habitat quality of the impact.

The offset and management actions will provide:



EOP Requirements	Delivery
Suitable offsets must:	
	• Legally secured and long-term protection of 159.01 ha of Koala habitat and GHFF foraging habitat.
	 Improvement of Koala habitat and GHFF foraging habitat through revegetation and natural regeneration of Koala food trees and GHFF foraging trees and removal of weeds.
	• Contribution to a large contiguous protected habitat and biodiversity corridor with reduced threats.
	• Long-term reduction in threats, through the removal of incompatible land uses.
	• Reduced risk of Koala mortality or injury due to vehicle strike.
	 Reduced risk of Koala mortality or injury due to predators, through control of non-native predators.
	• Reduced risk of high intensity fire through management of fuel loads.
	 Reduced risk of the spread of Koala and vegetation diseases and/or pathogens.
Effectively account for and manage the risks of the offset not succeeding	Confidence in the success of the offset is high (>70%) given the detail and intensity of the management actions outlined within this OMP. The confidence is supported by the offset site selection, design of management actions, and recommended monitoring and reporting procedures. Non-remnant vegetation areas across both offset sites is considered to have a lower confidence level reflecting the potential risks relating to higher levels of disturbance, revegetation processes and plant stock success/failure rates, and natural events. Risks associated with the offset delivery will be mitigated and managed through the detailed management actions outline in Section F .
	the detailed management actions outline in Section 5 . Management actions have been drawn from offset targets stated within the EPBC Act approval which aim to protect and conserve large, connected areas of Koala habitat and GHFF foraging habitat to support viable populations. Potential risks were assessed in the Preliminary Documentation Offset Chapter (refer Appendix A).
Be additional to what is already required, determined by law or	Legally securing the offset sites for the duration of the impact will ensure existing and future owners are prohibited from conflicting land uses, including clearing. Management beyond minimum legislative requirements is proposed

determined by law or clearing. Management beyond minimum legislative requirements is proposed planning regulations, or across the whole area to ensure loss of habitat values does not occur through agreed to under other intensification of weeds causing loss of connectivity, destruction of habitat via schemes or programs hot intensive fires, increased risk of mortality or injury by dog attack.



Delivery	
Efficient and Effective:	
 The offset sites are large and located within a contiguous landscape of connected Koala habitat and GHFF foraging habitat. Management actions will ensure efficient delivery of outcomes over the large areas and proactive management, monitoring and reporting will ensure response/corrective actions are timely and focused. 	
 Prior to the EPBC Act approval, the offset areas were not protected or managed for conservation outcomes. Protection and management of the offset areas in accordance with this OMP aim to deliver an overall improved conservation outcome and net gain in Koala habitat and GHFF foraging habitat. 	
Timely:	
• The mix of remnant and non-remnant vegetation provided within the offset sites allows for the achievement of immediate and long-term conservation outcomes. The offset sites were legally secured in 2019, and this instantaneously removed the risk of conflicting land uses occurring on the sites. Following the approval of this OMP, management actions outlined within Section 5 will commence. Adaptive management processes will ensure management actions respond to technology improvements, natural events and potential risks identified in the risk assessment.	
Transparent:	
 The baseline surveys established the survey methodology to be used for the monitoring and reporting required for the lifetime of the approval. A clear monitoring and reporting framework is established within this OMP (refer Section 6). Monitoring and reporting of the offset sites will be summarised within the Annual Compliance Reports for the impact action. 	
Scientifically robust:	
• The proposed offset sites were assessed by qualified and experienced ecologists from SHG. Ongoing management and monitoring actions will be conducted in collaboration with other qualified ecologists and regeneration specialists to achieve the outcomes specified within the EPBC Act approval and this OMP.	
• The baseline surveys conducted for the offset sites will be scientifically robust, reliable and repeatable, ensuring the monitoring and	



EOP Requirem	ents D	elivery
Suitable offsets	must:	
		compliance reporting are consistent and relate back to the overall outcomes specified within the EPBC Act approval.
	R	easonable:
		• The offset is considered reasonable as the offset areas are greater than the significant residual impact on Koala habitat and GHFF foraging habitat and compensate for 105.94% of the quantum impact (using the OAG).
		• This OMP outlines appropriate management actions to achieve the offset outcomes specified within the EPBC Act approval and an overall improved conservation outcome and net gain in Koala habitat and GHFF foraging habitat, ensuring the long-term viability of both protected matters.
Have	transparent T	his OMP provides a detailed monitoring and reporting framework (refer

Have transparent This OMP provides a detailed monitoring and reporting framework (refer governance arrangements **Section 6**), performance criteria and corrective actions (refer **section 3**). These including being able to be provide minimum requirements for success/failure of management actions and readily measures, triggers for corrective actions. monitored, audited and

The Proponent will engage qualified and experienced consultants and specialists throughout the offset delivery to ensure the offset outcomes are achieved. Section 491 of the EPBC Act makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. As such, engaged consultants and specialists are required to complete a declaration of accuracy in reports provided to the Department, acknowledging their responsibility and accountability for information provided to the Department.

Annual Compliance Reports must published on the Proponent's website in accordance with Condition 18 the EPBC Act approval and may be subject to audit by the Department by an independent auditor in accordance with section 458 of the EPBC Act, and/or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.

enforced



3. Offset Key Performance Criteria

Monitoring results will be used to determine if the following performance criteria are met, as interim outcomes and targets, prior to completion criteria being achieved. These criteria provide an indication of the success of the management measures being implemented for Koala and GHFF habitat offsets, and serve as trigger values where failure to achieve will result in the implementation of corrective actions. Performance criteria are provided for each of the management actions, although it is noted that legally securing the offset does not have any specific performance criteria:

3.1. Commencement of the offset

- The offset sites, Peak Crossing and Burnett Creek, were secured prior to the commencement of the action.
- The Department was provided evidence of the date both sites were legally secured.
- The approval holder must submit the OMP to the Department for the Minister's approval and must address both the Peak Crossing and Burnett Creek offset sites.
- The approved OMP must be implemented.
- Management actions are to commence upon approval of the OMP.

3.2. Baseline Surveys

Surveys were undertaken to establish the condition of each offset site and baseline performance indicators (refer **Section 3.3-3.7**). Approval conditions require the performance criteria to be achieved relative to the date of baseline surveys. **Table 7** provides the dates of each survey undertaken across each offset sites. Refer to **Appendix B**, the Baseline Survey Report, for survey methodology and detailed results.

Survey	Methodology	Survey Date	
Requirement		Peaks Crossing	Burnett Creek
Baseline Koala density survey	Regularised grid-based Spot Assessment Technique (RGB-SAT)	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021
Baseline GHHF presence survey	Random Diurnal Meander- search for roosts, winter & spring flowering species. Evening search- fly in/out of species Spotlighting/dusk surveys- return to likely foraging areas	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021

Table 6: Baseline Survey Summary



Survey	Methodology	Survey Date	
Requirement		Peaks Crossing	Burnett Creek
Baseline Koala food tree and GHFF foraging tree surveys	Modified Habitat Quality Assessment (MHQA)	1 November 2018 8 May 2019	1 November 2018 3 May 2019
Baseline non-native plant survey	Random diurnal meander recording observation and, MHQA and targeted non-native plant transect assessments	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021
Baseline non-native Koala predators survey	Motion Sensor Camera survey	15 March to 6 April 2021	8 April to 13 May 2021

3.3. Koala food trees

- Planting is to commence within 12 months of commencement of the action (and of weeds being treated in the rehabilitation areas).
- Completion of planting of the following number of seeds, sapling, or tube stock (or equivalent) tree species suitable for the eventual establishment of new Koala food trees within 5 years of commencement of action:
 - At least 15,000 at the Peak Crossing offset site; and
 - At least 2,500 at the Burnett Creek offset site.
- Through maintenance measures, rehabilitation areas at both sites will have at least 90% survival rate (of planted seed, sapling or tube stock) over the life of the approval (refer **Section 4.4** for specific measures to ensure 90% survival rates).
- Areas allowed to regenerate will display signs of native vegetation regrowth at rates expected for those species.
- By the end of the management period, non-remnant areas will resemble an open woodland structure with an abundance of food tree species, and that is representative of pre-clearing Regional Ecosystems.
- A Rehabilitation and Regeneration Management Strategy (refer Section 4.4) and rehabilitation Management Plan (RMP) has been developed for each of the offset sites and is presented in Section 4.4 which details the process to achieve the above performance criteria.
- Within 15 years of the date of the baseline Koala food tree survey the following increases in the number of Koala food trees are to be achieved:
 - 20% increase at the Peak Crossing offset site;
 - o 5% increase at the Burnett Creek offset site.



Koala food tree means a species of tree of genus Angophora, Corymbia, Eucalyptus, Lophostemon or Melaleuca, with a height of more than 4 metres or with a trunk circumference more than 31.5 centimetres at 1.3 metres above the ground, whose leaves are known to be consumed by the Koala.

3.3.1 Koala Habitat Quality Assessment

Table 7:	Koala Habitat Quality Score
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Offset Site	Zone	Current Score (/10)	Future Score (/10)	Time till measured benefit	
Peak Crossing	1	7	9	20 Years	
	2	7	9		
Burnett Creek	1	7	9		
	2	7	9	20 Years	

3.4. GHFF foraging trees

- Within 15 years of the date of the baseline surveys, the following increases in the number of GHFF foraging trees relative to the baseline are to be achieved:
 - o 20% at the Peak Crossing offset site;
 - o 5% at the Burnett Creek offset site.

GHFF foraging tree means a species of tree or shrub that is known to provide a foraging resource for GHFF and is at a stage of development to produce a foraging resource for GHFF during the winter and spring period.

3.4.1 GHFF Habitat Quality Assessment

Table 8:	GHFF Habitat Quality Score
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Offset Site	Zone	Current Score (/10)	Future Score (/10)	Time till measured benefit	
Peak Crossing	1	7	9	20 Years	
	2	6	8		
Burnett Creek	1	7	9	20 Мария	
	2	7	9	20 Years	

3.5. Koala density and GHFF presence

• Within 15 years of the date of the baseline surveys, a 50% increase in Koala density relative to the baseline is achieved at both sites.

Koala density means the number of Koalas per unit area across on the Peak Crossing offset site and Burnett Creek offset site.



Table 9: Species Stocking Rate (Koala)

Species Stocking Nate (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
Koala population (density range of 0.02 –	1 – 3 Koalas	4 – 7 Koalas	8 – 10 Koalas	11 + Koalas
0.08 Koalas per/ha)	20	30	35	40

Species Stocking Rate (40%)

Two (2) Koalas were identified through direct observations on the Burnett Creek offset site. The estimate Koala density across the two offset sites was determined using the SAT method. Using the available published scientific literature and SAT results, it can be inferred that the both the Peaks Crossing offset site and Burnett Creek offset site demonstrate 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, 159.01 ha, the offset sites have an estimated Koala carrying capacity between three (3) to thirteen (13). 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)
Peaks Crossing	109.76 ha	0.02 to 0.08	2.2 – 8.78
Burnett Creek	49.25 ha	0.02 to 0.08	1 (0.99) – 3.94
Total	159.01 ha	0.02 to 0.08	3.18-12.72

To achieve the outcome required by approval condition 7, a 50% increase in Koala density relative to the baseline (refer to **Table 10**) must be achieved at both sites.

Despite extensive surveys (opportunistic and targeted), no GHFF individuals were identified utilising the vegetation on either offset site or as fly-over species. However, monitoring and reporting will continue to include species specific information where necessary.

Refer to **Appendix B**, the Baseline Survey Report, for survey methodology and detailed results.



■ Preliminary Documentation Report (EPBC 2019/8398)

3.6. Weed Management

- Within 10 years of the commencement of the action, at least 90% of non-native plants, relative to the baseline non-native plant survey, are to be removed from the Peak Crossing and Burnett Creek offset sites.
- This level of non-native plant cover must be maintained until the requirements of Condition 6 are achieved (i.e., 15 years after baseline Koala tree and GHFF foraging tree surveys are completed).

Non-native plant means lantana (*Lantana camara*) and other invasive weed species occurring on the Peak Crossing offset site and Burnett Creek offset site that can inhibit the recruitment of Koala food trees and GHFF foraging trees.

A weed management plan (WMP) has been developed for the offset sites and is presented in **Section 4.3** of this OMP. The weed management plan is integrated with the RMP developed for each of the offset sites (refer **Section 4.4** of this OMP). Management, monitoring and maintenance of weeds will be completed in accordance with the RMP, and implementation of management actions are to commence within 12 months of the commencement of the action subject to the approval of this OMP.

Non-native plant baseline cover was surveyed using two (2) methodologies, MHQA and targeted weed transect surveys. A results summary of each is provided in **Table 12**.

	Survey Methodology			
Offset Site	MHQA (Non-native	Weed Trans	sects	
	Plant Cover)	Non-native Plant Cover	WONS	
Peak Crossing	9%	41.04%	8.86%	
Burnett Creek	1.3%	1.55%	0.05%	

Table 11: Non-native Plant Cover Baseline Survey Results

Additionally, the extent of significant patches of non-native plant cover were mapped. Refer to **Appendix B**, the Baseline Survey Report, for survey methodology and detailed results.

In accordance with approval condition 5, within 10 years of the commencement of the action, at least 90% of non-native plants, relative to the baseline non-native plant survey (refer to **Table 12**), are to be removed from the Peak Crossing and Burnett Creek offset sites and must be maintained until the requirements of Condition 6 are achieved (i.e., 15 years after baseline Koala tree and GHFF foraging tree surveys are completed).

3.7. Non-native Predator Control

• A reduction in the number of non-native Koala predators, relative to the baseline results over both sites, is to be demonstrated and maintained for 9 consecutive years from the date of completion of baseline survey.


• The non-native predator management strategy will be updated annually based on the outcomes of monitoring.

Non-native Koala predators means any animal not native to Australia that is known to predate on Koalas of any age. A non-native predator management plan (NNPMP) has been developed and is included within **Section 4.6** of this OMP.

Non-native predators were surveyed using regularised grid-based motion detection cameras methodology which provides a Relative Abundance Index (RAI). The results of the baseline survey are summarised within **Table 13**.

Table 12: N	Ion-native Predato	r Baseline Surve	y Results
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Offset Site	RAI (all non-native predators)
Peak Crossing	6.2
Burnett Creek	0.57

In accordance with approval condition 8, a reduction in the number of non-native Koala predators, relative to the baseline results over both sites (refer to **Table 13**), is to be demonstrated and maintained for 9 consecutive years from the date of completion of baseline survey. Refer to **Appendix B**, the Baseline Survey Report, for survey methodology and detailed results.

3.8. Completion of the Offset Management Period

The offset management period under this OMP will be considered complete on achievement of the performance criteria outlined within **Sections 3.1-3.6** above. If the performance criteria outlined above, is not achieved at the end of the life of the approval, 30 January 2041, the approval holder or those acting on their behalf are to engage with the Department to determine suitable criteria for resolution and finalisation of the offset. However, most of the targets outlined within the performance criteria are expected to be achieved within 15 years from the date of the baseline surveys.

3.9. Corrective Action Triggers

If progression towards the completion criteria identified above are not met following annual compliance inspections and 5-yearly habitat quality monitoring, the following corrective actions will be implemented:

- The control measures and the timing and frequency of management measures will be increased and maintained at a higher rate of control until the completion criteria have been attained.
- Where unplanned fires or flooding occurs during the monitoring interval, any negative impacts to ecological score will be noted and compared to unaffected monitoring sites of previously the same quality and resulting potential weed infestations following disturbance will be managed to ensure the weed control completion criteria are achieved.



- Where Koala habitat and GHFF foraging habitat rehabilitation has a success rate below 90%, the active regeneration or rehabilitation measures will be repeated until the original completion criteria are achieved (refer **Section 3.2** and **Section 3.3**). Where non-native plant cover has increased or remained constant relative to the previous monitoring event (refer to **Section 6**), management actions are to be repeated until completion criteria are achieved (refer to **Section 3.5**).
- Where the RAI of non-native predators increase or remain constant relative to the previous monitoring event (refer to **Section 6**), management actions are to be repeated until completion criteria are achieved (refer to **Section 3.6**).

4. Management Framework

This section outlines the management framework to be implemented for the duration of the approval (20 years), though as outlined within the performance criteria most of the targets are to be achieved within 15 years from the date of the baseline surveys. 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.

To address the key performance criteria across the offset sites, the Peak Crossing and Burnett Creek sites have been delineated into a variety of Management Zones based upon the Regional Ecosystem mapping (Qld). Each Management Zone has a defined set of actions designed to progress towards the performance criteria in the most efficient way possible with the common objective to achieve a net gain in Koala habitat and GHFF foraging habitat quality.

Critical elements of the OMP are as follows:

- Legal protection of the existing remnant and non-remnant vegetation, consisting of Koala habitat and GHFF foraging habitat from incompatible land uses such as vegetation clearing, logging and grazing.
- Revegetation and management of non-remnant vegetation to establish a self-sustaining forest representative of pre-clearing Regional Ecosystems including the presence of Koala food trees and GHFF foraging trees.
- Assisted natural regeneration of remnant vegetation through active management of threatening processed including weeds, fire and pests/predators.
- Reduction to identified threats to Koala and GHFF.

The management actions will result in a net gain of the overall habitat quality for Koala and GHFF over the life of the approval through active management, maintenance, monitoring and reporting. A monitoring and reporting schedule is provided in **Section 7.**

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).

4.1. Management Approach

The delivery of the offset is over two (2) offset sites, which are divided into Management Zones predominantly based upon the Regional Ecosystem mapping. As such, there are two (2) Management Zones within each of the offset sites.

Offset Site	Area	Koala H Quality	labitat / Score	GHFF I Qualit	Habitat y Score	Management Zone	Description				
		Current	Future	Current	Future						
Peak	109.76	7	9 7	7	0	1	Contiguous Native Canopy Vegetation				
Crossing	ha	7		9	, 9	/	/	9	9	9	2
Burnott	40.25					1	Contiguous Native Canopy Vegetation				
Creek	49.25 ha	7	9	7	9	2	Weedy Watercourses and Other Weedy / Sparsely Vegetated Areas				

Table 13:	Offset Site Management Zone Summary
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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.

4.2. 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 secured the conservation use on the land prior to the action commencing. The declaration of the offset areas at Peak Crossing and Burnett Creek occurred on 20 March 2019 by the Department of Resources (DOR), formerly the Department of Natural Resources, Mines and Energy (DNRME). 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".



4.3. Management Action 2 – Weed 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 (refer **Appendix B**). 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 is considered a key threatening process to Koalas, impacting on movement between trees and prolonging time spent on the ground, making them vulnerable to predators (DECC 2008). The *South East Queensland Koala Conservation Strategy 2020-2025* developed with the advice of the Koala expert panel, lists Koala habitat restoration, including the removal of weeds, as a key priority (Queensland Government 2020). Additionally, Lantana is recognised as a transformer weed, which changes the structure and health of ecosystems and wildfire behaviour. The species supresses eucalypt recruitment leading to a decline in quality of Koala habitat and availability of food resources (Threatened Species Scientific Committee, 2010).

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.

Given the size of the offset sites, weed management will require an intense initial period of treatment and removal and numerous applications over the first 5-10 years. Monitoring and follow up treatments will then be required throughout the remaining management period to maintain progress and ensure longevity of initial works.

The measures for the control of weeds are outlined within this OMP, and involve the following:

- Comprehensive baseline surveys consisting of a combination of MHQA transects, targeted weed coverage transects and mapping of identified infestations are to be conducted;
- Weeds, with a focus on Lantana, will be monitored and treated annually, until the performance criteria is achieved. Once the performance criteria is achieved, monitoring and maintenance actions will include:
 - comprehensive monitoring including repeats of baseline surveys and annual photo monitoring for weeds will be conducted and reported; and
 - identified weeds and infestations are to be reported and be treated. Refer to Table 13 for treatment/removal method.
- A suitably qualified bushland regeneration contractor will be engaged to undertake the weed control.



• Control of infestations will utilise techniques that avoid disturbance to surrounding areas.

Management measures for the control of weeds will include the following:

- Baseline weed mapping for weeds to be conducted and specific treatment techniques developed.
- Identified weeds and infestations are documented/reported and then treated. Refer to **Table 13** for treatment/removal method.
- A suitably qualified bushland regeneration contractor will be engaged to undertake the necessary weed control.
- Control of infestations will utilise techniques that avoid disturbance to surrounding areas.

Weeds will be monitored annually until condition 5 of the approval is achieved, identified at densities less than 10% of the baseline infestation. Evidence of weed management and control will be reported annually within the Annual Compliance Report (ACR).

The monitoring will be undertaken annually, during the same season as the original surveys, to ensure that the timing is consistent and aligns with the baseline assessment. The following procedures will be implemented to ensure that the monitoring event aligns with the baseline monitoring methodology:

- Location of the presence of weeds either via a GPS waypoint or where a large weed infestation is present. A GPS polyline will be created to delineate the extent of the infestation.
- On a field datasheet, detail the time 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 years' weed survey mapping, field datasheet and photos for noting changes in weed infestations and densities.
- Transfer GPS data to the necessary programs to generate weed survey mapping extent and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring purposes.

This management approach will be led by current best practice, where current control options available include those detailed in the following extract.



Type of infestation	Physical	Mechanical	Chemical	Fire	Biological
Small (few plants, small area)	Hand grubbing only suitable for	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.
Medium (medium density, medium total area) Large (many plants, many ha)	seedlings. Wear gloves for protection from thorns.	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.	They are already distributed throughout their potential range.

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



Table 14: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:	Herbicides must be applied by
2	Gramineae	Andropogon gayanus	Gamba Grass	Invasive Plants at	appropriately qualified /
3	Annonaceae	Annona glabra	Pond Apple	/industries/farms-fishing-	accordance with the Agricultural
4	Basellaceae	Anredera cordifolia	Madeira Vine	forestry/agriculture/landmanage	Chemicals and Distribution
5	Asparagaceae	Asparagus aethiopicus cv. Sprengeri	Asparagus Ground Fern	diseases/weeds-	identified on registered product
6	Asparagaceae	Asparagus africanus	Ornamental Asparagus, Asparagus Fern	diseases/invasive-plants for	labels, or on an Australian
7	Asparagaceae	Asparagus asparagoides	Bridal Creeper	additional guidance.	Pesticides and Veterinary Medicines Authority (APVMA)
8	Asparagaceae	Asparagus declinatus	Bridal Veil, South African Creeper	Or	issued off-label permit where
9	Asparagaceae	Asparagus plumosus	Asparagus Fern	WONE wood management	applicable.
10	Asparagaceae	Asparagus scandens	Climbing Asparagus Fern	guides available at	Also refer to:
11	Cactaceae	Austrocylindropuntia spp.	Prickly Pears	https://www.environment.gov.a	Business Queensland: Invasive
12	Cabombaceae	Cabomba caroliniana	Cabomba	u/biodiversity/invasive/weeds/w eeds/lists/wons.html	Plants at <u>https://www.business.gld.gov.au</u>
13	Asteraceae	Chrysanthemoides monilifera subsp. Monilifera	Boneseed		<u>/industries/farms-fishing-</u> forestry/agriculture/landmanage
14	Asteraceae	Chrysanthemoides monilifera subsp. rotundata	Bitou Bush		<u>ment/health-pests-weeds-</u> <u>diseases/weeds-</u> diseases/invasive-plants for
15	Asclepiadaceae	Cryptostegia grandiflora	Rubber Vine		additional guidance.
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		Southeast Queensland Ecolog
19	Pontederiaceae	Eichhornia crassipes	Water Hyacinth		Restoration Framework
20	Fabaceae	Genista linifolia	Flax-leaved Broom, Mediterranean Broom		guides available at https://www.environment.go
21	Fabaceae	Genista monspessulana	Montpellier Broom, Cape Broom, Canary Broom		u/biodiversity/invasive/weed eeds/lists/wons.html
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		



4.4. Management Action 3 – Rehabilitation and regeneration management strategy

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 Management Plans (RMPs) for Burnett Creek and Peak Crossing have been developed and are detailed in **Sections 4.42** and **4.4.3**, respectively. These plans 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, the natural regeneration rehabilitation technique is considered the preferred method to enhance remnant and non-remnant vegetation. Where natural regeneration is unsuccessful, infill planting will be implemented to facilitate recovery.

Management measures for rehabilitation and regeneration include:

- All rehabilitation activities are to be carried out by a suitably qualified bush regeneration contractor.
- The planting of 15,000 and 2,500 Koala habitat trees in the form of seeds, sapling or tube stock at Peak Crossing and Burnett Creek, respectively, within 12 months of the commencement of the action, in accordance with Condition 4b. Methodology developed to achieve condition 4b is provided in the respective RMP for each offset site (refer **Sections 4.4.2** and **4.4.3**). Key methods are described as the following:
 - Infill planting of 15,000 and 2,500 Koala food trees at Peak Crossing and Burnett Creek, respectively.
 - Infill planting will occur at a rate of 1 tubestock per 10m² using local provenance species from the verified RE technical descriptions.
- The species planted must be consistent with the mapped regional ecosystem or pre-clear regional ecosystem over that area.
- Monitoring to measure survival of planted specimens. Evidence of rehabilitation and the success and survival rate will be reported annually within the ACR.
- Initial works or beginning of works must occur prior to 15 March 2020 as per the conditions of approval.



- Ongoing maintenance of areas where replanting has occurred will ensure plant survival and allow continued assessment of site condition. Maintenance of the plantings will include the following:
 - Treatment of weeds when they are detected to occur until the performance criteria is achieved.
 - Watering of plantings to improve early stage survival in dry conditions. This is often highly variable and depends on the suite of species planted, weather conditions and time of year when planted. A watering schedule may consist of watering every day for week 1, twice per week for weeks 2-6 and then weekly from weeks 6-12.
 - Replenishment of mulch as required.
 - Maintaining exclusion fencing (should the local Kangaroo and Wallaby population hinder replanting efforts); and
 - Additional planting if maintenance and monitoring measures identify plants requiring replacement. This will occur when the targeted plant survival rate is not met, or gaps are required to be filled. Additional planting is necessary if the introduction of new species at different stages of vegetation succession is required. An adaptive management approach will be utilised whereby if one plant species consistently dies on an offset site, the replacement of this species will be considered with a species observed to be performing well.

4.4.1 Rehabilitation Management Plan

The RMP detailed herein this section applies to each of the offset sites, Peak Crossing and Burnett Creek and consists of the following requirements:

- Baseline MHQA surveys (to be prepared as a separate document for ongoing monitoring and reporting requirements);
- Rehabilitation Management Plan (RMP) preparation (this plan);
- Primary and follow up rehabilitation works;
 - o Assisted Natural Regeneration Removal of conflicting land uses and weed management, and
 - o Reconstruction Weed management and revegetation/infill planting
- Maintenance
 - Ongoing weed management and maintenance of infill planting
- Monitoring and Reporting
 - Rehabilitation works progress reports prepared by engaged contractor to approval holder / environmental coordinator
 - Annual photo monitoring
 - Repeat of baseline surveys
 - \circ $\;$ Progress and achievements to be included within ACR.



As noted above within **Section 4.1**, the management will be divided over the offset sites into the individual management zones (refer **Table 14**).

Offset Site	Management Zone	Description	Rehabilitation Method
Peak Crossing	1	Continuous Native Canopy Vegetation	Assisted Natural Regeneration
	2	Sparse Native Canopy Vegetation	Reconstruction Assisted Natural Regeneration
Burnett Creek	1	Continuous Native Canopy Vegetation	Assisted Natural Regeneration
	2	Weedy Watercourses and Other Weedy / Sparsely Vegetated Areas	Reconstruction Assisted Natural Regeneration

Table 15: Management Zone Rehabilitation Method	Summary
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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. Refer to **Section 4.4.2** and **Section 4.2.3** for offset site specific details.

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. It also forms part of the preliminary work required for reconstruction and fabrication scopes.



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 15**).

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 16:	Weed Treatment Schedules (source: SEQERF)
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	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 thizome 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 delive 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, especial 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 knapsac 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 human 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.



Planting Notes

Primary weed management works, areas requiring infill planting (assisted natural regeneration), and larger scale planting (reconstruction and fabrication) can be undertaken.

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.

Refer to plant species schedule below for species and planting densities.

Sourcing Plant Material

There are several options for sourcing plant material for revegetation 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. This allows planting to cater for various requirements including standard revegetation, infill only requirements such as canopy trees at low densities, as well as dense bioretention plantings as per Bioretention Technical Guidelines. Refer to plant species schedule below for species and planting 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 RMP, 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.

4.4.2 Peak Crossing

In addition to section 4.4.1, the following rehabilitation measures apply to the Peak Crossing offset site.

Rehabilitation Design

This documentation has been compiled through processes outlined in the SEQERF, site analysis and previous rehabilitation project experiences. The rehabilitation design—comprising distinct management zones— provides assessment managers, clients and contractors a clear methodology to assist the recovery of an ecosystem(s) that has been degraded, damaged or destroyed.

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

Management Zone 1 – Continuous Native Canopy Vegetation (Assisted Natural Regeneration)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses or soil erosion i.e., staged removal of Lantana on steep slopes.

Management Zone 2 – Weedy Watercourses and Other Weedy / Sparsely Vegetated Areas (Assisted Natural Regeneration)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate



(sensitive) weed management methodology within this zone to minimise any native vegetation damage losses and soil erosion i.e., staged removal of Lantana on creek banks and other steep slopes.

Infill planting of 15,000 juvenile Koala food trees which is to occur at a rate of 1 tubestock per 10m² using local provenance species from the verified mapped RE technical description. Mulch or jute matting squares to be secured in accordance with manufacturer's recommendations and 450mm high tree guards to be installed at rehabilitation supervisor's discretion.

Any bare, eroded areas to be suitably cultivated, treated/topsoiled and Jute matting installed to manufacturer's recommendations prior to planting.



PEAKS CROSSING OFFSET SITE **REHABILITATION AND REGENERATION PLAN - MANAGEMENT ZONES**





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Management Zone 1 – Continuous Native Canopy **Vegetation (Assisted Natural Regeneration)**

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with Southeast Queensland Ecological Restoration Framework (SEQERF) to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses or soil erosion i.e. staged removal of Lantana on steep slopes.

Refer to Rehabilitation Notes for additional details.

Management Zone 2 - Weedy Watercourses and Other Weedy / Sparsely Vegetated Areas (Assisted Natural **Regeneration**)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses and soil erosion i.e. staged removal of Lantana on creek banks and other steep slopes.

Infill planting of 15,000 Koala food trees where average tree densities for the verified Regional Ecosystem communities occurring onsite are not being met. Infill planting to occur at a rate of 1 tubestock per 10m² using local provenance species from the verified mapped Regional Ecosystem(s) technical description(s). Jute matting squares to be secured in accordance with manufacturer's recommendations and 450mm high tree guards to be installed at rehabilitation supervisor's discretion.

Any bare, eroded areas to be suitably cultivated, treated/topsoiled and Jutematting installed to manufacturer's recommendations prior to planting.

Refer to Rehabilitation Notes for additional details, plant species and densities.

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MOUNT FLINDERS ROAD NATURAL BRIDGE (LOT 172 & 173 ON CH312424, LOT 151 ON RP892014)

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas



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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

PROJECT:

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas



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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse



MOUNT FLINDERS ROAD NATURAL BRIDGE (LOT 172 & 173 ON CH312424, LOT 151 ON RP892014)

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas



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VDEC site boundary

Surface contours (5m)

Mapped watercourse

PROJECT:

MOUNT FLINDERS ROAD NATURAL BRIDGE (LOT 172 & 173 ON CH312424, LOT 151 ON RP892014)

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas





Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas



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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas





Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas





Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Rehabilitation Plan Detail Sheet **09**

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas





Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Management Zone 2 Weedy watercourses and other weedy / sparsely vegetated areas



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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

PROJECT:

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Planting Species Schedule

Management Zone 2 – Sparse Native Canopy Vegetation

Recommended species list total approximate area = 352,400 m² (Overall minimum density approx. 1 plant per 10 m²)

Notes:

- 1) The dominant mapped and verified REs on site are RE12.8.24 and RE12.9-10.2—both of which are dominated by *Corymbia citriodora* with scattered *Eucalyptus tereticornis, E. crebra* and *E. moluccana*.
- 2) The vast majority of remnant areas are dominated by *C. citriodora* and *E. crebra* with lower slopes containing more *E. tereticornis and E. moluccana*. These communities dominate from the flats through the foothills to the lower slope of the ridgelines. As the land elevates to upper slopes and ridgelines, more *E. crebra, E. siderophloia and E. microcorys* become prevalent. The regrowth Koala Tree areas are dominated by Eucalyptus, Corymbia and Lophostemon species that are also consistent with RE12.9-10.2 and RE12.8.24.
- 3) All tree species listed below were recorded on-site (refer to **Appendix B**) and are dominant species from RE 12.8.24 and RE 12.9-10.2 technical descriptions.
- 4) Setback trees 3 metres minimum from all property boundaries, sewer and service alignments.
- 5) Distribute plants in groups on site in random arrangement to be confirmed with super intendant on site.
- 6) Tree species to be planted in relative densities to mimic those observed onsite i.e., if a species below is restricted to isolated areas onsite, only plant in that location and adjust planting quantity where required.
- 7) Trees to be planted according to watercourse zoning i.e., no trees on lower to mid bank.
- 8) Planting tubestock to be arranged with nursery well in advance to ensure supply of locally sourced seed stock. If nursery availability is limited, species to be supplemented with other species from this schedule, or local provenance species from verified RE.

Scientific name	Common name	Plant form	Pot size	Planting density (1 per 10 m²)	Quantity required
Corymbia citriodora	Spotted Gum	Tree	Tubestock		3,500
Eucalyptus crebra	Narrow-leaved Ironbark	Tree	Tubestock		3,500
Eucalyptus tereticornis	Forest Red Gum	Tree	Tubestock		2,500
Eucalyptus moluccana	Gum-topped Box	Tree	Tubestock		2,500
Eucalyptus siderophloia	Grey Ironbark	Tree	Tubestock		1,000
Eucalyptus microcorys	Tallowwood	Tree	Tubestock		1,000
Lophostemon confertus	Brush Box	Tree	Tubestock		1,000
Subtotal				15,000	
Total				15,000	

9) Final species schedule from nursery to be approved by Saunders Havill Group prior to planting works.



Performance and Completion Criteria

The utilisation of benchmark criteria helps to determine rehabilitation success during the maintenance period and assists in prompting when additional maintenance activities are required. Performance indicators for rehabilitation and regeneration works that have been conditioned under the Approval (Conditions 4-6) and the Offset Chapter (**Appendix B**) are as follows:

- 1. Development of a RMP (this plan) specifying techniques and species to be utilised will be implemented within 12 months of commencement of the action;
- 2. All rehabilitation activities are to be carried out by a suitably qualified bush regeneration contractor;
- 3. Commencement of planting at least 15,000 juvenile Koala food trees within 12 months of the commencement of the action;
- 4. Commencement of weed management in rehabilitation areas within 12 months of the commencement of the action;
- 5. Inform the Department in writing of the commencement and completion of the planting of tube stock tree species;
- 6. Within 10 years of commencement of the action, ensure at least 90% of non-native plants, relative to the baseline non-native plant survey, are removed (to be maintained until the requirements of condition 6 have been met);
- 7. Survival over the life of the approval of at least 90% of the plantings;
- 8. 5% increase in the number of Koala food trees and GHFF foraging trees at (within 15 years of the date of the baseline Koala food tree and GHFF foraging tree surveys);
- 9. The plants reinstated in any particular location must be consistent with the mapped regional ecosystem or pre-clear regional ecosystem over that area; and
- 10. By the end of the management period, non-remnant areas will resemble an open woodland structure with an abundance of food tree species, and that is representative of pre-clear REs.

All benchmarks are required to be fulfilled in the indicated timeframes with works ceasing only when all benchmarks have been fulfilled and a score of 9 is achieved under the MHQA.



4.4.3 Burnett Creek

In addition to section 4.4.1, the following rehabilitation measures apply to the Burnett Creek offset site.

Rehabilitation Design

This documentation has been compiled through processes outlined in the Southeast Queensland Ecological Restoration Framework (SEQERF), site analysis and previous rehabilitation project experiences. The rehabilitation design—comprising distinct management zones—provides assessment managers, clients and contractors a clear methodology to assist the recovery of an ecosystem(s) that has been degraded, damaged or destroyed.

Rehabilitation zones were identified through detailed site analysis and are described in the following.

Management Area 1 – Continuous Native Canopy Vegetation (Assisted Natural Regeneration)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses or soil erosion i.e., staged removal of Lantana on steep slopes.

Management Zone 2 – Sparse Native Canopy Vegetation (Assisted Natural Regeneration / Reconstruction)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses and soil erosion i.e., staged removal of Lantana on steep slopes.

Potential infill planting of 2,500 Koala food trees to occur at a rate of 1 tubestock/ seed per 10m² using local provenance species from the verified mapped RE technical descriptions.



BURNETT CREEK OFFSET SITE **REHABILITATION AND REGENERATION PLAN - MANAGEMENT ZONES**



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Management Zone 1 – Continuous Native Canopy **Vegetation (Assisted Natural Regeneration)**

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with Southeast Queensland Ecological Restoration Framework (SEQERF) to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses or soil erosion i.e. staged removal of Lantana on steep slopes.

Refer to Rehabilitation Notes for additional details.

Management Zone 2 – Sparse Native Canopy Vegetation (Assisted Natural Regeneration)

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management to entire zone in accordance with SEQERF to encourage natural regeneration by reducing competition. Appropriate (sensitive) weed management methodology within this zone to minimise any native vegetation damage losses and soil erosion i.e. staged removal of Lantana on steep slopes.

Infill planting of 2,500 Koala food trees where average tree densities for the verified Regional Ecosystem communities occurring onsite are not being met. Infill planting to occur at a rate of 1 tubestock per 10m² using local provenance species from the verified mapped Regional Ecosystem(s) technical descriptions. Jute matting squares to be secured in accordance with manufacturer's recommendations and 450mm high tree guards to be installed at Rehabilitation Supervisor's discretion.

Any bare, eroded areas to be suitably cultivated, treated/topsoiled and Jutematting installed to manufacturer's recommendations prior to planting.

Refer to Rehabilitation Notes for additional details, plant species and densities.

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BURNETT CREEK ROAD **BURNETT CREEK** (LOT 100 ON WD682)

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Management Zone 1 Continuous native canopy vegetation

Sparse native canopy vegetation

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Project site boundary

Management Zone 2



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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Management Zone 1 Continuous native canopy vegetation

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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse



BURNETT CREEK ROAD **BURNETT CREEK** (LOT 100 ON WD682)

environmental management

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Management Zone 1 Continuous native canopy vegetation

Sparse native canopy vegetation

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Project site boundary

Management Zone 2



VDEC site boundary

Surface contours (5m)

Mapped watercourse

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BURNETT CREEK ROAD **BURNETT CREEK** (LOT 100 ON WD682)

environmental management

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Management Zone 1 Continuous native canopy vegetation

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Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse



BURNETT CREEK ROAD **BURNETT CREEK** (LOT 100 ON WD682)

environmental management

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Management Zone 1 Continuous native canopy vegetation

Sparse native canopy vegetation

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Project site boundary

Management Zone 2



VDEC site boundary

Surface contours (5m)

Mapped watercourse



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LEGEND



Management Zone 1 Continuous native canopy vegetation

Management Zone 2 * * * Sparse native canopy vegetation



QLD DCDB



Project site boundary



VDEC site boundary

Surface contours (5m)

Mapped watercourse

PROJECT:

BURNETT CREEK ROAD **BURNETT CREEK** (LOT 100 ON WD682)

environmental management

Detail Sheet 07				
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Planting Species Schedule

Management Zone 2 – Sparse Native Canopy Vegetation

Recommended species list total approximate area = 352,400 m² (Overall minimum density approx. 1 plant per 10 m²)

Notes:

- 1) The dominant remnant vegetation community is RE12.9-10.2 which is dominated by *Corymbia citriodora* (Spotted Gum) with scattered *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark).
- 2) The species observed within the regrowth vegetation community were also consistent with the pre-clear regional ecosystem mapping, being, 'least concern' RE12.9-10.2. The dominant regrowth species was *Corymbia citriodora* (Spotted Gum) with scattered *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark).
- 3) All tree species listed below were recorded onsite (refer **Appendix B**) and are dominant species from the RE 12.9-10.2 technical description.
- 4) Setback trees 3 metres minimum from all property boundaries, sewer and service alignments.
- 5) Distribute plants in groups on site in random arrangement to be confirmed with super intendant on site.
- 6) Tree species to be planted in relative densities to mimic those observed onsite i.e if a species below is restricted to isolated areas onsite, only plant in that location and adjust planting quantity where required.
- 7) Trees to be planted according to watercourse zoning i.e., no trees on lower to mid bank.
- 8) Planting tubestock to be arranged with nursery well in advance to ensure supply of locally sourced seed stock. If nursery availability is limited, species to be supplemented with other species from this schedule, or local provenance species from verified RE.

9)	Final species schedule from r	nursery to be approv	ed by Saunders Havi	Il Group prior to planting works.
-,	ind species series and its in the			

Scientific name	Common name	Plant form	Pot size	Planting density (1 per 10 m ²)	Quantity required
Corymbia citriodora	Spotted Gum	Tree	Tubestock		800
Eucalyptus tereticornis	Forest Red Gum	Tree	Tubestock		600
Eucalyptus acmenoides	White Mahogany	Tree	Tubestock		500
Eucalyptus crebra	Narrow-leaved Ironbark	Tree	Tubestock		500
Eucalyptus siderophloia	Grey Ironbark	Tree	Tubestock		100
	2,500				
	2,500				

Note: depending on availability substitutions may be required

Methodology – Maintenance

Maintenance, as with all ecological restoration work, is fundamental in ensuring project success. Maintenance of the planting includes tasks such as:

• Treatment of weeds when detected to occur until performance criteria is achieved.



• Watering of plantings to improve early stage survival in dry conditions. This is often highly variable and depends on the suite of species planted, weather conditions and time of year when planted. A watering schedule may consist of watering every day for week 1, twice per week for weeks 2-6 and then weekly from weeks 6-12.

Additional planting may be required to replace plants that do not survive (e.g., to meet survival rate requirements, or to fill gaps), but it may also be necessary to introduce new species at different stages of vegetation succession. An adaptive management approach should be utilised, if one plant species consistently dies on a site, consider using in its place a species that is performing well.

Maintenance is required following installation of the plants, although if maintenance is regular and thorough during the first year, maintenance requirements are likely to taper off significantly in the following years.

Performance and Completion Criteria

The utilisation of benchmark criteria helps to determine rehabilitation success during the maintenance period and assists in prompting when additional maintenance activities are required. Performance indicators for rehabilitation and regeneration works that have been conditioned under the Approval (Conditions 4-6) and the Offset Strategy (refer **Appendix B**) are as follows:

- 1. Development of a rehabilitation and regeneration plan specifying techniques and species to be utilised will be completed within 12 months of commencement of the action (15 March 2020);
- 2. All rehabilitation activities are to be carried out by a suitably qualified bush regeneration contractor;
- 3. Commencement of planting at least 2,500 juvenile Koala food trees within 12 months of the commencement of the action;
- 4. Commencement of weed management in rehabilitation areas within 12 months of the commencement of the action;
- 5. Establishment of at least 2,500 new juvenile Koala food trees (to be completed within 5 years of commencement of action);
- 6. Inform the Department in writing of the commencement and completion of the planting of tube stock tree species;
- 7. Within 10 years of commencement of the action, ensure at least 90% of non-native plants, relative to the baseline non-native plant survey, are removed (to be maintained until the requirements of condition 6 have been met);
- 8. Survival over the life of the approval of at least 90% of the plantings;
- 9. 5% increase in the number of Koala food trees and GHFF foraging trees at (within 15 years of the date of the baseline Koala food tree and GHFF foraging tree surveys);
- 10. The plants reinstated in any one location must be consistent with the mapped regional ecosystem or pre-clear regional ecosystem over that area; and
- 11. By the end of the management period, non-remnant areas will resemble an open woodland structure with an abundance of food tree species, and that is representative of pre-clear REs.



All benchmarks are required to be fulfilled in the indicated timeframes with works ceasing only when all benchmarks have been fulfilled and a score of 9 is achieved under the MHQA.

<u> Methodology – Monitoring</u>

The monitoring objectives directly relate to determining whether the management objectives are being achieved, that is, whether there has been:

- Decreased weed coverage, successful controlling actions and subsequent benefit to the Koala offset areas;
- Habitat improvement and maintenance within the offset areas, and
- Survival of planted specimens (evidence of rehabilitation and the success and survival rate will be reported annually within the ACR).

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)(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.

Rehabilitation and regeneration monitoring

Once planting has been completed, the engaged suitably qualified environmental consultant will be notified. 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.

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.

4.5. Management Action 4 – High Intensity Fires

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.

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.

Specific actions as directed by the local authority (Scenic Rim Regional Council) mustbe implemented which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.

4.6. Management Action 5 – Non-native predator control

Wild dogs/dingoes, feral foxes and feral cats are restricted invasive animals under the *Biosecurity Act 2014* and do not require specific control measures. It states "The Act requires everyone to take all reasonable and practical steps to minimise the risks associated with invasive animals under their control". 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. Adaptive predator control measures, rigorous monitoring and coordinated landscape approach that will be implemented at the offset sites to reduce the risks associated with invasive animals and mitigate impacts of this key threatening process.

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. Monitoring is to be reported and included in the ACR.



A NNPMP has been developed for both the Burnett Creek and Peak Crossing offset sites, and is presented in **Section 4.6.1**. Key management measures for the control of feral or unwanted domestic dogs, feral cats and other detrimental 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 monitoring by a suitably qualified pest management contractor, with evidence of non-native predators GPS recorded. Where there is evidence of non-native predators, targeted trapping, baiting or shooting programs will be implemented by an independent suitably qualified pest management contractor. Once performance criteria is achieved monitoring will reduce to 5 year intervals until the end of the management period.
- 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 areas. This includes working in conjunction with pest management occurring:
 - On the land to the immediate north under a Koala offset management plan (Peak Crossing offset site).
 - The Flinders-Goolman Protected Area (Peak Crossing offset site) and 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.
- Install signage at access points to inform any persons interacting with the area of feral animal control being undertaken within the offset site.

The detailed NNPMP is provided in **Section 4.6.1**.

As part of the management program baseline monitoring will be undertaken on the property and a relative abundance index calculated for non-native predator species including wild dogs, foxes and cats (as required). Where post control surveys indicate that there has been a recurrence of non-native predators within the offset sites, control measures will be actioned using methods (e.g., controlled shooting and/or trapping) as determined by a pest control professional in response to these monitoring results.

Monitoring will be conducted annually, for the first 5 years or until performance criteria is achieved, using wildlife motion cameras. Cameras will be positioned along tracks at a height of 50 cm and south-facing, to maximise capture. Additionally, opportunistic observations during other site works and scat surveys and will be conducted.

Management and monitoring programs will be ongoing to support a decrease in relative non-native predators abundance index from the baseline and no recorded injury or death from feral animal attacks within the offset area. To ensure the sustainability of the threatened species populations, it is critical to ensure management outcomes are maximised.



Preliminary Documentation Report (EPBC 2019/8398)

4.6.1 Non-native predator management plan

The following NNPMP operates on the following applied management principles to ensure objectives of this OMP are achievable across the two offset sites, Peak Crossing and Burnett Creek. 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 OMP will provide a detailed prescription of management actions. This OMP 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 NNPMP 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 OMP (refer **Section 4.3** for the Weed 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 6** 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 12 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 17**.

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

Table 17: Predator species management priorities

Management methodologies for predator species will involve approaches presented in **Table 17** were deemed appropriate, adapted from the *National Wild Dog Action Plan: Promoting and supporting communitydriven action for landscape scale wild dog management* (WoolProducers Australia 2014).

Annual monitoring 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.



Preliminary Documentation Report (EPBC 2019/8398)

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.

Table 18: Predator species control methods (adapted from WoolProducers Australia 2014)



4.7. Management Action Summary

Management Action	Specific Actions	Peak C	Crossing	Burnett Creek		Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition					
		Zone 1	Zone 2	Zone 1	Zone 2	_							
1. Legally secure offset area	Complete voluntary declaration applications under the Vegetation Management Act 1999 (Qld) to legally secure the Peak Crossing and Burnett Creek offset sites ensuring 159.01ha of offsets for impacts on the Koala and GHFF. Exclude all other incompatible land uses	✓	✓	✓ 	✓ 	Legally secure Peak Crossing and Burnett Creek Offset site through Voluntary Declaration prior to the commencement of the action. The offset sites are not being used for other	 The offset sites were secured through a Voluntary Declaration under the <i>Vegetation Management Act 1999</i> (Qld) on 20 March 2018. The Department was notified on 1 	2. To compensate for the clearing of 62.79 hectares of Koala habitat and Grey-headed Flying-fox foraging habitat within the development area of the project site, the approval holder must legally secure the Peak Crossing					
						purposes – site access is restricted.	April 2019 that 159.01ha for the offset of impacts on the Koala and GHFF had been secured.	offset site and Burnett Creek offset site prior to the commencement of the action.					
2. Weed	Undertake baseline surveys to determine weed coverage % and locations	~	~	~	~	Remove 90% of non-native plants, relative to the baseline survey, from	Weed infestation surveys and mapping	5. Within 10 years of commencement of the action ensure at least 90% of non-					
Management	Undertake primary and follow-up works	-				the Peak Crossing offset site and	Photo monitoring points	native plants, relative to the baseline					
	 selective chemical / mechanical weed control/removal 					 Burnett Creek offset site; and maintain for 15 years after the 	 Targeted weed transect surveys with a RGB approach to ensure 	non-native plant survey, are removed from the Peak Crossing offset site and Burnett Creek offset site. This level of non-native plant cover must be maintained until the requirements of Condition 6 have been met.					
	Conduct annual monitoring and reporting	-				baseline surveys.	representation of the offset sites and each Regional Ecosystem/ Assessment Unit.						
	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												
3. Rehabilitation &	Undertake baseline surveys to determine Koala and GHFF habitat quality	~	· · ·	~	✓	Completion of planting new Koala food trees, 15,000 at the Peak	Keep accurate records and perform regular audits/monitoring of	4. Within 5 years of the commencement					
regeneration	Koala food tee survey					Crossing offset site and 2,500 at the	revegetation planting events and	the following number of seed, sapling					
	GHFF foraging habitat assessment / stem density					Burnett Creek offset site, within 5 years of the commencement of the action (15 March 2019).	remedial planting (if required),Photo monitoring points,	or tube stock (or equivalent) free species suitable for the eventual establishment of juvenile Koala food					
	Assisted Natural Regeneration	\checkmark \checkmark \checkmark	✓	• 90% survival rate for the trees	Annual Compliance Report recording:	trees:							
	Weed management (refer Management					planted within the 5 years.	 The success of the rehabilitation stock (a physical count of alive 	 at least 15,000 at the Peak Crossing offset site; 					
	Action 2)					2 point gain in Koala and GHFF Habitat Quality	plants in the ground).	ii. at least 2,500 at the Burnett Creek					
	direct planting where natural regeneration fails (after a sufficient rest period)							offset site.					



Management Action	Specific Actions	Peak C	rossing	Burnett Creek		Performance Criteria		Monitoring/Survey Methodology	EPBC Act Approval Condition	
		Zone 1	Zone 2	Zone 1	Zone 2	_				
	 Reconstruction planting 15,000 juvenile Koala food trees at Peak Crossing plant 2,500 juvenile Koala food trees at Burnett Creek Maintenance Ensure 90% survival rate for tree planting within the offset sites Implement RMPs (i.e., planting technique, watering schedule, weed management and control, replacement planting (if required)). Conduct annual monitoring and reporting Report failure/success rate of planted trees Implement adaptive measures/corrective actions if required 	✓ ✓				GHFF:	 Increase the number of Koala food trees and GHFF foraging trees at the Peak Crossing offset site by 20%; Increase the number of Koala food trees and GHFF foraging trees at the Burnett Creek Offset Site by 5%. Increase Koala habitat quality/Koala food trees; Increase distribution and abundance of SAT records; Increase in species stocking rates; and/or increase rate of occurrence/observation within the site Increase GHFF habitat quality/stem density; and Increase in species stocking rates 	 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. Modified Habitat Quality Assessment (MHQA) Koala food tree survey GHFF Foraging Habitat Assessment /Stem Density Koala: Diurnal meander for direct observation and signs Nocturnal spotlighting surveys for individuals Opportunistic observations MHQA- Koala food tree survey GHFF: MHQA- Foraging Habitat Assessment & Stem Density for stocking rates Opportunistic observations 	 At least 90 per cent of the planted seed, sapling or tube stock (or equivalent) tree species at the Peak Crossing offset site and Burnett Creek offset site survive. 6. Within 15 years of the date of the baseline Koala food tree survey and baseline Grey-headed Flying-fox foraging tree survey ensure the following outcomes are achieved relative to the baselines determined by the baseline Grey-headed Flying-fox foraging tree survey: a. 20 per cent increase in the number of Koala food trees and Grey-headed Flying-fox foraging trees at the Peak Crossing offset site; b. 5 per cent increase in the number of Koala food trees and Grey-headed Flying-fox foraging trees at the Peak Crossing offset site; 7. Within 15 years of the date of the baseline Koala density survey, ensure an increase of at least 50 per cent of Koala density is achieved at both the Peak Crossing offset site and Burnett Creek offset site relative to the baseline determined by the baseline koala density survey. 	
4. High intensity fires	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.	V	~	~	~	•	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. Non-native predator control	Undertake baseline surveys to determine relative abundance index	✓ ✓	✓ ✓	✓ ✓	✓ ✓	•	Reduction in detection of non-native Koala predators via motion sensor	Regularised grid-based motion sensor camera detection survey (record number of occurrences over dove of	8. Demonstrate a reduction, maintained for nine consecutive years from the date of completion of the baseline	
	The control program and techniques (trapping, baiting, shooting) will be informed based on the results of the abundance surveys.	·	•	No recorded injury or death native predator attacks with		baseline survey. No recorded injury or death from Non- native predator attacks within the offset	 Records of injury or death from Non- native predators. 	survey of non-native Koala predators, in the number of non-native Koala predators over both the Peak Crossing		
	Conduct follow-up monitoring and implement further control efforts if feral animals recur. Implement adaptive management techniques if	\checkmark	\checkmark	~	\checkmark		areas.	 Non-native predator control statistics (Ground baiting with 1080, Shooting to 	offset site and Burnett Creek offset site, relative to the baseline	



Management Action	Specific Actions	Peak Crossing		Peak Crossing Burnett Creek		Performance Criteria	Monitoring/Survey Methodology	EPBC Act Approval Condition
		Zone 1	Zone 2	Zone 1	Zone 2	_		
	initial control techniques are not working effectively.						euthanise trapped dogs / fox / cats, Ground shooting)	determined by the baseline survey of non-native Koala predators.
	Implement adaptive management techniques if initial control techniques are not working effectively.	~	~	~	~		Opportunistic observation (direct and indirect) during other survey works.	



5. 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 (EPBC2017/8095). 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. Presence of weeds has decreased from the baseline surveys;
- 3. Rehabilitation and regeneration actions have been implemented and Koala habitat and GHFF foraging habitat quality has increased; and
- 4. Increased density of Koala and presence of GHFF; and
- 5. Relative abundance of Non-native predators has decreased and no injury or deaths from Nonnative predators recorded.

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.

5.1. Survey Methodologies

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

- Koala density survey;
 - Random diurnal meander,
 - o Spotlighting, and
 - Regularised grid-based spot assessment technique (RGB-SAT).
- GHFF presence survey;
 - \circ Random diurnal meanders search for roosts, and winter & spring flowering species,
 - \circ 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.
- Non-native plant survey;
 - o 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.
- Non-native Koala predators 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
 - o 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 March-April 2021 across Peak Crossing and April-May 2021 across Burnett Creek. 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.

5.2. Management Action 1- Legally Secure Offset Area

The offset sites were secured through a VDEC under the VMA on 20 March 2018. The Department was notified on 1 April 2019 that 159.01ha for the offset of impacts on the Koala and GHFF had been secured. 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.

5.3. Management Action 2 - Weeds monitoring

The methodology for non-native plant survey is to be repeated in accordance with the monitoring and reporting schedule in **Section 6**. 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
 - o Use a field datasheet (MHQA & targeted transect) to record date and time of monitoring event,
 - o Inspect previously identified infestations to record extent,
 - Record non-native flora species list,
 - \circ provide photo monitoring with photo location and direction, and
 - o notes of any notable positive and/or negative changes in weed density and coverage.

Refer to the Burnett Creek and Peak Crossing RMPs for detailed monitoring approaches, located in **Sections 4.4.2** and **4.4.2**, respectively.

5.4. Management Action 3 - Rehabilitation and regeneration monitoring

To monitor management action 3, MHQA are to be conducted at 5 year intervals (0, 5, 10, 15 and 20 year milestones). Performance criteria is to be achieved and maintained for the duration of the management period.

Once infill planting has been completed, the engaged suitably qualified environmental consultant will be notified. 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.

5.4.1 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.

5.4.2 Rehabilitation and regeneration survey

The following elements will be noted on a field datasheet:

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

These are also detailed within RMPS for the offset sites (refer **Section 4.4**).

5.4.3 Habitat quality

Additionally, the MHQA for Koala habitat and GHFF foraging habitat assessment will be conducted at 5 year intervals (0, 5, 10, 15 and 20 year milestones). Performance criteria is to be achieved and maintained for the duration of the management period.

5.4.4 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 **Section 5.1**).

5.5. Management Action 4 – High Intensity Fires

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 (Scenic Rim Regional Council) 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.

5.6. Management Action 5 - Non-native predator monitoring

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 with the NNPMP detailed in **Section 4.5**.

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 4.6**, 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.



■ Preliminary Documentation Report (EPBC 2019/8398)

5.7. Reporting Requirements

In accordance with EPBC Approval (EPBC 2017/8095), 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.





Monitoring and Reporting Schedule 6.

The timing and frequency of monitoring and reporting actions, and responsibilities for the offset area will be undertaken in accordance with **Table 19**.

Table 19: Timeline for monitoring actions

Mar	agement 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 <i>Vegetation Management Act 1999</i> (Qld) on 20 March 2018.	Not appliable.	The action cannot commence until offset sites are legally secured.	The Department was notified on 1 April 2019 that 159.01ha for the offset of impacts on the Koala and GHFF had been secured.	Suitably qualified environmental consultant.
2.	Weed Management	 Targeted weed and MHQA transects to be conducted at 5 year intervals, 0 (baseline), 5, 10, 15 and 20 year milestones. Baseline surveys were conducted March-April 2021 across Peak Crossing and May 2021 across Burnett Creek. 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). 	 a. Non-native plant cover has increased or remained constant, relative to the previous monitoring event. b. If non-native plant cover has not reduced by at least 90% within 10 years of the commencement of the action. 	 weed control program to be expanded/adapted to improve outcomes. 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 performance criteria is not achieved at the conclusion of the management period, the management period is to be extended. 	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.
3.	Rehabilitation and generation	 MHQA transects to be conducted at 5 year intervals, 0 (baseline), 5, 10, 15 and 20 year milestones. Baseline surveys were conducted March-April 2021 across Peak Crossing and May 2021 across Burnett Creek. Future milestone surveys are to be conducted within the same baseline survey month(s). 	Should MHQA surveys and photo monitoring indicate that natural regeneration is less than the performance criteria after a sufficient rest period implement corrective actions.	Direct planting through reconstruction (see below).	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,



Management Action	Monitoring action(s)	Corrective Action Trigger	Corrective Action	Reporting Actio
	 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). Natural Regeneration (Zone 1) Natural regeneration areas within the offset sites, Zone 1, will be monitored every two years via photo monitoring and at 5 year intervals through MHQA transects. 			
	 Reconstruction (Zone 2) 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 schedule (refer Sections 4.4.2 & 4.4.3). 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 surveys. Monitoring is to be undertaken at 5 year intervals, at 0, 5, 10, 15 and 20-year milestones, to determine if the target quality score has achieved a 2-point gain 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. 	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 3.2 and Section 3.3) within the management period, implement corrective actions.	Koala Implement supplementary direct seeding, planting, weed control, fertilizer, amelioration or other management actions must be implemented 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 performance criteria is not achieved at the conclusion of the management period, the management period is to be extended.	
4. High intensity fires	Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled	Unexpected bushfire event and resurgence of non-native	Undertake audit to inspect impacts.	Any bushfire ma undertaken und
	burns or other management.	plant species/decrease Koala habitat and GHFF foraging habitat.	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.	local authority o consultation wit Fire Brigade are projects environ



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.

on	Responsible person(s) for activity/reporting
	• 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 surveys, and
	 Preparation of Annual Compliance Report.

Suitably qualified bushfire management contractor and environmental consultant as directed by the offset area manager.

Mana	gement Action	Monitoring action(s)	Co	rrective Action Trigger	Corrective Action	Reporting Actio
					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.	Offset Area Asses conducted annu summary to be in Annual Complian
					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.	
5.	Non-native predator control	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.	a.	Monitoring actions detect increase in non-native predator RAI from previous survey or relative to the baseline.	Implement supplementary control measures, increase frequency of control events or other management actions must be implemented as recommended by pest control expert. Where there is evidence of non-native predator activity trapping or baiting program by a suitably qualified contractor will be conducted.	Offset Area Asse conducted annu summary to be in Annual Complian
		Baseline surveys were conducted March-April 2021 across Peak Crossing and April-May 2021 across Burnett Creek. Future milestone surveys are to be conducted within the same baseline survey month(s).	b.	The reduction in the number of non-native Koala predators, relative to the baseline results over both sites, has not been maintained for 9	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.	
				consecutive years from the date of completion of baseline survey.	management period, the management period is to be extended	

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on

Responsible person(s) for activity/reporting

essment Reports to be ually and progress included within the nce Report.

essment Reports to be ually and progress included within the nce Report. Suitably qualified pest management contractor and environmental consultant as directed by offset area manager.

7. 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 OMP 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 OMP, 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.

7.1. 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 NNPMP.
- 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 OMP, inclusive of the management plans detailed within it (NNPMP, WONS management plan and RMPs), 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 2017/8095).

Limitations associated with the Baseline Surveys have been discussed within the Baseline Survey Results Report. 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.



8. Compliance with Relevant Plans

This section describes how the offset, management measures and corrective actions have considered and are consistent with the relevant national recovery plans for the Koala and GHFF.

8.1. Draft National Recovery Plan for the Koala

At the time of publication the EPBC Act recovery plan for the Koala has not been finalised. A Draft National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) was released in June 2021. The recovery plan is informed by the 2012 EPBC Act listing assessment and Conservation Advice.

This recovery plan for the listed Koala replaces the National Koala Conservation and Management Strategy (2009-2014) (NRM Ministerial Council 2009). It has been developed with relevant state and territory governments to provide an overarching national conservation framework for the listed Koala that aligns with local, state and territory government plans, programs and strategies. However, it does not replace local, state and territory government plans, programs and strategies. It is the first recovery plan for the nationally listed Koala.

The overall goal of the National Recovery Plan is 'to reverse the trend of declining populations size in the listed Koala by having connected, resilient, and genetically healthy metapopulations across its range, and to increase the extent, quality and connectivity of habitat occupied'.

Three (3) key objectives of the Draft National Recovery Plan are provided below with responses relevant to the proposed action:

0	bjective	Comment		
1.	The area of occupancy and size of populations that are declining, suspected to be declining, and predicted to decline are increased.	The offset will increase habitat critical to the survival of the Koala through the legal protection of 159.01 ha within an occupied area and ongoing rehabilitation, including planting of koala food tree species, and weed and predator management. Thus, the management measures and corrective actions will increase area of occupancy and subsequently size of the wider SEQ Koala population.		
2.	Metapopulation processes are maintained or improved	Offset areas are occupied by Koalas forming part of the wider SEQ Koala population. Through the legal protection, the offset secures properties located within the regional corridor increasing connectivity allowing for exchange of genes. Additionally, rehabilitation of the degraded areas will increase carrying capacity while decreasing risks and threats through predator management. As such, the offset, through implementation of the		

Table 20:	Compliance with Draft National Recovery Plan for the Koala
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Objective	Comment	
	management measures and corrective actions, is expected to improve metapopulation processes.	
 Communities and individuals have a greater role and capability in Koala conservation and management 	The offset provider, EnviroCapital works with landholders to increase understanding and awareness of Koala conservation and management on their land.	

8.2. National Recovery Plan for the Grey-headed Flying-fox

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

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

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

Ob	jective	Constraint
1.	Identify, protect and increase native foraging habitat that is critical to the survival of the Grey- headed Flying-fox	Habitat critical to the survival of the species is considered important winter and spring flowering vegetation communities. Of the species listed above, <i>Corymbia Citriodora, Eucalyptus crebra</i> and <i>Eucalyptus tereticornis</i> are located within the offset area. In addition to the protection of existing native foraging habitat as a result of the offset, management measures include the planting of important winter and spring flowering tree species. Reviewing the above, the offset identifies, protects and increases native foraging habitat that is critical to the survival of the GHFF.
2.	Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps.	No roosts have been identified within the offset areas, however native foraging habitat is available. Additionally, the GHFF is recognized as a highly

Table 21:	Compliance with National Recover	ry Plan for the Gre	v-headed Flying-fox
	compliance with National Necove	ry i lan for the dre	y-medueu i fymg-for



Objective		Constraint	
		mobile species and patterns of camp occupation can vary. GHFF forage over extensive areas and sometimes as far as 40 km to from their camp location. Although the offset area is not currently occupied by a GHFF camp, on-site vegetation provides native foraging habitat critical to the survival of this species. Overtime the GHFF is likely to be opportunistically utilise the offset area for foraging and potentially roosting, following the implementation of the management measures outlined within Section 4 .	
3.	Determine trends in the Grey-headed Flying-fox population so as to monitor the species' national distribution, habitat use and conservation status.	Not applicable, however species records will be monitored throughout the offset area management period to analyse GHFF use of habitat overtime.	
4.	Build community capacity to coexist with flying-foxes and minimise the impacts on urban settlements from new and existing camps while avoiding interventions to move on or relocate entire camps.	Not applicable. Offset areas are located within rural areas and land is secured for conservation purposes.	
5.	Increase public awareness and understanding of Grey-headed Flying-foxes and the recovery program, and involve the community in the recovery program where appropriate	Not applicable. Offset areas are located within rural areas and land is secured for conservation purposes.	
6.	Improve the management of Grey-headed Flying-fox camps in areas where interaction with humans is likely.	Not applicable. Offset areas are located within rural areas and land is secured for conservation purposes.	
7.	Significantly reduce levels of licenced harm to Grey-headed Flying-foxes associated with commercial horticulture.	Not applicable. Offset areas are located within rural areas and land is secured for conservation purposes, specifically for the Koala and GHFF.	
8.	Support research activities that will improve the conservation status and management of Greyheaded Flying-foxes.	Not applicable. No research activities are proposed as part of the offset actions, however species records will be monitored throughout the offset area management period to analyse GHFF use of habitat overtime.	



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Ok	jective	Constraint
9.	Reduce the impact on Grey-headed Flying- foxes of electrocution on power lines, and entanglement in netting and on barbed-wire.	Offset areas are located within rural areas and reducing the risk of electrocution to GHFF. Any netting or barbed wire is to be removed from the property to reduce risks to GHFF.



9. Conclusion

The *Environmental Management Division* of SHG was engaged by EnviroCapital as the approved offset provider for Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust (the Proponent) to prepare an OMP for the 352-396 Ripley Road development, located at Ripley in SEQ.

The Ripley Road Development was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2017 and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC Act reference 2017/8095). The trigger for the controlling provision was due to potential impacts on the Koala and GHFF, 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 62.79 ha of habitat critical to the survival of the Koala and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC Act Approval for 2017/8095. The offset includes the dedication and rehabilitation of a total of 159.01 ha of vegetation constituting Koala habitat and GHFF foraging habitat.

The offset will compensate for impacts to Koala habitat and GHFF foraging habitat. The baseline surveys proposed within this OMP cover the entirety of the offset sites through direct and indirect sampling methods to assess the offsets achievement towards conditions of approval. Where direct observations fail supplementary survey methods have been proposed. The survey and monitoring methods seek to assess the habitat quality for each species and provide data on the effectiveness of the management activities. The baseline surveys are considered scientifically robust, repeatable and inform progress towards achieving Approval conditions 4, 5, 6, 7 and 8. Additionally, these survey and monitoring methodologies to ensure the Approval conditions are achieved were agreed upon by the Department during the Preliminary Documentation phase of the project.

Thus, this OMP has been developed to satisfy the requirements of the conditions of approval, the Department's Environmental Management Plan Guidelines and the *EPBC Act Environmental Offset Policy 2012*.

10.Reference List

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Preliminary Documentation Report (EPBC 2019/8398)

11. 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 Error! 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 OMP, and if the review results in the need to revise the OMP the plan 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 generation¹.



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									
			Minor	Moderate	High	Major	Critical					
q	Highly Likely Likely Possible		Medium	High	High	Severe	Severe					
lihoo			Low	Medium	High	High	Severe					
Like			Low	Medium	Medium	High	Severe					
	Unlik	ely	Low	Low	Medium	High	High					
	Rare		Low	Low	Low	Medium	High					
Likelih	ood an	d conse	quence					-				
Qualit occur	tative n after n	neasure nanagen	of likelihood nent actions	l (how likely i have been p	s it that this ut in place/a	s event/circu are being im	imstances will plemented)	I				
Highly	likely	Is expe	cted to occur	in most circur	nstances							
Likely		Will pro	bably occur o	during the life	of the projec	t						
Possik	ble	Might o	ccur during the life of the project									
Unlike	ly	Could o	ccur but con	sidered unlike	ly or doubtfu							
Rare		May oc	cur in excepti	ional circumst	ances							
Qualit issue	tative n does c	neasure occur)	of conseque	ences (what v	vill be the c	onsequence	/result if the					
Minor	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.											
Mode	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 ris term de cost/efi			k of failure to achieve the plan's objectives. Results in medium-long lays to achieving plan objectives, implementing uncertain, high fort corrective actions.									
Major		The pla technica no evide	an's objectives are unlikely to be achieved, with significant legislative, al, ecological and/or administrative barriers to attainment that have lenced mitigation strategies.									
Critical The mitig			's objectives are unable to be achieved, with no evidenced n 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	С	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.
Weed Management	Failure to control weeds	 Management Action 2: 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 <i>Lantana camara</i>), and under the <i>Biosecurity</i> <i>Act 2014</i>, to reduce weed cover to target thresholds. Undertake weed management in 	U	Mod	Low	Annual (photo monitoring and mapping of weed infestations) and 5-year Targeted transects and MHQA) surveys of non- native plant cover to ensure reduction across offset area. Surveys in-line with weed management strategy. Repeated surveys of baseline data including 5 yearly habitat monitoring data as part of the OMP.	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		risk	Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
		accordance with section 4.3.					
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 OMP outlines specific management actions to achieve performance criteria. 	U	Mod	Low	Scheduled monitoring/surveys and Annual Compliance Reports	 Review OMP Implement adaptive management and corrective actions
	The offset sites fail to naturally regenerate	 Management Action 3: Remove incompatible land uses Weed management (refer Management action 2) Sufficient rest period 	U	Mod	Low	After a sufficient rest period the repeat MHQA will indicate progress towards performance criteria.	 infill planting/ revegetation to be implemented after sufficient rest period.



Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk		risk	Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	С	RL		
	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: implement RMPs for each offset site: 15,000 Koala food trees at the Peak Crossing offset site; and 2,500 Koala food trees at the Burnett Creek offset site. Ensure 90% success rate 	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 additional 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		Residual risk		Residual risk		Residual risk		Residual risk		Residual risk		Residual risk		Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions															
			L	С	RL																															
	High plant stock failure.	Management Action 3: • implement RMPs for each offset site: • Adhere to planting method and watering schedule				Annual plant stock audit (first 5 years). Planting and monitoring event schedules by the qualified bush regenerator.	If there is a high rate of plant stock failure adaptive management and corrective actions will be implemented and may include, additional supplementary planting, direct seeding, weed control, fertiliser, water spike, mulching, tree guards, etc.																													
Increase Koala 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 weed management Encourage natural regeneration Implement RMPs Undertake fire management as 	Ρ	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 stem density surveys 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		Residual risk		risk	Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL				
		directed by local authorityUndertake non-native predator control				Record opportunistic sightings inclusive of scat findings (location and date).			
High intensity fire	A high intensity uncontrolled fire occurs within the offset site/s which causes loss of Koala and GHFF habitat	 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. 	Ρ	Μ	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 weather event (whichever is sooner). Where natural regeneration is failing to thrive, assist natural regeneration through direct seeding and planting 		



Residual risk Trigger detection and Feasible/effective Management **Event or Relevant management** objective/desired circumstance actions/measures monitoring corrective actions activity/ies outcome C RL Non-native predator Management Action 5: U Mod Low Monitoring of the Failure to reduce Should the initial and • the threat of presence of introduced control ongoing introduced Conduct baseline introduced predators through the surveys and predator control use of remote motionpredators determine relative measures not result in a activated cameras: abundance index. reduction of introduced predator numbers Implement Survey the site to • (compared to baseline record the presence / predator control survey), introduced absence of signs of program. predator program to be introduced predator Conduct follow-up expanded/adapted to • (sightings, killings monitoring and improve outcomes. and/or scats and tracks). implement further Any incidence of Koala • control injury/mortality resulting 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.



Appendix B Baseline Survey Report





Baseline Survey Report EPBC 2017/8095

Peak Crossing and Burnett Creek Offset Sites

Prepared for EnviroCapital as the approved offset provider for Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust 4 June 2021

Job No. 9694

Document Control

Document: Offset Site Baseline Surveys for Peak Crossing and Burnett Creek under EPBC 2017/8095 prepared by Saunders Havill Group for EnviroCapital as the approved offset provider for Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust.

Document Issue

lssue	Date	Prepared By	Checked By
A	04/06/2021	LT	AD

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DAM

Declared Area Map

Abbreviations and Acronyms

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 NCA Nature Conservation Act 1992 (Qld) NCPR Nature Conservation (Plants) Regulation 2020 PDA Priority Development Area (herein referencing the Greater Flagstone Priority Development Area) PMAV Property Map of Assessable Vegetation RAI **Relative Abundance Index** SEO South-east Oueensland 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, a portion of which (49.25ha) has been legally secured to compensate for impacts associated with approved development EPBC2017/8095.

Burnett Creek offset site means part of Lot 100 on WD682 covering an area of 49.25 ha which has been legally secured to compensate for impacts associated with approved development EPBC2017/8095.

Peaks Crossing offset site means Lots 172 and 173 on CH312424 and Lot 151 on RP892014 covering an area of 109.76 ha legally secured to compensate for impact associated with approved development EPBC2017/8095.



1. Introduction

The *Environmental Management Division* of Saunders Havill Group (SHG) was engaged by EnviroCapital as the approved offset provider for Jolifields Developments Pty Ltd & The Trustee for Morehampton Capital & The Trustee for the Goldfields QLD Trust (the Proponent) to prepare a Baseline Survey Report for offset sites associated with the impact for the approved development located 352-396 Ripley Road development, Ripley (EPBC 2017/8095). The approval pertains to the construction of a residential development comprising of open space, conservation and commercial precinct on approximately 109 hectares on Lot 3 on SP237241.

The Ripley Road Development was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2017 and subsequently declared a "Controlled Action" requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC Act reference 2017/8095). 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 62.79 ha of habitat critical to the survival of the Koala and GHFF foraging habitat. This offset was approved by a delegate of the Minister as part of the EPBC Act Approval for 2017/8095. The offset includes the dedication and rehabilitation of a total of 159.01 ha of vegetation constituting Koala habitat and GHFF foraging habitat.

The project was approved under the EPBC Act subject to conditions on 12 February 2019 with effect until 30 January 2041. Condition 3 of the approval requires that the approval holder must complete and provide the Department with the results and dates of the following surveys:

- a. baseline Koala density survey;
- b. baseline Grey-headed Flying-fox presence survey;
- c. baseline Koala food tree survey;
- d. baseline Grey-headed Flying-fox foraging tree survey;
- e. baseline non-native plant survey;
- f. baseline survey of non-native Koala predators.

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 Peak Crossing offset site and 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 159.01 ha offset required under the EPBC Act approval:



- Peak Crossing (109.76 ha); and
- Burnett Creek (49.25 ha).

The Peak Crossing offset site is located in the Scenic Rim Regional Council local government area (LGA), directly south of an existing secured Koala offset project and adjacent to Flinders Peak (a mountain in the Teviot Range). 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.

Both sites are zoned rural under the respective planning schemes, and located within the boundary of the Flinders Karawatha Corridor and South East Queensland Regional Plan — Regional Biodiversity Corridor. Key details relating to Peak Crossing offset site and Burnett Creek offset site are located in **Table 1** and Error! Reference source not found., respectively.

Table 1: Peak Crossing offset site summary

Address	583 Mount Flinders Road, Peak Crossing	
Lot / Plan	Lot 172 on CH312424 Lot 173 on CH312424 Lot 151 on RP892014	
Area	109.76 ha	
Tenure	Freehold	
Local government area	Scenic Rim Regional Council	
Date legally secured	21.02.2019	
Table 2: Burnett Creek offset site summary		
Address	Burnett Creek Road, Burnett Creek	
Lot / Plan	Part Lot 100 on WD682	
Area	49.25 ha	
Tenure	Freehold	
Local government area		
Local government area	Scenic Rim Regional Council	

Although only part of Lot 100 on WD682 (Burnett Creek property) has been secured for the offset associated with EPBC 2017/8095, 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.



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 areas of the Peak Crossing offset site and Burnett Creek offset site.

Condition 3 states that within 6 months of the commencement of the action, the approval holder must complete and provide the Department with the results and dates of the following surveys:

- a. baseline Koala density survey;
- b. baseline GHFF presence survey;
- c. baseline Koala food tree survey;
- d. baseline GHFF foraging tree survey;
- e. baseline non-native plant survey; and
- f. baseline survey of non-native Koala predators.

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 3**.

Survey	Methodology	Survey	Date
Requirement		Peaks Crossing	Burnett Creek
Baseline koala density survey	Opportunistic observations Random diurnal meander Regularised grid-based Spot Assessment Technique (RGB-SAT)	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021
Baseline GHHF presence survey	Opportunistic observations Random diurnal meander- search for roosts, winter & spring flowering species. Evening search- fly in/out of species Spotlighting/dusk surveys- return to likely foraging areas	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021
Baseline koala food tree and GHFF foraging tree surveys	Modified Habitat Quality Assessment (MHQA)	1 November 2018 7 May 2019	1 November 2018 3 May 2019

Table 3: Survey Methodology Summary



Survey	Methodology	Survey I	Date
Requirement		Peaks Crossing	Burnett Creek
Baseline non-native plant survey	Random diurnal meander recording observation and, MHQA and targeted non-native plant transect assessments	15, 16, 18 &19 March 2021 6 April 2021	6, 7, 13 & 27 May 2021
Baseline non-native koala predators survey	Motion Sensor Camera survey	15 March to 6 April 2021	8 April to 13 May 2021

Table 4: 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	15 & 16 Mach 2021 6, 8, & 9 April
Amy Westman	Ecologist	Bachelor of Science (Zoology)	6, 13 & 27 May 2021
Liam Brzezinski	Ecologist	Bachelor of Environmental Management (Natural Systems and Wildlife)	6, 8, & 9 April 2021
Laura Thorley	Environmental Scientist	Bachelor of Environmental Management (Natural Systems and Wildlife)	7 May 2021
Nicole Tomilson	Graduate Ecologist	Bachelor of Science (Ecology and Conservation Biology) Certificate II in Horticulture	15, 16, 17 & 18 March 2021
Kirstyn Hayward	Graduate Ecologist	Bachelor of Science (Ecology and Conservation Biology)	17 & 18 March 2021

As demonstrated within **Table 4**, 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 Peaks Crossing offset site and 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 Peaks Crossing offset site and Burnett Creek offset site were separated into AUs to ensure each habitat type was assessed to provide results that are representative of the entire areas of the offset sites.

The Peaks Crossing offset site consists of five (5) AUs, three (3) within remnant and two (2) within non-remnant categories (refer **Table 5**). The Burnett Creek offset site consists of two (2) AUs, one (1) within each the remnant and non-remnant categories (refer **Table 6**).

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)
AU1	Non-remnant	RE12.8.24	21.62 ha
AU2	Non-remnant	RE12.9-10.2	48.02 ha
AU3	Remnant	RE12.8.24	28.63 ha
AU4	Remnant	RE12.9-10.2	11.49 ha
AU5	Remnant	RE12.9-10.7	11.18 ha

Table 5: Assessment Units – Peaks Crossing

Table 6: Assessment Units – Burnett Creek

Assessment Unit	Vegetation Status	Regional Ecosystem	Area (ha)
AU1	Non-remnant	RE12.9-10.2	24.25 ha
AU2	Remnant	RE12.9-10.2	20 ha

Further, a 350m grid was applied over both Peaks Crossing offset site and Burnett Creek property to stratify sampling, reducing bias and increasing repeatability of SAT surveys and camera trap. 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 Peaks Crossing offset site and 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 Peaks Crossing offset site and 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 both the Peaks Crossing offset site and Burnett Creek Offset site (detailed in following sections). As such, these surveys were conducted between the 15 March and 27 May 2021.

As discussed within section 2.1, the offset sites were 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 sites. 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 Peaks Crossing offset site and 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 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. Koala Density Survey

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 2017/8095). The offset sites, Peak Crossing and Burnett Creek were both surveyed using direct methods, including;

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

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 Peaks Crossing offset site and 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.

2.3.1 Regularised Grid-Based Spot Assessment Technique

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 Peaks Crossing offset site and Burnett Creek 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 each offset site a 350m grid was selected resulting in nine (9) sampling sites across Peak Crossing offset site and eleven (11) at Burnett Creek property, two (2) 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 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 Presence Survey

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 such, the following methods in accordance with the *Survey guidelines for Australia's threatened bats* 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.

The offset sites were traversed in detail to confirm GHFF presence through the identification of roosts, fly-over species and habitat resources including foraging species. Diurnal searches were conducted to identify roosts/camps and listening for their distinctive calls, while dusk surveys were conducted to record fly-in/out events or individual fly overs. Where foraging habitat (i.e. spring and winter flowering species) was identified during diurnal searches, it was revisited during spotlighting to increase likelihood of observation of foraging within the site. Other habitat features including waterways and drainage features were targeted during diurnal and nocturnal surveys to determine GHFF presence/absence.

It was not considered appropriate to utilise the Anabat system due to the requirement of knowing bat species present within the region as echolocation frequencies have been shown to differ dependent on regional setting. This is typically done through the capture and recording of hundreds of bats (discussed within the *Survey guidelines for Australia's threatened bats*), of which was impractical for these purposes.

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 (EPBC2017/8095). 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.

2.5. Koala Food Tree Survey

The koala food tree survey was 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. 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.

2.5.1 Modified Habitat Quality Assessment

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 7: 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
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A 100 m X 20 m plot was used to gather the data required for the MHQA. The offset sites were surveyed using twelve (12) plots, seven (7) located at Peak Crossing and five (5) located at 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.

2.6. 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 8** 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 8** 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 8** 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 8** 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 8** 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 8** 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. twelve (12) plots across the offset sites; seven (7) located across the Peak Crossing offset site and five (5) 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 9** 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 9** 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 9** 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 9** 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 9** 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 9 for the benchmark scoring values for this context characteristic.

Species Stocking Rate (30%)

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

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

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

The species stocking rate scoring was determined by analysing the Technical Descriptions of Regional Ecosystems of Southeast Queensland (Ryan 2019) and the stem density per hectare associated with the technical description of the regional ecosystem (refer **Table 10**).

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 8: 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	



Score	Description
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) Sco	ring
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 9: 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
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



Score	Description
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 10:	Species Stocking Rate (30%) Scoring Benchmarks (RE12.9-10.2)
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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

2.7. Non-native Plant Survey

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 both the Peaks Crossing offset site and 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 1: 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 Peaks Crossing offset site and Burnett Creek offset site including, MQHA, targeted weed transects (stratified sampling) and mapping of ground-truthed weed extent. All of these survey techniques were use to complement one another to build a baseline measurement to ensure improvements can be measured over the offset site management period.

Non-native plant 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 Peaks Crossing offset site and Burnett Creek offset site. As discussed, transects were stratified across the offset sites 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 2: 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 Peaks Crossing offset site and 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 3: Line transect methodology (extract- Figure 8: Auld, B. 2009)



Further, where patches of non-native plant cover were identified within Peaks Crossing offset site and 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.

2.8. Non-native Koala Predator Survey

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). 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 Peaks Crossing offset site and Burnett Creek property. Seven (7) cameras were deployed across the Peaks Crossing offset site and six (6) cameras were deployed across the Burnett Creek property, two (2) located within the Burnett Creek offset site between 15 March to 13 May 2021.

As discussed within **section 2.1**, the number of cameras deployed at the Peaks Crossing offset site and 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 Peaks Crossing offset site and



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 $RAI = D/TN \times 100$, 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 4: Camera trap set-up at Peaks Crossing offset site. Camera 5 (left) and camera 6 (right).

2.9. 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 30 March – 1 April 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) (2016) Gladstone received 56.6 mm rainfall from 14 March – 22 March 2016 but none in the week immediately prior to the survey. However, a total of 338.4 mm fell during the month of March which was significantly higher than the mean recording of 98.2 mm (BoM 2016b). 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.

Droughts can also impact surveys as koalas move away from their core habitat to find food and habitat. Historically Gladstone's mean rainfall for summer (December to February) is 424.5 mm. The same period in 2015-2016 recorded 262.6 mm which is significantly lower (BoM 2016) and suggests drier than usual 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 Peaks Crossing offset site and 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 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 both the Peaks Crossing and Burnett Creek is difficult to traverse, particularly the Burnett Creek property which has 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. Peak Crossing - Baseline Field Survey





7/06/2021 Preliminar LT







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 Q'd' State Carlastre and Mapping byers © State of Queensland (Department of Natural Resources and Mines) 2021. Updated data available at http://qldspatial.information.qld.gov.au/catalogue://

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2. Burnett Creek Baseline Field Survey







Legend QId DCDB Offset site DCDB Site VDEC ō Motion detection camera Grey-headed Fly-fox Survey \otimes Koala (female) K Koala (male) Κ Koala scat SAT ◬ Weed observations • Weed transect GPS Tracklog



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 Qid 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//

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3. Baseline Survey Results

3.1. Koala Density

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 2017/8095). The offset sites, Peak Crossing and Burnett Creek were both surveyed using direct methods, including, diurnal searches, opportunistic observations during other survey works and spotlighting.

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

Table 11: Direct Koala observations summary

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



Photo Set 3: Koalas recorded within Burnett Creek property. Adult male external the Burnett Creek offset site (left). Adult female located within 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 Peaks Crossing offset site and Burnett Creek property and the resulting grid-cell intersections selected as sampling.

A total of nine (9) SAT surveys were completed across the Peaks Crossing offset site in March 2021. Four (4) SAT surveys were completed within the remnant vegetation, all of which yielded low Koala activity based on East Coast med-high area/density (Phillips and Callaghan 2011). It should be noted that scat meanders were conducted within the juvenile regrowth and cleared grazing areas, however no evidence of Koala was recorded. Five (5) SAT surveys where completed within the non-remnant mapped vegetation, four (4) yielding a low Koala activity result and one (1) medium Koala activity result based on East Coast med-high area/density (Phillips and Callaghan, 2011) (refer to **Table 12**).

Eleven (11) SAT surveys were completed across the Burnett Creek property in May 2021, three (3) 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 13**). Refer to **Appendix A** for raw SAT data.

SAT	Date	Total Percentage	Vegetation Status	Activity Category
1	15 March 2021	0%	Remnant	Low
2	15 March 2021	10%	Remnant	Low
3	15 March 2021	6.67%	Remnant	Low
4	15 March 2021	3.33%	Non-remnant	Low
5	16 March 2021	16.67%	Non-remnant	Low
6	16 March 2021	3.33%	Non-remnant	Low
7	16 March 2021	23.33%	Non-remnant	Medium (Normal)
8	18 March 2021	20%	Remnant	Low

Table 12: SAT Survey Summary – Peak Crossing



SAT	Date	Total Percentage	Vegetation Status	Activity Category
9	19 March 2021	3.33%	Non-remnant	Low

Table 13: SAT Survey Summary – Burnett Creek

SAT	Date	Total Percentage	Vegetation Status	Activity Category	Within Offset Site
1	6 May 2021	6.67%	Remnant	Low	\checkmark
2	6 May 2021	3.33%	Remnant	Low	\checkmark
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	\checkmark

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 were no direct observations across the Peaks Crossing offset site and 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 **Table 12** & **Table 13**), it can be inferred that the both the Peaks Crossing offset site and Burnett Creek offset site demonstrate 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, 159.01 ha, the offset sites have an estimated Koala carrying capacity between three (3) to thirteen (13) (refer to **Table 14**). 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.

Offset Site	Area (ha)	Density (Koalas/ha)	Carrying Capacity (Koalas)
Peaks Crossing	109.76 ha	0.02 to 0.08	2.2 - 8.78
Burnett Creek	49.25 ha	0.02 to 0.08	1 (0.99) – 3.94
Total	159.01 ha	0.02 to 0.08	3.18-12.72

 Table 14:
 Offset Site Koala Carrying Capacity Estimate

3.2. Grey-headed Flying-fox Presence

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.

3.2.1 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 5**). 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 5: 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 3km of the Peak Crossing site and approximately 23km of the Burnett Creek 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 Peaks Crossing offset site, however one (1) is considered to be inactive (refer to **Table 15**). 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 16**).

ID	Location	Approximate Distance (km)	GHFF Records	BFF Records	Survey Date
148	Cedar Grove	19.3km	2,500-9,999	-	8/2020
158	Peak Crossing, Flinders Peak	1.65km	-	1-499	8/2020
310	Cedar Vale, Banksia Court	23km	2,500-9,999	500-2,499	8/2016
399	Mount Elliot	3km	Flying-fox camp con	has not been su sidered inactive	rveyed and is
464	Undulluh, Homestead Drive (Flagstone)	17km	1-499	-	8/2013

Table 15: Flying-fox camps proximate Peak Crossing Offset Site (DAWE, 2021)

Table 16: 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 co	o has not been su nsidered inactive	rveyed and is
289	Bicentenial Park, Boonah	24.82	2,500-9,999	2,500-9,999	5/2014

The Peaks Crossing offset site and Burnett Creek offset site both contain suitable foraging habitat for the GHFF (refer to **Table 17** and **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 17:
 Regional Ecosystem mapping summary – Peaks Crossing offset site

RE	Description
RE12.8.24	Corymbia citriodora subsp. variegata, Eucalyptus crebra +/- E. moluccana open forest. Occurs on Cainozoic igneous rocks especially lower slopes of rhyolite and trachyte hills (e.g. Moogerah Peaks). (BVG1M: 10b)
RE12.9-10.2	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks
RE12.9-10.7	<i>Eucalyptus crebra</i> +/- <i>E. tereticornis, Corymbia tessellaris, Angophora spp.</i> and <i>E. melanophloia</i> woodland on sedimentary rocks

Table 18: Regional Ecosystem Summary – Burnett Creek offset site

RE	Description
RE12.8.24	Corymbia citriodora subsp. variegata, Eucalyptus crebra +/- E. moluccana open forest. Occurs on Cainozoic igneous rocks especially lower slopes of rhyolite and trachyte hills (e.g. Moogerah Peaks). (BVG1M: 10b)
RE12.9-10.2	<i>Corymbia citriodora subsp. variegata</i> +/- <i>Eucalyptus crebra</i> open forest on sedimentary rocks

3.2.2 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. Due to the absence of camps on-site and failure to detect GHFF at both offset sites, the baseline abundance is estimated to be 0 in accordance with the recommended methodologies (refer to **Table 19**).

Table 19:	Grey-headed Flying-fox Abundance			

Offset Site	Survey Dates	Grey-headed Flying-fox abundance
Peaks Crossing	15, 16, 18 &19 March 2021 6 April 2021	0
Burnett Creek	6, 7, 13 & 27 May 2021	0



Offset Site	Survey Dates	Grey-headed Flying-fox abundance
Total		0

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 (EPBC2017/8095). 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*. Opportunistic observations of this species are to be recorded in future surveys.

3.3. Koala Food Tree Survey

At the Peak Crossing Site, a total of seven (7) MHQAs were conducted, with the first five (5) conducted in October 2018, followed by the more recent in May 2019. Three (3) were conducted in non-remnant vegetation, with four (4) conducted in remnant vegetation (refer **Appendix B** for results data, and **Table 20** and Table 21 for results summary).

The Peaks Crossing offset site scored a 2.41 out of 3 for site context across both remnant and non-remnant vegetation 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 3** for context analysis). The site condition, site context score and species stocking rate (2.00 out of 3) combined to provide a habitat quality score of 6.55 (rounded to 7.00) for non-remnant vegetation and a score of 6.54 (rounded to 7.00) for remnant vegetation.

At the Burnett Creek Site, a total of five (5) MHQAs were conducted, with the first three (3) completed in October 2018, and the more recent two (2) completed in May 2019. Two (2) were conducted in non-remnant vegetation, with three (3) conducted in remnant vegetation (refer **Appendix B** for results data, and **Table 22** and **Table 23** for results summary).

The Burnett Creek offset site scored a 2.41 out of 3 for site context within non-remnant vegetation and 2.36 out of 3 within remnant vegetation 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 4** for context analysis). The site condition, site context score and species stocking rate (2.00 out of 3) combined to provide a habitat quality score for non-remnant was 6.71 (rounded to 7.00), and the habitat quality score for remnant was 6.60 (rounded to 7.00).



Attribute		Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)
Site (30%)	Condition	Recruitment of woody perennial species in EDL	5/5	5/5
		Native plant species richness – trees	5/5	5/5
		Native plant species richness – shrubs	3/5	3/5
		Native plant species richness – grasses	3/5	3/5
		Native plant species richness – forbs	2.5/5	2.5/5
		Tree canopy height	5/5	5/5
		Tree canopy cover	5/5	2/5
		Shrub canopy cover	5/5	5/5
		Native grass cover	5/5	5/5
		Organic litter	5/5	3.5/5
		Large trees	5/15	5/15
		Coarse woody debris	2/5	2/5
		Non-native plant cover	5/10	5/10
		Quality and availability of food and foraging habitat	9/10	9/10
		Quality and availability of shelter habitat	9/10	9/10
		Site Condition Score	73.5/100	69/100
		Site Condition Score (out of 3)	2.21	2.07
		Average Site Condition Score (out of 3)	2.14	
Site Cont	ntext (30%)	Size of the patch	10/10	10/10
		Connectedness	5/5	5/5
		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	5/15	5/15
		Species mobility capacity	10/10	10/10

Table 20:	Modified Habitat Quality	Assessment To	ool (non-remnant)	[Koala] – Peak Crossir	۱g
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Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)
	Site Context Score	45/56	45/56
	Site Context Score (out of 3)	2.41	2.41
	Average Site Context Score (out of 3)	2.41	
	SAT survey results	20/40	20/40
	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	-
Species Stocking Rate (40%)	Species Stocking Rate Score	20/40	20/40
	Species Stocking Rate Score (out of 3)	2.00	2.00
	Average Species Stocking Rate Score (out of 3)	2.00	
Total (out of 10)		6.55 (rounded to 7.0	00)

Table 21: Modified Habitat Quality Assessment Tool (remnant) [Koala] – Peak Crossing

Attribute	9	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
Site (30%)	Condition	Recruitment of woody perennial species in EDL	5/5	3/5	5/5
		Native plant species richness – trees	5/5	3/5	5/5
		Native plant species richness – shrubs	3/5	5/5	5/5
		Native plant species richness – grasses	3/5	3/5	3/5
		Native plant species richness – forbs	2.5/5	2.5/5	3/5
		Tree canopy height	5/5	5/5	5/5
		Tree canopy cover	5/5	5/5	5/5
		Shrub canopy cover	5/5	3/5	3/5
		Native grass cover	5/5	5/5	0/5
		Organic litter	5/5	5/5	3/5
		Large trees	5/15	5/15	5/15



Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
	Coarse woody debris	5/5	2/5	2/5
	Non-native plant cover	5/10	5/10	5/10
	Quality and availability of food and foraging habitat	9/10	9/10	9/10
	Quality and availability of shelter habitat	9/10	9/10	9/10
	Site Condition Score	76.5/100	69.5/100	67/100
	Site Condition Score (out of 3)	2.30	2.09	2.01
	Average Site Condition Score (out of 3)	2.13		
Site Context (30%)	Size of the patch	10/10	10/10	10/10
	Connectedness	5/5	5/5	5/5
	Context	4/5	4/5	4/5
	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	5/15	5/15	5/15
	Species mobility capacity	10/10	10/10	10/10
	Site Context Score	45/56	45/56	45/56
	Site Context Score (out of 3)	2.41	2.41	2.41
	Average Site Context Score (out of 3)	2.41		
	SAT survey results	20/40	20/40	20/40
Species Stocking Rate (40%)	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	-	
	Species Stocking Rate Score	20/40	20/40	20/40



Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
	Species Stocking Rate Score (out of 3)	2.00	2.00	2.00
	Average Species Stocking Rate Score (out of 3)	2.00		
Total (100%)		6.54 (rounded to 3	7.00)	

Table 22: Modified Habitat Quality Assessment Tool (non-remnant) [Koala] – Burnett Creek

Attribute	Condition Characteristics	Score (RE12.9-10.2)
Site Condition (30%)	Recruitment of woody perennial species in EDL	5/5
	Native plant species richness – trees	5/5
	Native plant species richness – shrubs	2.5/5
	Native plant species richness – grasses	3/5
	Native plant species richness – forbs	3/5
	Tree canopy height	5/5
	Tree canopy cover	5/5
	Shrub canopy cover	3/5
	Native grass cover	5/5
	Organic litter	5/5
	Large trees	5/15
	Coarse woody debris	2/5
	Non-native plant cover	10/10
	Quality and availability of food and foraging habitat	9/10
	Quality and availability of shelter habitat	9/10
	Site Condition Score	76.5/100
	Site Condition Score (out of 3)	2.30
	Average Site Condition Score (out of 3)	2.30
Site Context (30%)	Size of the patch	10/10
	Connectedness	5/5



Attribute Condition Characteristics		Score (RE12.9-10.2)
	Context	4/5
	Ecological corridors	6/6
	Role of site location to species overall population in the State	5/5
	Threats to the species	5/15
	Species mobility capacity	10/10
	Site Context Score	45/56
	Site Context Score (out of 3)	2.41
	Average Site Context Score (out of 3)	2.41
	SAT survey results	20/40
Species Stocking Rate	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-
(40%)	Species Stocking Rate Score	20/40
	Species Stocking Rate Score (out of 3)	2.00
	Average Species Stocking Rate Score (out of 3)	2.00
Total (100%)	6.71 (rounded to 7.00)	

Table 23: Modified Habitat Quality Assessment Tool (remnant) [Koala] – Burnett Creek

Attribute	Condition Characteristics	Score (RE12.9-10.2)
Site Condition (30%)	Recruitment of woody perennial species in EDL	3/5
	Native plant species richness – trees	5/5
	Native plant species richness – shrubs	3/5
	Native plant species richness – grasses	3/5
	Native plant species richness – forbs	2.5/5
	Tree canopy height	5/5
	Tree canopy cover	5/5
	Shrub canopy cover	5/5
	Native grass cover	3/5
	Organic litter	5/5



Attribute	Condition Characteristics	Score (RE12.9-10.2)
	Large trees	5/15
	Coarse woody debris	2/5
	Non-native plant cover	10/10
	Quality and availability of food and foraging habitat	9/10
	Quality and availability of shelter habitat	9/10
	Site Condition Score	74.5/100
	Site Condition Score (out of 3)	2.24
	Average Site Condition Score (out of 3)	2.24
Site Context (30%)	Size of the patch	10/10
	Connectedness	5/5
	Context	4/5
	Ecological corridors	6/6
	Role of site location to species overall population in the State	4/5
	Threats to the species	5/15
	Species mobility capacity	10/10
	Site Context Score	44/56
	Site Context Score (out of 3)	2.36
	Average Site Context Score (out of 3)	2.36
	SAT survey results	20/40
Species Stocking Rate	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-
(40%)	Species Stocking Rate Score	20/40
	Species Stocking Rate Score (out of 3)	2.00
	Average Species Stocking Rate Score (out of 3)	2.00
Total (100%)		6.60 (rounded to 7.00)



3. Peak Crossing Koala Context Assessment



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Tran sve rse Mer cator GD A 1994 Zone 56 1:16,000 @ A3	

Legend



QId DCDB

Offset site DCDB

Site VDEC

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 (77%)



Size of habitat critical to the survival of the Koala patch >200m corridor connectivity (>10,000 ha)



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4. Burnett Creek Koala Context Assessment





4/06/2021 Preliminary

Legend





QId DCDB

Offset site DCDB

Site VDEC

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 (93%)

Size of habitat critical to the survival of the Koala patch >200m survival of the Koala pater > 2000. corridor connectivity (>10,000 ha)



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3.4. Grey-headed Flying-fox Foraging Habitat

At the Peak Crossing Site, a total of seven (7) MHQAs were conducted, with three (3) in non-remnant vegetation, and four (4) in remnant vegetation. GHFF foraging habitat assessments were conducted in conjunction with each of these transects (refer **Appendix C** for results data, and **Table 24** and **Table 25** for results summary).

The Peaks Crossing offset site scored a 1.90 out of 3 for site context across both remnant and non-remnant vegetation on 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 5** for context analysis). Species stocking rate varied between remnant and non-remnant vegetation yielding 2.40 out of 3 and 1.95 out of 3 respectively. The site condition, site context score and species stocking rate combined to provide a habitat quality score for non-remnant was 6.27 (rounded to 6.00), and the habitat quality score for remnant was 7.15 (rounded to 7.00).

At the Burnett Creek Site, a total of five (5) MHQAs were conducted, with two (2) in non-remnant vegetation, and three (3) in remnant vegetation. GHFF foraging habitat assessments were conducted in conjunction with each of these transects (refer **Appendix C** for results data, and **Table 26** and **Table 27** for results summary).

The Burnett Creek offset site scored a 1.80 out of 3 for site context across both remnant and non-remnant vegetation on 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 6** for context analysis). Species stocking rate varied between remnant and non-remnant vegetation yielding 2.40 out of 3 and 3.00 out of 3 respectively. The site condition, site context score and species stocking rate combined to provide a habitat quality score for non-remnant was 7.12 (rounded to 7.00), and the habitat quality score for remnant was 7.32 (rounded to 7.00).

Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)
Site	Vegetation Condition	5/20	5/20
Condition	Species Richness	20/20	10/20
(30%)	Flower Score	8/10	8/10
	Timing of Biological Shortages	10/10	10/10
	Quality of Foraging Habitat	10/20	5/20
	Non-native Plant Cover	20/20	10/20
	Site Condition Score	73/100	48/100
	Site Condition Score (out of 4)	2.92	1.92
	Average Site Condition Score (out of 4)	2.42	•

Table 24: Modified Habitat Quality Assessment Tool (non-remnant) [GHFF] – Peak Crossing



Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)
Site	Size of the patch	10/10	10/10
Context	Connectedness	6/10	6/10
(30%)	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	10/10	10/10
	Site Context Score	38/60	38/60
	Site Context Score (out of 3)	1.90	1.90
	Average Site Context Score (out of 3)	1.90	
	GHFF Foraging Tree Density	20/40	32/40
Species Stocking	Species Stocking Rate Score (out of 3)	1.50	2.40
Rate (40%)	Average Species Stocking Rate Score (out of 3)	re 1.95	
Total (100%)		6.27 (rounded to 6.00)	

Table 25: Modified Habitat Quality Assessment Tool (remnant) [GHFF] – Peak Crossing

Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
Site Condition	Vegetation Condition	20/20	20/20	20/20
(30%)	Species Richness	10/20	10/20	10/20
	Flower Score	8/10	8/10	8/10
	Timing of Biological Shortages	10/10	10/10	10/10
	Quality of Foraging Habitat	10/20	5/20	5/20
	Non-native Plant Cover	20/20	20/20	10/20
	Site Condition Score	78/100	73/100	63/100
	Site Condition Score (out of 4)	3.12	2.92	2.52
	Average Site Condition Score (out of 4)	2.85		



Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
Site	Size of the patch	10/10	10/10	10/10
(30%)	Connectedness	6/10	6/10	6/10
	Context	6/10	6/10	6/10
	Ecological corridors	6/10	6/10	6/10
	Role of site location to species overall population in the State	0/10	0/10	0/10
	Threats to the species	10/10	10/10	10/10
	Site Context Score	38/60	38/60	38/60
	Site Context Score (out of 3)	1.90	1.90	1.90
	Average Site Context Score (out of 3)	1.90		
Spacias	GHFF Foraging Tree Density	20/40	36/40	40/40
Stocking Rate	Species Stocking Rate Score (out of 3)	1.50	2.70	3.00
(40%)	Average Species Stocking Rate Score (out of 3)	e 2.40		
Total (100%)		7.15 (rounded to 2	7.00)	

Table 26: Modified Habitat Quality Assessment Tool (non-remnant) [GHFF] – Burnett Creek

Attribute	Condition Characteristics	Score (RE12.9-10.2)
Site Condition (30%)	Vegetation Condition	5/20
	Species Richness	10/20
	Flower Score	8/10
	Timing of Biological Shortages	10/10
	Quality of Foraging Habitat	5/20
	Non-native Plant Cover	20/20
	Site Condition Score	58/100
	Site Condition Score (out of 4)	2.32



Attribute	Condition Characteristics	Score (RE12.9-10.2)
	Average Site Condition Score (out of 4)	2.32
Site Context (30%)	Size of the patch	10/10
	Connectedness	0/10
	Context	6/10
	Ecological corridors	10/10
	Role of site location to species overall population in the State	0/10
	Threats to the species	10/10
	Site Context Score	36/60
	Site Context Score (out of 3)	1.80
	Average Site Context Score (out of 3)	1.80
	GHFF Foraging Tree Density	40/40
Species Stocking Rate	Species Stocking Rate Score (out of 3)	3.00
	Average Species Stocking Rate Score (out of 3)	3.00
Total (100%)		7.12 (rounded to 7.00)

Table 27: Modified Habitat Quality Assessment Tool (remnant) [GHFF] – Burnett Creek

Attribute	Condition Characteristics	Score (RE12.9-10.2)
Site Condition (30%)	Vegetation Condition	20/20
	Species Richness	10/20
	Flower Score	8/10
	Timing of Biological Shortages	10/10
	Quality of Foraging Habitat	10/20
	Non-native Plant Cover	20/20
	Site Condition Score	78/100
	Site Condition Score (out of 4)	3.12
	Average Site Condition Score (out of 4)	3.12
Site Context (30%)	Size of the patch	10/10
	Connectedness	0/10



Attribute	Condition Characteristics	Score (RE12.9-10.2)
	Context	6/10
	Ecological corridors	10/10
	Role of site location to species overall population in the State	0/10
	Threats to the species	10/10
	Site Context Score	36/60
	Site Context Score (out of 3)	1.80
	Average Site Context Score (out of 3)	1.80
	GHFF Foraging Tree Density	32/40
Species Stocking Rate	Species Stocking Rate Score (out of 3)	2.40
	Average Species Stocking Rate Score (out of 3)	2.40
Total (100%)		7.32 (rounded to 7.00)



5. Peak Crossing Grey-headed Flying-fox Context Assessment





Legend



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Site DCDB

Site VDEC

20km Context buffer

Percentage of GHFF habitat in 20km context area from offset area is 34%

GHFF roost camp - active at last recording

GHFF roost camp - level 3 =< population at last recording



NOTES

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6. Burnett Creek Grey-headed Flying-fox Context Assessment





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Site DCDB

Site VDEC

20km Context buffer

Percentage of GHFF habitat in 20km context area from offset area is 55%

GHFF roost camp - active in last 12 months (no records)

GHFF roost camp - level 3 =< population within last 12 months (no records)



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7. Peak Crossing - Habitat Quality Survey



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Legend





▲ SAT survey

Assessment Units





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8. Burnett Creek Habitat Quality Survey









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3.5. Non-native Plant Cover

Non-native plant cover across the Peaks Crossing offset site and Burnett Creek property were recorded using three (3) complimentary techniques; MQHA, targeted weed transects and locating patches of non-native plant cover and mapping extents (refer to **section 2.7** for survey methodology).

The MHQA surveyed non-native plant cover simultaneously with other habitat quality indicators across Peaks Crossing and Burnett Creek offset sites. A summary of these results are provided in **Table 28** and **Table 29**. The average non-native plant cover across Peaks Crossing offset site within the MHQA transects is 8.9%, while the average across the Burnett Creek offset site within the MQHA transects is 1.3%. These surveys are easily repeated to ensure non-native plant cover over the offset sites decreases over the management period.

Table 28: MHQA Non-native Plant Cover Summary – Peaks Crossing Offset Site

AU	Transect ID	Area (ha)	Vegetation Status	RE	Non-native plant cover (%)
1	T4	26.16	Non-remnant	12.9-10.2	5%
2	T5 & T7	43.52	Non-remnant	12.9-10.2	17.5%
3	T6	28.63	Remnant	12.8.24	5%
5	T2 & T8	10.35	Remnant	12.9-10.7	8.5%
Offset Site Average					9%

Table 29: MHQA Non-native Plant Cover Summary – Burnett Creek Offset Site

AU	Area (ha)	Transect ID	Vegetation Status	RE	Non-native plant cover (%)
1	24.5	T1 & T2	Non-remnant	12.9-10.2	1.6%
2	20	T3 & T4	Remnant	12.9-10.2	1%
Offset Site Average					1.3%

Eleven (11) non-native plant cover transects were conducted across the Peaks Crossing offset site and fourteen (14) across the Burnett Creek property, four (4) of which are located within the Burnett Creek offset site. These transect differentiate between non-native plant cover and weeds of national significance (WONS). Refer to **Appendix D** for raw non-native plant cover transect data.

Table 30:	Non-native Plant Cover Transects – Peaks Crossing	offset Site
		,

Transect ID	Vegetation Status	Non-native plant cover (%)	WONS Cover (%)
WT1	Non-remnant	0.5%	0%
WT2	Remnant	2%	0%
WT3	Non-remnant	33.2%	0%



Baseline Survey Report

Transect ID	Vegetation Status	Non-native plant cover (%)	WONS Cover (%)
WT4	Remnant	17.1%	0%
WT5	Non-remnant	41.4%	0%
WT6	Non-remnant	15.7%	5.1%
WT7	Non-remnant	47.9%	14.2%
WT8	Non-remnant	100%	40.9%
WT9	Non-remnant	78.5%	14.2%
WT10	Remnant	52%	20.6%
WT11	Remnant	62.8%	2.47%
Offset Site Average	je	41.04%	8.86%

Table 31: Non-native Plant Cover Transects – Burnett Creek Offset Site

Transect ID	Vegetation Status	Non-native plant cover (%)	WONS (%)
WT1	Non-remnant	0.2%	0.2%
WT2	Remnant	0%	0%
WT7	Remnant	1%	0%
WT15	Non-remnant	5%	0%
Offset Site Average		1.55%	0.05%

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 Peaks Crossing offset site and Burnett Creek offset site (refer to **Plan 9 and Plan 10**).

3.6. Non-native Koala Predator Survey

Seven (7) motion activated camera were deployed across the Peaks Crossing offset site from 15 March to 6 April 2021. Six (6) motion activated cameras were deployed across the Burnett Creek property, two (2) 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 Peaks Crossing offset site camera detected ten (10) individuals non-native Koala predators over a total of 161 survey nights (refer to **Table 32**). While the Burnett Creek property cameras detected only one (1) individual non-native Koala predator over a total of 175 survey nights (refer to **Table 33**).



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 Peaks Crossing offset site and Burnett Creek property are **6.2** and **0.57**, respectively.

Camera	Survey Duration (nights)	Species	Detection	RAI
1	23	Fox (Vulpes vulpes)	1	
2	23	Dog (Canis familiaris)	2	
3	23	Nil	-	
4	23	Dog (Canis familiaris)	6	6.2
5	23	Nil	-	0.2
6	23	Fox (Vulpes vulpes)	1	
7	23	Nil	-	
Total	161		10	

Table 32:	Non-native Koala Predator Surve	y Results Summar	y – Peaks Crossing offset site

Table 33: Non-native Koala Predator Survey Results Summary – Burnett Creek property

Camera	Survey Duration (nights)	Species	Detection	Within offset site	RAI
1	28	Nil	-	\checkmark	
2	28	Nil	-	\checkmark	
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.



Photo 2: Fox captured on Peaks Crossing offset site Camera 4.




Photo 3: Six (6) dogs captured on Peaks Crossing offset site Camera 4.



9. Peak Crossing - Non-native Plant and Predators











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 Qid 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//

* 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 ful will render the information shown on such reproduction invalid and not suitable for use.

10. Non-native Plant and Predators - Burnett Creek











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 QId 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//

* 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 lender the information shown on such reproduction invalid and not suitable for use.

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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



	Spot Assessme	nt Technique (SAT)
SAT SITE #	Evidance of Use (%)	Koala Use (Low, Medium, High)
1	0	Low Use
2	10	Low Use
3	6.67	Low Use
4	3.33	Low Use
5	16.67	Low Use
6	3.33	Low Use
7	23.33	Medium Use
8	20	Low Use
9	3.33	Low use

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

Activity category	Low use	Medium (normal) use	High use
Area (density)			
East Coast (low)	24	≥ 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%

SAT Survey 1 (15.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Corymbia citriodora	Spotted Gum	340	Nil
2	Eucalyptus crebra	Narrow Leaved Ironbark	260	Nil
3	Corymbia citriodora	Spotted Gum	320	Nil
4	Corymbia citriodora	Spotted Gum	150	Nil
5	Corymbia citriodora	Spotted Gum	110	Nil
6	Corymbia citriodora	Spotted Gum	350	Nil
7	Corymbia citriodora	Spotted Gum	290	Nil
8	Eucalyptus crebra	Narrow Leaved Ironbark	170	Nil
9	Corymbia citriodora	Spotted Gum	240	Nil
10	Eucalyptus crebra	Narrow Leaved Ironbark	200	Nil
11	Corymbia citriodora	Spotted Gum	300	Nil
12	Corymbia citriodora	Spotted Gum	230	Nil
13	Corymbia citriodora	Spotted Gum	310	Nil
14	Corymbia citriodora	Spotted Gum	180	Nil
15	Corymbia citriodora	Spotted Gum	200	Nil
16	Corymbia citriodora	Spotted Gum	140	Nil
17	Eucalyptus crebra	Narrow Leaved Ironbark	160	Nil
18	Corymbia citriodora	Spotted Gum	160	Nil
19	Corymbia citriodora	Spotted Gum	340	Nil
20	Eucalyptus crebra	Narrow Leaved Ironbark	190	Nil
21	Eucalyptus crebra	Narrow Leaved Ironbark	140	Nil
22	Eucalyptus crebra	Narrow Leaved Ironbark	270	Nil
23	Corymbia citriodora	Spotted Gum	140	Nil
24	Eucalyptus moluccana	Gum Topped Box	330	Nil
25	Eucalyptus moluccana	Gum Topped Box	620	Nil
26	Corymbia citriodora	Spotted Gum	270	Nil
27	Corymbia citriodora	Spotted Gum	220	Nil
28	Corymbia citriodora	Spotted Gum	210	Nil
29	Eucalyptus crebra	Narrow Leaved Ironbark	140	Nil
30	Corymbia citriodora	Spotted Gum	170	Nil
Total Trees with Koala Scats			0	
Total Percentage of Koala Use				0%
	Koala Use (Based	on East Coast Low Habitat)		Nil

SAT Survey 2 (15.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Eucalyptus moluccana	Gum Topped Box	190	Scats
2	Eucalyptus moluccana	Gum Topped Box	300	Nil
3	Eucalyptus moluccana	Gum Topped Box	280	Scats
4	Eucalyptus moluccana	Gum Topped Box	220	Nil
5	Eucalyptus moluccana	Gum Topped Box	260	Nil
6	Eucalyptus moluccana	Gum Topped Box	330	Nil
7	Eucalyptus moluccana	Gum Topped Box	230	Nil
8	Eucalyptus moluccana	Gum Topped Box	200	Nil
9	Eucalyptus moluccana	Gum Topped Box	230	Nil
10	Eucalyptus moluccana	Gum Topped Box	120	Nil
11	Eucalyptus moluccana	Gum Topped Box	330	Nil
12	Eucalyptus moluccana	Gum Topped Box	280	Nil
13	Eucalyptus moluccana	Gum Topped Box	320	Scats
14	Eucalyptus moluccana	Gum Topped Box	340	Nil
15	Eucalyptus moluccana	Gum Topped Box	140	Nil
16	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
17	Eucalyptus moluccana	Gum Topped Box	170	Nil
18	Eucalyptus moluccana	Gum Topped Box	200	Nil
19	Eucalyptus moluccana	Gum Topped Box	230	Nil
20	Eucalyptus moluccana	Gum Topped Box	300	Nil
21	Eucalyptus moluccana	Gum Topped Box	140	Nil
22	Eucalyptus moluccana	Gum Topped Box	340	Nil
23	Eucalyptus moluccana	Gum Topped Box	320	Nil
24	Eucalyptus moluccana	Gum Topped Box	340	Nil
25	Eucalyptus moluccana	Gum Topped Box	280	Nil
26	Eucalyptus moluccana	Gum Topped Box	210	Nil
27	Eucalyptus moluccana	Gum Topped Box	230	Nil
28	Corymbia citriodora	Spotted Gum	200	Nil
29	Eucalyptus moluccana	Gum Topped Box	340	Nil
30	Eucalyptus moluccana	Gum Topped Box	130	Nil
Total Trees with Koala Scats			3	
Total Percentage of Koala Use				10%
	Koala Use (Based on East Coast Low Habitat)			

SAT Survey 3 (15.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Eucalyptus crebra	Narrow Leaf Ironbark	240	Nil
2	Corymbia citriodora	Spotted Gum	200	Nil
3	Eucalyptus crebra	Narrow Leaf Ironbark	350	Nil
4	Eucalyptus carnea	White Mahogany	160	Nil
5	Eucalyptus carnea	White Mahogany	130	Nil
6	Eucalyptus carnea	White Mahogany	200	Scats
7	Eucalyptus carnea	White Mahogany	190	Nil
8	Corymbia citriodora	Spotted Gum	240	Nil
9	Eucalyptus crebra	Narrow Leaf Ironbark	290	Nil
10	Eucalyptus carnea	White Mahogany	210	Nil
11	Corymbia citriodora	Spotted Gum	350	Nil
12	Corymbia citriodora	Spotted Gum	270	Nil
13	Corymbia citriodora	Spotted Gum	260	Scats
14	Eucalyptus carnea	White Mahogany	130	Nil
15	Corymbia citriodora	Spotted Gum	360	Nil
16	Corymbia citriodora	Spotted Gum	360	Nil
17	Corymbia citriodora	Spotted Gum	290	Nil
18	Corymbia citriodora	Spotted Gum	190	Nil
19	Corymbia intermedia	Pink Bloodwood	260	Nil
20	Corymbia citriodora	Spotted Gum	200	Nil
21	Corymbia citriodora	Spotted Gum	520	Nil
22	Eucalyptus moluccana	Gum Topped Box	220	Nil
23	Corymbia citriodora	Spotted Gum	260	Nil
24	Corymbia intermedia	Pink Bloodwood	140	Nil
25	Corymbia citriodora	Spotted Gum	140	Nil
26	Corymbia citriodora	Spotted Gum	290	Nil
27	Eucalyptus carnea	White Mahogany	260	Nil
28	Corymbia intermedia	Pink Bloodwood	130	Nil
29	Allocasuarina torulosa	Forest She Oak	150	Nil
30	Corymbia citriodora	Spotted Gum	360	Nil
Total Trees with Koala Scats			2	
Total Percentage of Koala Use				6.67%
	Koala Use (Based	on East Coast Low Habitat)		Low

SAT Survey 4 (15.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Corymbia intermedia	Pink Bloodwood	290	Nil
2	Eucalyptus crebra	Narrow Leaf Ironbark	120	Nil
3	Eucalyptus crebra	Narrow Leaf Ironbark	150	Nil
4	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
5	Corymbia intermedia	Pink Bloodwood	240	Nil
6	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
7	Corymbia intermedia	Pink Bloodwood	190	Nil
8	Corymbia intermedia	Pink Bloodwood	130	Nil
9	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
10	Eucalyptus crebra	Narrow Leaf Ironbark	230	Nil
11	Eucalyptus crebra	Narrow Leaf Ironbark	170	Nil
12	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
13	Eucalyptus crebra	Narrow Leaf Ironbark	190	Nil
14	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
15	Eucalyptus crebra	Narrow Leaf Ironbark	110	Nil
16	Eucalyptus crebra	Narrow Leaf Ironbark	110	Nil
17	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
18	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
19	Corymbia citriodora	Spotted Gum	190	Nil
20	Eucalyptus crebra	Narrow Leaf Ironbark	110	Nil
21	Eucalyptus crebra	Narrow Leaf Ironbark	150	Nil
22	Eucalyptus crebra	Narrow Leaf Ironbark	190	Nil
23	Eucalyptus crebra	Narrow Leaf Ironbark	100	Nil
24	Eucalyptus crebra	Narrow Leaf Ironbark	210	Nil
25	Eucalyptus crebra	Narrow Leaf Ironbark	190	Nil
26	Corymbia citriodora	Spotted Gum	420	Scats
27	Corymbia intermedia	Pink Bloodwood	250	Nil
28	Corymbia intermedia	Pink Bloodwood	230	Nil
29	Corymbia citriodora	Spotted Gum	340	Nil
30	Corymbia citriodora	Spotted Gum	180	Nil
Total Trees with Koala Scats			1	
Total Percentage of Koala Use				3.33%
	Koala Use (Based	on East Coast Low Habitat)		Low

SAT Survey 5 (16.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Corymbia citriodora	Spotted Gum	380	Nil
2	Eucalyptus crebra	Narrow Leaf Ironbark	190	Scats
3	Eucalyptus crebra	Narrow Leaf Ironbark	180	Scats
4	Eucalyptus crebra	Narrow Leaf Ironbark	170	Nil
5	Eucalyptus crebra	Narrow Leaf Ironbark	150	Nil
6	Corymbia citriodora	Spotted Gum	290	Nil
7	Eucalyptus crebra	Narrow Leaf Ironbark	120	Nil
8	Eucalyptus crebra	Narrow Leaf Ironbark	110	Nil
9	Corymbia citriodora	Spotted Gum	130	Nil
10	Corymbia citriodora	Spotted Gum	150	Nil
11	Corymbia citriodora	Spotted Gum	100	Nil
12	Corymbia citriodora	Spotted Gum	160	Nil
13	Corymbia citriodora	Spotted Gum	140	Nil
14	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
15	Corymbia citriodora	Spotted Gum	250	Nil
16	Corymbia citriodora	Spotted Gum	220	Nil
17	Eucalyptus crebra	Narrow Leaf Ironbark	150	Nil
18	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
19	Eucalyptus crebra	Narrow Leaf Ironbark	140	Scats
20	Corymbia citriodora	Spotted Gum	300	Scats
21	Eucalyptus crebra	Narrow Leaf Ironbark	270	Scats
22	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
23	Eucalyptus crebra	Narrow Leaf Ironbark	300	Nil
24	Corymbia citriodora	Spotted Gum	400	Nil
25	Eucalyptus crebra	Narrow Leaf Ironbark	100	Nil
26	Corymbia citriodora	Spotted Gum	230	Nil
27	Eucalyptus crebra	Narrow Leaf Ironbark	170	Nil
28	Eucalyptus crebra	Narrow Leaf Ironbark	210	Nil
29	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
30	Corymbia citriodora	Spotted Gum	220	Nil
Total Trees with Koala Scats			5	
Total Percentage of Koala Use				16.67%
Koala Use (Based on East Coast Low Habitat)				Low

SAT Survey 6 (16.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Eucalyptus crebra	Narrow Leaf Ironbark	370	Nil
2	Corymbia citridora	Spotted Gum	320	Nil
3	Corymbia citridora	Spotted Gum	160	Nil
4	Corymbia citridora	Spotted Gum	300	Scats
5	Corymbia citridora	Spotted Gum	100	Nil
6	Corymbia citridora	Spotted Gum	200	Nil
7	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
8	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
9	Eucalyptus crebra	Narrow Leaf Ironbark	110	Nil
10	Corymbia citridora	Spotted Gum	200	Nil
11	Corymbia citridora	Spotted Gum	240	Nil
12	Corymbia citridora	Spotted Gum	160	Nil
13	Eucalyptus melanophloia	Silver Leaf Ironbark	180	Nil
14	Corymbia citridora	Spotted Gum	180	Nil
15	Corymbia citridora	Spotted Gum	160	Nil
16	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
17	Corymbia citridora	Spotted Gum	190	Nil
18	Corymbia citridora	Spotted Gum	370	Nil
19	Corymbia citridora	Spotted Gum	230	Nil
20	Corymbia citridora	Spotted Gum	180	Nil
21	Corymbia citridora	Spotted Gum	210	Nil
22	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
23	Corymbia citridora	Spotted Gum	290	Nil
24	Corymbia citridora	Spotted Gum	140	Nil
25	Corymbia citridora	Spotted Gum	330	Nil
26	Corymbia citridora	Spotted Gum	150	Nil
27	Eucalyptus crebra	Narrow Leaf Ironbark	200	Nil
28	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
29	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
30	Eucalyptus crebra	Narrow Leaf Ironbark	170	Nil
	Total Trees with Koala Scats			1
Total Percentage of Koala Use				3.33%
Koala Use (Based on East Coast Low Habitat)				Low

SAT Survey 7 (16.03.2021)				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
2	Eucalyptus crebra	Narrow Leaf Ironbark	100	Nil
3	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
4	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
5	Eucalyptus crebra	Narrow Leaf Ironbark	190	Nil
6	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
7	Corymbia citriodora	Spotted Gum	190	Nil
8	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
9	Eucalyptus crebra	Narrow Leaf Ironbark	160	Scats
10	Corymbia intermedia	Pink Bloodwood	270	Scats
11	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
12	Eucalyptus crebra	Narrow Leaf Ironbark	150	Nil
13	Eucalyptus crebra	Narrow Leaf Ironbark	120	Nil
14	Eucalyptus crebra	Narrow Leaf Ironbark	130	Scats
15	Eucalyptus crebra	Narrow Leaf Ironbark	220	Scats
16	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
17	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
18	Eucalyptus crebra	Narrow Leaf Ironbark	160	Nil
19	Eucalyptus crebra	Narrow Leaf Ironbark	190	Scats
20	Eucalyptus melanophloia	Silver Leaf Ironbark	140	Nil
21	Corymbia intermedia	Pink Bloodwood	160	Nil
22	Corymbia citriodora	Spotted Gum	310	Nil
23	Eucalyptus crebra	Narrow Leaf Ironbark	160	Scats
24	Eucalyptus crebra	Narrow Leaf Ironbark	140	Nil
25	Eucalyptus crebra	Narrow Leaf Ironbark	120	Nil
26	Eucalyptus crebra	Narrow Leaf Ironbark	190	Nil
27	Eucalyptus crebra	Narrow Leaf Ironbark	130	Nil
28	Eucalyptus crebra	Narrow Leaf Ironbark	170	Scats
29	Corymbia intermedia	Pink Bloodwood	170	Nil
30	Corymbia citriodora	Spotted Gum	260	Nil
Total Trees with Koala Scats			7	
Total Percentage of Koala Use				23.33%
Koala Use (Based on East Coast Low Habitat)				Medium

SAT Survey 8				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Corymbia intermedia	Pink Bloodwood	230	Ν
2	Eucalyptus moluccana	Gum-topped box	150	Y
3	Eucalyptus moluccana	Gum-topped box	100	Y
4	Corymbia citridora	Spotted Gum	185	Y
5	Corymbia citridora	Spotted Gum	200	Ν
6	Corymbia citridora	Spotted Gum	310	Ν
7	Lophostemon confertus	Brush Box	130	Ν
8	Eucalyptus moluccana	Gum-topped box	240	N
9	Corymbia intermedia	Pink Bloodwood	210	N
10	Eucalyptus moluccana	Gum-topped box	250	Ν
11	Corymbia citridora	Spotted Gum	310	Ν
12	Eucalyptus moluccana	Gum-topped box	250	Y
13	Corymbia intermedia	Pink Bloodwood	160	Ν
14	Eucalyptus crebra	Narrow-leaved Ironbark	210	Ν
15	Corymbia citridora	Spotted Gum	150	Ν
16	Corymbia citridora	Spotted Gum	255	Ν
17	Corymbia citridora	Spotted Gum	150	Ν
18	Eucalyptus moluccana	Gum-topped box	180	Ν
19	Corymbia citridora	Spotted Gum	160	Ν
20	Corymbia citridora	Spotted Gum	340	Ν
21	Corymbia citridora	Spotted Gum	270	N
22	Corymbia citridora	Spotted Gum	230	Y
23	Corymbia intermedia	Pink Bloodwood	130	Ν
24	Eucalyptus moluccana	Gum-topped box	190	Ν
25	Corymbia citridora	Spotted Gum	350	Ν
26	Corymbia intermedia	Pink Bloodwood	320	Ν
27	Corymbia intermedia	Pink Bloodwood	420	Ν
28	Corymbia intermedia	Pink Bloodwood	110	N
29	Corymbia intermedia	Pink Bloodwood	180	Ν
30	Eucalyptus crebra	Narrow-leaved Ironbark	210	Y
Total Trees with Koala Scats			6	
Total Percentage of Koala Use				20.00%
	Koala Use (Based o	n East Coast Low Habitat)		Low

SAT Survey 9				
Tree Number	Species	Common Name	DBH (mm)	Scats
1	Eucalyptus crebra	Narrow-leaved Ironbark	210	Ν
2	Eucalyptus crebra	Narrow-leaved Ironbark	200	Ν
3	Eucalyptus crebra	Narrow-leaved Ironbark	160	Ν
4	Eucalyptus crebra	Narrow-leaved Ironbark	155	Ν
5	Erythrina vespertilio	Batwing Coral Tree	150	Ν
6	Eucalyptus crebra	Narrow-leaved Ironbark	150	Ν
7	Corymbia citridora	Spotted Gum	260	Ν
8	Eucalyptus crebra	Narrow-leaved Ironbark	110	Ν
9	Eucalyptus crebra	Narrow-leaved Ironbark	120	Ν
10	Corymbia citridora	Spotted Gum	210	Ν
11	Corymbia citridora	Spotted Gum	155	N
12	Eucalyptus melanophloia	Silver-leaved Ironbark	170	N
13	Eucalyptus crebra	Narrow-leaved Ironbark	115	Ν
14	Eucalyptus crebra	Narrow-leaved Ironbark	180	Ν
15	Corymbia citridora	Spotted Gum	210	N
16	Eucalyptus crebra	Narrow-leaved Ironbark	170	N
17	Corymbia citridora	Spotted Gum	195	Ν
18	Corymbia tessalaris	Moreton Bay Ash	140	N
19	Eucalyptus crebra	Narrow-leaved Ironbark	180	N
20	Eucalyptus crebra	Narrow-leaved Ironbark	125	Ν
21	Angophora leiocarpa	Smooth-barked Apple	170	N
22	Corymbia citridora	Spotted Gum	190	N
23	Eucalyptus crebra	Narrow-leaved Ironbark	160	Ν
24	Eucalyptus crebra	Narrow-leaved Ironbark	140	Ν
25	Eucalyptus crebra	Narrow-leaved Ironbark	140	N
26	Eucalyptus crebra	Narrow-leaved Ironbark	150	Ν
27	Corymbia citridora	Spotted Gum	210	Ν
28	Eucalyptus crebra	Narrow-leaved Ironbark	170	N
29	Eucalyptus crebra	Narrow-leaved Ironbark	130	Ν
30	Corymbia citridora	Spotted Gum	350	Y
Total Trees with Koala Scats			1	
Total Percentage of Koala Use				3.33%
	Koala Use (Based on East Coast Low Habitat)			

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 \pm 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%

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

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

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

SAT Survey 4 (06.05.2021)				
ree Numbe	Species	Common Name	DBH (mm)	Scats
1	Corymbia citriodora	Spotted Gum	180	Ν
2	Corymbia citriodora	Spotted Gum	140	Ν
3	Lophostemon confertus	Brushbox	200	Ν
4	Lophostemon confertus	Brushbox	180	Ν
5	Corymbia citriodora	Spotted Gum	220	Ν
6	Eucalyptus acmenoides	White Mahogany	370	Ν
7	Corymbia citriodora	Spotted Gum	140	Ν
8	Eucalyptus carnea	Broad-leaved White Mahogany	340	Ν
9	Angophora leiocarpa	Smooth-barked Apple	320	Ν
10	Eucalyptus carnea	Broad-leaved White Mahogany	440	Ν
11	Eucalyptus carnea	Broad-leaved White Mahogany	320	Ν
12	Corymbia citriodora	Spotted Gum	150	Ν
13	Angophora leiocarpa	Smooth-barked Apple	180	Ν
14	Eucalyptus carnea	Broad-leaved White Mahogany	320	Ν
15	Angophora leiocarpa	Smooth-barked Apple	400	Ν
16	Eucalyptus microcorys	Tallowwood	400	Ν
17	Eucalyptus carnea	Broad-leaved White Mahogany	330	Ν
18	Allocasuarina torulosa	She-oak	150	Ν
19	Allocasuarina torulosa	She-oak	190	Ν
20	Corymbia citriodora	Spotted Gum	140	Ν
21	Corymbia citriodora	Spotted Gum	160	Ν
22	Eucalyptus major	Flooded Gum	350	Ν
23	Angophora leiocarpa	Smooth-barked Apple	370	Ν
24	Corymbia intermedia	Pink Bloodwood	230	Ν
25	Eucalyptus major	Flooded Gum	230	Ν
26	Corymbia intermedia	Pink Bloodwood	150	Ν
27	Eucalyptus carnea	Broad-leaved White Mahogany	420	Ν
28	Angophora woodsiana	Rough-barked apple	160	Ν
29	Eucalyptus microcorys	Tallowwood	300	Ν
30	Corymbia citriodora	Spotted Gum	300	Ν
	Total Tre	ees with Koala Scats		0
	Total Pero	centage of Koala Use		0%
	Koala Use (Based or	n 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	Ν	
2	Eucalyptus carnea	Broad-leaved White Mahogany	450	Ν	
3	Eucalyptus crebra	Narrow-leaved Ironbark	200	Ν	
4	Eucalyptus acmenoides	White Mahogany	260	Ν	
5	Angophora leiocarpa	Smoth-barked Apple	450	Ν	
6	Eucalyptus acmenoides	White Mahogany	300	Ν	
7	Eucalyptus crebra	Narrow-leaved Ironbark	350	Ν	
8	Corymbia intermedia	Pink Bloodwood	310	Ν	
9	Eucalyptus crebra	Narrow-leaved Ironbark	410	Ν	
10	Allocasuarina torulosa	She-oak	180	Ν	
11	Corymbia citriodora	Spotted Gum	160	Ν	
12	Eucalyptus crebra	Narrow-leaved Ironbark	460	Ν	
13	Corymbia citriodora	Spotted Gum	200	Ν	
14	Allocasuarina torulosa	She-oak	100	Ν	
15	Corymbia intermedia	Pink Bloodwood	310	Ν	
16	Eucalyptus crebra	Narrow-leaved Ironbark	320	Ν	
17	Eucalyptus acmenoides	White Mahogany	520	Ν	
18	Eucalyptus crebra	Narrow-leaved Ironbark	230	Ν	
19	Eucalyptus acmenoides	White Mahogany	450	Ν	
20	Eucalyptus carnea	Broad-leaved White Mahogany	650	Ν	
21	Eucalyptus carnea	Broad-leaved White Mahogany	600	Y	
22	Corymbia citriodora	Spotted Gum	350	Ν	
23	Eucalyptus crebra	Narrow-leaved Ironbark	250	Ν	
24	Eucalyptus carnea	Broad-leaved White Mahogany	700	Ν	
25	Corymbia citriodora	Spotted Gum	400	Ν	
26	Eucalyptus carnea	Broad-leaved White Mahogany	450	Ν	
27	Eucalyptus carnea	Broad-leaved White Mahogany	300	Ν	
28	Corymbia citriodora	Spotted Gum	450	Ν	
29	Eucalyptus carnea	Broad-leaved White Mahogany	800	N	
30	Corymbia citriodora	Spotted Gum	700	N	
	Total Tree	s with Koala Scats		1	
	Total Perce	ntage of Koala Use		3.33%	
	Koala Use (Based on Ea	st Coast medium-hgih Habitat)		Low	

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

	SAT Survey 7 (13.05.2021)				
ree 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	Ν	
4	Corymbia citriodora	Spotted Gum	120	Ν	
5	Corymbia citriodora	Spotted Gum	180	Ν	
6	Corymbia citriodora	Spotted Gum	220	Ν	
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	Ν	
11	Corymbia citriodora	Spotted Gum	190	Ν	
12	Corymbia citriodora	Spotted Gum	320	Ν	
13	Corymbia citriodora	Spotted Gum	180	Ν	
14	Corymbia citriodora	Spotted Gum	270	Ν	
15	Corymbia citriodora	Spotted Gum	230	Ν	
16	Eucalyotus acmenoides	White Mahogany	280	Ν	
17	Corymbia citriodora	Spotted Gum	190	Ν	
18	Corymbia citriodora	Spotted Gum	710	Ν	
19	Corymbia citriodora	Spotted Gum	130	Ν	
20	Corymbia citriodora	Spotted Gum	270	Ν	
21	Corymbia citriodora	Spotted Gum	210	Ν	
22	Corymbia citriodora	Spotted Gum	150	Ν	
23	Corymbia citriodora	Spotted Gum	700	Ν	
24	Corymbia citriodora	Spotted Gum	310	Ν	
25	Corymbia citriodora	Spotted Gum	180	Ν	
26	Eucalyptus crebra	Narrow-leaved Ironbark	740	Ν	
27	Eucalyptus acmenoides	White Mahogany	350	Ν	
28	Eucalyptus tereticornis	Fored Red Gum	700	Ν	
29	Corymbia citriodora	Spotted Gum	210	Ν	
30	Corymbia citriodora	Spotted Gum	370	N	
	Total Tre	es with Koala Scats		5	
	Total Perc	entage of Koala Use		16.67%	
	Koala Use (Based on	East Coast med-high Habitat)		Low	

SAT Survey 8 (13.05.2021)					
'ree Numbe	Species	Common Name	DBH (mm)	Scats	
1	Corymbia citriodora	Spotted Gum	270	Ν	
2	Eucalyptus crebra	Narrow-leaved Ironbark	210	Ν	
3	Corymbia citriodora	Spotted Gum	240	Ν	
4	Corymbia citriodora	Spotted Gum	750	Ν	
5	Corymbia citriodora	Spotted Gum	300	Ν	
6	Corymbia citriodora	Spotted Gum	230	Ν	
7	Corymbia citriodora	Spotted Gum	310	Ν	
8	Corymbia citriodora	Spotted Gum	300	Ν	
9	Corymbia citriodora	Spotted Gum	170	Ν	
10	Corymbia citriodora	Spotted Gum	220	Ν	
11	Corymbia citriodora	Spotted Gum	290	Ν	
12	Corymbia citriodora	Spotted Gum	310	Ν	
13	Corymbia citriodora	Spotted Gum	300	Y	
14	Corymbia citriodora	Spotted Gum	150	Y	
15	Eucalyptus tereticornis	Forest Red Gum	190	Ν	
16	Eucalyptus crebra	Narrow-leaved Ironbark	140	Ν	
17	Eucalyptus crebra	Narrow-leaved Ironbark	160	Ν	
18	Corymbia citriodora	Spotted Gum	150	Ν	
19	Corymbia citriodora	Spotted Gum	130	Ν	
20	Corymbia citriodora	Spotted Gum	260	Ν	
21	Corymbia citriodora	Spotted Gum	210	Ν	
22	Corymbia citriodora	Spotted Gum	200	Ν	
23	Corymbia citriodora	Spotted Gum	280	Ν	
24	Eucalyptus crebra	Narrow-leaved Ironbark	700	Ν	
25	Corymbia citriodora	Spotted Gum	110	Ν	
26	Eucalyptus crebra	Narrow-leaved Ironbark	220	Ν	
27	Eucalyptus crebra	Narrow-leaved Ironbark	200	Ν	
28	Eucalyptus crebra	Narrow-leaved Ironbark	400	Ν	
29	Eucalyptus crebra	Narrow-leaved Ironbark	120	Ν	
30	Corymbia citriodora	Spotted Gum	200	Ν	
	Total Trees	with Koala Scats		2	
	Total Percent	tage of Koala Use		6.67%	
	Koala Use (Based on Ea	st 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	Ν	
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	Ν	
28	Eucalyptus dura	Ironbark	400	Y	
29	Eucalyptus dura	Ironbark	220	Y	
30	Ν				
Total Trees with Koala Scats				3	
	Total Percen	tage of Koala Use		10%	
	Koala Use (Based on Ea	st 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	Ν	
2	Eucalyptus microcorys	Tallowwood	380	Ν	
3	Corymbia intermedia	Pink Bloodwood	180	N	
4	Eucalyptus acmenoides	White Mahogany	470	Ν	
5	Eucalyptus microcorys	Tallowwood	240	Ν	
6	Angophora leiocarpa	Smooth-barked Apple	450	Ν	
7	Eucalyptus acmenoides	White Mahogany	650	N	
8	Eucalyptus acmenoides	White Mahogany	230	Ν	
9	Corymbia citriodora	Spotted Gum	200	Ν	
10	Corymbia citriodora	Spotted Gum	190	Ν	
11	Eucalyptus acmenoides	White Mahogany	620	Ν	
12	Corymbia citriodora	Spotted Gum	300	Ν	
13	Eucalyptus acmenoides	White Mahogany	730	Ν	
14	Corymbia intermedia	Pink Bloodwood	160	Y	
15	Eucalyptus acmenoides	White Mahogany	200	Y	
16	Corymbia citriodora	Spotted Gum	240	Ν	
17	Corymbia citriodora	Spotted Gum	280	Ν	
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	N				
	Total Trees with Koala Scats				
	Total Percent	tage of Koala Use		23.30%	
	Koala Use (Based on Ea	st Coast med-high Habitat)		High	

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	Ν	
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				
	Total Percenta	age of Koala Use		16.67%	
	Koala Use (Based on Eas	t Coast med-high Habitat)		Low	

Appendix B

Koala MHQA Data





Habitat Quality Site Assessment Template.....Burnett Cat x

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 Offset Site an Advanced Offset Site An Impact Site ◄

	Habitat Quality Asse	essment onit score snee	L	
Part C. Site Data				
Property	Burnett Creek		Date	03/05/19
Assessment Unit:	Assessment Unit Area (ha)	RE		Bioregion Number
1	24.25	12.9-10.2		Southeast Queensland
Landscape Photo- Please attach or inser	rt north, south, east and west photos in the spaces provided	from row 231-355 below	and include details such a	as Time and Mapping Coordinates in the following row.

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

<u>Datum</u> WGS 84 GDA 94 Easting rthing 0m Mark Zone Easting Northing 50m Mark Plot bearing

Site description and Location (including details of discrete polygons within the asses

Additional Transects: T1 (Blue) JG+CH 03/05/19 - Intack RE, recent fire, regrowth EDL T2 (Green) JG+CH 03/05/19 - Intact RE, recent fire, regrowth EDL, less rocky than T1, more grass cover than T1

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

Total number of species		6	
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark
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	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Jacksonia scoparia	Common Name	Dogwood
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Black Wattle
Scientific Name	Acacia implexa	Common Name	Lightwood
Scientific Name	Exocarpos cupressiformis	Common Name	Native Cherry
Scientific Name	Eucalyptus acmenoides	Common Name	
Scientific Name	Jacksonia scoparia	Common Name	
Scientific Name	Corymbia citriodora	Common Name	
Scientific Name	Eucalyptus crebra	Common Name	
Scientific Name	Eucalyptus dura	Common Name	
Scientific Name	Acacia suaveolens	Common Name	
Scientific Name	Corymbia citriodora	Common Name	
Scientific Name	Eucalyptus tereticornis	Common Name	
Scientific Name	Eucalyptus crebra	Common Name	
Scientific Name	Brachychiton populneus	Common Name	
Scientific Name	Corymbia tessellaris	Common Name	

	Shrub species richness:						
Total number of species		1					
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle				
Scientific Name	Persoonia cornifolia	Common Name	Geebung				
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle				
Scientific Name	Persoonia cornifolia	Common Name	Geebung				
Scientific Name		Common Name					
Scientific Name	Acacia suaveolens	Common Name					
Scientific Name	Jacksonia scoparia	Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					

Grass species richness:					
Total number of species		6			
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass		
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass		
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass		
Scientific Name	Eragrostis brownii	Common Name	Brown's Love Grass		
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass		
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass		
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass		
Scientific Name	Themeda triandra	Common Name			
Scientific Name	Cymbopogon refractus	Common Name			
Scientific Name	Eragrostis brownii	Common Name			
Scientific Name	Heteropogon contortus	Common Name	Black Speargrass		
Scientific Name		Common Name	Creeping Beared Grass		
Scientific Name		Common Name	Wiry Panic		
Scientific Name	Aristida latifolia	Common Name			
Scientific Name	Eragrostis brownii	Common Name			
Scientific Name	Themeda triandra	Common Name			
Scientific Name	Cymbopogon refractus	Common Name			
Scientific Name	Erntolasia stricta	Common Name			
Scientific Name	Heteropogon contortus	Common Name			
Scientific Name	Aristida latifolia	Common Name			
Scientific Name		Common Name	Sporobolus		
Scientific Name	Cuperus aracilis	Common Name			

Forbs and others (non grass ground) species richness:						
Total number of species 6						
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla			
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush			
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily			

Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons
Scientific Name		Common Name	Pomax
Scientific Name		Common Name	Hairy Trefoil
Scientific Name	Lomandra multiflora	Common Name	
Scientific Name	Cyperus gracilis	Common Name	
Scientific Name	Dianella caerulea	Common Name	
Scientific Name	Hardenbergia violacea	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	Hardenbergia
Scientific Name	Lomandra longifolia	Common Name	
Scientific Name	Lomandra multiflora	Common Name	
Scientific Name		Common Name	Dianella
Scientific Name	Eremophila debilis	Common Name	Winter Apple
Scientific Name		Common Name	Wallumbergia
Colorability Manua		Common Norma	Vallow Puttons

Part E - Non-Native Plant Cover: (*list species below)			
Total percentage cover within plot		1.60%	
Scientific Name	Senecio madagascariensis	Common Name	Fireweed
Scientific Name	Opuntia spp.	Common Name	Prickly Pear
Scientific Name	Conzya spp.	Common Name	Fleabane
Scientific Name	Melinis repens	Common Name	Red Natal Grass
Scientific Name	Lantana camara	Common Name	Lantana
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena
Scientific Name	Senecio madagascariensis	Common Name	Fireweed
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton Bush
Scientific Name		Common Name	Emelia
Scientific Name		Common Name	Fireweed
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton Bush
Scientific Name		Common Name	Greenleaf Desmodium
Scientific Name		Common Name	Purple-top Verbena
Scientific Name		Common Name	Giant Rats Tail Grass
Scientific Name		Common Name	Giant Rats Tail Grass

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

Scientific Name

Total Length of Course Woody Debris (Meters):	202.00				
1	1.10	26			
2	1.50	27			
3	0.50	28			
4	1.00	29			
5	5.80	30			
6	1.40	31			
7	4.40	32			
8	7.90	33			
9	5.10	34			
10	1.60	35			
11	7.10	36			
12	3.40	37			
13	1.00	38			
14	8.30	39			
15	2.10	40			
16	3.40	41			
17	2.80	42			
18	3.10	43			
19	1.10	44			
20	11.60	45			
21	4.20	46			
22	1.60	47			
23	0.80	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
	53.30%	53.30%	38.30%	27.50%	19.20%	38.32%
Organic Littor	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	26.60%	25.00%	26.60%	45.00%	43.30%	33.30%

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:	7			Number of large non eucalypt trees:		0	
Total Number Large Trees:		7					
Median Tree Canopy Height Measurements	Canopy:	18.60	Sub-canopy:	10.60	Emergent:		
Number of ecologically domina			77				
Part I - Tree canopy cover, Shrub canopy cover							
Tree capopy cover %		50.000/		0.000/			

0.95%

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

Shrub canopy cover %

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	E > 200ha	4 - >75% or >500ha			3 - Within (whole or part)
DESCRIPTION	3 - >2001a	connection	3 - >30-75% remnant		5 - Within (Whole or part)
SCORE	10	5	4		6
	•				

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	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2		GHFF		Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
,				Score					
Δ				Description					
•				Score					
5				Description					
, , , , , , , , , , , , , , , , , , ,				Score					
6				Description					
0				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
, ,				Score					
10				Description					

10		Score					
		Maximum Score	5.00	9.00	9.00	10.00	5.00

Habitat Quality Final Summary

Complete form [Environmental Offsets Delivery Form 1-Notice of Election and Advanced Delivery Form 1-Notice of Election and Advanced Deli

Note: This document/tool may be used in relation to undertaking a habitat quality analysis of an impact site/offset site and/or advanced offset site and is designed to be attached to Environmental Offsets Delivery Form 5 - Habitat Quality Details as directed. Further information on habitat quality can be found in the Guide to determining terrestrial habitat quality, which is available on the Queensland Governments website that can be accessed here

Case Ref Project Total	Name Area	Peak Crossing											
TOTAL								Assessment	Unit Number				
		Habitat Quality Attributes	Requirement	1	2	3	4	5	6	7	8	9	10
PAF	श	Assessment Unit Area (ha) Regional Ecosystems	Area (ha) RE	24.25	0	0	0	0	0	0	0	0	0
		Bioregion	Bioregion	Southeast Queensland									
		1. Recruitment of woody perennial species	Score	5									
		2. Native plant species richness											
		- Trees	Score	5									
		- Shrubs	Score	2.5									
		- Grasses	Score	3									
		- Forbs	Score	3									
		3. Tree canopy height											
		- Canopy layer	Score	5									
	s	- Sub-Canopy Layer	Score	5									
	ibute	- Emergent Layer	Score										
	h Attr	Average Score	Average Score	5									
1	ditior	4. Tree canopy cover											
	Conc	- Canopy layer	Score	5									1
	Site	- Sub-Canopy Layer	Score	5									
		- Emergent Layer	Score										
		Average Score	Average Score	5									
		5. Shrub canopy cover	Score	3									
		6. Native perennial grass cover	Score	5									
		7. Organic litter	Score	5									
		8. Large trees	Score	5									
		9. Coarse woody debris	Score	2									
		10. Weed cover	Score	10									
	tes	11. Size of patch (fragmented)	Score	10									
	tribu	12. Connectedness (fragmented)	Score	5									
2	ext At	13. Context (fragmented)	Score	4									
	Conte	14. Distance from water (intact)	Score										
	Site	15. Ecological corridors	Score	6									
	dex	16. Threats to species	Score	5									
	at Inc	17. Quality and availability of food and foraging habitat	Score	9									
3	Habit	18, Quality and availability of shelter	Score	9									
	ecies	19. Species mobility capacity	Score	10									
	Spe	20. Role of site location to overall population in the State.	Score	5									

Nabite Quality Score (measured) 121:0 Image: Control of the state											
Habitat Quality Score (max) 156.0 Image: Control (max) Image: Control (m	Habitat Quality Score (measured)	121.50									
Assessment Unit Abate (bally Score 22.3 0.00	Habitat Quality Score (max)	156.00									
Assessment Unit Nabilital Quality Score 7.73 Image: Constraint of the Nability Constra	Assessment Unit Area (ha)	24.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Size weighing 1.00 Image: Constraint of the second	Assessment Unit Habitat Quality Score	7.79									
Weighted Assessment Unit kabitat Quality Sore 7.79 Date FINAL TOTAL HABITAT QUALITY SCORE 7.79 Administrative information Date Name of Assessment Officer Date Organization/Conserv, Name Date	Size weighting	1.00									
FINAL TOTAL HABITAT QUALITY SCORE 7.79 Administrative Information Date Name of Assement Officer Date Organization(Conserv) Name Date	Weighted Assessment Unit Habitat Quality Score	7.79									
Administrative Information Name of Assessment Officer Date Organization(congary Name	FINAL TOTAL HABITAT QUALITY SCORE	7.79									
Name of Assument Officer Date Organization/Company Name	Administrative Information										
Organisation/Company Name	Name of Assessment Officer						Da	ste			
	Organisation/Company Name										
Project Name	Project Name										
Phone Number Email							Err	nail			

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Habitat Quality Site Assessment Template.....

Peak Crossing Natural Bridge 12.8.24 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 PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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.

An Offset Site Is this Assessment for: An Impact Site ~ an Advanced Offset Site Habitat Quality Asses

Part C - Site Data									
Property	Peak Crossing	Date	07/0	5/19					
Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number						
1	21.62	12.8.24	Southeast Queensland						
						_			

it Sc

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.

VGS 84		Om Mark	Zone	Eas	sting	Northing
		OTTIVIAR				
iDA 94		50m Mark	Zone	Easting		Northing
		Som wark				
Plot bearing				Recorders		

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

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

Tree species richness:							
Total number of species		8					
Scientific Name	Eucalyptus crebra	Common Name					
Scientific Name	Corymbia citriodora	Common Name					
Scientific Name	Corymbia intermedia	Common Name					
Scientific Name	Eucalyptus carnea	Common Name					
Scientific Name	Allocasuarina torulosa	Common Name					
Scientific Name	Corymbia tessellaris	Common Name					
Scientific Name	Eucalyptus tereticornis	Common Name					
Scientific Name	Lophostemon confertus	Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					

Shrub species richness:							
Total number of species		2					
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree				
Scientific Name	Acacia suaveolens	Common Name	Sweet 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	5						
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass				
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass				
Scientific Name	Entolasia stricta	Common Name	Wiry Panic				
Scientific Name	Imperata cylindrica	Common Name	Blady Grass				
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire 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	3						
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush				
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily				
Scientific Name	Cassytha pubescens	Common Name	Devil's Twine				
Scientific Name		Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					

Common Name

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

Scientific Name

Total percentage cover within plot	5.00%					
Scientific Name	Lantana camara	Common Name	Lantana			
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana			
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine			
Scientific Name	Conyza spp.	Common Name	Fleabane			
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):	318.00					
1	4.10	26				
2	0.80	27				
3	0.90	28				
4	6.10	29				
5	4.20	30				
6	4.10	31				
7	0.70	22				

8	0.70	33	
9	2.20	34	
10	1.50	35	
11	3.20	36	
12	3.30	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)										
Notive perceptial grass sever	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average				
Native perennial grass cover	60.00%	40.00%	5.00%	0.00%	0.00%	21.00%				
Orenaria Littar	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average				
Organic Littler	40.00%	40.00%	65.00%	95.00%	30.00%	54.00%				
Part H- Number of large trees , tree canopy height, recruitment of woody perennial species:										
Eucalypt Large tree DBH benchmark used :	420			Non- Eucalypt Large tree DBH benchmark used:	200					
Number of large eucalypt trees:	2			Number of large non eucalypt trees:						
Total Number Large Trees:	2									
Median Tree Canopy Height Measurements	Canopy:	19.00	Sub-canopy:	9.00	Emergent:					
Number of ecologically dominant layer species regenerating:			6							

 Part I - Tree canopy cover, Shrub canopy cover
 Canopy:
 78.90%
 Sub-canopy:
 12.90%
 Emergent:

 Shrub canopy cover %
 10.10%

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	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)			
SCORE	10	5	A		6			

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	of food and foraging	shelter	capacity	to overall	
1	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival	
				Score	5	9	9	10	5	
2				Description						
-				Score						
3	2			Description						
-				Score						
4				Description						
-				Score						
5				Description						
-	· · · · · · · · · · · · · · · · · · ·			Score						
6				Description						
-				Score						
7	7			Description						
				Score						
8				Description						
			Score							
9	9			Description						
				Score						
10	10		Description							
				Score						
				I						
				Maximum Score	5.00	9.00	9.00	10.00	5.00	
1										
Habitat Quality Site Assessment Template.....

Peak Crossing Natural Bridge - 12.9-10.2 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 PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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 Offset Site An Impact Site ~ an Advanced Offset Site Habitat Quality Ass

Part C - Site Data					
Property	Peak Crossing		Date	07/05/19	
Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number		
2	48.02	12.9-10.2	Southeast Queensland		
Landscape Photo- Please attach or inser	t north, south, east and west photos in the spaces provide	d from row 231-355 below a	and include details such a	s Time and Mapping Coord	linates in the following row.
Datum	Zo	me	Eas	sting	Northing

it Sc

-aca		Own Mdaula		8	
GS 84		UM Mark			
DA 94		50m Mark	Zone	Easting	Northing
	John Wark				
	Plot bearing			Recorders	

Site description and Location (including details of discrete polygons within the assessment unit) T5 T7

Part D - Native Species Richness: (*list species below)					
Tree species richness:					
Total number of species		6			
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum		
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash		
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark		
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark		
Scientific Name	Angophora subvelutina	Common Name	Rough-barked Apple		
Scientific Name	Lophostemon confertus Common Name		Brush Box		
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum		
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash		
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark		
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark		
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark		
Shrub species richness:					
Total number of species		6			

Scientific Name	Acacia salicina Common Nam		Sally Wattle
Scientific Name	Acacia fimbriata	Common Name	Brisbane Wattle
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Wattle
Scientific Name	Acacia melanoxlyn	Common Name	Blackwood
Scientific Name	Ficus coronata	Common Name	Sandpaper Fig
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree
Scientific Name	Ozothamnus diosmifolius	Common Name	Sago Bush
Scientific Name	Dodonaea viscosa	Common Name	Hop Bush
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle
Scientific Name	Grewia retusifolia	Common Name	Dog's Balls
Colontific Name	Sida cordifolia	Common Nama	sida

0

Grass species richness:							
Total number of species		4					
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass				
Scientific Name	Themeda triandra	Kangaroo Grass					
Scientific Name	Entolasia stricta	Common Name	Wiry Panic				
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	Entolasia stricta	Common Name	Wiry Panic				
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass				
Scientific Name	Aristida calycina	Common Name	Dark Aristida				
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily				

Forbs and others (non grass ground) species richness:						
Total number of species		3				
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush			
Scientific Name	Cheilanthes distans	Common Name	Bristle Cloak Fern			
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily			
Scientific Name	Cassytha pubescens	Common Name	Devil's Twine			
Scientific Name	Sida cordifolia	Common Name	Sida			
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush			
A 1 1/1 1	Frank damage to seat the se		Durba Calk Durba			

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

Sci ntific N

Total percentage cover within plot		17.50%	
Scientific Name	Lantana camara	Common Name	Lantana
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Conyza spp.	Fleabane	
Scientific Name	Dichondra repens	Common Name	Kidney Weed
Scientific Name	Senecio madagascariensis	Common Name	Fireweed
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton Bush
Scientific Name	Lantana camara	Common Name	Lantana
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Opuntia spp.	Common Name	Prickly Pear
Scientific Name	Conyza spp.	Common Name	Fleabane
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine

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

Total Length of Course Woody Debris (Meters):	119.00				
1	1.20	26			
2	1.40	27			
3	5.10	28			
4	4.10	29			

5	2.90	30	
6	0.80	31	
7	6.20	32	
8	2.10	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	

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
	55.00%	80.00%	52.50%	70.00%	75.00%	66.50%
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
	35.00%	20.00%	35.00%	27.50%	10.00%	25.50%

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:	2			Number of large non eucalypt trees:	0	
Total Number Large Trees:				2		
Median Tree Canopy Height Measurements	Canopy:	17.50	Sub-canopy:	9.50	Emergent:	
Number of ecologically dominant layer species regenerating:			5			
•						

 Part I - Tree canopy cover, Shrub canopy cover
 Canopy:
 20.30%
 Sub-canopy:
 15.15%
 Emergent:

 Shrub canopy cover %
 10.95%

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	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
2				Score					
2				Description					
,				Score					
4				Description					
-				Score					
5				Description					
,				Score					
6				Description					
, i i i i i i i i i i i i i i i i i i i				Score					
7				Description					
				Score					
8				Description					
, v				Score					
9				Description					
				Score					
10				Description					
				Score					
					-	-			
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Habitat Quality Final Summary

Complete form [Environmental Offsets Delivery Form 1-Notice of Election and Advanced Delivery Form 1-Notice of El

Note: This document/tool may be used in relation to undertaking a habitat quality analysis of an impact site/offset site and/or advanced offset site and is designed to be attached to Environmental Offsets Delivery Form 5 - Habitat Quality Details as directed. Further information on habitat quality can be found in the Guide to determining terrestrial habitat quality, which is available on the Queensland Governments website that can be accessed here

Case Re Project	Reference Peak Crossing				i mai sum	inary ren	place						
Total	Area	69.64											
		Habitat Quality Attributes	Requirement					Assessment	Unit Number				
DA	07	Assessment Unit Area (ha)	Area (ha)	21.62	48.02	3 0	4	0	0	0	8 0	9	0
FA	KI	Regional Ecosystems	RE	12.8.24 Southeast	12.9-10.2 Southeast								
		Bioregion	Bioregion	Queensland	Queensland								
		1. Recruitment of woody perennial species	Score	5	5								
		2. Native plant species richness											
		- Trees	Score	5	5								
		- Shrubs	Score	3	3								
		- Grasses	Score	3	3								
		- Forbs	Score	2.5	2.5								
		3. Tree canopy height											
		- Canopy layer	Score	5	5								
		- Sub-Canopy Layer	Score	5	5								
	butes	- Emergent Layer	Score										
	Attri	Average Score	Average Score	5	5								
1	lition	4. Tree canopy cover	· ·									1	
	Conc	- Canopy layer	Score	5	2								
	Site	- Sub-Canopy Layer	Score	5	5								
		- Emergent Layer	Score										
		Average Score	Average Score	5	3.5								
		5. Shrub canopy cover	Score	5	5								
		6. Native perennial grass cover	Score	5	5								
		7. Organic litter	Score	5	5								
		8. Large trees	Score	5	5								
		9. Coarse woody debris	Score	2	2								
		10. Weed cover	Score	5	5								
		·											
	tes	11. Size of patch (fragmented)	Score	10	10								
	tribu	12. Connectedness (fragmented)	Score	5	5								
2	ext At	13. Context (fragmented)	Score	4	4								
	Conte	14. Distance from water (intact)	Score										
	Site	15. Ecological corridors	Score	6	6								
	ex	16. Threats to species	Score	5	5								
	it Ind	17. Quality and availability of food and foraging habitat	Score	9	9								
3	labita	18, Quality and availability of shelter	Score	9	9								
	cies H	19. Species mobility capacity	Score	10	10								
	Spe	20. Role of site location to overall population in the State.	Score	5	5								
-													

Habitat Quality Score (measured)	118.50	117.00								
Habitat Quality Score (max)	156.00	156.00								
Assessment Unit Area (ha)	21.62	48.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Assessment Unit Habitat Quality Score	7.60	7.50								
Size weighting	0.31	0.69								
Weighted Assessment Unit Habitat Quality Score	2.36	5.17								
FINAL TOTAL HABITAT QUALITY SCORE	7.53									
Administrative Information										
Name of Assessment Officer						Da	ite		-	
Organisation/Company Name										
Project Name										
Phone Number						En	nail			

Version 1.0 - December - 2014 © - State of Queensland, Department of Environment and Heritage Pro

Habitat Quality Site Assessment Template.....Burnett Creek Remant

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.

An Offset Site Is this Assessment for: An Impact Site ~ an Advanced Offset Site Habitat Quality Asse

Part C - Site Data								
Property	Burnett Creek		Date	03/05/19				
Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number					
1	20	12.9-10.2	Southeast Queensland					

it Sc

atum		Oran Marach	Zone	Easting	Northing	
NGS 84	-	UT IVIARK				
DA 94	50m March	Zone	Easting	Northing		
		Som wark				
Plot bearing				Recorders		

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

Tree species richness:								
Total number of species		8						
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum					
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark					
Scientific Name	Allocasuarina torulosa	Common Name	Forest She-oak					
Scientific Name	Angophora subvelutina	Common Name	Rough-barked Apple					
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum					
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark					
Scientific Name	Jacksonsia scoparia	Common Name	Dogwood					
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark					
Scientific Name		Common Name						
Scientific Name		Common Name						

Shrub species richness:								
Total number of species		2						
Scientific Name	Acacia irrorata	Common Name	Green Wattle					
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		4						
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass					
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass					
Scientific Name	Entolasia stricta	Common Name	Wiry Panic					
Scientific Name	Eragrostis brownii	Common Name	Brown's Love 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	3						
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat-rush				
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla				
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons				
Scientific Name		Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					

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

Total percentage cover within plot		1.00%	
Scientific Name	Andropogon virginicus	Common Name	Whiskey Grass
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena
Scientific Name	Senecio madagascariensis	Common Name	Fireweed
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton 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	

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

Total Length of Course Woody Debris (Meters):	229.00				
1	0.70	26			
2	0.80	27			
3	1.40	28			
4	11.40	29			
5	0.60	30			
6	1.20	31			
7	0.50	22			

8	4.20	33	
9	2.10	34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

art G - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)								
Matter annual anna anna	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average		
Native perennial grass cover	20.00%	30.00%	10.00%	5.00%	10.00%	15.00%		
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average		
Organic Litter	60.00%	35.00%	20.00%	80.00%	75.00%	54.00%		
Part H- Number of large trees , tree canopy height, rec	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:		9		Number of large non eucalypt trees:				
Total Number Large Trees:				9				
Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	12.00	Emergent:			
Number of ecologically domina	ant layer species regenerating:				3			
rt I - Tree canony rover Shruh canony rover								

 The canopy cover, sinul canopy cover
 Canopy:
 72.80%
 Sub-canopy:
 22.40%
 Emergent:

 Shrub canopy cover %
 4.40%

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

art J - Site Context Score					
ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	E > 200ha	4 - >75% or >500ha			2 - Within (whole or part)
DESCRIPTION	3 - >20011a	connection	3 - >30-75% remnant		5 - within (whole of part)
SCORE	10	5	4		6

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 Hab	itat Attributes					
No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability	Quality and availability of	Species mobility	Role of site location
						of food and foraging	shelter	capacity	to overall
1	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	2 - Likely to be critical to species' survival
			Score		5	9	9	10	4
2		GHFF		Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	2 - Likely to be critical to species' survival
				Score	5	9	9	10	4
2				Description					
3				Score					
٨				Description					
-				Score					
5				Description					
,				Score					
6				Description					
,				Score					
7				Description					
-				Score					
8				Description					
				Score					
9				Description					
-				Score					
10				Description					
				Score					
					-	-			
				Maximum Score	5.00	9.00	9.00	10.00	4.00
1									

Habitat Quality Final Summary

Complete form [Environmental Offsets Delivery Form 1-Notice of Election and Advanced Delivery Form 1-Notice of El

Note: This document/tool may be used in relation to undertaking a habitat quality analysis of an impact site/offset site and/or advanced offset site and is designed to be attached to Environmental Offsets Delivery Form 5 - Habitat Quality Details as directed. Further information on habitat quality can be found in the Guide to determining terrestrial habitat quality, which is available on the Queensland Governments website that can be accessed here

Project Total	Name Area	Burnett Creek											
		Habitat Quality Attributes	Requirement					Assessment	Unit Number				
		Assessment Unit Area (ha)	Area (ha)	1 20	2	3	4	5	6	7	8	9	10
PAI	RT	Regional Ecosystems	RE	12.9-10.2									
		Bioregion	Bioregion	Queensland									
		1. Recruitment of woody perennial species	Score	3									
		2. Native plant species richness			•				•		•	•	
		- Trees	Score	5									
		- Shrubs	Score	3									
		- Grasses	Score	3									
		- Forbs	Score	2.5									
		3. Tree canopy height											
		- Canopy layer	Score	5									
	sa	- Sub-Canopy Layer	Score	5									
	tribut	- Emergent Layer	Score										
	n Atl	Average Score	Average Score	5									
-	nditic	4. Tree canopy cover											
	e Col	- Canopy layer	Score	5									
	sit	- Sub-Canopy Layer	Score	5									
		- Emergent Layer	Score										
		Average Score	Average Score	5									
		5. Shrub canopy cover	Score	5									
		6. Native perennial grass cover	Score	3									
		7. Organic litter	Score	5									
		8. Large trees	Score	5									
		9. Coarse woody debris	Score	2									
		10. Weed cover	Score	10									
_	s	as for start the second		40								-	
	ib ute:	11. size of patch (fragmented)	Score	10									
,	t Attr	12. Context (fragmented)	Score	5									
-	ontex	14. Distance from water (intact)	Score	*									
	ite C	15. Ecological corridors	Score	6									
		Surray 2		Ŭ									
	ex	16. Threats to species	Score	5									
	at Ind	17. Quality and availability of food and foraging habitat	Score	9									
3	Habite	18, Quality and availability of shelter	Score	9									
	cies I	19. Species mobility capacity	Score	10									
	Spe	20. Role of site location to overall population in the State.	Score	4									

Habitat Quality Score (measured)	118.50									
Habitat Quality Score (max)	156.00									
Assessment Unit Area (ha)	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Assessment Unit Habitat Quality Score	7.60									
Size weighting	1.00									
Weighted Assessment Unit Habitat Quality Score	7.60									
FINAL TOTAL HABITAT QUALITY SCORE	7.60									
Administrative Information										
Name of Assessment Officer						Da	ite			
	on/Company Name									
Organisation/Company Name		Project Name								
Organisation/Company Name Project Name										
Organisation/Company Name Project Name Phone Number						Em	ail			
Organistich (Company Name Project Name Phone Number						Err	ail			
Organisation(Company Name Project Name Phone Number						Em	ail	[

Habitat Quality Site Assessment Template.....Cat X 12.8.24

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.

An Offset Site Is this Assessment for: An Impact Site ~ an Advanced Offset Site Habitat Quality Ass

Part C - Site Data						
Property	Peak Crossing		Date	07/05/19		
Assessment Unit:	Assessment Unit Area (ha)	RE		Bioregion Number		
1	28.63	12.8.24		Southeast Queensland		
Landscape Photo- Please attach or inser	t north, south, east and west photos in the spaces provided	from row 231-355 below a	and include details such a	s Time and Mapping Coordinates in the following row.		

it So

Datum	Om Mark	Zone	Easting	Northing	
WGS 84	OITIMARK				
GDA 94	E0m Mark	Zone	Easting	Northing	
	Som Wark				
Plot bearing			Recorders		

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

Additional Transects: TA (Pink) DH+HS 07/05/19 - Recent Fire, site approximately 50m NE of dam, transect 300 degrees NW direction

Part D - 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 crebra	Common Name	Narrow-leaved Ironbark			
Scientific Name	Eucalyptus moluccana	Common Name	Gum-topped Box			
Scientific Name	Eucalyptus carnea	Common Name	Broad-leaved Mahogany			
Scientific Name	Corymbia trachyphloia	Common Name	Brown Bloodwood			
Scientific Name	Acacia disparrima	Common Name	Hickory Wattle			
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark			
Scientific Name	Corymbia citriodora	Common Name				
Scientific Name	Lophostemon suaveolens	Common Name				
Scientific Name	Lophostemon confertus	Common Name				
Scientific Name	Eucalyptus tereticornis	Common Name				
Scientific Name	Eucalyptus crebra	Common Name				
Scientific Name	Alphitonia excelsa	Common Name				
Scientific Name	Allocasuarina torulosa	Common Name				
Scientific Name	Corymbia intermedia	Common Name				
Scientific Name	Eucalyptus moluccana	Common Name				
Coloural Standard		Common Norma				

Planth and a shake soor						
an up species numess.						
Total number of species		5				
Scientific Name	Acacia fimbriata	Common Name	Brisbane Wattle			
Scientific Name	Alphitonia excelsa	Common Name	Soap Tree			
Scientific Name	Melia azedarach	Common Name	White Cedar			
Scientific Name	Jacksonia scoparia	Common Name	Dogwood			
Scientific Name	Acacia salicina	Common Name	Sally Wattle			
Scientific Name		Common Name	Hop Bush			
Scientific Name	Acacia fimbriata	Common Name				
Scientific Name		Common Name	Slender Wattle			
Scientific Name		Common Name				
Scientific Name		Common Name				

Grass species richness:					
Total number of species		7			
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass		
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass		
Scientific Name	Entolasia stricta	Common Name	Wiry Panic		
Scientific Name	Imperata cylindrica	Common Name	Blady Grass		
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass		
Scientific Name	Aristida calycina	Common Name	Dark Aristida		
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass		
Scientific Name		Common Name	Blady Grass		
Scientific Name		Common Name	Barbed-wire Grass		
Scientific Name		Common Name	Dark Aristida		
Scientific Name		Common Name	Slender Rats Tail		
Coloural Standard		Common Norma	K		

Forbs and others (non grass ground) species richness:					
Total number of species		4			
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush		
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily		
Scientific Name	Cheilanthes distans	Common Name	Bristle Cloak Fern		
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla		
Scientific Name		Common Name	Blue Flax Lily		
Scientific Name		Common Name	Hairy Glycine		
Scientific Name		Common Name	Star Goodenia		
Scientific Name		Common Name	Native Cobblers Pegs		
Scientific Name	Lomandra longifolia	Common Name			
Scientific Name	Lomandra multiflora	Common Name			
Scientific Name	Sida cordifolia	Common Name			
Colontific Name		Common Nama	Dhullanthas		

Part E - Non-Native Plant Cover: (*list species below)	
Total concentrate an environmental la seta	

Total percentage cover within plot	5.00%			
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana	
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine	
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana	
Scientific Name	Lantana camara	Common Name	Lantana	
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine	
Scientific Name		Common Name		

Scientific Name	ļ			Common Name		
Scientific Name	<u> </u>			Common Name		
Scientific Name	ļ			Common Name		
Scientific Name	I			Common Name		
Conner Woods Debris (#list locathe of individua	() (
Total Length of Course Woody Debris (Meters):	logs in meters)			572.00		
1		1.50		26		3.60
2		2.10		27		2.00
3		9.30		28		2.00
4		3.60		29		5.80
5		1.20		30		4.80
6		2.40		31		0.50
7		8.10		32		1.20
8		1.10		33		0.60
9		2.70		34		1.40
10		9.30		35		5.50
11		5.10		36		2.10
12		5.00		37		
13		5.50		38		
14		0.70		39		
15		6.10		40		
16		5.50		41		
17		1.20		42		
18		2.80		43		
19		1.10		44		
20	1.60			45		
21	1.40			46		
22		0.50		47		
23		1.30		48		
24		4.10		49		
25		1.70		50		
C. Notice according according to the state of the state o			:da a			
G - Native perennial grass cover, organic itter. (pr	Ouadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	20.00%	2.50%	7.50%	0.00%	15.00%	9.00%
		,u				
0	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	45.00%	47.50%	50.00%	52.50%	80.00%	55.00%
			•			
irt H- Number of large trees , tree canopy height, rec	ruitment of woody perennial	species:		Non Eucolumt Lorgo		
Eucalynt Large tree DBH benchmark used :	1	420		tree DBH benchmark		200
	1			used:		200
				Number of Jarge non		
Number of large eucalypt trees:	1	5		eucalypt trees:		1
1.0						
i Number Large Trees:				0		
lian Tree Canopy Height Measurements	Canopy:	24.00	Sub-canopy:	11.00	Emergent:	
Number of cools-111111					53	
Number of ecologically domina	int layer species regenerating:				53	
I - Tree canopy cover. Shrub canopy cover						
canopy cover %	Canopy:	55.60%	Sub-canopy:	32 40%	Emergent:	
	Canopy.	33.00%	ous canopy.	13.10%		
Sh canony cover %				A.J. 10/0		

Part J - Site Context Score							
ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors		
DESCRIPTION	5 - >200ha	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)		
SCORE	10	5	4		6		

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 Hab	itat 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	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
			Score	5	9	9	10	5	
2		GHFF		Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
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	5.00	9.00	9.00	10.00	5.00
				Maximul Score	5.00	5.00	5.00	10.00	5.00

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 Offset Site an Advanced Offset Site An Impact Site ~

Habitat Quality Assessment Unit Score Sheet						
Part C - Site Data						
Property Peak Crossing Date				Date	07/05/19	
Assessment Unit:	Assessment Un	it Area (ha)	RE	Bioregion Number		
2	11.4	9	12.9-10.2	Southeast Queensland		
Landscape Photo- Please attach or inser	t north, south, east and west pl	notos in the spaces provided	from row 231-355 below a	and include details such a	s Time and Mapping Coord	dinates in the following row.
Datum	Om Mark	Zon	e	Eas	sting	Northing
WGS 84	Uni Wark					

NGS 84		0m Mark		5	
		50m Mark	Zone	Easting	Northing
	Plot bearing			Recorders	
-					

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

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

Tree species richness:							
Total number of species		4					
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum				
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum				
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark				
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					

Shrub species richness:					
Total number of species		7			
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree		
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Black Wattle		
Scientific Name	Acacia salicina	Common Name	Sally Wattle		
Scientific Name	Ficus coronata	Common Name	Sandpaper Fig		
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle		
Scientific Name	Breynia oblongifolia	Common Name	Coffee Bush		
Scientific Name	Brachychiton rupestris	Common Name	Narrow-leaved Bottletree		
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			

Grass species richness:				
Total number of species		4		
Scientific Name	Herteropogon contortus	Common Name	Black Spear Grass	
Scientific Name	Imperata cylindrica	Common Name	Blady Grass	
Scientific Name	Entolasia stricta	Common Name	Wiry Panic	
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		3			
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily		
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush		
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush		
Scientific Name		Common Name			
Scientific Name		Common Name			
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	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine
Scientific Name	Dichondra repens	Common Name	Kidney Weed
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):	236.50				
1	3.30	26			
2	5.80	27			
3	3.10	28			
4	3.00	29			
5	8.45	30			
6		31			
7		32			

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%	20.00%	20.00%	10.00%	30.00%	19.00%
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	70.00%	80.00%	70.00%	80.00%	60.00%	72.00%
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:	ie rk 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:	22.00	Sub-canopy:	11.00	Emergent:	
Number of ecologically dominant layer species regenerating:			2			
Part I - Tree canopy cover, Shrub canopy cover						
Tree canopy cover %	Canopy:	78.00%	Sub-canopy:	22.50%	Emergent:	

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

37.20%

art J - Site Context Score					
ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
00005		-			

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

Shrub canopy cover %

	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	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
			Score		5	9	9	10	5
2		GHFF		Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
		Score	5	9	9	10	5		
2				Description					
, J				Score					
۵				Description					
-				Score					
5				Description					
-				Score					
6				Description					
-				Score					
7				Description					
-				Score					
8				Description					
-				Score					
9				Description					
				Score					
10				Description					
				Score					
				Maximum Score	5.00	9.00	9.00	10.00	5.00

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 Offset Site An Impact Site ~ an Advanced Offset Site Habitat Quality Ass

Part C - Site Data						
Property	Peak Crossing		Date	07/05/19		
Assessment Unit:	Assessment Unit Area (ha)	RE		Bioregion Number		
3	11.18	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.						

it Sc

WGS 84 GDA 94 50m Mark Zone Easting Northing Cone Cone Cone Cone Cone Cone Cone Cone	Datum	Om Mark	Zone	Easting	Northing
GDA 94 S0m Mark Zone Easting Northing	WGS 84	OTTIVIAR			
	GDA 94	50m Mark	Zone	Easting	Northing
Plot bearing Recorders	Plot bearing			Recorders	

Site description and Location (including details of discrete polygons within the assessment unit) TB DH+HS 07/05/19 - Transect on lower steep slope with greater density of Brush Box. Recent fire. Some exposed rocks (Sparse at start of transect)

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

Total number of species		7			
Scientific Name	Corymbia citriodora	Common Name			
Scientific Name		Common Name	Bat Wing Coral Tree		
Scientific Name	Eucalyptus moluccana	Common Name			
Scientific Name	Lophostemon confertus	Common Name			
Scientific Name	Angophora subvelutina	Common Name			
Scientific Name	Allocasuarina torulosa	Common Name			
Scientific Name	Corymbia intermedia	Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			

Shrub species richness:				
Total number of species		5		
Scientific Name		Common Name	Fringing Wattle	
Scientific Name		Common Name	Sandpaper Fig	
Scientific Name	Acacia leiocalyx	Common Name		
Scientific Name		Common Name	Hop Bush	
Scientific Name		Common Name	Slender Wattle	
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		Common Name	Blady Grass
Scientific Name		Common Name	Barbed Wire Grass
Scientific Name		Common Name	Dark Aristida
Scientific Name		Common Name	Black Speargrass
Scientific Name		Common Name	Brown's Lovegrass
Scientific Name		Common Name	Scented Top Grass
Scientific Name		Common Name	Kangaroo Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:												
Total number of species		19										
Scientific Name		Common Name	Phyllanthes									
Scientific Name		Common Name	Native Sarsparilla									
Scientific Name	Lomandra multiflora	Common Name										
Scientific Name		Common Name	Wombat Berry									
Scientific Name		Common Name	Whalenbergia									
Scientific Name		Common Name	White Root									
Scientific Name		Common Name	Hairy Glycine									
Scientific Name		Common Name	Wild Cow Pea									
Scientific Name		Common Name	Small Glycine									
Scientific Name		Common Name	Brislte Cloak Fern									
Scientific Name		Common Name	Creeping Oxalis									
Scientific Name	Dichondra repens	Common Name	Kidney Weed									
Scientific Name		Common Name	Maiden Hair Fern									
Scientific Name		Common Name	Yellow Jute									
Scientific Name	Smilax australis	Common Name										
Scientific Name		Common Name	Grape Vine									
Scientific Name		Common Name	Purple Pea									
Scientific Name	Cyperus gracilis	Common Name										
Scientific Name		Common Name	Wild Raspberry									

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

Total percentage cover within plot	12.00%	
Scientific Name	Common Name	Green Cestrum
Scientific Name	Common Name	Lantana
Scientific Name	Common Name	Creeping Lantana
Scientific Name	Common Name	Corky Passion Vine
Scientific Name	Common Name	Fish Bone Fern
Scientific Name	Common Name	Balloon Cotton Bush
Scientific Name	Common Name	
Scientific Name	Common Name	
Scientific Name	Common Name	

Scientific Name				Common Name		
Part F - Coarse Woody Debris: (*list lengths of individua	al logs in meters)					
Total Length of Course Woody Debris (Meters):				743.00		
1		6.50		26		
2		8.50		27		
3		2.10		28		
4		2.40		29		
5		2.50		30		
6		7.50		31		
7		2.90		32		
8		3.60		33		
9		6.50		34		
10		5.80		35		
11		0.90		36		
12		2.10		37		
13		1.40		38		
14		2.70		39		
15		5.00		40		
16		1.20		41		
17		0.80		42		
18		7.10		43		
19		4.80		44		
20				45		
21				46		
22				47		
23				48		
24				49		
25				50		
art G - Native perennial grass cover, organic litter: (*p	rovide percentage cover within	n each quadrat, and provid	le average cover)			
Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0.00%	5.00%	5.00%	20.00%	0.00%	6.00%
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
organic Litter	70.00%	10.00%	65.00%	60.00%	35.00%	48.00%
Part H- Number of large trees , tree canopy height, re	cruitment of woody perennial	species:				
				Non-Eucalypt Large		
Eucalypt Large tree DBH benchmark used :		390		tree DBH benchmark		200
				Number of large non		_
Number of large eucalypt trees:		4		eucalypt trees:		3
otal Number Large Trees:				7		
fedian Tree Canopy Height Measurements	Canopy:	24.00	Sub-canopy:	12.00	Emergent:	
Number of ecologically domin	ant layer species regenerating:				71	
art i - mee canopy cover, snrub canopy cover	6	40.40%	Cub and and	26.40%	Farmer	
the canopy cover %	Canopy:	40.40%	Sub-canopy:	30.40%	Emergent:	
sin up canopy cover %				11.90%		

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	4 - >75% or >500ha connection	3 - >30-75% remnant		<u>3 - Within (whole or part)</u>
SCORE	10	5	4		6

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES DEPLEASE 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	Phascolarctos cinereus	koala	SL	Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival					
				Score	5	9	9	10	5					
2		GHFF		Description	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival					
				Score	5	9	9	10	5					
2				Description										
3				Score										
Δ				Description										
•				Score										
5				Description										
-				Score										
6				Description										
				Score										
7				Description										
				Score										
8				Description										
				Score										
9				Description										
				Score										
10				Description										
				Score										
				Maximum Score	5.00	9.00	9.00	10.00	5.00					

Habitat Quality Final Summary

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

Note: This document/tool may be used in relation to undertaking a habitat quality analysis of an impact site/offset site and/or advanced offset site and is designed to be attached to Environmental Offsets Delivery Form 5 - Habitat Quality Details as directed. Further information on habitat quality can be found in the Guide to determining terrestrial habitat quality, which is available on the Queensland Governments website that can be accessed here

Case Re Project	ference Name	Peak Crossing			110010	at quality							
Total	Area	51.3											
		Habitat Quality Attributes	Requirement	1	1 2	2	4	Assessment	Unit Number	1		1 •	10
PA	RT	Assessment Unit Area (ha)	Area (ha)	28.63	11.49	11.18	0	0	0	0	0	0	0
		Regional Ecosystems	RE	12.8.24 Southeast	12.9-10.2 Southeast	12.9-10.7 Southeast							
		Bioregion	Bioregion	Queensland	Queensland	Queensland							
		1. Recruitment of woody perennial species	Score	5	3	5							
		2. Native plant species richness											
		- Trees	Score	5	3	5							
		- Shrubs	Score	3	5	5							
		- Grasses	Score	3	3	3							
		- Forbs	Score	2.5	2.5	3							
		3. Tree canopy height											
		- Canopy layer	Score	5	5	5							
	~	- Sub-Canopy Layer	Score	5	5	5							
	bute	- Emergent Layer	Score										
	n Attri	Average Score	Average Score	5	5	5							
1	ditior	4. Tree canopy cover											
	Con	- Canopy layer	Score	5	5	5							
	Site	- Sub-Canopy Layer	Score	5	5	3							
		- Emergent Layer	Score										
		Average Score	Average Score	5	5	4							
		5. Shrub canopy cover	Score	5	3	3							
		6. Native perennial grass cover	Score	5	5	0							
		7. Organic litter	Score	5	5	3							
		8. Large trees	Score	5	5	5							
		9. Coarse woody debris	Score	5	2	2							
		10. Weed cover	Score	5	5	5							
	fes	11. Size of patch (fragmented)	Score	10	10	10							
	tribut	12. Connectedness (fragmented)	Score	5	5	5							
2	xt Ati	13. Context (fragmented)	Score	4	4	4							
	Conte	14. Distance from water (intact)	Score										
	Site C	15. Ecological corridors	Score	6	6	6							
	ex	16. Threats to species	Score	5	5	5							
	t Ind	17. Quality and availability of food and foraging habitat	Score	9	9	9							
3	labita	18, Quality and availability of shelter	Score	9	9	9							
	ties H	19. Species mobility capacity	Score	10	10	10							
	Spec	20. Role of site location to overall population in the State.	Score	5	5	5							

Habitat Quality Score (measured)	121.50	114.50	111.00							
Habitat Quality Score (max)	156.00	156.00	156.00							
Assessment Unit Area (ha)	28.63	11.49	11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Assessment Unit Habitat Quality Score	7.79	7.34	7.12							
Size weighting	0.56	0.22	0.22							
Weighted Assessment Unit Habitat Quality Score	4.35	1.64	1.55							
FINAL TOTAL HABITAT QUALITY SCORE					7.	54				
Administrative Information										
Name of Assessment Officer						Da	ite			
Organisation/Company Name										
Project Name										
Phone Number						En	nail			

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Appendix C

Grey-headed Flying-fox Foraging Habitat Assessment Data



Assessment Unit - Regional Ecosystem		AU 1 - NON-REMNANT AU 2 - NON-REMNANT								INANT						
Site Reference Peaks Crossing	OUT OF	RE1	2.8.24			Average	Average	OUT OF	RE12	.9-10.2					Average	Average
	(X/10)	Raw Data	Score	Raw Data	Score	Raw	Score	(X/10)	Raw Data	Score		Raw Data	Score		Raw	Score
Vegetation Condition Species Richness Flower Score Timing of Biological Shortages Quality of Foraging Habitat Non-native Plant Cover	20 20 10 10 20 20 20		5 20 8 10 10 20			0		20 20 10 10 20 20 20		5 10 8 10 5 10						
Site Condition Score			73		0	ľ				48	0		0	0		
MAX Site Condition Score	x	х	100	х	100	х	100	x	х	100	100	х	100	100	х	100
Site Condition Score - out of 4	X	х	2.92	X	0.00	х	0.00	х	X	1.92	0.00	х	0.00	0.00	х	0.00
Size of patch Connectedness Context Ecological Corridors Role of site location to species overall population in the state Threats to the species	10 10 10 10 10 10		10 6 6 0 10					10 10 10 10 10		10 6 6 0 10						
Site Context Score			38		C	Ĭ				38	0		0	0		
MAX Site Context Score	x	X	60	X	60	x	56	x	x	60	60	x	60	60	X	56
Site Context Score - out of 3	x	x	1.90	x	0.00	x	0.00	x	x	1.90	0.00	x	0.00	0.00	x	0.00
GHFF Foraging Tree Density	40		20					40		32						
Species Stocking Rate Score			20		C					32	0		0	0		
MAX Species Stocking Rate Score	x	X	40	x	40			x	X	40	40	x	40	40		
Species Stocking Nate Stole * Out of S	^	0.00	1.50	^	0.00		1	^	0.00	2.40	0.00	^	0.00	0.00		
Tota			6.32		0.00					6.22	0.00		0.00	0.00		
MEAT	6.27															
MEAN	0															

Assessment Unit - Regional Ecosystem			A	J 1 - REMN	ANT		AU 2 - REMNANT AU 3 - REMNANT																
Site Reference Peaks Crossing	OUTO	F R	E12.8.24			Average	Average	OUT OF	RE12	.9-10.2					Average	Average	OUT OF	RE12.	.9-10.7			Average	Average
0	(X/10	Raw Da	ta Score	Raw Data	Score	Raw	Score	(X/10)	Raw Data	Score		Raw Data	Score		Raw	Score	(X/10)	Raw Data	Score	Raw Data	Score	Raw	Score
Vegetation Condition Species Richness Flower Score		20 20	2					20 20		20 10							20 20		20 10				
Timing of Biological Shortages Quality of Foraging Habitat Non-native Plant Cover		10 20 20	1) 1) 2)					10 10 20 20		10 5 20		1					10 10 20 20		10 5 10				
Site Condition Score MAX Site Condition Score Site Condition Score - out of 4	x x	x x	78 100 3.12	x x	0 100 0.00	x x	100 0.00	x x	x x	73 100 2.92	0 100 0.00	x x	0 100 0.00	0 100 0.00	x x	100 0.00	x x	x x	63 100 2.52	0 100 0.00	0 100 0.00	x x	100 0.00
Site of patch Connectedness Context Ecological Corridors Role of site location to species overall population in the state Threats to the species		10 10 10 10 10 10	1	5				10 10 10 10 10		10 6 6 0 10							10 10 10 10 10		10 6 6 0 10				
Site Context Score MAX Site Context Score Site Context Score - out of 3	x x	x x	3: 60 1.90	x x	60 0.00	x x	56 0.00	x x	x x	38 60 1.90	60 0.00	x x	0 60 0.00	60 0.00	x x	56 0.00	x x	x x	38 60 1.90	x x	0 60 0.00	x x	56 0.00
GHFF Foraging Tree Density	1	40	2			1		40		36		ĺ					40		40				
Species Stocking Rate Score MAX Species Stocking Rate Score Species Stocking Rate Score - out of 3	x x	x 0.00	40 1.50	x x	40 0.00	D		x x	x 0.00	36 40 2.70	40 0.00	x x	0 40 0.00	40 0.00			x x	х 0.00	40 40 3.00	x x	0 40 0.00		
То	tal		6.52	I	0.00	I				7.52	0.00	I	0.00	0.00	l				7.42	I	0.00		
ME	AN 7.1533 AN	33 0																					

Assessment Unit - Regional Ecosystem	AU 1 - NON-REMNANT										
Site Reference Burnett Creek	OUT OF	RE12.	9-10.2			Average	Average				
	(X/10)	Raw Data	Score	Raw Data	Score	Raw	Score				
Vegetation Condition	20		5								
Species Richness	20		10								
Flower Score	10		8								
Timing of Biological Shortages	10		10								
Quality of Foraging Habitat	20		5								
Non-native Plant Cover	20		20								
					i í						
Site Condition Score			58		0						
MAX Site Condition Score	x	Х	100	Х	100	Х	100				
Site Condition Score - out of 4	х	х	2.32	х	0.00	х	0.00				
					ļ						
Size of patch	10		10								
Connectedness	10		0								
Context	10		6								
Ecological Corridors	10		10								
Role of site location to species overall population in the state	10		0								
Threats to the species	10		10								
Site Context Score			36		0						
MAX Site Context Score	x	Х	60	Х	60	X	56				
Site Context Score - out of 3	х	х	1.80	х	0.00	Х	0.00				
					!						
GHFF Foraging Tree Density	40		40								
Species Stocking Rate Score			40		0						
MAX Species Stocking Rate Score	X	X	40	X	40						
Species Stocking Rate Score - out of 3	Х	0.00	3.00	Х	0.00						
Total	1		7.12		0.00						
	•					I					
MEAN	7.12										
MEAN	0										

Assessment Unit - Regional Ecosystem	AU 1 - REMNANT										
Site Reference Burnett Creek	OUT OF	RE12.	9-10.2			Average	Average				
	(X/10)	Raw Data	Score	Raw Data	Score	Raw	Score				
Vegetation Condition	20		20								
Species Richness	20		10								
Flower Score	10		8								
Timing of Biological Shortages	10		10								
Quality of Foraging Habitat	20		10								
Non-native Plant Cover	20		20								
Site Condition Score			78		0						
MAX Site Condition Score	x	Х	100	X	100	Х	100				
Site Condition Score - out of 4	Х	Х	3.12	Х	0.00	Х	0.00				
	10		10			l					
Size of patch	10		10								
Context	10		0								
Context Ecological Carridara	10		10								
Polo of site location to species overall population in the state	10		10								
Threats to the species	10		10								
initials to the species	10		10								
Site Context Score			36		0	ľ					
MAX Site Context Score	x	Х	60	Х	60	X	56				
Site Context Score - out of 3	х	х	1.80	х	0.00	х	0.00				
GHFF Foraging Tree Density	40	I	32	I	!	I	!				
Species Stocking Rate Score			32		0						
MAX Species Stocking Rate Score	x	X	40	X	40						
Species Stocking Rate Score - out of 3	х	0.00	2.40	Х	0.00						
Tota	I		7.32		0.00						
MEAN	7.32										
MEAN	0										

Appendix D Weed Transect Data



Peak Crossing - Ground Layer Transect (100M) 1 15/03/21				
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.70	0.90	Lomandra multiflora	Many Flowered Mat Rush	0.20
1.20	1.70	Lomandra multiflora	Many Flowered Mat Rush	0.50
1.90	2.20	Lomandra multiflora	Many Flowered Mat Rush	0.30
3.00	3.20	Panicum decompositum	Native Millet	0.20
3.50	3.60	Cyprus gracilis	Slender Flat Sedge	0.10
5.80	6.00	Lomandra multiflora	Many Flowered Mat Rush	0.20
6.20	6.30	Phyllanthus virgatus	Phyllanthus	0.10
7.40	7.50	Cymbopogon refractus	Barbed Wire Grass	0.10
7.80	8.10	Cymbopogon refractus	Barbed Wire Grass	0.30
9.40	9.70	Lomandra multiflora	Many Flowered Mat Rush	0.30
10.60	10.90	Dianella caerulea	Blue Flax-lily	0.30
12.80	12.90	Cymbopogon refractus	Barbed Wire Grass	0.10
14.40	14.70	Lomandra multiflora	Many Flowered Mat Rush	0.30
15.40	15.80	Aristida vaaans	Threeawn Speargrass	0.40
15.80	16.70	Desmodium intortum	Greenleaf Desmodium	0.90
18.20	18.50	Aristida vaaans	Threeawn Speargrass	0.30
18.90	19.20	Cymbopogon refractus	Barbed Wire Grass	0.30
19.60	19.80	Aristida vagans	Threeawn Speargrass	0.20
21.00	22.00	Cymbopogon refractus	Barbed Wire Grass	1.00
22.10	22.50	Aristida vagans	Threeawn Speargrass	0.40
22.10	22.50	Aristida vagans	Threeawn Speargrass	0.40
22.00	23.00	Desmodium intortum	Greenleaf Desmodium	0.20
25.10	25.50	Aristida vagans		0.00
20.20	20.50	Aristida vagans		1.00
27.10	28.10	Diapella caerulea	Blue Elay-liby	0.10
28.10	28.20	Hardonboraia violacoa	Nativo Sasparilla	0.10
28.20	28.50	Imporata cylindrica	Right Grass	0.10
20.30	20.90	Cymbonogon refractus	Barbad Wire Grass	0.40
32.30	33.00	Cymoopogon renactus		0.70
35.70	40.00	Dianella caerulea		4.30
40.00	40.90	Anstida vagans		0.90
41.10	41.70	Dianella caerulea	Dive Flax-Illy	0.80
42.50	43.20	Cymbopogon refractus	Barbed Wire Grass	0.70
43.30	43.90	Lomanara multinora		0.80
43.90	44.10			0.20
44.10	44.20	Dianella caerulea	Blue Flax-Illy	0.10
44.50	45.30	Aristiaa vagans	Inreeawn Speargrass	0.80
45.90	46.40	Heteropogon contortus	Black Speargrass	0.50
48.60	48.90	Lantana montevidensis		0.30
51.70	51.90	Imperata cylinarica	Blady Grass	0.20
53.40	53.50	Panicum decompositum	Native Millet	0.10
54.10	54.30	Desmodium infortum	Greenleaf Desmodium	0.20
56.90	57.40	Lomanara multiflora	Many Flowered Mat Rush	0.50
59.50	59.90	Desmodium intortum	Greenleat Desmodium	0.40
60.50	60.70	Panicum decompositum	Native Millet	0.20
63.00	63.80	Aristida vagans	Threeawn Speargrass	0.80
64.20	65.30	Aristida vagans	Inreeawn Speargrass	1.10
65.50	65.60	Cheilanthes distans	Bristly Cloak Fern	0.10
67.80	67.90	Desmodium intortum	Greenleat Desmodium	0.10
69.10	69.50	Lomandra multiflora	Many Flowered Mat Rush	0.40
70.50	70.80	Lomandra multiflora	Many Flowered Mat Rush	0.30
71.20	72.30	Hardenbergia violacea	Native Sasparilla	1.10
73.80	75.90	Aristida vagans	Ihreeawn Speargrass	2.10
80.90	81.10	Heteropogon contortus	Black Speargrass	0.20
81.40	81.80	Lomandra multiflora	Many Flowered Mat Rush	0.40
81.80	83.40	Panicum decompositum	Native Millet	1.60
84.10	84.90	Heteropogon contortus	Black Speargrass	0.80
87.00	87.20	Panicum decompositum	Native Millet	0.20
88.60	89.00	Aristida vagans	Threeawn Speargrass	0.40
94.60	94.90	Aristida vagans	Threeawn Speargrass	0.30
96.00	96.50	Aristida vagans	Threeawn Speargrass	0.50
98.00	98.30	Eustrephus latifolius	Wombat Berry	0.30

Native/bare cover	99. 5%
Exotic/weed cover	0.5%
Weeds of National Significance cover	0%

50m mark









West



		Peak Crossing - Ground	Layer Transect (100M) 2	15/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.70	1.20	Aristida vagans	Threeawn Speargrass	0.50
1.20	1.70	Panicum decompositum	Native Millet	0.50
1.80	2.30	Eragrostis brownii	Brown's Love Grass	0.50
2.30	2.90	Heteropogon contortus	Black Speargrass	0.60
3.60	3.70	Cyperus polystachyos	Bunchy Sedge	0.10
4.40	4.60	Chrysocephalum apiculatum	Yellow Buttons	0.20
4.90	5.60	Heteropogon contortus	Black Speargrass	0.70
5.90	6.20	Aristida vagans	Threeawn Speargrass	0.30
6.40	6.80	Lomandra multiflora	Many Flowered Mat Rush	0.40
7.50	7.80	Desmodium intortum	Greenleaf Desmodium	0.30
8.70	9.50	Desmodium intortum	Greenleaf Desmodium	0.80
9.80	11.20	Aristida vagans	Threeawn Speargrass	1.40
11.60	12.80	Lomandra multiflora	Many Flowered Mat Rush	1.20
13.10	13.30	Cyperus gracilis	Slender Flat Sedge	0.20
13.40	14.10	Lomandra multiflora	Many Flowered Mat Rush	0.70
14.20	14.40	Panicum decompositum	Native Millet	0.20
14.40	14.70	Lomandra multiflora	Many Flowered Mat Rush	0.30
15.40	15.80	Panicum decompositum	Native Millet	0.40
15.80	16.20	Heteropogon contortus	Black Speargrass	0.40
19.00	19.20	Lomandra multiflora	Many Flowered Mat Rush	0.20
19.20	19.40	Panicum decompositum	Native Millet	0.20
19.60	20.20	Panicum decompositum	Native Millet	0.60
20.20	20.80	Imperata cylindrica	Blady Grass	0.60
21.40	22.30	Lomandra multiflora	Many Flowered Mat Rush	0.90
22.40	22.80	Heteropogon contortus	Black Speargrass	0.40
22.90	23.40	Lomandra multiflora	Many Flowered Mat Rush	0.50
23.80	23.90	Cheilanthes distans	Bristly Cloak Fern	0.10
24.20	24.60	Desmodium intortum	Greenleaf Desmodium	0.40
26.10	27.20	Heteropogon contortus	Black Speargrass	1.10
27.20	28.60	Aristida vagans	Threeawn Speargrass	1.40
28.70	29.00	Lomandra multiflora	Many Flowered Mat Rush	0.30
29.10	30.40	Aristida vagans	Threeawn Speargrass	1.30
31.70	33.80	Lomandra multiflora	Many Flowered Mat Rush	2.10
34.60	35.00	Aristida vagans	Threeawn Speargrass	0.40
35.60	35.80	Glycine tabacina	Glycine	0.20
36.10	37.20	Lomandra multiflora	Many Flowered Mat Rush	1.10
40.20	41.20	Lomandra multiflora	Many Flowered Mat Rush	1.00
41.20	41.50	Panicum decompositum	Native Millet	0.30
42.20	42.60	Cheilanthes distans	Bristly Cloak Fern	0.40
43.10	43.40	Lomandra multiflora	Many Flowered Mat Rush	0.30
43.90	44.10	Eragrostis brownii	Brown's Love Grass	0.20
44.20	44.80	Lomandra multiflora	Many Flowered Mat Rush	0.60
45.90	46.40	Lomandra multiflora	Many Flowered Mat Rush	0.50
47.10	47.50	Lomandra multiflora	Many Flowered Mat Rush	0.40
49.00	49.60	Eragrostis brownii	Brown's Love Grass	0.60
49.60	50.10	Lomandra multiflora	Many Flowered Mat Rush	0.50
50.50	51.20	Eragrostis brownii	Brown's Love Grass	0.70
51.20	53.50	Aristida vagans	Threeawn Speargrass	2.30
53.70	54.70	Lantana montevidensis	Creeping Lantana	1.00
54.70	55.50	Cymbopogon refractus	Barbed Wire Grass	0.80
55.60	56.50	Panicum decompositum	Native Millet	0.90
58.10	58.80	Heteropogon contortus	Black Speargrass	0.70
58.80	59.40	Lomandra multiflora	Many Flowered Mat Rush	0.60
59.40	59.90	Cymbopogon refractus	Barbed Wire Grass	0.50
59.90	60.50	Lomandra multiflora	Many Flowered Mat Rush	0.60
62.80	64.20	Panicum decompositum		1.40
64.20	65.70	Cymbopogon retractus		1.50
65.80	66.80	Lantana montevidensis	Creeping Lantana	1.00
68.00	68.50		Brown's Love Grass	0.50
69.20	69.50	Lomanara multiflora	IVIANY Flowered Mat Rush	0.30
/5./0	/6.20	Ellonurus citreus	Lemon Scented Grass	0.50
81.00	83.00	Heteropogon contortus	Black Speargrass	2.00
83.00	83.90		Barbed Wire Grass	0.90
83.90	87.80	neteropogon contortus		3.90
88.00	89.70	Panicum aecompositum		1./0
90.00	91.40	rieteropogon contortus	Black Speargrass	1.40
94.00	97.70	Heteropogon contortus	Black Speargrass	3.70
98.70	99.40	Aristiaa vagans	inreeawn Speargrass	0.70

Native/bare cover98%Exotic/weed cover2%Weeds of National Significance cover0%

50m mark



South







		Peak Crossing - Grou	nd Layer Transect (100M) 3	15/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	2.20	Cymbopogon refractus	Barbed Wire Grass	2.20
2.20	2.70	Dianella caerulea	Blue Flax-lily	0.50
2.70	3.30	Cymbopogon refractus	Barbed Wire Grass	0.60
3.30	4.30	Lantana montevidensis	Creeping Lantana	1.00
4.30	5.10	Cymbopogon refractus	Barbed Wire Grass	0.80
5.10	6.00	Bidens pilosa	Cobbler's Pegs	0.90
6.80	7.40	Sporobolus africanus	Parramatta Grass	0.60
7.40	7.90	Bidens pilosa	Cobbler's Pegs	0.50
7.90	8.80	Passiflora suberosa	Corky Passion Vine	0.90
8.80	9.60	Physalis angulata	Wild Gooseberry	0.80
9.60	10.90	Bidens pilosa	Cobbler's Pegs	1.30
10.90	12.10	Heteropogon contortus	Black Speargrass	1.20
12.10	12.80	Bidens pilosa	Cobbler's Pegs	0.70
13.30	14.50	Heteropogon contortus	Black Speargrass	1.20
15.10	17.10	Bidens pilosa	Cobbler's Pegs	2.00
17.10	19.60	Heteropogon contortus	Black Speargrass	2.50
21.00	22.60	Imperata cylindrica	Blady Grass	1.60
22.60	34.70	Heteropogon contortus	Black Speargrass	12.10
34.70	35.90	Lantana montevidensis	Creeping Lantana	1.20
35.90	36.50	Solanum nigrum	Blackberry Nightshade	0.60
36.50	40.20	Imperata cylindrica	Blady Grass	3.70
40.20	40.90	Dianella caerulea	Blue Flax-lily	0.70
40.90	42.70	Bidens pilosa	Cobbler's Pegs	1.80
42.70	47.90	Physalis angulata	Wild Gooseberry	5.20
47.90	48.90	Lantana montevidensis	Creeping Lantana	1.00
48.90	55.30	Heteropogon contortus	Black Speargrass	6.40
55.70	56.40	Imperata cylindrica	Blady Grass	0.70
58.60	61.50	Imperata cylindrica	Blady Grass	2.90
61.50	74.70	Bidens pilosa	Cobbler's Pegs	13.20
74.70	76.20	Physalis angulata	Wild Gooseberry	1.50
76.80	78.30	Imperata cylindrica	Blady Grass	1.50
78.30	98.70	Heteropogon contortus	Black Speargrass	20.40

Native/bare cover	66.8 %
Exotic/weed cover	33.2%
Weeds of National Significance cover	0%

50m mark North











		Peak Crossing - Gro	und Layer Transect (100M) 4	16/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	1.30	Lomandra multiflora	Many Flowered Mat Rush	1.30
1.80	2.30	Panicum decompositum	Native Millet	0.50
2.80	3.20	Lomandra multiflora	Many Flowered Mat Rush	0.40
3.40	5.00	Heteropogon contortus	Black Speargrass	1.60
5.60	5.90	Heteropogon contortus	Black Speargrass	0.30
5.90	6.30	Lomandra multiflora	Many Flowered Mat Rush	0.40
7.00	8.50	Lomandra multiflora	Many Flowered Mat Rush	1.50
8.60	8.80	Aristida vagans	Threeawn Speargrass	0.20
9.10	10.10	Lomandra multiflora	Many Flowered Mat Rush	1.00
10.50	11.20	Entolasia stricta	Wiry Panic	0.70
12.00	12.50	Lomandra multiflora	Many Flowered Mat Rush	0.50
13.10	13.80	Lomandra multiflora	Many Flowered Mat Rush	0.70
15.00	16.80	Lomandra multiflora	Many Flowered Mat Rush	1.80
17.20	17.40	Desmodium intortum	Greenleaf Desmodium	0.20
17.80	18.50	Lomandra multiflora	Many Flowered Mat Rush	0.70
19.10	19.70	Lomandra multiflora	Many Flowered Mat Rush	0.60
19.90	20.10	Medicago polymorpha	Burr Medic	0.20
21.20	21.70	Eragrostis tenuifolia	Elastic Grass	0.50
21.70	22.20	Dichanthium sericeum	Queensland Bluegrass	0.50
23.10	23.60	Lomandra multiflora	Many Flowered Mat Rush	0.50
24.00	25.00	Themeda triandra	Kangaroo Grass	1.00
25.10	25.60	Sida acuta	Common Wiregrass	0.50
26.50	27.20	Lomandra multiflora	Many Flowered Mat Rush	0.70
27.20	27.80	Eustrephus latifolius	Wombat Berry	0.60
29.30	30.10	Aristida vagans	Threeawn Speargrass	0.80
30.40	30.70	Aristida vagans	Threeawn Speargrass	0.30
34.50	34.70	Desmodium intortum	Greenleaf Desmodium	0.20
34.70	35.80	Lomandra multiflora	Many Flowered Mat Rush	1.10
35.80	36.40	Lantana montevidensis	Creeping Lantana	0.60
37.80	38.60	Eremophila debilis	Winter Apple	0.80
39.10	39.80	Lomandra multiflora	Many Flowered Mat Rush	0.70
39.80	40.00	Eremophila debilis	Winter Apple	0.20
40.00	40.50	Megathyrsus maximus	Guinea Grass	0.50
41.50	42.90	Megathyrsus maximus	Guinea Grass	1.40
45.10	45.70	Solanum nigrum	Blackberry Nightshade	0.60
47.10	48.70	Einandia hastata	Berry Saltbush	1.60
48.70	49.50	Panicum decompositum	Native Millet	0.80
49.50	50.00	Lomandra multiflora	Many Flowered Mat Rush	0.50
51.70	52.10	Panicum decompositum	Native Millet	0.40
52.70	53.20	Imperata cylindrica	Blady Grass	0.50
54.40	55.20	Themeda triandra	Kangaroo Grass	0.80
55.20	55.40	Lomandra multiflora	Many Flowered Mat Rush	0.20
55.40	56.00	Imperata cylindrica	Blady Grass	0.60
56.70	57.90	Lomandra multiflora	Many Flowered Mat Rush	1.20
58.40	59.00	Lomandra multiflora	Many Flowered Mat Rush	0.60
61.40	61.80	Desmodium intortum	Greenleaf Desmodium	0.40
61.80	62.40	I hemeda triandra	Kangaroo Grass	0.60
63.90	64.20	Themeda triandra	Kangaroo Grass	0.30
64.30	64.80	Melinis minutiflora	Molasses Grass	0.50
64.80	65.20	Dianella caerulea	Blue Flax-lily	0.40
66.00	66.80	Melinis minutiflora	Molasses Grass	0.80
67.00	68.60	Imperata cylíndrica	Blady Grass	1.60
68.60	71.90	Megathyrsus maximus	Guinea Grass	3.30
71.90	75.30	Heteropogon contortus	Black Speargrass	3.40
75.90	77.40	Heteropogon contortus	Black Speargrass	1.50
77.40	78.50	Panicum decompositum	Native Millet	1.10
81.40	83.30	Sorghum halepense	Johnson Grass	1.90
83.90	85.70	Sorghum halepense	Johnson Grass	1.80
85.70	87.10	i nemeda triandra	Kangaroo Grass	1.40
87.10	88.10	Sorgnum halepense	Johnson Grass	1.00
88.30	89.00	Lantana montevidensis	Creeping Lantana	0.70
89.20	93.30	Themeda triandra	Kangaroo Grass	4.10
93.30	93.90	Lantana montevidensis	Creeping Lantana	0.60
93.90	95.40	Themeda triandra	Kangaroo Grass	1.50
95.40	98.10	Lantana montevidensis	Creeping Lantana	2.70
98.10	98.60	Sida acuta	Common Wiregrass	0.50
98.60	99.50	I hemeda triandra	Kangaroo Grass	0.90
99.5	100	Lantana montevidensis	Creeping Lantana	0.50

Native/bare cover82.9%Exotic/weed cover17.1%Weeds of National Significance cover0%

50m mark









Peak Crossing - Ground Layer Transect (100M) 5			16/03/21	
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	2.50	Lantana montevidensis	Creeping Lantana	2.50
2.50	3.50	Heteropogon contortus	Black Speargrass	1.00
4.40	5.70	Lantana montevidensis	Creeping Lantana	1.30
5.70	6.40	Heteropogon contortus	Black Speargrass	0.70
6.40	11.30	Lantana montevidensis	Creeping Lantana	4.90
11.30	12.40	Heteropogon contortus	Black Speargrass	1.10
12.40	13.00	Lantana montevidensis	Creeping Lantana	0.60
13.00	13.70	Heteropogon contortus	Black Speargrass	0.70
13.70	14.40	Lantana montevidensis	Creeping Lantana	0.70
14.40	15.90	Heteropogon contortus	Black Speargrass	1.50
15.90	19.80	Lantana montevidensis	Creeping Lantana	3.90
19.80	22.40	Heteropogon contortus	Black Speargrass	2.60
22.40	22.90	Panicum decompositum	Native Millet	0.50
22.90	25.50	Heteropogon contortus	Black Speargrass	2.60
25.50	26.00	Lomandra multiflora	Many Flowered Mat Rush	0.50
26.00	26.50	Cymbopogon refractus	Barbed Wire Grass	0.50
26.50	27.20	Themeda triandra	Kangaroo Grass	0.70
27.20	29.80	Heteropogon contortus	Black Speargrass	2.60
29.80	30.40	Themeda triandra	Kangaroo Grass	0.60
30.40	32.10	Eragrostis brownii	Brown's Love Grass	1.70
32.10	34.60	Heteropogon contortus	Black Speargrass	2.50
34.60	37.90	Lantana montevidensis	Creeping Lantana	3.30
37.90	44.60	Heteropogon contortus	Black Speargrass	6.70
44.60	45.90	Desmodium intortum	Greenleaf Desmodium	1.30
45.90	46.20	Fimbristylis velata	Fringe Rush	0.30
46.20	47.00	Heteropogon contortus	Black Speargrass	0.80
47.00	48.90	Glycine tabacina	Glycine	1.90
48.90	55.70	Lantana montevidensis	Creeping Lantana	6.80
55.70	59.40	Heteropogon contortus	Black Speargrass	3.70
59.40	60.30	Lomandra multiflora	Many Flowered Mat Rush	0.90
60.30	62.20	Heteropogon contortus	Black Speargrass	1.90
64.10	67.40	Heteropogon contortus	Black Speargrass	3.30
67.40	68.50	Imperata cylindrica	Blady Grass	1.10
68.50	70.20	Melinis repens	Red Natal Grass	1.70
70.20	75.90	Imperata cylindrica	Blady Grass	5.70
75.90	84.30	Heteropogon contortus	Black Speargrass	8.40
84.30	100.00	Lantana montevidensis	Creeping Lantana	15.70

Native/bare cover Exotic/weed cover Weeds of National Significance cover 58.6% 41.4%

0%







East





		Peak Crossing - Groun	nd Layer Transect (100M) 6	16/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	7.30	Lantana montevidensis	Creeping Lantana	7.30
7.30	10.70	Heteropogon contortus	Black Speargrass	3.40
10.70	11.80	Chrysocephalum apiculatum	Yellow Buttons	1.10
11.80	15.20	Heteropogon contortus	Black Speargrass	3.40
15.20	19.50	Lantana camara	Lantana	4.30
19.50	20.80	Lomandra multiflora	Many Flowered Mat Rush	1.30
20.80	21.70	Megathyrsus maximus	Guinea Grass	0.90
21.70	22.60	Heteropogon contortus	Black Speargrass	0.90
22.60	23.50	Themeda triandra	Kangaroo Grass	0.90
23.50	25.90	Heteropogon contortus	Black Speargrass	2.40
26.70	28.30	Lomandra multiflora	Many Flowered Mat Rush	1.60
28.30	29.30	Lomandra multiflora	Many Flowered Mat Rush	1.00
30.00	31.10	Imperata cylindrica	Blady Grass	1.10
31.50	31.90	Lomandra multiflora	Many Flowered Mat Rush	0.40
31.90	32.20	Eragrostis brownii	Brown's Love Grass	0.30
33.80	35.60	Lomandra multiflora	Many Flowered Mat Rush	1.80
35.90	36.80	Lomandra multiflora	Many Flowered Mat Rush	0.90
37.00	37.60	Heteropogon contortus	Black Speargrass	0.60
38.40	40.10	Aristida vagans	Threeawn Speargrass	1.70
40.10	40.30	Heteropogon contortus	Black Speargrass	0.20
40.80	41.20	Lomandra multiflora	Many Flowered Mat Rush	0.40
41.30	43.60	Heteropogon contortus	Black Speargrass	2.30
43.80	45.70	Aristida vagans	Threeawn Speargrass	1.90
46.10	47.00	Lomandra multiflora	Many Flowered Mat Rush	0.90
48.20	49.80	Aristida vagans	Threeawn Speargrass	1.60
49.80	50.10	Desmodium intortum	Greenleaf Desmodium	0.30
51.10	52.30	Lomandra multiflora	Many Flowered Mat Rush	1.20
52.50	53.40	Lomandra multiflora	Many Flowered Mat Rush	0.90
53.40	55.30	Heteropogon contortus	Black Speargrass	1.90
56.00	56.60	Aristida vagans	Threeawn Speargrass	0.60
56.60	57.70	Heteropogon contortus	Black Speargrass	1.10
57.70	58.40	Aristida vagans	Threeawn Speargrass	0.70
58.80	63.70	Heteropogon contortus	Black Speargrass	4.90
63.70	64.10	Lomandra multiflora	Many Flowered Mat Rush	0.40
64.10	64.70	Chrysocephalum apiculatum	Yellow Buttons	0.60
64.70	65.90	Lomandra multiflora	Many Flowered Mat Rush	1.20
67.00	70.30	Heteropogon contortus	Black Speargrass	3.30
70.30	71.00	Cymbopogon refractus	Barbed Wire Grass	0.70
71.00	73.00	Heteropogon contortus	Black Speargrass	2.00
73.00	73.30	Melinis minutiflora	Molasses Grass	0.30
73.30	73.60	Desmodium intortum	Greenleaf Desmodium	0.30
74.50	75.20	Lomandra multiflora	Many Flowered Mat Rush	0.70
75.20	75.90	Heteropogon contortus	Black Speargrass	0.70
76.10	77.00	Themeda triandra	Kangaroo Grass	0.90
77.00	77.40	Panicum decompositum	Native Millet	0.40
77.40	78.20	Lomandra multiflora	Many Flowered Mat Rush	0.80
78.20	78.90	Heteropogon contortus	Black Speargrass	0.70
78.90	79.20	Lantana montevidensis	Creeping Lantana	0.30
81.40	83.40	Heteropogon contortus	Black Speargrass	2.00
83.60	84.20	Panicum decompositum	Native Millet	0.60
84.60	85.10	Panicum decompositum	Native Millet	0.50
85.10	86.50	Heteropogon contortus	Black Speargrass	1.40
86.60	86.90	Phyllanthus virgatus	Phyllanthus	0.30
87.40	88.60	Heteropogon contortus	Black Speargrass	1.20
88.90	89.30	Eragrostis brownii	Brown's Love Grass	0.40
90.60	92.20	Heteropogon contortus	Black Speargrass	1.60
92.20	93.20	Melinis repens	Red Natal Grass	1.00
93.20	94.00	Lantana montevidensis	Creeping Lantana	0.80
94.00	97.70	Heteropogon contortus	Black Speargrass	3.70
97.70	98.50	Lantana camara	Lantana	0.80
98.50	100.00	Heteropogon contortus	Black Speargrass	1.50

Native/bare cover	84.3%
Exotic/weed cover	15.7%
Weeds of National Significance cover	5.1%

50m mark

North









		Peak Crossing - Ground La	yer Transect (100M) 7	18/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	1.90	Heteropogon contortus	Black Speargrass	1.90
1.90	2.80	Macrotyloma axillare var. axillare	Perennial Horse Gram	0.90
2.80	4.10	Heteropogon contortus	Black Speargrass	1.30
4.10	5.00	Medicago lupulina	Yellow Trefoil	0.90
5.00	5.40	Heteropogon contortus	Black Speargrass	0.40
5.40	5.80	Lantana camara	Lantana	0.40
5.80	8.90	Macrotyloma axillare var. axillare	Perennial Horse Gram	3.10
8.90	9.40	Heteropogon contortus	Black Speargrass	0.50
9.40	10.10	Medicago lupulina	Yellow Trefoil	0.70
10.10	11.40	Heteropogon contortus	Black Speargrass	1.30
11.40	12.00	Medicago lupulina	Yellow Trefoil	0.60
12.00	13.10	Heteropogon contortus	Black Speargrass	1.10
13.10	15.90	Medicago lupulina	Yellow Trefoil	2.80
15.90	17.50	Heteropogon contortus	Black Speargrass	1.60
17.50	18.50	Imperata cylindrica	Blady Grass	1.00
18.50	19.20	Sorghum halepense	Johnson Grass	0.70
19.20	21.00	Bidens pilosa	Cobbler's Pegs	1.80
21.00	22.60	Heteropogon contortus	Black Speargrass	1.60
22.60	24.00	Imperata cylindrica	Blady Grass	1.40
24.00	26.20	Bidens pilosa	Cobbler's Pegs	2.20
26.20	27.00	Ambrosia artemisiifolia	Annual ragweed	0.80
27.00	40.80	Lantana camara	Lantana	13.80
40.80	41.10	Lomandra multiflora	Many Flowered Mat Rush	0.30
41.50	42.70	Megathyrsus maximus	Guinea Grass	1.20
42.70	43.30	Melinis repens	Red Natal Grass	0.60
43.30	46.90	Lantana camara	Lantana	3.60
46.90	47.40	Heteropogon contortus	Black Speargrass	0.50
47.40	50.20	Lantana montevidensis	Creeping Lantana	2.80
50.20	53.20	Heteropogon contortus	Black Speargrass	3.00
53.20	55.60	Melinis repens	Red Natal Grass	2.40
55.60	57.10	Heteropogon contortus	Black Speargrass	1.50
57.10	57.90	Lantana montevidensis	Creeping Lantana	0.80
57.90	58.60	Heteropogon contortus	Black Speargrass	0.70
58.60	59.00	Melinis repens	Red Natal Grass	0.40
59.00	61.50	Lantana montevidensis	Creeping Lantana	2.50
61.90	66.50	Lantana montevidensis	Creeping Lantana	4.60
67.20	69.90	Lantana montevidensis	Creeping Lantana	2.70
69.90	70.70	Macroptilium atropurpureum	Siratro	0.80
70.70	70.90	Heteropogon contortus	Black Speargrass	0.20
70.90	74.00	Lantana montevidensis	Creeping Lantana	3.10
74.00	77.10	Melinis repens	Red Natal Grass	3.10
79.00	79.90	Heteropogon contortus	Black Speargrass	0.90
81.00	83.70	Heteropogon contortus	Black Speargrass	2.70
83.70	83.90	Desmodium intortum	Greenleat Desmodium	0.20
83.90	86.60	Heteropogon contortus	Black Speargrass	2.70
86.60	87.10	Desmodium intortum	Greenleat Desmodium	0.50
87.10	87.80	Lantana montevidensis	Creeping Lantana	0.90
87.80	88.70	Heteropogon contortus	Black Speargrass	0.90
88.80	89.10	Aristida vagans	Threeawn Speargrass	0.30
90.00	92.30	Heteropogon contortus	Black Speargrass	2.30
92.90	93.80	Cnrysocephalum apiculatum	Yellow Buttons	0.90
94.80	96.60	Heteropogon contortus	Black Speargrass	1.80
96.60	97.00	Cymbopogon refractus	Barbed Wire Grass	0.40
97.00	97.30	Heteropogon contortus	Black Speargrass	0.30
97.60	98.50	Aristida vagans	Threeawn Speargrass	0.90
98.50	99.30	Heteropogon contortus	Black Speargrass	0.80
99.30	99.50	Melinis repens	Red Natal Grass	0.20
99.50	100.00	Heteropogon contortus	васк Speargrass	0.50

Native/bare cover52.10%Exotic/weed cover47.90%Weeds of National Significance cover14.2%

50m mark

<image>

East







		Peak Crossing - Ground	l Layer Transect (100M) 8	18/03/21
Start (m)	Finish (m)	Species	Common Name	Total Coverage
0.00	7.10	Megathyrsus maximus	Guinea Grass	7.10
7.10	10.60	Lantana camara	Lantana	3.50
10.60	11.10	Ambrosia artemisiifolia	Annual ragweed	0.50
11.10	12.40	Megathyrsus maximus	Guinea Grass	1.30
12.40	17.60	Lantana camara	Lantana	5.20
17.60	26.40	Megathyrsus maximus	Guinea Grass	8.80
26.40	28.80	Calyptocarpus viali	Creeping Cinderella	2.40
28.80	31.80	Megathyrsus maximus	Guinea Grass	3.00
31.80	33.80	Lantana camara	Lantana	2.00
33.80	35.90	Melinis repens	Red Natal Grass	2.10
35.90	42.90	Lantana camara	Lantana	7.00
42.90	47.00	Bidens pilosa	Cobbler's Pegs	4.10
47.00	49.50	Megathyrsus maximus	Guinea Grass	2.50
49.50	50.50	Bidens pilosa	Cobbler's Pegs	1.00
50.50	51.70	Lantana camara	Lantana	1.20
51.70	54.10	Megathyrsus maximus	Guinea Grass	2.40
54.10	57.10	Lantana camara	Lantana	3.00
57.10	57.50	Bidens pilosa	Cobbler's Pegs	0.40
57.50	71.70	Lantana camara	Lantana	14.20
71.70	75.30	Solanum mauritianum	Flannel Weed	3.60
75.30	75.80	Lantana camara	Lantana	0.50
75.80	79.30	Passiflora suberosa	Corky Passion Vine	3.50
79.30	82.30	Lantana camara	Lantana	3.00
82.30	82.80	Megathyrsus maximus	Guinea Grass	0.50
82.80	85.40	Bidens pilosa	Cobbler's Pegs	2.60
85.40	87.70	Macroptilium atropurpureum	Siratro	2.30
87.70	95.30	Lantana montevidensis	Creeping Lantana	7.60
95.30	96.40	Melinis repens	Red Natal Grass	1.10
96.40	98.20	Macroptilium atropurpureum	Siratro	1.80
98.20	100.00	Lantana camara	Lantana	1.80

Native/bare cover	0%
Exotic/weed cover	100%
Weeds of National Significance cover	40.9%

50m mark



South



Peak Crossing - Ground Layer Transect (100M) 9 18/03/21					
Start (m)	Finish (m)	Species	Common Name	Total Coverage	
0.00	1.40	Megathyrsus maximus	Guinea Grass	1.40	
1.40	1.80	Lantana montevidensis	Creeping Lantana	0.40	
1.80	2.40	Dianella caerulea	Blue Flax Lily	0.60	
2.40	3.10	Bidens pilosa	Cobbler's Pegs	0.70	
3.10	4.30	Lantana camara	Lantana	1.20	
4.30	5.10	Bidens pilosa	Cobbler's Pegs	0.80	
5.10	6.80	Cymbopogon refractus	Barbed Wire Grass	1.70	
6.80	7.40	Heteropogon contortus	Black Speargrass	0.60	
7.40	8.00	Oxalis corniculata	Creeping Woodsorrel	0.60	
8.00	9.20	Heteropogon contortus	Black Speargrass	1.20	
9.20	9.80	Oxalis corniculata	Creeping Woodsorrel	0.60	
9.80	10.40	Megathyrsus maximus	Guinea Grass	0.60	
10.40	11.40	Heteropogon contortus	Black Speargrass	1.00	
11.40	11.80	Lomandra multiflora	Many-flowered Matrush	0.40	
11.80	13.60	Bidens pilosa	Cobbler's Pegs	1.80	
13.60	14.00	Adiantum sp.	Maidenhair Fern	0.40	
14.00	15.30	Lomandra multiflora	Many-flowered Matrush	1.30	
15.30	16.60	Bidens pilosa	Cobbler's Pegs	1.30	
16.60	17.50	Adiantum sp.	Maidenhair Fern	0.90	
17.50	18.00	Sida cordifolia	Flannel Weed	0.50	
18.00	19.10	Bidens pilosa	Cobbler's Pegs	1.10	
19.10	19.80	Lantana montevidensis	Creeping Lantana	0.70	
19.80	22.60	Bidens pilosa	Cobbler's Pegs	2.80	
22.60	23.30	Lantana camara	Lantana	0.70	
23.30	24.90	Sida cordifolia	Flannel Weed	1.60	
24.90	26.30	Oxalis corniculata	Creeping Woodsorrel	1.40	
26.30	27.80	Adiantum sp.	Maidenhair Fern	1.50	
28.00	28.80	Bidens pilosa	Cobbler's Pegs	0.80	
28.80	29.90	Sida cordifolia		1.10	
29.90	30.50	Adiantum sp.		0.60	
30.50	32.60	Lantana monteviaensis		2.10	
33.20	34.20	Bidens pilosa	Cobbler's Pegs	1.00	
34.20	30.30	Lantana montevidensis		2.10	
37.00	37.00	l antana montevidensis	Creening Lantana	0.70	
37.00	39.00	Ridens nilosa	Cobbler's Peas	1.60	
39.00	39.30	Lantana camara	Lantana	0.30	
39 30	40.30	Desmodium intortum	Greenleaf Desmodium	1.00	
40.30	41.00	Bidens nilosa	Cobbler's Peas	0.70	
41.00	41 90	Desmodium intortum	Greenleaf Desmodium	0.90	
41.90	47.90	Lantana camara	Lantana	6.00	
47.90	50.90	Bidens pilosa	Cobbler's Peas	3.00	
50.90	51.30	Lantana montevidensis	Creeping Lantana	0.40	
51.30	51.50	Lomandra multiflora	Many-flowered Matrush	0.20	
52.20	56.80	Lantana montevidensis	Creeping Lantana	4.60	
56.80	57.30	Lomandra multiflora	Many-flowered Matrush	0.50	
58.60	59.20	Oxalis corniculata	Creeping Woodsorrel	0.50	
59.20	59.70	Lantana montevidensis	Creeping Lantana	0.50	
61.40	63.90	Sida cordifolia	Flannel Weed	2.50	
63.90	65.00	Rivina humilis	Coral Berry	1.10	
65.00	71.90	Bidens pilosa	Cobbler's Pegs	6.90	
71.90	74.40	Heteropogon contortus	Black Speargrass	2.50	
74.40	74.80	Lomandra multiflora	Many-flowered Matrush	0.40	
74.80	88.10	Bidens pilosa	Cobbler's Pegs	13.30	
88.10	89.60	Lantana montevidensis	Creeping Lantana	1.50	
89.60	92.00	Bidens pilosa	Cobbler's Pegs	2.40	
92.00	97.30	Lantana camara	Lantana	5.30	
97.30	98.50	Heteropogon contortus	Black Speargrass	1.20	
98.50	100.00	Ambrosia artemisiifolia	Annual ragweed	1.50	

Native/bare cover	21.5%
Exotic/weed cover	78.5 %
Weeds of National Significance cover	14.2%

50m mark



East







Peak Crossing - Ground Layer Transect (100M) 10 18/03/21					
Start (m)	Finish (m)	Species	Common Name	Total Coverage	
0.00	4.00	Cyprus gracilis	Slender Flat Sedge	4.00	
4.50	4.80	Sida rhombifolia	Arrowleaf Sida	0.30	
4.80	6.00	Cyprus gracilis	Slender Flat Sedge	1.20	
6.00	6.60	Heteropogon contortus	Black Speargrass	0.60	
7.00	7.20	Cyprus gracilis	Slender Flat Sedge	0.20	
7.20	8.10	Passiflora suberosa	Corky Passion Vine	0.90	
8.10	9.00	Lantana camara	Lantana	0.90	
9.00	9.60	Sida rhombifolia	Arrowleaf Sida	0.60	
9.60	10.50	Lantana montevidensis	Creeping Lantana	0.90	
10.50	13.40	Sida rhombifolia	Arrowleaf Sida	2.90	
13.40	14.80	Lantana montevidensis	Creeping Lantana	1.40	
14.80	16.60	Sida cordifolia	Flannel Weed	1.80	
16.60	18.00	Solanum nigrum	Blackberry Nightshade	1.40	
18.00	20.10	Sida cordifolia	Flannel Weed	2.10	
20.10	22.70	Imperata cylindrica	Blady Grass	2.60	
23.50	23.70	Solanum nigrum	Blackberry Nightshade	0.20	
23.70	24.70	Lantana camara	Lantana	1.00	
24.70	25.30	Conopodium majus	Pignut	0.60	
25.30	26.20	Sida cordifolia	Flannel Weed	0.90	
26.20	26.40	Eustrephus latifolius	Wombat Berry	0.20	
27.80	28.20	Adiantum sp.	Maidenhair Fern	0.40	
28.20	28.80	Panicum decompositum	Native Millet	0.60	
28.80	29.30	Adiantum sp.	Maidenhair Fern	0.50	
29.30	30.30	Passiflora suberosa	Corky Passion Vine	1.00	
30.30	30.50	Adiantum sp.	Maidenhair Fern	0.20	
30.50	31.00	Lantana camara	Lantana	0.50	
31.00	32.00	Passiflora suberosa	Corky Passion Vine	1.00	
32.00	32.30	Ipomoea plebeia	Bell Vine	0.30	
32.30	43.00	Lantana camara	Lantana	10.70	
43.00	43.90	Glycine tabacina	Glycine Pea	0.90	
43.90	44.40	Trophis scandens	Burny Vine	0.50	
44.40	45.20	Passiflora suberosa	Corky Passion Vine	0.80	
45.20	46.00	Trophis scandens	Burny Vine	0.80	
46.00	48.90	Lantana camara	Lantana	2.90	
51.10	51.50	Solanum nigrum	Blackberry Nightshade	0.40	
52.00	53.80	Passiflora suberosa	Corky Passion Vine	1.80	
54.10	55.30	Sida cordifolia	Flannel Weed	1.20	
55.80	56.50	Lantana camara	Lantana	0.70	
56.60	56.90	Eustrephus latifolius	Wombat Berry	0.30	
56.90	57.10	Coleus australis	Little Spurflower	0.20	
57.70	58.10	Heteropogon contortus	Black Speargrass	0.40	
58.10	58.90	Glycine tabacina	Glycine Pea	0.80	
58.90	59.30	Coleus australis	Little Spurflower	0.40	
59.30	60.90	Heteropogon contortus	Black Speargrass	1.60	
60.90	61.40	Adiantum sp.	Maidenhair Fern	0.50	
61.40	62.70	Coleus australis	Little Spurflower	1.30	
62.70	63.50	Heteropogon contortus	Black Speargrass	2.80	
63.50	66.30	Lantana montevidensis	Creeping Lantana	2.80	
66.30	67.40	Lantana camara	Lantana	1.10	
67.40	68.30	Lomandra longifolia	Spiny Head Matrush	0.90	
68.30	69.20	Lantana camara	Lantana	0.90	
69.20	74.20	Imperata cylindrica	Blady Grass	5.00	
74.20	79.40	Lantana camara	Lantana	5.20	
79.40	79.80	Passiflora suberosa	Corky Passion Vine	0.40	
79.80	80.70	Lantana camara	Lantana	0.90	
80.70	83.50	Passiflora suberosa	Corky Passion Vine	2.80	
83.50	84.50	Macroptilium atropurpureum	Siratro	1.00	
84.50	86.40	Passiflora suberosa	Corky Passion Vine	1.90	
86.40	91.30	Lantana camara	Lantana	4.90	
91.30	93.80	Imperata cylindrica	Blady Grass	2.50	
93.80	95.40	Lantana camara	Lantana	1.60	
95.40	95.90	Passiflora suberosa	Corky Passion Vine	0.50	
95.90	99.10	Sida rhombifolia	Arrowleaf Sida	3.20	
99.10	99.80	Lantana montevidensis	Creeping Lantana	0.70	
99.80	100.00	Oxalis corniculata	Creeping Woodsorrel	0.20	

Native/bare cover	48.0 %
Exotic/weed cover	52.0 %
Weeds of National Significance cover	20.6 %

50m mark

North



South



+





Start (m)Finisk (m)SpeciesCommon NameTotal Coverage0.000.401.210Heteropogen contortusBlack Speargrass1.702.102.50Melinis regensRed Natal Grass0.403.001.70Heteropogen contortusBlack Speargrass2.703.001.0.0Lantana matevidensisCreeping Lantana0.503.001.0.0Lantana motevidensisCreeping Lantana4.601.1.001.0.0Panicum decompositumNative Millet0.701.1.701.230Lantana montevidensisCreeping Lantana0.601.300Panicum decompositumNative Millet0.701.300Panicum decompositumNative Millet0.701.3001.450Heteropogen contortusBlack Speargrass1.501.4501.450Heteropogen contortusBlack Speargrass1.802.2402.350Heteropogen contortusBlack Speargrass1.802.2402.360Heteropogen contortusBlack Speargrass1.002.3502.970Lantana montevidensisCreeping Lantana6.202.9703.060Heteropogen contortusBlack Speargrass0.903.3603.300Heteropogen contortusBlack Speargrass0.903.440Pasiflora suberoseCreeping Lantana6.203.5303.5270Macrophilian attropurpureSiratro0.403.5303.520Macrophilian attropurpureSiratro0.40 <t< th=""><th colspan="6">Peak Crossing - Ground Layer Transect (100M) 11 19/03/21</th></t<>	Peak Crossing - Ground Layer Transect (100M) 11 19/03/21					
0.00 0.40 Lantane mantevidensis Creeping Lantana 0.40 0.40 2.10 Hetropogon contortus Black Speargrass 1.70 2.10 2.50 Melinis repens Red Natal Grass 0.40 2.50 3.00 Lamtana montevidensis Creeping Lantana 0.50 3.00 Jantana montevidensis Creeping Lantana 4.60 1.03 Lantana montevidensis Creeping Lantana 4.60 1.03 Lantana montevidensis Creeping Lantana 0.70 1.100 Tantana montevidensis Creeping Lantana 0.70 1.100 Panicum decompositum Native Millet 0.70 1.300 1.450 Hetropogon contortus Black Speargrass 1.80 1.450 1.980 Lantana montevidensis Creeping Lantana 6.20 2.400 Panicum decompositum Native Millet 0.80 3.30 1.450 1.980 Lantana montevidensis Creeping Lantana 6.20 2.40 2.350 Heteropogon contortus Blac	Start (m)	Finish (m)	Species	Common Name	Total Coverage	
0.40 2.10 Heteropogon contortus Black Speargrass 1.70 2.10 2.50 3.00 Lantana montevidensis Creeping Lantana 0.50 3.00 5.70 Heteropogon contortus Black Speargrass 2.70 5.70 10.30 Lantana montevidensis Creeping Lantana 4.60 10.30 11.00 Pankum decompositum Native Millet 0.70 11.70 12.30 Lantana montevidensis Creeping Lantana 0.60 12.30 Inaticum decompositum Native Millet 0.70 1.50 13.00 14.50 Heteropogon contortus Black Speargrass 1.80 13.00 14.50 Heteropogon contortus Black Speargrass 1.80 14.50 19.80 Lantana montevidensis Creeping Lantana 5.20 21.60 Heteropogon contortus Black Speargrass 0.90 23.50 23.70 Lantana montevidensis Creeping Lantana 6.20 29.70 30.60 32.80 Lantana montevidensis Creeping Lan	0.00	0.40	Lantana montevidensis	Creeping Lantana	0.40	
2.10 2.50 Melinis repens Red Natal Grass 0.40 2.50 3.00 5.70 Heteropogon contortus Black Speargrass 2.70 5.70 10.30 Lantana montevidensis Creeping Lantana 4.60 10.30 Lantana montevidensis Creeping Lantana 4.60 10.30 Lantana montevidensis Creeping Lantana 0.70 11.00 Pankum decompositum Native Millet 0.70 13.00 Pankum decompositum Native Millet 0.70 13.00 Pankum decompositum Native Millet 0.70 14.50 14.80 Heteropogon contortus Black Speargrass 1.80 21.60 22.40 Pankum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 22.40 23.50 Heteropogon contortus Black Speargrass 0.90 23.40 23.40 Atatora montevidensis Creeping Lantana 2.20 23.60 32.80	0.40	2.10	Heteropogon contortus	Black Speargrass	1.70	
2.50 3.00 Lantana montevidensis Creeping Lantana 0.50 3.00 5.70 Heteropogon contortus Black Speargrass 2.70 5.70 10.30 Lantana montevidensis Creeping Lantana 4.60 10.30 11.00 Panicum decompositum Native Millet 0.70 11.00 11.70 12.30 Lantana montevidensis Creeping Lantana 0.60 12.30 13.00 Panicum decompositum Native Millet 0.70 1.60 13.00 14.50 Heteropogon contortus Black Speargrass 1.80 14.50 Heteropogon contortus Black Speargrass 1.80 21.60 22.40 Panicum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.00 23.50 14.60 passiflor stuberosa Creeping Lantana 2.20 30.60 32.80 Lontana montevidensis Creeping Lantana 2.20 34.40 34.80 Sida rhombifolia Arrowleaf Sida 0.40<	2.10	2.50	Melinis repens	Red Natal Grass	0.40	
3.00 5.70 Heteropogan contortus Black Speargrass 2.70 5.70 10.30 Lantana montevidensis Creeping Lantana 4.60 10.30 11.00 Panicum decompositum Native Millet 0.70 11.00 11.70 Heteropagon contortus Black Speargrass 0.70 12.30 13.00 Panicum decompositum Native Millet 0.70 13.00 14.50 Heteropagon contortus Black Speargrass 1.50 14.50 19.80 Lantana montevidensis Creeping Lantana 5.30 19.80 21.60 Heteropagon contortus Black Speargrass 1.80 22.40 23.50 Heteropagon contortus Black Speargrass 1.80 23.50 23.70 30.60 Heteropagon contortus Black Speargrass 0.90 34.40 34.80 Sida rhombfolia Arrowleaf Sida 0.40 34.40 34.80 Sida rhombfolia Arrowleaf Sida 0.40 35.30 35.70 Maccopililum atropurpureum Siratro	2.50	3.00	Lantana montevidensis	Creeping Lantana	0.50	
5.70 10.30 Lontan montevidensis Creeping Lantana 4.60 10.30 11.00 Paricum decompositum Native Millet 0.70 11.00 11.70 12.30 Lontan montevidensis Creeping Lantana 0.60 11.70 12.30 Lontan a montevidensis Creeping Lantana 0.60 13.00 14.50 Heteropogon contortus Black Speargrass 1.50 14.50 Interno montevidensis Creeping Lantana 5.30 19.80 21.60 Heteropogon contortus Black Speargrass 1.80 21.60 22.40 Paricum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 29.70 Lontana montevidensis Creeping Lantana 2.20 33.60 32.80 Lontona montevidensis Creeping Lantana 2.20 34.40 34.80 Sida rhombilola Arrowleaf Sida 0.40 34.40 34.80 Sida rhombilola Arrowleaf Sida 0.40	3.00	5.70	Heteropogon contortus	Black Speargrass	2.70	
10.30 11.00 Panicum decompositum Native Millet 0.70 11.00 11.70 Heteropagon contortus Black Speargrass 0.70 11.70 12.30 13.00 Panicum decompositum Native Millet 0.70 13.00 14.50 Heteropagon contortus Black Speargrass 1.50 14.50 19.80 Lantana montevidensis Creeping Lantana 5.30 21.60 Heteropagon contortus Black Speargrass 1.80 22.40 23.50 Heteropagon contortus Black Speargrass 0.80 23.50 Ieteropagon contortus Black Speargrass 0.90 30.60 Ieteropagon contortus Black Speargrass 0.90 32.80 23.40 Passiflora suberosa Creeying Lantana 2.20 33.60 Heteropagon contortus Black Speargrass 0.50 34.40 34.80 5iad introinifolia Arrowleaf Sida 0.40 34.40 Heteropagon contortus Black Speargrass 0.50 37.20 39.60 Lont	5.70	10.30	Lantana montevidensis	Creeping Lantana	4.60	
11.00 11.70 12.30 Lantana montevidensis Creeping Lantana 0.60 11.70 12.30 Lantana montevidensis Creeping Lantana 0.60 13.00 14.50 Heteropogon contortus Black Speargrass 1.50 14.50 Jenicum decompositum Native Millet 0.70 14.50 Interon pontervidensis Creeping Lantana 5.30 19.80 21.60 Heteropogon contortus Black Speargrass 1.80 22.40 Panicum decompositum Native Millet 0.80 22.40 Panicum decompositum Black Speargrass 1.10 23.50 29.70 Lantana montevidensis Creeping Lantana 6.20 30.60 32.80 Lantana montevidensis Creeping Lantana 6.20 34.40 34.80 35.30 Heteropogon contortus Black Speargrass 0.50 35.70 37.20 Heteropogon contortus Black Speargrass 2.20 35.70 37.20 Heteropogon contortus Black Speargrass 2.20 <	10.30	11.00	Panicum decompositum	Native Millet	0.70	
11.70 12.30 Lantana montevidensis Creeping Lantana 0.60 12.30 13.00 Paricum decompositum Native Millet 0.70 13.00 14.50 Heteropogon contortus Black Speargrass 1.50 14.50 19.80 Lantana montevidensis Creeping Lantana 5.30 21.60 22.40 Paricum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 Lantana montevidensis Creeping Lantana 6.20 29.70 30.60 Heteropogon contortus Black Speargrass 0.90 32.80 Lantana montevidensis Creeping Lantana 2.20 34.40 34.80 Sida chombifolia Arrowleaf Sida 0.40 34.40 34.80 Sida chombifolia Arrowleaf Sida 0.40 35.30 35.70 Macroptillum atropurpureum Siratro 0.40 37.20 Heteropogon contortus Black Speargrass 1.50 37.20 Jeteropogon con	11.00	11.70	Heteropogon contortus	Black Speargrass	0.70	
12.30 13.00 Panicum decompositum Native Millet 0.70 13.00 14.50 Heteropogon contortus Black Speargrass 1.50 14.50 19.80 21.60 Heteropogon contortus Black Speargrass 1.80 21.60 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 23.70 Lantana montevidensis Creeping Lantana 6.20 30.60 32.80 Lantana montevidensis Creeping Lantana 2.20 32.80 Jantama montevidensis Creeping Lantana 2.20 34.40 34.80 Sida rhombifolia Arrowleaf Sida 0.40 34.40 34.80 Sida rhombifolia Arrowleaf Sida 0.40 35.70 37.20 Heteropogon contortus Black Speargrass 1.50 35.60 40.40 Physalis angulata Wild Gooseberry 0.80 42.60 Heteropogon contortus Black Speargrass 2.20 57.50 Heteropogon contortus Black Speargrass 2.30	11.70	12.30	Lantana montevidensis	Creeping Lantana	0.60	
13.00 14.50 Heteropogon contortus Black Speargrass 1.50 14.50 19.80 Lantara montevidensis Creeping Lantana 5.30 21.60 22.40 Ponicum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 29.70 Lantana montevidensis Creeping Lantana 6.20 29.70 30.60 Heteropogon contortus Black Speargrass 0.90 32.80 34.40 Posifibra suberosa Corky Passion Vine 1.60 34.40 34.80 Sida rhombifolia Arrowleaf Sida 0.40 34.80 35.30 Heteropogon contortus Black Speargrass 0.50 35.70 Macroptilium atropurpureum Siratro 0.40 35.70 Macroptilium atropurpureum Black Speargrass 1.50 37.20 39.60 Lantana camara Lantana 2.40 40.40 Physialis angulata Wild Gooseberry 0.80 42.60 52.20 Lontana montevidensis Creeping Lantana 9.60 52.20 57.50 Heteropogon contortus Black Speargrass 2.30 66.30 67.10 Cymbopogon rentatus Black	12.30	13.00	Panicum decompositum	Native Millet	0.70	
14.50 19.80 Lantana montevidensis Creeping Lantana 5.30 19.80 21.60 Heteropogon contortus Black Speargrass 1.80 22.40 22.30 Heteropogon contortus Black Speargrass 1.10 23.50 29.70 Jantana montevidensis Creeping Lantana 6.20 29.70 30.60 Heteropogon contortus Black Speargrass 0.90 32.80 Lantana montevidensis Creeping Lantana 2.20 32.80 Jattana montevidensis Creeping Lantana 2.20 32.80 Jattana montevidensis Creeping Lantana 2.20 32.80 Marcoptilium atropurpureum Siratro 0.40 34.40 34.80 35.30 Heteropogon contortus Black Speargrass 0.50 35.70 37.20 Heteropogon contortus Black Speargrass 1.50 37.20 39.60 Lantana camara Lantana 2.40 42.60 Heteropogon contortus Black Speargrass 2.30 52.20 Lantana montevidensis	13.00	14.50	Heteropogon contortus	Black Speargrass	1.50	
19.8021.60Heteropagan contortusBlack Speargrass1.8021.6022.40Panicum decompositumNative Millet0.8022.4023.501 Heteropagan contortusBlack Speargrass1.1023.5029.70Lantana montevidensisCreeping Lantana6.2029.7030.60Heteropagan contortusBlack Speargrass0.9030.6032.80Lantana montevidensisCreeping Lantana2.2034.40Passififora suberosaCorky Passion Vine1.6034.4035.30Sida rhombifoliaArrowleaf Sida0.4034.8035.30Heteropagan contortusBlack Speargrass0.5035.3035.70Macroptilium atropurpureumSiratro0.4035.70Jaccoptilium atropurpureumSiratro0.4037.2039.60Lontana camaraLantana2.4036.6040.40Physalis angulataWild Gooseberry0.8040.4042.60Heteropagan contortusBlack Speargrass5.3057.5058.30Lantana montevidensisCreeping Lantana9.6052.20Lantana montevidensisCreeping Lantana9.6058.30Go.60Panicum decompositumNative Millet2.3066.3067.10Cymbopogan refractusBlack Speargrass1.0068.10Heteropagan contortusBlack Speargrass1.0068.10Geount contortusBlack Speargrass1.0068.10Geount contortusBlack Sp	14.50	19.80	Lantana montevidensis	Creeping Lantana	5.30	
21.60 22.40 Panicum decompositum Native Millet 0.80 22.40 23.50 Heteropogon contortus Black Speargrass 1.10 23.50 29.70 30.60 Heteropogon contortus Black Speargrass 0.90 30.60 32.80 Lantana montevidensis Creeping Lantana 2.20 32.80 34.40 Passificar suberosa Corty Passion Vine 1.60 34.40 34.80 Sida rhombifolia Arrowleaf Sida 0.40 34.80 35.30 Heteropogon contortus Black Speargrass 0.50 35.70 37.20 Heteropogon contortus Black Speargrass 1.50 37.20 Jeteropogon contortus Black Speargrass 2.20 37.20 Lantana montevidensis Creeping Lantana 2.40 40.40 42.60 Heteropogon contortus Black Speargrass 2.20 57.50 58.30 Lantana montevidensis Creeping Lantana 9.60 52.20 57.50 Heteropogon contortus Black Speargrass 5.30 <td>19.80</td> <td>21.60</td> <td>Heteropogon contortus</td> <td>Black Speargrass</td> <td>1.80</td>	19.80	21.60	Heteropogon contortus	Black Speargrass	1.80	
22.4023.50Heteropogon contortusBlack Speargrass1.1023.5029.70Lantana montevidensisCreeping Lantana6.2029.7030.6032.80Lantana montevidensisCreeping Lantana2.2030.6032.80Lantana montevidensisCreeping Lantana2.2032.8034.40Pasifiora suberosaCorky Passion Vine1.6034.4034.80Sida rhombifidiaArrowleaf Sida0.4034.8035.30Heteropogon contortusBlack Speargrass0.5035.3035.70Macroptillum atropurpureumSiratro0.4035.70Jetteropogon contortusBlack Speargrass1.5037.2039.60Lantana camaraLantana2.4039.6040.40Physolis angulataWild Gooseberry0.8042.6052.20Lantana montevidensisCreeping Lantana9.6052.2057.50Heteropogon contortusBlack Speargrass5.3058.3060.60Panicum decompositumNative Millet2.3066.30Lantana montevidensisCreeping Lantana0.8057.5058.30Lantana montevidensisCreeping Lantana5.9067.1068.10Heteropogon contortusBlack Speargrass1.0068.1069.40Lantana montevidensisCreeping Lantana5.9075.30Macrofyloma axillare var. axillarePerennial Horse Gram5.9075.3076.40Solanum matritianumFlanel Weed1.10 </td <td>21.60</td> <td>22.40</td> <td>Panicum decompositum</td> <td>Native Millet</td> <td>0.80</td>	21.60	22.40	Panicum decompositum	Native Millet	0.80	
23.5029.70Lantana montevidensisCreeping Lantana6.2029.7030.60Heteropogon contortusBlack Speargrass0.9030.60Jatteropogon contortusBlack Speargrass0.9032.8034.40Passiflora suberosaCorky Passion Vine1.6034.4034.80Sida rhombifoliaArrowleaf Sida0.4034.8035.30Black Speargrass0.5035.3035.70Macroptillum atropurpureumSiratro0.4035.3037.20Heteropogon contortusBlack Speargrass1.5037.20Jatteropogon contortusBlack Speargrass1.5037.20Jatteropogon contortusBlack Speargrass2.2040.4042.60Lantana camaraLantana2.4039.6040.40Physalis angulataWild Gooseberry0.8040.4042.60Heteropogon contortusBlack Speargrass5.3057.5058.30Lantana montevidensisCreeping Lantana9.6052.2057.50Heteropogon contortusBlack Speargrass5.3058.30Lantana montevidensisCreeping Lantana0.8066.30Cantana montevidensisCreeping Lantana0.8057.5058.30Lantana montevidensisCreeping Lantana5.7066.30Cantana montevidensisCreeping Lantana5.7066.30Cantana montevidensisCreeping Lantana5.9075.3076.40Solanum mauritianumFlannel Weided1.10 <td>22.40</td> <td>23.50</td> <td>Heteropogon contortus</td> <td>Black Speargrass</td> <td>1.10</td>	22.40	23.50	Heteropogon contortus	Black Speargrass	1.10	
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75.3076.40Solanum mauritianumFlannel Weed1.1076.4077.00Ageratum houstonianumBlue Billy Goat Weed0.6077.0079.60Heteropogon contortusBlack Speargrass2.6079.6082.50Lantana montevidensisCreeping Lantana2.9082.5083.60Heteropogon contortusBlack Speargrass1.1083.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.9090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon contortusBlack Speargrass0.9097.0097.50Panicum decompositumNative Millet0.50	69.40	75.30	Macrotyloma axillare var. axillare	Perennial Horse Gram	5.90	
76.4077.00Ageratum houstonianum Ageratum houstonianumBlue Billy Goat Weed0.6077.0079.60Heteropogon contortusBlack Speargrass2.6079.6082.50Lantana montevidensisCreeping Lantana2.9082.5083.60Heteropogon contortusBlack Speargrass1.1083.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.9090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	75.30	76.40	Solanum mauritianum	Flannel Weed	1.10	
77.0079.60Heteropogon contortusBlack Speargrass2.6079.6082.50Lantana montevidensisCreeping Lantana2.9082.5083.60Heteropogon contortusBlack Speargrass1.1083.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.9090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	76.40	77.00	Aaeratum houstonianum	Blue Billy Goat Weed	0.60	
79.6082.50Lantana montevidensisCreeping Lantana2.9082.5083.60Heteropogon contortusBlack Speargrass1.1083.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.9090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	77.00	79.60	Heteropogon contortus	Black Speargrass	2.60	
82.5083.60Heteropogon contortusBlack Speargrass1.1083.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.9090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	79.60	82.50	Lantana montevidensis	Creeping Lantana	2.90	
83.6084.90Lantana montevidensisCreeping Lantana1.3084.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.7090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	82.50	83.60	Heteropogon contortus	Black Speargrass	1.10	
84.9087.50Panicum decompositumNative Millet2.6087.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.7090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	83.60	84.90	Lantana montevidensis	Creeping Lantana	1.30	
87.5088.40Lantana camaraLantana0.9088.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.7090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	84.90	87.50	Panicum decompositum	Native Millet	2.60	
88.4089.70Heteropogon contortusBlack Speargrass1.3089.7090.40Lantana montevidensisCreeping Lantana0.7090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	87.50	88.40	Lantana camara	Lantana	0.90	
89.7090.40Lantana montevidensisCreeping Lantana0.7090.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	88.40	89.70	Heteropogon contortus	Black Speargrass	1.30	
90.4090.70Desmodium intortumGreenleaf Desmodium0.3090.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	89.70	90.40	Lantana montevidensis	Creeping Lantana	0.70	
90.7092.00Lantana camaraLantana4.1092.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	90,40	90,70	Desmodium intortum	Greenleaf Desmodium	0.30	
92.0096.10Heteropogon contortusBlack Speargrass4.1096.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	90.70	92.00	Lantana camara	Lantana	4.10	
96.1097.00Cymbopogon refractusBarbed Wire Grass0.9097.0097.50Panicum decompositumNative Millet0.50	92.00	96.10	Heteropogon contortus	Black Speargrass	4 10	
97.0097.50Panicum decompositumNative Millet0.50	96 10	97.00	Cymbopogon refractus	Barbed Wire Grass	<u> </u>	
	97.00	97.50	Panicum decompositum	Native Millet	0.50	
97.50 100.00 Lantana montevidensis Creeping Lantana 2.50	97.50	100.00	Lantana montevidensis	Creeping Lantana	2.50	

Exotic/weed cover Weeds of National Significance cover

50m mark North









	Burnett Creek - Ground Layer Transect (100M) 1 06/05/2021				
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



East



South









Burnett Creek - Ground Layer Transect (100M) 2 06				06/05/2021
Start (m)	Finish (m)	Species	Common Name	Coverage
	100.0	Themeda triandra	Kangaroo Grass	100.00
0.0		Heteropogon contortus	Black Spear Grass	
0.0		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







South



West


		Burnett Creek - Ground	l Layer Transect (100M) 3	06/05/2021
Start (m)	Finish (m)	Species	Common Name	Coverage
0.0	3.0	Melinis repens	Red Natal Grass	3.00
		Themeda triandra	Kangaroo Grass	
2.0	5.0	Heteropogon contortus	Black Spear Grass	2.00
5.0	5.0	Xanthorrhoea johnsonii	Forest Grass Tree	2.00
		Bare Rock	Bare Rock	
5.0	6.5	Lantana camara	Lantana	1.50
		Themeda triandra	Kangaroo Grass	
6 5	24.0	Heteropogon contortus	Black Spear Grass	17.50
0.5	24.0	Xanthorrhoea johnsonii	Forest Grass Tree	17.50
		Bare Rock	Bare Rock	
24.0	24.2	Senecio madagascariensis	Fireweed	0.20
		Themeda triandra	Kangaroo Grass	
24.2	40.0	Heteropogon contortus	Black Spear Grass	1 5 90
24.2		Xanthorrhoea johnsonii	Forest Grass Tree	15.80
		Bare Rock	Bare Rock	
40.0	40.2	Senecio madagascariensis	Fireweed	0.20
		Themeda triandra	Kangaroo Grass	
40.2	80.0	Heteropogon contortus	Black Spear Grass	20.90
40.2	80.0	Xanthorrhoea johnsonii	Forest Grass Tree	59.00
		Bare Rock	Bare Rock	
80.0	80.2	Senecio madagascariensis	Fireweed	0.20
		Themeda triandra	Kangaroo Grass	
80.2	100.0	Heteropogon contortus	Black Spear Grass	10.80
00.2	100.0	Xanthorrhoea johnsonii	Forest Grass Tree	19.00
		Bare Rock	Bare Rock	
			Native/bare cover	94.9%
				5 1%
			Weeds of National Significance cover	3. 170 3. 10/2
			weeus of National Significance cover	Z. 1 70









		Burnett Creek - Ground	Layer Transect (100M) 4	06/05/2021
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%



East



South



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%	



East







		Burnett Creek - Groun	d Layer Transect (100M) 6	06/05/2021
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%



<image>







		Burnett Creek - Ground	Layer Transect (100M) 7	06/05/2021
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%





South



West



	Burnett Creek - Ground Layer Transect (100M) 8 07/05/2021				
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%	



East









	Burnett Creek - Ground Layer Transect (100M) 907/05/2021			
Start (m)	Finish (m)	Species	Common Name	Coverage
0.0	100.0	Themeda triandra	Kangaroo Grass	100.0
0.0	100.0	Leaf Litter	Leaf Litter	100.0
			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) 1007/05/2021			
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%





<image>





	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	
0.0	100.0	Heteropogon contortus	Black Spear Grass	100.0	
			Native/bare cover	100.0%	
			Total Exotic/weed cover	0.0%	
			Weeds of National Significance cover	0.0%	



South



East







Burnett Creek - Ground Layer Transect (100M) 12				13/05/2021
Start (m)	Finish (m)	Species	Common Name	Coverage
0.0	10.0	Lantana camara	Lantana	10.0
0.0	10.0	Passiflora suberosa	Corky Passion Vine	10.0 2.0 2.0 2.0 2.0 5.0 2.0 2.0 5.0 2.0 10.0 5.0
10.0	12.0	Themeda triandra	Kangaroo Grass	2.0
12.0	14.0	Lantana camara	Lantana	2.0
12.0	14.0	Heliotropium amplexicaule	Blue Heliotrope	2.0
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
20.0	25.0	Leaf Litter	Leaf Litter	5.0
		Lantana camara	Lantana	
25.0	27.0	Bidens pilosa	Cobbler's Pegs	2.0
		Desmodium uncinatum	Silver-leaf Desmodium	
27.0	52.0	Themeda triandra	Kangaroo Grass	25.0
27.0	52.0	Leaf Litter	Leaf Litter	25.0
52.0	55.0	Lantana camara	Lantana	3.0
55.0	65.0	Themeda triandra	Kangaroo Grass	10.0
55.0	05.0	Leaf Litter	Leaf Litter	10.0
65.0	70.0	Lantana camara	Lantana	5.0
70.0	80.0	Themeda triandra	Kangaroo Grass	10.0
70.0	00.0	Leaf Litter	Leaf Litter	10.0
80.0	82.0	Lantana camara	Lantana	2.0
82.0	84.0	Themeda triandra	Kangaroo Grass	2.0
02.0	01.0	Leaf Litter	Leaf Litter	2.0
84.0	90.0	Lantana camara	Lantana	6.0
90.0	97.0	Themeda triandra	Kangaroo Grass	70
20.0	27.0	Leaf Litter	Leaf Litter	7.0
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	35.0%

50m North









		Burnett Creek - Ground	d Layer Transect (100M) 13	13/05/2021
Start (m)	Finish (m)	Species	Common Name	Coverage
0.0	2.0	Themeda triandra	Kangaroo Grass	2.0
0.0	2.0	Leaf Litter	Leaf Litter	2.0
2.0	2.3	Bidens pilosa	Cobbler's Pegs	0.3
22	10.0	Themeda triandra	Kangaroo Grass	77
2.5	10.0	Leaf Litter	Leaf Litter	1.1
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	16
10.4	12.0	Leaf Litter	Leaf Litter	1.0
12.0	14.0	Lantana camara	Lantana	2.0
14.0	55.0	Themeda triandra	Kangaroo Grass	41.0
14.0	55.0	Leaf Litter	Leaf Litter	41.0
55.0	56.0	Desmodium uncinatum	Silver-leaf Desmodium	1.0
56 0	80.0	Themeda triandra	Kangaroo Grass	24.0
50.0		Leaf Litter	Leaf Litter	24.0
		Desmodium uncinatum	Silver-leaf Desmodium	
80.0	83.0	Bidens pilosa	Cobbler's Pegs	3.0
		Solanum nigrum	Blackberry Nightsahde	
82.0	08.0	Themeda triandra	Kangaroo Grass	15.0
85.0	96.0	Leaf Litter	Leaf Litter	15.0
		Desmodium uncinatum	Silver-leaf Desmodium	
98.0	100.0	Bidens pilosa	Cobbler's Pegs	2.0
		Solanum nigrum	Blackberry Nightsahde	
			Native/bare cover	91.3%
			Total Exotic/weed cover	8.7%
			Weeds of National Significance cover	2.0%







East



		Burnett Creek - Grour	nd Layer Transect (100M) 14	13/05/2021
Start (m)	Finish (m)	Species	Common Name	Coverage
0.0	10.0	Themeda triandra	Kangaroo Grass	10.00
0.0	.0 10.0	LeafLitter	Leaf Litter	10.00
10.0	10.2	Melinis repens	Red Natal Grass	0.20
10.2	20.0	Themeda triandra	Kangaroo Grass	0.90
10.2	20.0	LeafLitter	Leaf Litter	9.00
20.0	21.0	Lantana montevidensis	Creeping Lantana	1.00
20.0	21.0	Desmodium uncinatum	Silver-leaf Desmodium	1.00
21.0	25.0	Themeda triandra	Kangaroo Grass	4.00
21.0	25.0	LeafLitter	Leaf Litter	4.00
25.0	25.5	Lantana montevidensis	Creeping Lantana	0.50
25.0	25.5	Desmodium uncinatum	Silver-leaf Desmodium	0.50
	40.0	Themeda triandra	Kangaroo Grass	14.50
25.5	40.0	LeafLitter	Leaf Litter	14.50
40.0	41.0	Lantana montevidensis	Creeping Lantana	1.00
40.0		Desmodium uncinatum	Silver-leaf Desmodium	1.00
41.0	41.0 52.0	Themeda triandra	Kangaroo Grass	11.00
41.0	52.0	LeafLitter	Leaf Litter	11.00
52.0	52.5	Heliotropium amplexicaule	Blue Heliotrope	0.50
F 2 F	75.0	Themeda triandra	Kangaroo Grass	
52.5	75.0	LeafLitter	Leaf Litter	22.50
75.0	75.2	Desmodium uncinatum	Silver-leaf Desmodium	0.20
75.0	00.0	Themeda triandra	Kangaroo Grass	14.00
/5.2	90.0	LeafLitter	Leaf Litter	14.80
00.0	01.0	Lantana montevidensis	Creeping Lantana	1.00
90.0	91.0	Desmodium uncinatum	Silver-leaf Desmodium	1.00
			Native/bare cover	44.0%
			Total Exotic/weed cover	86.0%
			Weeds of National Significance cover	0.0%



South





East

	27/05/2021			
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%



<image>





Appendix E Non-native Koala Predator Data



Camera #	Set up	Collected	Common name	Species	Detection	non-native koala predator
1	15/03/2021	6/04/2021	Common brushtail possum	Trichosurus vulpecula	1	
			Red fox	Vulpes vulpes	1	\checkmark
			Lace monitor	Varanus varius	1	
			Laughing kookaburra	Dacelo novaeguineae	1	
			Australian magpie	Cracticus tibicen	1	
2	15/03/2021	6/04/2021	Red necked Wallaby	Macropus rufogriseus	1	
			Noisey miner	Manorina melanocephala	1	
			Pig	Sus scrofa	1	
			Dog	Canis familiaris	2	\checkmark
3	15/03/2021	6/04/2021	Nil	Nil	1	
4	15/03/2021	6/04/2021	Dog	Canis familiaris	6	\checkmark
			Pig	Sus scrofa	1	\checkmark
			Torresian crow	Corvis orru	1	
			Fox	Vulpes vulpes	1	\checkmark
5	15/03/2021	6/04/2021	Wallaby sp		1	
			Australian magpie	Cracticus tibicen	1	
			Common brush-tailed possum	Trichosurus vulpecula	1	
6	15/03/2021	6/04/2021	Swamp Wallaby	Wallabia bicolor	1	
			Laughing kookaburra	Dacelo novaeguineae	1	
			Fox	Vulpes vulpes	1	\checkmark
			Lace monitor	Varanus varius	1	
			Red necked Wallaby	Macropus rufogriseus	1	
7	15/03/2021	6/04/2021	Laughing kookaburra	Dacelo novaeguineae	1	





















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		6/05/2021	Northern brown bandicoot	Isoodon macrourus	1	Native
	8/04/2021		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

















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Introduction

This environmental offset chapter has been prepared by EnviroCapital (EC) on behalf of Ripley Projects Pty Ltd, care of Goldfield Northern Pty Ltd, and is based on a briefing from the Saunders Havill Group. Summary information and calculation sheets included in this section have been derived from the <u>Natural Bridge at Flinders</u> <u>Offset Report and Management Plan</u> (January 2018 – EnviroCapital) and more recent discussions with the Department of the Environment and Energy (DoEE) relating to the project.

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.

In October 2018, this chapter has been revised to reflect a revised methodology to the assessment of quantum impacts and offset areas. The revised assessment and Offset Assessment Guide (OAG) is detailed in the sections below.

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 ramework. 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).

Modified Habitat Quality Assessment

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

The modified habitat quality assessment (MHQA) combines the three (3) core indicators into two (2) (site condition and site context) with each 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 report, the vulnerable-listed Koala MNES. The following section



details the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

Site Condition (30% 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 fourteen (14) condition characteristics being:

- recruitment of woody perennial species in EDL;
- native plant species richness trees;
- native plant species richness shrubs;
- native plant species richness grasses;
- native plant species richness forbs;
- tree canopy height;
- 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% weighting)

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% weighting)

The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment. 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 Spot Assessment Technique (Phillips *et al.* 2011). The SAT survey results indicated a 'low' Koala activity across both the impact and offset sites. Utilising these Koala activity levels, and inferring the results with current available published scientific literature, an estimated Koala carrying capacity (stocking rate) was determined.

The preferred approach for ongoing Koala stocking rate surveys is through the use of unmanned aerial vehicle (UAV) thermal imagery technology. This method allows for direct Koala identification across the site and is highly accurate. The output data provides a high-confidence indication of the Koala population on-site on any given day which is assessed against the Koala carrying capacity of the site as pre-determined by the Koala density estimates of the Ipswich and Scenic Rim locality. Should UAV surveys be unsuccessful in the identification of Koala presence, unavailable or cost-prohibitive, SAT surveys utilising the traditional method or Koala detection dogs will be undertaken to assess the current Koala activity levels. The following section details the three (3) methodologies that may be utilised to determine the species stocking rate.



UAV Technology Surveys

A typical detection flight may see various flight methods including a standard survey grid, two (2) directional grid, semi-autonomous grid or manual flight. The spotting and detection methods during those flights remain the same. Koalas will be detected and identified during a typical flight using the following methods:

- Hot spot gross object detection: When in flight, a hot spot may visually be detected in contrast to the surrounding environment. Koalas tend to be a round ball of highlighted colour (depending on colour pallet used for observation). Koalas may be seen in the grey "white hot isotherm" pallet profile and may initially be detected as a red and yellow spot amongst the vegetation. Other methods of gross object detection include hottest spot in scene detection and a dedicated temperature specific alert. Scene hottest and coldest spot detection can provide both an initial indicator of object within the canopy for investigation but also a confirmation for object visually observed.
- Shape method: The operator will manoeuvre around the object to gain the best field of view to ascertain the species shape. Generally, Koalas shapes are prominent due to the body, limbs, head and ears. For example:



• Species position and proximity: There are secondary confirmation triggers that also assist in gaining evidence to log a Koala location. Generally, observed behaviour during thermal camera spotting activities show Koalas are located in the mid to upper canopy (season and sex dependent). During breeding season, several Koalas may be located in close proximity. Dominant males have shown to reside in the highest position of a habitat tree especially during breeding season.

These Koala-specific UAV surveys are a relatively new, however they are an accurate survey technique that provide effective and efficient results. Results compiled by the Saunders Havill Group (2017 & 2018) for two (2) residential development sites within the Coomera and Helensvale Koala habitat areas found that the UAV technology was superior to human-only strip transect identification techniques.

Over a period of three (3) months comprising of six (6) individual survey efforts on the Coomera site, the UAV survey detected on average 5.83 Koalas per survey effort compared to 2.33 Koalas per survey effort for industry trained



professionals conducting the strip-transect technique (Holyoak (SHG) 2018 pers. communications). Comparatively, these results are supported by the Helensvale survey period, which consisted of seven (7) individual surveys conducted over a six (6) month period. On average, the UAV survey detected 3.43 Koalas per survey effort compared to 1.85 Koalas per survey effort for industry trained professionals conducting the strip-transect technique (Holyoak (SHG) 2018 pers. communications). These preliminary results demonstrate that the UAV survey methodology is on average 118% (150.22% and 85.40% respectively) more accurate than human-only survey efforts.

Spot Assessment Technique Surveys

Surveys are undertaken in accordance with the methodology developed by Phillips *et al.* (2011) and specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala*. The SAT method is a assessment of Koala activity involving a search for any Koalas and signs of Koala usage. 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 *et al.* 2011).

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).

Koala Detection Dog Surveys

The use of this rapid assessment technique is generally employed when Koala detection dogs are incorporated into the Koala survey. One dog should be handled per handler, dogs are led out to the starting point (predetermined) and then let off-leash. Dogs are prompted by the trainer to search for the scent both on ground and above. Dogs search in the trained search pattern for the scent. Dogs are only to be stopped should they be close to going out of site or if the handler deems the site unsafe to continue. When the dog indicates on its target scent, the handler is to record the coordinates (GPS) and collect/photograph evidence of scat or live Koala(s).



Research by Cristescu *et al.* (2015) indicates that the Koala detection dog rapid SAT survey consistently outperformed human-only survey teams. When off-leash, the Koala detection dogs had a 100% detection rate for Koala scats and identified Koala scats where the human-only team did not (Cristescu *et al.* 2015). Like the traditional Koala SAT surveys, the Koala detection dog rapid SAT surveys are an effective technique in determining Koala activity level.

Calculating Koala Carrying Capacity (species stocking rate)

The Koala carrying capacity has been estimated in the MHQA to coincide with the latest available published scientific literature and data for the South East Queensland Koala population.

A recent study undertaken by Rhodes *et al.* (2015) revealed that the density of Koala populations in South East Queensland 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 South East Queensland 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 data presented within this Offsets Chapter, it can be inferred that the impact and offset sites identified with a low Koala activity level (Phillips *et al.* (2011) (refer to *Preliminary Documentation Part B Appendix E* (impact site) and for the offset site refer to **Appendix 1** in this chapter), contain an estimated Koala density ranging from 0.02 to 0.08 Koalas/ha. Therefore, using these Koala density estimations, it has been estimated that the impact site Koala carrying capacity, where there is 96.16 ha of critical Koala habitat on-site, is between two (2) and eight (8). The offset sites, which are estimated to have 144 ha of critical Koala habitat, has an estimated Koala carrying capacity of three (3) to twelve (12). It should be noted that due to the lack of available published scientific literature of Koala densities in South East Queensland, these carrying capacity estimates are subject to ongoing adaptive management as data and scientific literature becomes available.

Background

To satisfy the environmental offset requirements for Ripley Projects Pty Ltd's 31.40 hectares of quantum impact on habitat critical to the survival of the Koala (refer **Figure 1**), EC will legally secure, manage and improve land located at their Natural Bridge at Flinders and Burnett Creek sites (refer **Figure 2**). The Natural Bridge offset site is located directly south of an existing secured Koala offset project and adjacent to Flinders Peak (a mountain in the



Teviot Range). The Burnett Creek site is 46 kilometres south of the Natural Bridge and approximately 6 kilometres from the Queensland-New South Wales state border. Both sites are located within the boundary of the Flinders Karawatha Corridor and South East Queensland Regional Plan — Regional Biodiversity Corridor (refer *Plan EC2* — *Biodiversity Corridor*).

In order to establish the quantum impact on habitat critical to the survival of the Koala, EC undertook a detailed ecological survey of the impact site 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 Natural Bridge at Flinders offset site and Burnett Creek offset site, with results and data records included in **Appendix 2**. 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 109.7 hectares of land at the Natural Bridge at Flinders site and 34.25 hectares of land at the Burnett Creek site (total 144 ha). Following the ecological field surveys, the sites were assessed against the MHQA tool and relevant components of the DoEE *EPBC Act Environmental Offset Policy* (2012) including analysis using the *Offset Assessment Guide* (OAG). The OAG indicates the Natural Bridge at Flinders offset site will offset <u>80.36%</u> of Ripley Projects Pty Ltd's 31.40 hectare quantum impact, while the Burnett Creek offset site will offset <u>25.58%</u> of Ripley Projects Pty Ltd's 31.40 hectare quantum impact.

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.

Impact Site Location and Details

The impact site is located at 352-396 Ripley Road, Ripley, and is located approximately 5 kilometres south of Ipswich City. The land comprises of the following cadastral allotments (refer **Figure 1**):

1. Lot 3 on SP237241

The land tenure is freehold and located in the Ripley Valley Priority Development Area within the Ipswich local government area, where it retains a *future urban* and *recreation* land use zoning. The land can be accessed via Ripley Road to the west, Fischer Road to the east, Boyland Way to the north or Monerea Road to the south.


Figure 1 Impact site



Legend 3SP237241 Ripley Road, Ripley

Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018

Commercial in confidence

Impact site







Figure 2 Offset sites



Legend

SEQ regional biodiversity value 3SP237241 Ripley Road, Ripley Peak Crossing Burnett Creek

Impact and offset sites



Data sources -© State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



Offset Site Location and Details

The Natural Bridge offset site is located at 583 Mount Flinders Road on the eastern part of the Peak Crossing locality and approximately 1 kilometre directly west of the Flinders-Goolman Conservation Estate — a local government conservation area. The land comprises the following cadastral allotments (refer **Figure 3**):

- 1. Lot 172 on CH312424
- 2. Lot 173 on CH312424
- 3. Lot 151 on RP892014

The land tenure is freehold and located within the northern extent of the Scenic Rim local government area where it retains a *rural* land use zoning. The land can be accessed via un-named roads or private easement from the north off Mount Flinders Road and from the south-east via Mount Elliott / Washpool Roads. From boundary to boundary, the offset site is located 15.72 kilometres south of the impact site.

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 4**). The property is 200 hectares, however the offset is a subset of 34.25 hectares located in the northern part of the site.

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.







Legend

Peak Crossing

Offset site - Peak Crossing





Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



Figure 4 Burnett Creek offset site



Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



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.

Impact Site

Vegetation Areas — Summary

The impact site was found to be relatively disturbed due to past land use practices, and during the time of ecological assessment had been subject to recent fire activity. As documented by SHG (2018) in the preliminary documentation, the reduced maintenance practices has resulted in a high density of introduced species amongst the ground and shrub layers within the mapped non-remnant areas and waterways. Illegal dumping and ongoing 4WD and motorbike trespassing has further diminished the ecological values across both the remnant and non-remnant vegetation. Although heavily disturbed, the impact site contains both remnant and non-remnant vegetation. The remnant vegetation was representative of least concern RE12.9-10.2 and of concern RE12.9-10.7, while the non-remnant vegetation contained species consistent with least concern RE12.9-10.2 (refer Figure 5).

Remnant Vegetation

The property defined as L3/SP237241 contains 72.28 hectares of remnant vegetation consisting of 62.23 hectares of 'least concern' vegetation, 5.91 hectares of 'of concern' and 4.14 hectares of 'endangered' vegetation (SHG 2017) (refer **Figure 5**). Observations made during the ecological surveys of the impact site confirmed that the species observed throughout the mapped remnant areas are consistent. The dominant remnant vegetation community on the impact site is 'least concern' RE12.9-10.2 which is dominated by *Corymbia citriodora* (Spotted Gum) which predominantly occurs on the higher slopes. The 'of concern' regional ecosystem is recognised as a composite vegetation community comprised of RE12.9-10.7, RE12.9-10.16 and RE12.9-10.2. Ecological surveys confirmed the findings of the SHG (2017) Technical Ecological Report, whereby the composite 'of concern' regional ecosystems consistent entirely of species representative of RE12.9-10.7. The dominant species observed within the 'of concern' RE12.9-10.7 mapped areas were *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark). Therefore, given that RE12.9-10.2 and RE12.9-10.7 are the dominant vegetation communities on the impact site, the benchmark values for these regional ecosystems are to be used as the input values for the MHQA.







Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



A large portion of the impact site contains non-remnant vegetation. These areas have either been identified as cleared native and exotic grass paddocks or unmaintained eucalypt regrowth. As mentioned in the Technical Ecological Report (SHG 2017), the western aspect of the impact site contains regrowth typical of the pre-clear vegetation communities. The majority of the regrowth vegetation is dominated by *Corymbia citriodora* (Spotted Gum), *Corymbia intermedia* (Pink Bloodwood) and *Eucalyptus crebra* (Narrow-leaved Ironbark). These species are representative of RE12.9-10.2. Therefore, given that the species observed within the non-remnant vegetation areas are representative of RE12.9-10.2, the benchmark values for this regional ecosystem are to be used as the input values for the MHQA.

Koala SAT Surveys

Results of Koala specific SAT surveys documented in the Technical Ecological Report (SHG 2017) note that a total of thirty (30) SAT surveys were completed across the impact site by Austecology (2014) and SHG (2017). The majority of the SAT results provided comparatively low results regarding evidence of Koala activity. Greater Koala activity was documented within the impact sites two (2) main drainage lines, however overall the SAT survey data was indicative of a relatively low-level Koala activity.

Offset Assessment Guide inputs and worksheet

The MHQA has been applied separately to the 'remnant' and 'non-remnant' vegetation across the site taking into account the many variables that influence the total habitat quality and species stocking rate (refer **Table 1**). Refer to **Appendix 2** for the raw data of the modified MHQA.

Attribute	Condition Characteristics	Score (Non- remnant (RE12.9-10.2))	Score (RE12.9- 10.2)	Score (RE12.9- 10.7)
Site	Recruitment of woody perennial species in EDL	3/5	3/5	5/5
Condition (30%)	Native plant species richness – trees	5/5	3/5	3/5
(0070)	Native plant species richness – shrubs	3/5	3/5	3/5
	Native plant species richness – grasses	3/5	3/5	3/5
	Native plant species richness – forbs	0/5	2.5/5	2.5/5
	Tree canopy height	5/5	5/5	5/5
	Tree canopy cover	5/5	2/5	5/5
	Shrub canopy cover	5/5	5/5	3/5
	Native grass cover	1/5	0/5	0/5

Table 1 Modified Habitat Quality Assessment (Impact Site)



	Organic litter	5/5	5/5	5/5	
	Large trees	5/15	5/15	5/15	
	Coarse woody debris	2/5	2/5	5/5	
	Non-native plant cover	5/10	5/10	10/10	
	Quality and availability of food and foraging habitat	5/10	8/10	8/10	
	Quality and availability of shelter habitat	5/10	9/10	9/10	
	Site Condition Score	57/100	60.5/100	71.5/100	
	Site Condition Score (out of 3)	1.71	1.89	2.15	
	Average Site Condition Score (out of 3)	1.71	2.	02	
Site	Size of the patch	7/10	7/10	7/10	
Context (30%)	Connectedness	4/5	4/5	4/5	
(3070)	Context	2/5	3/5	3/5	
	Ecological corridors	0/6	0/6	0/6	
	Role of site location to species overall population in the State	4/5	4/5	4/5	
	Threats to the species	1/15	1/15	1/15	
	Species mobility capacity	4/10	7/10	7/10	
	Site Context Score	22/56	25/56	25/56	
	Site Context Score (out of 3)	1.18	1.34	1.34	
	Average Site Context Score (out of 3)	1.18	1.	34	
	SAT survey results	20/40	20/40	20/40	
Species	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	/40	/40	
Stocking Rate (40%)	Species Stocking Rate Score	20/40	/40	/40	
1010	Species Stocking Rate Score (out of 3)	2.00	2.00	2.00	
	Average Species Stocking Rate Score (out of 3)	2.00	2.	00	
Unit Scores	Total	4.89	5.23	5.49	
Unit Scores	Total (Average)	4.89 5.36			
Impact Site	Score	5.13 (rounded to 5.00)			



Peak Crossing

Vegetation Areas — Summary

The offset land vegetation at Peak Crossing comprises of high to low quality non-remnant and remnant vegetation. The non-remnant land ranges from cleared grazing and slashed grass areas through to valuable Koala regrowth patches, while the remnant vegetation ranges from highly degraded through to intact.

A general description, photos and MHQA tool analysis is provided herein considering the current state of the land, condition reductions without offset (business as usual) and anticipated benefits resulting from offset securement.

A certified Property Map of Assessable Vegetation (PMAV) is in place across the property which retains the Category X classification across the majority of the land. Where land has this classification, the *Vegetation Management Act 1999* does not have the regulatory capacity to protect the vegetation (refer **Figure 6**).

Non-remnant Vegetation

There are three (3) separate classifications of non-remnant vegetation on the Peak Crossing offset site, being, cleared grazing and slashed grass areas, juvenile regrowth, saplings and weed infestations and valuable Koala regrowth.

Just over 12.3 hectares of the offset site is retained as grazing or slashed pasture land. This excludes areas to be retained for the existing house and associated infrastructure (refer **Figure 7**). Cleared grazing and slashed grass areas are sporadically located over the allotments as they primarily formed a much larger cleared zoned which is now fragmented by large areas of juvenile regrowth and weeds and areas where healthy native Koala trees have regenerated. The areas are connected via a mix of sealed and unsealed well maintained vehicle tracks.

Grazing infrastructure is evident in two (2) locations with holding yards, fencing, sheds and loading facilities. In the southern parts of the site these areas appear to have not been used for a period as the pasture grass in paddocks and around infrastructure was waist-high. In the northern areas the grass was grazed and/or slashed.

Interspersed with the patchwork of cleared zones are large connected areas of very juvenile regrowth. This includes areas of dense wattle whipstick saplings growing in clumped monocultures amongst previously grassed paddocks. The juvenile regrowth, saplings and weed infestation areas are predominantly correlated with drainage lines and lower foothills and flats which appeared to have been more intensely utilised for various rural pursuits. Historical aerial imagery shows that juvenile regrowth, saplings and weed infestation areas evident. These areas contain a matrix of dense wattle regrowth, *Lantana camara* clumps and isolated trees amongst long and dense pasture grasses.



One of the more dominant ecological characteristics recorded on-site is described as valuable Koala tree regrowth patches. These areas are only estimated to retain tree species between 10-15 years of age and under a detailed assessment measure significantly below the Queensland Government's definition of remnant vegetation, however are predominantly defined by *Eucalyptus, Corymbia* and *Lophostemon* species. Most of these areas occur on land that was formerly used for grazing, however less intensively than other non-remnant areas because of topography and access. As a result these areas have been re-seeded by patches of retained trees and adjoining remnant areas which has enabled more native trees to germinate and thrive. The species within this regrowth vegetation community were representative of 'least concern' RE12.9-10.2 and 'endangered' RE12.8.24. Therefore, given that the species observed within the non-remnant area were representative of 'least concern' RE12.9-10.2, the benchmark values for this regional ecosystem are to be used as the input values for the MHQA.

There are areas of *Lantana camara* and other weeds amongst the valuable Koala regrowth areas, however, they are not at the same intensity as the balance of the non-remnant area and therefore not suppressing native tree growth. The zone also contains a blending of the cleared grazing areas mixed with isolated trees and larger patches of trees forming the ecotone into the adjoining remnant vegetation areas.

Evidence of wild dog tracks and faeces were recorded throughout the non-remnant area, and in particular surrounding the available water resources.

Non-remnant — Images





Offset sites





Offset sites







Figure 6 Peak Crossing PMAV



Legend

Property Maps of Assessable Vegetation (PMAV)

	Current, PMAV category A
	Current, PMAV category B
	Current, PMAV category C
	Current, PMAV category R
1	Current, PMAV category X

Offset site - Peak Crossing





Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



Figure 7 Peak Crossing offset areas



Legend

Peak Crossing
future offset area
no offset

Offset site - Peak Crossing





Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018. Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018



Non-remnant —Offset Suitability

Although retaining areas of high disturbance and relatively high existing Koala habitat values, the non-remnant areas are not protected through Local or State Government legislation, leaving the sole regulation for these areas with the EPBC Act. Removal of these areas for development uses would likely trigger an assessment under the EPBC Act, however, expansion or reactivation of the grazing uses or the progressive lawful clearing of the areas over a period are not likely to become regulated through the EPBC Act. Values in the non-remnant areas are the greatest beneficiary of the *Voluntary Declaration* as this will protect Koala trees through the offset process at all levels of government. Weed control, pest management and infill replanting all form part of the management actions for the non-remnant areas which are summarised as follows:

- 1. Legally secure the land via a *Voluntary Declaration* under the *Vegetation Management Act 1999* precluding the ongoing rural use rights and protecting replanted tree species
- 2. Removal and control of weeds of national environmental significance
- 3. Cultivation and remediation of soil within grazed and dense grass paddocks
- 4. Replanting of Koala food and refuge tree species to infill open areas and reinstate the land to a predominantly bushland property
- 5. Assisted natural regeneration practices to expand patches of regrowth over weed and grass areas
- 6. Implement the pest management plan (whole of property) for the control and removal of wild dog usage
- 7. Maintain and manage the land for the life of the offset including direct monitoring of Koala usage in replanted zones.

Koala SAT Surveys

Three (3) SAT surveys were completed within the valuable Koala regrowth vegetation amongst the non-remnant areas, with two (2) yielding low Koala activity and one (1) yielding medium Koala activity (East Coast med-high) (Phillips *et al.* 2011). It should be noted that SAT meanders were conducted within the juvenile regrowth and cleared grazing areas, however no evidence of Koala was recorded. Refer to **Appendix 1** for the Koala SAT survey results.

Remnant Vegetation

There are two (2) separate classifications of remnant vegetation on the Peak Crossing offset site, being, degraded and intact. Beyond the mix of tree species within each regional ecosystem type and the levels of weed infestation, the difference in terms of Koala habitat values is minor to imperceptible. The remnant vegetation on the Peak Crossing offset site is described collectively in this section.

The site is mapped as containing three (3) separate regional ecosystem types, however detailed survey only located two (2) of these within the offset land. The vast majority of the remnant areas are dominated by *Corymbia*



citriodora (Spotted Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark) with the lower slopes containing more *E. tereticornis* and *E. moluccana*. These communities dominate from the flats through the foothills to the lower slope of the ridgelines. As the land elevates to the upper slope and ridgelines, more *E. crebra, E. siderophloia* and *E. microcorys* become prevalent. The elevated land displays more volcanic rocks and eroded shallow gully lines where the contours converge to convey drainage. The dominant remnant vegetation community on Natural Bridge at Finders is 'endangered' RE12.8.24 and 'least concern' RE12.9-10.2, both of which are dominated by *Corymbia citriodora* (Spotted Gum) with scattered *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus moluccana* (Forest Red Gum). Therefore, given that the species observed within the mapped 'endangered' RE12.8.24 and 'least concern' RE12.9-10.2 are consistent with the technical description of the regional ecosystem, the benchmark values for this regional ecosystem are to be used as the input values for the MHQA.

Remnant — Offset Suitability

Despite retaining a relatively low averted loss, the remnant vegetation of the site help complete the offset offering through removal of lower impact uses (such as forestry/timber harvest) and through quality improvements provided in the pest and weed management actions.

- 1. Legally secure the land via a *Voluntary Declaration* under the *Vegetation Management Act 1999* precluding rural use rights permissible within acceptable development codes assigned to remnant communities.
- 2. Removal / control of weeds of national environmental significance
- 3. Assisted natural regeneration practices where removed weeds leave open areas
- 4. Implement the pest management plan (whole of property) for the control and removal of wild dog usage
- 5. Maintain and manage the land for the life of the offset including direct monitoring of Koala usage.

Remnant Vegetation — Photos



Offset sites







Koala SAT Surveys

Four (4) SAT surveys where completed within the remnant mapped land all yielding low Koala activity result (East Coast med-high) (Phillips *et al.* 2011). This result is concluded to be representative of the recent published scientific literature that indicates that where temperatures are higher, Koala densities are lower, in particular surrounding the Ipswich City Council region (Rhodes *et al.* 2015).

Peak Crossing — Summary of Averted Loss Factors

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 Natural Bridge at Flinders. 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	r: Protec	tions u	nder tl	ne Vegetation N	1anage	ment	Act 1999		····•
Category A	<	Categ	ory B	< C	ategory	/ C			<			Category X
				Factor	: Prote	ctions	under the <i>Plar</i>	ning Ac	t 2016			•
Prohibited development		<	Impact deve	t assessa elopmen	ible t	<	Code assess developme	able ent	<	Accepted development	<	Exempt development
Factor:	Prot	ections	under t	he plann	iing sch	neme (2	zoning, codes,	policies	s and s	elf-assessable o	opport	unities) ▶
Prohibited development		< In	npact as: develop	sessable oment	<	C	ode assessable development) <	<	Accepted development	<	Exempt development
€					Fac	ctor: H	istorical land u	ise				·Þ
Land use that d vegetation (e.g.	lid no ., natu	it clear ural are	a)			<		Ag	gricultu	ural production as part of	— veg routir	etation clearing le management
				Facto	or: Infl	uences	from adjoinin	g land ı	uses			·Þ



	Risk of loss factor	
Low		► High
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 mana	agement
Successful and ongoing pest management programme	<	Pests known to occur, non-existent ongoing management

For the Natural Bridge at Flinders, each of the above-mentioned factors vary in weighting due to site specific factors. Specifically under the *Vegetation Management Act 1999*, 69.64 hectares, or 64% of the offset land is Category X whilst the remaining land is Category B (refer **Figure 6**). Within Category B areas, the vegetation is classified as either least concern, of concern or endangered 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 varying protections — Category B protected, Category X unprotected — will be replaced with the Category A classification that will apply over 100% of the land. With this classification in place, land management activities are severely restricted and only those stipulated in the approved offset management plan are permissible. A contextual view of vegetation categories across the landscape is provided in *Plan EC5b — Category X Exempt Clearing under the VMA 1999*. 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 across the property at varying intensities — generally influenced by economic and climatic variables. The planning scheme allows the clearing of understorey, immature vegetation and juvenile Koala habitat trees where such clearing is part of animal husbandry uses (i.e., these activities do not require assessment under the planning scheme). 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 third party offset areas, natural areas and lands used for animal husbandry. 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.



Offset Assessment Guide inputs and worksheet

The MHQA has been applied separately to the 'non-remnant' and 'remnant' vegetation across the site taking into account the many variables that influence the total habitat quality and species stocking rate (refer to **Table 2-3**). The raw data of the MHQA is included in **Appendix 2**. The OAG inputs are justified in **Table 4-5** 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 Natural Bridge at Flinders offset site will offset 80.38% of Ripley Projects Pty Ltd's 31.40 hectare quantum impact.

Table 2 Mo	odified Habitat Quality Assessment T	ool (non-remnant)				
Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)	Values Increase 'WITH' Offset	Score (RE12.8.24)	Score (RE12.9-10.2)
Site Condition	Recruitment of woody perennial species in EDL	5/5	5/5	Non-remnant areas are proposed to undergo weed removal, grass cultivation, direct replanting and assisted natural regeneration with locally endemic Koala food and refuge trees. The objective for these areas is to reinstate and escalate juvenile	5/5	5/5
(30%)	Native plant species richness – trees	5/5	5/5	Koala values to remnant standard and thus being fully available for use by Koala species.	5/5	5/5
	Native plant species richness – shrubs	3/5	3/5	Non-remnant areas will be transitioned back to remnant open woodland Eucalyptus communities via weed management.	5/5	5/5
	Native plant species richness – grasses	3/5	3/5	assisted natural regeneration and direct replanting. At the specified timeframe until 'ecological benefit' the non-remnant areas 5/5 will resemble an open woodland structure with an abundance of Koala food species.		5/5
	Native plant species richness – forbs 2.5/5 Will resemble an open woodland structure with an abundance of Koala food species.	will resemble an open woodland structure with an abundance of Koala food species.	3/5	3/5		
	Tree canopy height	5/5	5/5	Substantial weed management, assisted natural regeneration and patch work replanting is proposed to support and expand the extent of Koala habitat within the non-remnant areas.	5/5	5/5
	Tree canopy cover	5/5	2/5		5/5	5/5
	Shrub canopy cover	5/5	5/5		5/5	5/5
	Native grass cover	5/5	5/5	5	5/5	5/5
	Organic litter	5/5	3.5/5		5/5	5/5
	Large trees	5/15	5/15		10/15	10/15
	Coarse woody debris	2/5	2/5		2/5	2/5
	Non-native plant cover	5/10	5/10		10/10	10/10
	Quality and availability of food and foraging habitat	9/10	9/10		10/10	10/10
	Quality and availability of shelter habitat	9/10	9/10		10/10	10/10
	Site Condition Score	73.5/100	69/100		90/100	90.5/100
	Site Condition Score (out of 3)	2.21	2.07		2.70	2.72
	Average Site Condition Score (out of 3)	2.14			2.71	
Site	Size of the patch	10/10	10/10	As part of the offset an adaptive management 'Pest Management Programme' will be implemented whereby the adopted	10/10	10/10
Context	Connectedness	5/5	5/5	methods and intensities adjust to maximise removal of wild dogs from the offset site.	5/5	5/5
(30 %)	Context	4/5	4/5	 This programme will work in conjunction with pest management occurring: On the land to the immediate north under a Koala offset management plan 	4/5	4/5
	Ecological corridors	6/6	6/6	 The Flinders-Goolman Protected Area 	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	 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 	5/5	5/5
	Threats to the species	5/15	5/15	dog attack /kill.	15/15	15/15
	Species mobility capacity	10/10	10/10	- דוופרפ וא הט עפוווכנפ אנוואפ נווופמנ שונוווד נוווא טוואפנ אונפ.	10/10	10/10
	Site Context Score	45/56	45/56		55/56	55/56
	Site Context Score (out of 3)	2.41	2.41	2		2.95



	Average Site Context Score (out of 3)	2.41			2.95	
	SAT survey results	20/40	20/40	Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on	-/40	-/40
Species	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	-	Koala habitat. This reduction and monitoring regime over the 10 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.	30/40	30/40
Stocking Rate	Species Stocking Rate Score	20/40	20/40		30/40	30/40
(40%)	Species Stocking Rate Score (out of 3)	2.00	2.00	3	3.00	3.00
	Average Species Stocking Rate Score (out of 3)	2.00			3.00	
Total (out	of 10)	6.55 (rounded to 7.00))		8.66 (rounded to 9.0	0)

Table 3 Modified Habitat Quality Assessment Tool (remnant)

Attribute	Condition Characteristics	Score (RE12.8.24)	Score (RE12.9-10.2)	Values Increase 'WITH' Offset	Score (RE12.8.24)	Score (RE12.9-10.2)
Site Condition (30%)	Recruitment of woody perennial species in EDL	3/5	3/5	Site-wide habitat variability will be the result of natural variation in suitable Eucalyptus communities rather than be attributable to current dominant cause being weed infestations and sparse areas. This results in the offset achieving the highest possible value of vegetation composition available to this land.	5/5	5/5
	Native plant species richness – trees	3/5	3/5	highest possible value of vegetation composition available to this land.	5/5	5/5
	Native plant species richness – shrubs	5/5	5/5	Weed and pest management throughout the remnant areas will support the transition to optimal vegetation composition across the offset area.	5/5	5/5
	Native plant species richness – grasses	3/5	3/5		5/5	5/5
	Native plant species richness – forbs	2.5/5	2.5/5		3/5	3/5
	Tree canopy height	5/5	5/5		5/5	5/5
	Tree canopy cover	5/5	5/5		5/5	5/5
	Shrub canopy cover	3/5	3/5		5/5	5/5
	Native grass cover	5/5	5/5		5/5	5/5
	Organic litter	5/5	5/5		5/5	5/5
	Large trees	5/15	5/15		10/15	10/15
	Coarse woody debris	2/5	2/5		5/5	5/5
	Non-native plant cover	5/10	5/10		10/10	10/10
	Quality and availability of food and foraging habitat	9/10	9/10		10/10	10/10
	Quality and availability of shelter habitat	9/10	9/10		10/10	10/10
	Site Condition Score	69.5/100	69.5/100		93/100	93/100



Offset sites

	Site Condition Score (out of 3)	2.09	2.09		2.79	2.79
	Average Site Condition Score (out of 3)	2.09		2.79		1
Site Context	Size of the patch	10/10	10/10	As part of the offset an adaptive management 'Pest Management Programme' will be implemented whereby the adopted 10/	10/10	10/10
(30%)	Connectedness	5/5	5/5	methods and intensities adjust to maximise removal of wild dogs from the offset site.	5/5	5/5
	Context	4/5	4/5	This programme will work in conjunction with pest management occurring:	4/5	4/5
	Ecological corridors	6/6	6/6	 The Flinders-Goolman Protected Area 	6/6	6/6
	Role of site location to species overall population in the State	5/5	5/5	 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. 10/3 55/3 	5/5	5/5
	Threats to the species	5/15	5/15		15/15	15/15
	Species mobility capacity	10/10	10/10		10/10	10/10
	Site Context Score	45/56	45/56		55/56	55/56
	Site Context Score (out of 3)	2.41	2.41		2.95	2.95
	Average Site Context Score (out of 3)	2.41			2.95	
	SAT survey results	20/40	20/40	Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on	-/40	-/40
	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	-	Koala habitat. This reduction and monitoring regime over the 10 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. Impediments to the Koala population ³	30/40	30/40
Species Stocking Rate	Species Stocking Rate Score	20/40	20/40		30/40	30/40
(40%)	Species Stocking Rate Score (out of 3)	2.00	2.00	3		3.00
	Average Species Stocking Rate Score (out of 3)				3.00	
Total (100%)		6.50 (rounded to 7.00)			8.74 (rounded to 9.00)	

Species Stocking Rate (4	10%)				
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))	
			30	40	
Koala population	1 – 3 Koalas	4 – 7 Koalas	8 – 10 Koalas	11 + Koalas	
(density range of 0.02 – 0.08 Koalas per/ha)	20	30	35	40	



Table 4: Offset Asses	sment	Guide calculator values justification (non-remnant)
Attribute	Value	Justification (Summary)
Time over which loss is averted	10 years	 For the Natural Bridge at Flinders offset site the Voluntary Declaration — the highest protection category under the Vegetation Management Act 1999 — will legally secure the minimum of ten years. The ten 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	10 years	 The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. It's estimated that the non-remnant Koala habitat areas will take 10 years to be habitat able to be utilised by Koalas.
Start Quality	7	 Refer to score derived above in Table 2.
Future Quality (without)	7	 Refer to score derived above in Table 2.
Future Quality (With)	9	 Refer to score derived above in Table 2
Risk of Loss (Without)	20%	 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. A certified PMAV is in place to ensure the <i>Vegetation</i> vegetation across 64% of the offset land. These factors cause a large increase to the overall risk of loss. Category X habitat areas are highly susceptible to clearing activities related to the rural pursuits supported in the planning scheme. This causes a large increase to the overall Category B areas are protected under the <i>Vegetation Management Act 1999</i> however, this protection does not outright prohibit clearing of Koala habitat. However, this leads In the cleared grazing and slashed grass areas (Category X), little to no regeneration would occur alongside rural pursuits or even if these ceased because the depth of grass or regenerating without intervention. With the absence of mature trees, there are nil regulations precluding most rural activities at the Local, State and even Commonwealth Ge increase to the overall risk of loss. In the juvenile regrowth, saplings and weed infestation areas (Category X), the land actively formed part of the grazing and other activities occurring on-site approximately 8-with relevant infrastructure to expand this operation (the land could be cleared and re-grazed without application — existing land use rights). Topography (slope) is generall; these areas are less actively maintained. These factors cause an increase to the overall risk of loss. In the valuable Koala regrowth areas (Category X), some topographical (slope) constraints are present. The land actively formed part of the grazing and other activities occur continues to provide areas with relevant infrastructure to expand this operation (the land could be cleared and re-grazed without application — existing land use rights). The considered to be Koala habitat by
Risk of Loss (With)	5%	 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 instrume 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 v other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	90%	 Voluntary Declarations are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and C 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 value
Confidence in result (Quality)	85%	 All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be 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 has inherent risks. The cleared grazing and grass areas require mass areas of revegetation and is at potential risk of plant mortality or absence of maintenance resulting in limited tree strike. The result compared to other management areas. Additionally, these areas will result in the largest increase in quality which warrants additional caution. Juvenile regrowth, saplings and weed infestation areas include some areas of mass replanting, however, these abut patches of pioneer regeneration (wattles) and thus build expanded regeneration and revegetation. This has a negative effect on the confidence in result compared to the higher order non-remnant and remnant management areas The valuable Koala regrowth areas predominantly involves weed removal, assisted natural regeneration and support for existing values already establishing within the zone result compared to lower order non-remnant management areas.



land and is proposed to be in place for a
on Management Act 1999 does not regulate
l risk of loss. to a decrease to the overall risk of loss. cover precludes the areas from naturally overnment levels. These factors cause an
10 years ago and continues to provide areas / favourable for grazing activities however,
ring on-site approximately 10+ years ago and vegetation in these areas contains vegetation ement is not likely the case for sequencing
ent regulates new controls on the land as alues are protected up to the maturity where
commonwealth Government approvals. An
s to be reinstated within the offset area.
e engaged using AS2124 – contract clauses confidence in result however this type of work
is has a negative effect on the confidence in
on these native saplings as anchors for
This has a positive effect on the confidence in

Table 5: Offset Asses	sment	Guide calculator values justification (remnant)
Attribute	Value	Justification (Summary)
Time over which loss is averted	10 years	 For the Natural Bridge at Flinders offset site the Voluntary Declaration — the highest protection category under the Vegetation Management Act 1999 — will legally secure the minimum of ten years. The ten 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	6 years	 The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. It is estimated that on average after 6 years of management the large majority of the offset land will improve to the nominated future quality.
Start Quality	7	 Refer to score derived above in Table 3
Future Quality (without)	7	– Refer to score derived above in Table 3
Future Quality (With)	9	 Refer to score derived above in Table 3
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. A certified PMAV is in place to ensure the <i>Vegetatii</i> vegetation across 64% of the offset land. These factors cause a large increase to the overall risk of loss. Category B areas are protected under the <i>Vegetation Management Act 1999</i> however, this protection does not outright prohibit clearing of Koala habitat. However, this leads 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 noted as acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within lower order remnant communities accepted development code and State Development Assessment Provisions module. Although this avenue to reduce the existing Koala habitat quality exists, there are prote <i>Management Act</i> 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 wo development (which includes native forest practice). Clearing which triggers an application could result in a prohibition or environmental offset under the <i>Vegetation Manage</i> decrease to the overall risk of loss.
Risk of Loss (With)	5%	 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 instrum 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 we other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	90%	 Voluntary Declarations are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and C 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 value
Confidence in result (Quality)	85%	 All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be 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 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 be whether the confidence in the confiden



land and is proposed to be in place for a
<i>on Management Act 1999</i> does not regulate
to a decrease to the overall risk of loss. exception of works which are exempt or by achieving the acceptable solutions in the ections in place under the <i>Vegetation</i>
rks which are exempt or noted as acceptable <i>rement Act 1999</i> . These factors cause a
ent regulates new controls on the land as values are protected up to the maturity where
Commonwealth Government approvals. An
es to be reinstated within the offset area.
e engaged using AS2124 – contract clauses confidence in result however this type of
o 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 calcu	lator										
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	pact	Units	Information source							
			Ecological c											
				Area										
	Area of community	No		Quality										
				Total quantum of impact	0.00									
	Threatened species habitat													
				Area	62.7	Hectares								
ator	Area of habitat	Yes	Goldfields	Quality	5	Scale 0-10								
act calcul				Total quantum of impact	31.35	Adjusted hectares								
Imp	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	pact	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												
			Threatene	d 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 o	alculat	or										
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start arc qual	ea and ity	Future are quality witho	ea and out offset	Future are quality wit	ea and h offset	Raw gain	Confidence in result (%)	Adjusted gain	Net prese (adjusted l	nt value hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
									Ecolog	gical Con	ımunities										
Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset Future area without offset (adjusted hectares)	0.0	Risk of loss (%) with offset 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																					
				EnviroContiel Not	Time over which loss is averted (max.	10	Start area (hectares)	69.64	Risk of loss (%) without offset Future area	20%	Risk of loss (%) with offset Future area	5%	10.45	90%	9.40	9.22					
Area of habitat	Yes	31.35	Adjusted hectares	Bridge Site - Non Remnant	20 years) Time until				(adjusted hectares)	55.7	(adjusted hectares)	66.2					17.58	56.07%	No		
					ecological benefit	10	Start quality (scale of 0-10)	7	without offset (scale of 0-10)	7	with offset (scale of 0-10)	9	2.00	85%	1.70	1.67					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start v	alue	Future value offse	e without t	Future valu offse	ue with t	Raw gain	Confidence in result (%)	Adjusted gain	Net prese	nt 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																				
									Thr	eatened s	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																				

				Sur	nmary								
						Cost (\$)							
	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Direct offset (\$)	Other compensatory measures (\$)	Total (\$)					
	Birth rate	0				\$0.00		\$0.00					
nary	Mortality rate	0				\$0.00		\$0.00					
Sumi	Number of individuals	0				\$0.00		\$0.00					
	Number of features	0				\$0.00		\$0.00					
	Condition of habitat	0				\$0.00		\$0.00					
	Area of habitat	31.35	17.58	56.07%	No	\$0.00	#DIV/0!	#DIV/0!					
	Area of community	0				\$0.00		\$0.00					
						\$0.00	#DIV/0!	#DIV/0!					

Offsets Assessment Guide For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999 2 October 2012 This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance										
Name	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 calcu	lator										
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	pact	Units	Information source							
				Area										
	Area of community	No		Quality										
				Total quantum of impact	0.00									
	Threatened species habitat													
				Area	62.7	Hectares								
ator	Area of habitat	Yes	Goldfields	Quality	5	Scale 0-10								
act calcul				Total quantum of impact	31.35	Adjusted hectares								
Imp	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	pact	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												
			Threatene	ed 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 c	alculate	or										
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start arc qual	ea and ity	Future are quality witho	ea and out offset	Future ar quality wit	ea and h offset	Raw gain	Confidence in result (%)	Adjusted gain	Net prese (adjusted	nt value hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
									Ecolog	gical Con	nmunities										
Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset Future area without offset (adjusted	0.0	Risk of loss (%) with offset Future area with offset (adjusted	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)											
									Threate	ened spec	ies habitat										
					Time over		Start area		Risk of loss (%) without offset	10%	Risk of loss (%) with offset	5%									
Area of habitat	Yes	31.35	Adjusted hectares	EnviroCaptial Nat. Bridge Site - Remnant	averted (max. 20 years)	10	(hectares)	40.12	Future area without offset (adjusted hectares)	36.1	Future area with offset (adjusted hectares)	38.1	2.01	90%	1.81	1.77	7.61	24.27%	No		
					Time until ecological benefit	10	Start quality (scale of 0-10)	7	Future quality without offset (scale of 0-10)	7	Future quality with offset (scale of 0-10)	9	2.00	85%	1.70	1.67					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start v	alue	Future value offse	e without t	Future val offse	ue with t	Raw gain	Confidence in result (%)	Adjusted gain	Net prese	nt 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																				
									Thr	eatened s	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																				

				Sur	nmary			
							Cost (\$)	
	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
	Birth rate	0				\$0.00		\$0.00
nary	Mortality rate	0				\$0.00		\$0.00
Sumr	Number of individuals	0				\$0.00		\$0.00
•	Number of features	0				\$0.00		\$0.00
	Condition of habitat	0				\$0.00		\$0.00
	Area of habitat	31.35	7.61	24.27%	No	\$0.00	#DIV/0!	#DIV/0!
	Area of community	0				\$0.00		\$0.00
						\$0.00	#DIV/0!	#DIV/0!



Burnett Creek

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 (refer **Figure 8**). 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 (remnant and non-remnant) were predominantly devoid of weed infestations and appeared to be relatively intact. The entire Burnett Creek property contains three (3) separate regional ecosystem communities, being 'least concern' RE12.9-10.2, composite 'least concern' RE12.11.3 / RE12.9-10.17e and composite 'of concern' RE12.8.20 / RE12.8.19. To satisfy the offset of the Ripley Projects Pty Ltd's 31.40 quantum impact, the offset will only utilise the non-remnant vegetation and a small portion (10.00 hectares) of 'least concern' RE12.9-10.2.

Remnant Vegetation

As previously stated, the Burnett Creek property contains approximately 176 hectares of remnant vegetation. However, to satisfy the offset requirements for Ripley Projects Pty Ltd's 31.40 hectare quantum impact, 10.00 hectares of the 95.52 hectares of 'least concern' RE12.9-10.2 available is necessary (refer **Figure 9**). Observations made during the ecological surveys of the Burnett Creek property confirmed that the species observed throughout the mapped remnant vegetation are consistent. The dominant remnant vegetation community on the Burnett Creek property is 'least concern' RE12.9-10.2 which is dominated by *Corymbia citriodora* (Spotted Gum) with scattered *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrowleaved Ironbark). Therefore, given that the species observed within the mapped 'least concern' RE12.9-10.2 are consistent with the technical description of the regional ecosystem, the benchmark values for this regional ecosystem are to be used as the input values for the MHQA.





Figure 8 Burnett Creek Category B and Category X vegetation

Legend

Property Maps of Assessable Vegetation (PMAV)

Current,	PMAV	category	A
Current,	PMAV	category	в
Current,	PMAV	category	С
Current,	PMAV	category	R
Current,	PMAV	category	х





Data sources - © State of Queensland (Department of Natural Resources, Mines and Energy) 2018, Updated data available at http://qldspatial.information.qld.gov.au/catalogue// Nearmap 2018









Non-remnant Vegetation

Field investigations in ecological surveys confirmed the Category X vegetation has regrowth characteristics. The species observed within this regrowth vegetation community were consistent with the pre-clear regional ecosystem mapping, being, 'least concern' RE12.9-10.2. The dominant regrowth species was *Corymbia citriodora* (Spotted Gum) with scattered *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark). Therefore, given that the species observed within the non-remnant area were representative of 'least concern' RE12.9-10.2, the benchmark values for this regional ecosystem are to be used as the input values for the MHQA.

Burnett Creek — Summary of Averted Loss Factors

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								Þ		
Category A <	C	ategory B	<	Catego	ory C			<		Category X
4	Factor: Protections under the <i>Planning Act 2016</i> ►									
Prohibited development	<	Impac dev	t asse: elopm	ssable nent	<	Code assessab development	le <	Accepted development	<	Exempt development
Factor: Protections under the planning scheme (zoning, codes, policies and self-assessable opportunities)										
Prohibited development	<	Impact as develo	ssessal pment	ble :	<	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 f	rom 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 Burnett Creek property, each of the above-mentioned factors vary in weighting due to site specific factors. Specifically under the *Vegetation Management Act 1999*, 24.25 hectares of the offset land is Category X whilst the remaining land is Category B. 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 varying protections — Category B protected, Category X unprotected — 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. A contextual view of vegetation categories across the landscape is provided in *Plan EC5b* — *Category X Exempt Clearing under the VMA 1999*. 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.



Offset Assessment Guide inputs and worksheet

The Modified Habitat Quality Assessment (MHQA) has been applied separately to the 'non-remnant' and 'remnant' vegetation across the site taking into account the many variables that influence the total habitat quality and species stocking rate (refer to **Table 6-7**). The raw data of the MHQA is included in **Appendix 2**. The OAG inputs are justified in **Table 8-9** 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 25.58% of Ripley Projects Pty Ltd's 31.40 hectare quantum impact.

Table 6 Modified Habitat Quality Assessment Tool (non-remnant)						
Attribute	Condition Characteristics	Score (RE12.9-10.2)	Values Increase 'WITH' Offset	Score (RE12.9-10.2)		
Site Condition (30%)	Recruitment of woody perennial species in EDL	5/5	Non-remnant areas are proposed to undergo weed removal, grass cultivation, direct replanting and assisted natural regeneration with locally endemic Koala food and refuge trees. The objective for these areas is to reinstate and escalate juvenile Koala values to remnant standard and thus being fully	5/5		
	Native plant species richness – trees	5/5	available for use by Koala species.	5/5		
	Native plant species richness – shrubs	3/5	Non-remnant areas will be transitioned back to remnant open woodland Eucalyptus communities via weed management, assisted natural	5/5		
	Native plant species richness – grasses	3/5	regeneration and direct replanting. At the specified timeframe until 'ecological benefit' the non-remnant areas will resemble an open woodland	5/5		
	Native plant species richness – forbs	2.5/5	structure with an abundance of Koala food species.	3/5		
	Tree canopy height	5/5	Weed management, assisted natural regeneration and patch work replanting is proposed to support and expand the extent of Koala habitat within			
	Tree canopy cover	5/5	the non-remnant areas.	5/5		
	Shrub canopy cover	3/5		5/5		
	Native grass cover	5/5		5/5		
	Organic litter	3/5		5/5		
	Large trees	5/15		10/15		
	Coarse woody debris	5/5		5/5		
	Non-native plant cover	10/10		10/10		
	Quality and availability of food and foraging habitat	9/10		10/10		
	Quality and availability of shelter habitat	9/10		10/10		
	Site Condition Score	77.5/100		93/100		
	Site Condition Score (out of 3)	2.33		2.79		
	Average Site Condition Score (out of 3)	2.33		2.79		
Site Context (30%)	Size of the patch	10/10	As part of the offset an adaptive management 'Pest Management Programme' will be implemented whereby the adopted methods and intensities	10/10		
	Connectedness	5/5	adjust to maximise removal of wild dogs from the offset site.	5/5		
	Context	4/5	 I his programme will work in conjunction with pest management occurring: — The Mount Barney National Park protected area 	4/5		
	Ecological corridors	6/6	 Scenic Rim Regional Council's annual dog management programs for baiting, trapping and shooting 	6/6		
	Role of site location to species overall population in the State	5/5	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.	5/5		
	Threats to the species	5/15		15/15		
	Species mobility capacity	10/10		10/10		
	Site Context Score	45/56		55/56		
	Site Context Score (out of 3)	2.41		2.95		
 	Average Site Context Score (out of 3)	2.41				



Offset sites

Species Stocking Rate (40%)	SAT survey results	20/40	Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. Th	-/40
	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	reduction and monitoring regime over the 10 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.	30/40
	Species Stocking Rate Score	20/40		30/40
	Species Stocking Rate Score (out of 3)	2.00		3.00
	Average Species Stocking Rate Score (out of 3)	2.00		3.00
Total (100%)		6.74 (rounded to 7.00)		8.74 (rounded to 9.00)

Table 7 Modified Habitat Quality Assessment Tool (remnant)

Attribute	Condition Characteristics	Score (RE12.9-10.2)	Values Increase 'WITH' Offset	Score (RE12.9-10.2)	
Site Condition (30%)	Recruitment of woody perennial species in EDL	3/5	Site-wide habitat variability will be the result of natural variation in suitable Eucalyptus communities rather than be attributable to current dominant cause being weed infestations and sparse areas. This results in the offset achieving the highest possible value of vegetation composition available to		
	Native plant species richness – trees	5/5	this land. 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	3/5		5/5	
	Native plant species richness – grasses	3/5		5/5	
	Native plant species richness – forbs	2.5/5		3/5	
	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		5/5	
	Organic litter	5/5		5/5	
	Large trees	5/15		10/15	
	Coarse woody debris	2/5		5/5	
	Non-native plant cover	10/10		10/10	
	Quality and availability of food and foraging habitat	9/10		10/10	
	Quality and availability of shelter habitat	9/10		10/10	
	Site Condition Score	74.5/100		93/100	
	Site Condition Score (out of 3)	2.24		2.79	
	Average Site Condition Score (out of 3)	2.24		2.79	
Site Context (30%)	Size of the patch	10/10	As part of the offset an adaptive management 'Pest Management Programme' will be implemented whereby the adopted methods and intensities	10/10	
	Connectedness	5/5	adjust to maximise removal of wild dogs from the offset site.	5/5	
	Context	4/5	I his programme will work in conjunction with pest management occurring:		


	Ecological corridors	6/6	 The Mount Barney National Park protected area 	6/6
	Role of site location to species overall population in the State	5/5	 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. 	5/5
	Threats to the species	5/15	There is no vehicle strike threat within this offset site.	15/15
	Species mobility capacity	10/10		10/10
	Site Context Score	45/56		55/56
	Site Context Score (out of 3)	2.41		2.95
	Average Site Context Score (out of 3)	2.41		2.95
	SAT survey results	20/40	Management measures will reduce threatening processes that would otherwise advance in extent and severity of impact on Koala habitat. This	-/40
	Koala population (density of 0.02 – 0.08 Koalas per/ha)	-	reduction and monitoring regime over the 10 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.	30/40
Species Stocking Rate (40%)	Species Stocking Rate Score	20/40		30/40
	Species Stocking Rate Score (out of 3)	2.00		3.00
	Average Species Stocking Rate Score (out of 3)	2.00		3.00
Total (100%)		6.65 (rounded to 7.00)		8.74 (rounded to 9.00)

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		
Koala population	1 – 3 Koalas	4 – 7 Koalas	8 – 10 Koalas	11 + Koalas		
(density range of 0.02 – 0.08 Koalas per/ha)	20	30	35	40		



Table 8: Offset Asse	essmen	t Guide calculator values justification (non-remnant)
Attribute	Value	Justification (Summary)
Time over which loss is averted	10 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 of ten years. The ten 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	10 years	 The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. It's estimated that the non-remnant Koala habitat areas will take 10 years to be habitat able to be utilised by Koalas.
Start Quality	7	– Refer to score derived above in Table 6.
Future Quality (without)	7	– Refer to score derived above in Table 6.
Future Quality (With)	9	– Refer to score derived above in Table 6
Risk of Loss (Without)	20%	 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. A certified PMAV is in place to ensure the <i>Vegetati</i> regulate vegetation across 64% of the offset land. These factors cause a large increase to the overall risk of loss. Category X habitat areas are highly susceptible to clearing activities related to the rural pursuits supported in the planning scheme. This causes a large increase to the overall risk of loss. In the non-remnant area (Category X). The land actively formed part of the grazing and other activities occurring on-site (the land could be cleared and re-grazed without ap The vegetation in these areas contains vegetation considered to be Koala habitat by the State Government and Commonwealth Government and thus at certain scales per This requirement is not likely the case for sequencing expansion of grazing activities.
Risk of Loss (With)	5%	 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 instrum 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 reinstat maturity where other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	90%	 Voluntary Declarations are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and 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 valuarea.
Confidence in result (Quality)	85%	 All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be clauses which will include establishment and replacement periods for replanted stock. Employing a suitably qualified third party to complete this work has a positive impatible this type of work has inherent risks. The non-remnant regrowth area predominantly involves weed removal, assisted natural regeneration and support for existing values already establishing within the zone. Confidence in result.



is proposed to be in place for a minimum
<i>tion Management Act 1999</i> does not
all risk of loss. pplication — existing land use rights). rmits may be required for major clearing.
ment regulates new controls on the land ted values are protected up to the
l Commonwealth Government approvals.
ues to be reinstated within the offset
be engaged using AS2124 – contract act on the confidence in result however
This has a positive effect on the

Table 9: Offset Asse	essmen	t Guide calculator values justification (remnant)
Attribute	Value	Justification (Summary)
Time over which loss is averted	10 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 i of ten years. The ten 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	6 years	 The existing Koala habitat variability across the site results in realisation of ecological benefits at variable timeframes. It is estimated that on average after 6 years of management the large majority of the offset land will improve to the nominated future quality.
Start Quality	7	 Refer to score derived above in Table 7
Future Quality (without)	7	– Refer to score derived above in Table 7
Future Quality (With)	9	– Refer to score derived above in Table 7
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. A certified PMAV is in place to ensure the <i>Vegeta</i> regulate vegetation across 64% of the offset land. These factors cause a large increase to the overall risk of loss. Category B areas are protected under the <i>Vegetation Management Act 1999</i> however, this protection does not outright prohibit clearing of Koala habitat. However, this lead 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 th or noted as acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within lower order remnant commun solutions in the accepted development code and State Development Assessment Provisions module. Although this avenue to reduce the existing Koala habitat quality exist the <i>Vegetation Management Act</i> 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 w acceptable development (which includes native forest practice). Even with an application, a volume of clearing can occur within lower order remnant communities in 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 w acceptable development (which includes native forest practice). Clearing which triggers an application could result in a prohibition or environmental offset under the <i>Vege</i> factors cause a decrease to the
Risk of Loss (With)	5%	 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 instrur 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 reinstat maturity where other legislation and mapping over-rides rural uses.
Confidence in result (Averted loss)	90%	 Voluntary Declarations are routinely used for the securement of environmental offsets and are approved all over Queensland representing a combination of both State and 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 valuarea.
Confidence in result (Quality)	85%	 All weed management, regeneration and replanting works will be documented by a registered bushland regenerator or landscape architect with contractors employed to be clauses which will include establishment and replacement periods for replanted stock. Employing a suitably qualified third party to complete this work has a positive impatting 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 non-remnant management areas.



s proposed to be in place for a minimum
<i>tion Management Act 1999</i> does not
Is to a decrease to the overall risk of loss. e exception of works which are exempt ities by achieving the acceptable sts, there are protections in place under
rorks which are exempt or noted as tation Management Act 1999. These
nent regulates new controls on the land ted values are protected up to the
Commonwealth Government approvals.
ues to be reinstated within the offset
be engaged using AS2124 – contract act on the confidence in result however
he confidence in result compared to

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 imp	oact	Units	Information source	
			Ecological c	ommunities				
				Area				
	Area of community	No		Quality				
				Total quantum of impact	0.00			
			Threatened sp	ecies habitat				
				Area	62.7	Hectares		
ator	Area of habitat	Yes	Goldfields	Quality	5	Scale 0-10		
act calcul				Total quantum of impact	31.35	Adjusted hectares		
Imp	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	oact	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						
			Threatene	ed 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 o	alculat	or										
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon ((years)	Start arc qual	ea and ity	Future are quality witho	ea and out offset	Future are quality wit	ea and h offset	Raw gain	Confidence in result (%)	Adjusted gain	Net prese (adjusted	ent value hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
									Ecolog	gical Con	ımunities										
Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset Future area without offset (adjusted hectares)	0.0	Risk of loss (%) with offset 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)										
									Threate	ened spec	ies habitat										
				Burnett Creek - Non	Time over which loss is averted (max.	10	Start area (hectares)	24.25	Risk of loss (%) without offset Future area without offset	20%	Risk of loss (%) with offset Future area with offset	5%	3.64	90%	3.27	3.21					
Area of habitat	Yes	31.35	Adjusted hectares	Remnant(Goldfields Balance)	20 years) Time until		Start quality		(adjusted hectares)	19.4	(adjusted hectares)	23.0					6.12	19.52%	No		
					ecological benefit	10	(scale of 0-10)	7	without offset (scale of 0-10)	7	with offset (scale of 0-10)	9	2.00	85%	1.70	1.67					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon ((years)	Start v	alue	Future value offse	without t	Future val offse	ue with t	Raw gain	Confidence in result (%)	Adjusted gain	Net prese	ent 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																				
									Thr	eatened s	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																				

				Sur	nmary			
							Cost (\$)	
	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
	Birth rate	0				\$0.00		\$0.00
nary	Mortality rate	0				\$0.00		\$0.00
Sumi	Number of individuals	0				\$0.00		\$0.00
	Number of features	0				\$0.00		\$0.00
	Condition of habitat	0				\$0.00		\$0.00
	Area of habitat	31.35	6.12	19.52%	No	\$0.00	#DIV/0!	#DIV/0!
	Area of community	0				\$0.00		\$0.00
						\$0.00	#DIV/0!	#DIV/0!

Offsets Assessment Guide For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999 2 October 2012 This guide relies on Macros being enabled in your browser.

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

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

			Impact calcu	lator			
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	oact	Units	Information source
			Ecological c	ommunities			
				Area			
	Area of community	No		Quality			
				Total quantum of impact	0.00		
			Threatened sp	oecies habitat			
				Area	62.7	Hectares	
ator	Area of habitat	Yes	Goldfields	Quality	5	Scale 0-10	
act calcul				Total quantum of impact	31.35	Adjusted hectares	
Imp	Protected matter attributes	Attribute relevant to case?	Description	Quantum of imp	oact	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					
			Threatene	ed 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 o	alculate)r										
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start are quali	ea and ity	Future are quality witho	ea and out offset	Future ar quality wit	ea and h offset	Raw gain	Confidence in result (%)	Adjusted gain	Net prese (adjusted	ent value hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
									Ecolog	gical Con	munities										
Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset Future area without offset (adjusted hectares)	0.0	Risk of loss (%) with offset 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)										
									Threate	ened spec	ies habitat										
					Time over		Start area		Risk of loss (%) without offset	10%	Risk of loss (%) with offset	5%									
Area of habitat	Yes	31.35	Adjusted hectares	Burnett Creek - Remnant(Goldfields Balance)	averted (max. 20 years)	10	(hectares)	10	Future area without offset (adjusted hectares)	9.0	Future area with offset (adjusted hectares)	9.5	0.50	90%	0.45	0.44	1.91	6.09%	No		
					Time until ecological benefit	6	Start quality (scale of 0-10)	7	Future quality without offset (scale of 0-10)	7	Future quality with offset (scale of 0-10)	9	2.00	85%	1.70	1.68					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon	(years)	Start v	alue	Future value offse	e without t	Future val offse	ue with t	Raw gain	Confidence in result (%)	Adjusted gain	Net prese	ent 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																				
									Thr	eatened s	pecies										
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																				

				Sur	nmary			
							Cost (\$)	
	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
	Birth rate	0				\$0.00		\$0.00
nary	Mortality rate	0				\$0.00		\$0.00
Sumr	Number of individuals	0				\$0.00		\$0.00
•	Number of features	0				\$0.00		\$0.00
	Condition of habitat	0				\$0.00		\$0.00
	Area of habitat	31.35	1.91	6.09%	No	\$0.00	#DIV/0!	#DIV/0!
	Area of community	0				\$0.00		\$0.00
						\$0.00	#DIV/0!	#DIV/0!

Appendix 1 SAT survey data (offset sites)

		SAT survey 1		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus siderophloia	Grey Ironbark	210	Scat
2	Eucalyptus siderophloia	Grey Ironbark	190	Scat
3	Eucalyptus siderophloia	Grey Ironbark	140	Nil
4	Corymbia intermedia	Pink Bloodwood	160	Nil
5	Corymbia intermedia	Pink Bloodwood	150	Nil
6	Eucalyptus siderophloia	Grey Ironbark	160	Nil
7	Eucalyptus siderophloia	Grey Ironbark	180	Scat
8	Eucalyptus siderophloia	Grey Ironbark	170	Nil
9	Brachychiton		140	Nil
10	Eucalyptus siderophloia	Grey Ironbark	160	Nil
11	Brachychiton		130	Nil
12	Eucalyptus tereticornis	Forest Red Gum	220	Nil
13	Eucalyptus siderophloia	Grey Ironbark	150	Nil
14	Allocasuarina torulosa	Forest She Oak	200	Nil
15	Corymbia citriodora	Spotted Gum	140	Nil
16	Eucalyptus siderophloia	Grey Ironbark	150	Nil
17	Corymbia intermedia	Pink Bloodwood	240	Nil
18	Eucalyptus siderophloia	Grey Ironbark	220	Nil
19	Eucalyptus siderophloia	Grey Ironbark	120	Nil
20	Corymbia intermedia	Pink Bloodwood	260	Scat
21	Corymbia intermedia	Pink Bloodwood	170	Nil
22	Eucalyptus siderophloia	Grey Ironbark	140	Nil
23	Corymbia citriodora	Spotted Gum	160	Nil
24	Eucalyptus tereticornis	Forest Red Gum	160	Nil
25	Eucalyptus tereticornis	Forest Red Gum	150	Nil
26	Corymbia intermedia	Pink Bloodwood	140	Nil
27	Corymbia intermedia	Pink Bloodwood	140	Scat
28	Eucalyptus siderophloia	Grey Ironbark	100	Nil
29	Eucalyptus siderophloia	Grey Ironbark	280	Nil
30	Corymbia intermedia	Pink Bloodwood	150	Nil
	T	otal Recorded		5
	То	otal Percentage		16.67%

		SAT survey 2		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus tereticornis	Forest Red Gum	220	Scat
2	Eucalyptus tereticornis	Forest Red Gum	260	Nil
3	Eucalyptus tereticornis	Forest Red Gum	100	Nil
4	Eucalyptus tereticornis	Forest Red Gum	230	Nil
5	Eucalyptus tereticornis	Forest Red Gum	260	Nil
6	Corymbia citriodora	Spotted Gum	160	Nil
7	Eucalytpus crebra	Narrow-leaved Ironbark	150	Nil
8	Eucalytpus crebra	Narrow-leaved Ironbark	100	Nil
9	Corymbia citriodora	Spotted Gum	220	Nil
10	Eucalyptus tereticornis	Forest Red Gum	250	Nil
11	Eucalytpus crebra	Narrow-leaved Ironbark	100	Nil
12	Corymbia citriodora	Spotted Gum	140	Nil
13	Eucalyptus crebra	Narrow-leaved Ironbark	160	Nil
14	Eucalyptus tereticornis	Forest Red Gum	150	Nil
15	Eucalyptus tereticornis	Forest Red Gum	290	Nil
16	Corymbia intermedia	Pink Bloodwood	140	Nil
17	Corymbia intermedia	Pink Bloodwood	100	Nil
18	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
19	Eucalytpus tereticornis	Forest Red Gum	280	Nil
20	Angophora woodsiana	Rough-barked Apple	150	Nil
21	Angophora woodsiana	Rough-barked Apple	150	Nil
22	Eucalyptus tereticornis	Forest Red Gum	120	Nil
23	Eucalyptus tereticornis	Forest Red Gum	120	Nil
24	Corymbia citriodora	Spotted Gum	210	Nil
25	Allocasurina torulosa	Forest She-oak	120	Nil
26	Allocasurina torulosa	Forest She-oak	120	Nil
27	Allocasurina torulosa	Forest She-oak	140	Nil
28	Eucalyptus tereticornis	Forest Red Gum	360	Nil
29	Angophora woodsiana	Rough-barked Apple	150	Nil
30	Eucalyptus tereticornis	Forest Red Gum	100	Nil
		Fotal Recorded		1
	Т	otal Percentage		3.33%

		SAT survey 3		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus crebra	Narrow-leaved Ironbark	220	Scat
2	Corymbia citriodora	Spotted Gum	290	Nil
3	Corymbia citriodora	Spotted Gum	210	Nil
4	Corymbia citriodora	Spotted Gum	190	Nil
5	Eucalyptus moluccana	Gum-topped Box	150	Nil
6	Eucalyptus siderophloia	Grey Ironbark	150	Scat
7	Eucalyptus crebra	Narrow-leaved Ironbark	200	Nil
8	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
9	Corymbia citriodora	Spotted Gum	120	Nil
10	Corymbia citriodora	Spotted Gum	120	Nil
11	Eucalyptus tereticornis	Forest Red Gum	100	Nil
12	Eucalyptus siderophloia	Grey Ironbark	170	Nil
13	Eucalyptus moluccana	Gum-topped Box	200	Nil
14	Eucalyptus siderophloia	Grey Ironbark	220	Nil
15	Eucalyptus crebra	Narrow-leaved Ironbark	260	Nil
16	Eucalyptus crebra	Narrow-leaved Ironbark	250	Nil
17	Eucalyptus tereticornis	Forest Red Gum	180	Scat
18	Corymbia intermedia	Pink Bloodwood	150	Nil
19	Corymbia citriodora	Spotted Gum	130	Nil
20	Eucalyptus moluccana	Gum-topped Box	190	Nil
21	Eucalyptus moluccana	Gum-topped Box	210	Nil
22	Eucalyptus tereticornis	Forest Red Gum	200	Nil
23	Corymbia intermedia	Pink Bloodwood	200	Nil
24	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
25	Eucalyptus tereticornis	Forest Red Gum	140	Nil
26	Eucalyptus tereticornis	Forest Red Gum	140	Nil
27	Corymbia citriodora	Spotted Gum	290	Nil
28	Eucalyptus crebra	Narrow-leaved Ironbark	280	Nil
29	Eucalyptus crebra	Narrow-leaved Ironbark	110	Nil
30	Corymbia citriodora	Spotted Gum	100	Nil
	1	Fotal Recorded		3
	То	otal Percentage		10.00%

		SAT survey 4		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus crebra	Narrow-leaved Ironbark	260	Scat
2	Corymbia citriodora	Spotted Gum	200	Scat
3	Corymbia citriodora	Spotted Gum	160	Nil
4	Corymbia citriodora	Spotted Gum	200	Nil
5	Corymbia citriodora	Spotted Gum	200	Nil
6	Corymbia citriodora	Spotted Gum	160	Nil
7	Corymbia citriodora	Spotted Gum	130	Nil
8	Corymbia citriodora	Spotted Gum	100	Nil
9	Lophostemon confertus	Brush-box	100	Nil
10	Lophostemon confertus	Brush-box	110	Nil
11	Eucalyptus crebra	Narrow-leaved Ironbark	140	Nil
12	Eucalyptus crebra	Narrow-leaved Ironbark	150	Nil
13	Corymbia citriodora	Spotted Gum	210	Nil
14	Corymbia citriodora	Spotted Gum	360	Nil
15	Lophostemon confertus	Brush-box	120	Nil
16	Lophostemon confertus	Brush-box	110	Nil
17	Lophostemon confertus	Brush-box	100	Nil
18	Corymbia citriodora	Spotted Gum	290	Nil
19	Corymbia citriodora	Spotted Gum	200	Nil
20	Corymbia citriodora	Spotted Gum	280	Nil
21	Lophostemon confertus	Brush-box	160	Nil
22	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
23	Lophostemon confertus	Brush-box	100	Nil
24	Eucalyptus crebra	Narrow-leaved Ironbark	180	Nil
25	Corymbia citriodora	Spotted Gum	200	Nil
26	Corymbia citriodora	Spotted Gum	110	Nil
27	Corymbia citriodora	Spotted Gum	100	Nil
28	Corymbia citriodora	Spotted Gum	170	Nil
29	Lophostemon confertus	Brush-box	130	Nil
30	Lophostemon confertus	Brush-box	130	Nil
	1	otal Recorded		2
	Тс	otal Percentage		6.66%

		SAT survey 5		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus tereticornis	Forest Red Gum	230	Scat
2	Eucalyptus crebra	Narrow-leaved Ironbark	110	Nil
3	Eucalyptus crebra	Narrow-leaved Ironbark	120	Nil
4	Corymbia citriodora	Spotted Gum	190	Nil
5	Eucalyptus crebra	Narrow-leaved Ironbark	160	Nil
6	Eucalyptus crebra	Narrow-leaved Ironbark	170	Nil
7	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
8	Corymbia citriodora	Spotted Gum	230	Nil
9	Eucalyptus acmenoides	White Mahogany	200	Nil
10	Corymbia citriodora	Spotted Gum	290	Nil
11	Corymbia citriodora	Spotted Gum	180	Nil
12	Eucalyptus crebra	Narrow-leaved Ironbark	170	Nil
13	Eucalyptus crebra	Narrow-leaved Ironbark	150	Nil
14	Eucalyptus crebra	Narrow-leaved Ironbark	150	Nil
15	Eucalyptus crebra	Narrow-leaved Ironbark	110	Nil
16	Corymbia citriodora	Spotted Gum	200	Nil
17	Corymbia citriodora	Spotted Gum	210	Nil
18	Corymbia citriodora	Spotted Gum	130	Nil
19	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
20	Corymbia citriodora	Spotted Gum	100	Nil
21	Eucalyptus crebra	Narrow-leaved Ironbark	160	Nil
22	Corymbia citriodora	Spotted Gum	180	Nil
23	Corymbia citriodora	Spotted Gum	260	Nil
24	Corymbia citriodora	Spotted Gum	220	Nil
25	Eucalyptus crebra	Narrow-leaved Ironbark	280	Nil
26	Corymbia citriodora	Spotted Gum	190	Nil
27	Eucalyptus acmenoides	White Mahogany	150	Nil
28	Eucalyptus crebra	Narrow-leaved Ironbark	140	Nil
29	Corymbia citriodora	Spotted Gum	140	Nil
30	Eucalyptus crebra	Narrow-leaved Ironbark	110	Nil
	1	otal Recorded		1
	Тс	otal Percentage		3.33%

		SAT survey 6		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus crebra	Narrow-leaved Ironbark	240	Scat
2	Eucalyptus moluccana	Gum-topped Box	250	Nil
3	Corymbia citriodora	Spotted Gum	220	Nil
4	Eucalyptus crebra	Narrow-leaved Ironbark	200	Nil
5	Corymbia citriodora	Spotted Gum	140	Scat
6	Eucalyptus moluccana	Gum-topped Box	140	Nil
7	Eucalyptus crebra	Narrow-leaved Ironbark	210	Nil
8	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
9	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
10	Eucalyptus crebra	Narrow-leaved Ironbark	260	Nil
11	Lophostemon confertus	Brush-box	280	Nil
12	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
13	Eucalyptus crebra	Narrow-leaved Ironbark	110	Nil
14	Eucalyptus crebra	Narrow-leaved Ironbark	120	Nil
15	Corymbia citriodora	Spotted Gum	180	Nil
16	Eucalyptus crebra	Narrow-leaved Ironbark	140	Nil
17	Corymbia citriodora	Spotted Gum	140	Nil
18	Lophostemon confertus	Brush-box	130	Nil
19	Corymbia citriodora	Spotted Gum	120	Nil
20	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
21	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
22	Eucalyptus crebra	Narrow-leaved Ironbark	180	Nil
23	Eucalyptus moluccana	Gum-topped Box	210	Nil
24	Corymbia citriodora	Spotted Gum	190	Nil
25	Eucalyptus moluccana	Gum-topped Box	110	Nil
26	Eucalyptus crebra	Narrow-leaved Ironbark	160	Scat
27	Corymbia citriodora	Spotted Gum	270	Nil
28	Eucalyptus crebra	Narrow-leaved Ironbark	220	Nil
29	Eucalyptus crebra	Narrow-leaved Ironbark	130	Nil
30	Eucalyptus crebra	Narrow-leaved Ironbark	150	Nil
		Fotal Recorded		3
	Т	otal Percentage		10.00%

		SAT survey 7		
Number of Trees	Species	Common Name	DBH	Scat
1	Eucalyptus crebra	Narrow-leaved Ironbark	180	Scat
2	Eucalyptus crebra	Narrow-leaved Ironbark	160	Scat
3	Corymbia citriodora	Spotted Gum	110	Nil
4	Lophostemon confertus	Brush-box	100	Nil
5	Corymbia citriodora	Spotted Gum	120	Scat
6	Eucalyptus moluccana	Gum-topped Box	180	Nil
7	Eucalyptus crebra	Narrow-leaved Ironbark	220	Scat
8	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
9	Lophostemon confertus	Brush-box	110	Nil
10	Lophostemon confertus	Brush-box	100	Nil
11	Lophostemon confertus	Brush-box	100	Nil
12	Eucalyptus crebra	Narrow-leaved Ironbark	190	Scat
13	Corymbia citriodora	Spotted Gum	130	Nil
14	Eucalyptus crebra	Narrow-leaved Ironbark	160	Nil
15	Corymbia citriodora	Spotted Gum	120	Nil
16	Eucalyptus crebra	Narrow-leaved Ironbark	100	Nil
17	Corymbia citriodora	Spotted Gum	110	Nil
18	Lophostemon confertus	Brush-box	100	Nil
19	Corymbia citriodora	Spotted Gum	190	Nil
20	Eucalyptus crebra	Narrow-leaved Ironbark	160	Nil
21	Eucalyptus crebra	Narrow-leaved Ironbark	140	Nil
22	Eucalyptus crebra	Narrow-leaved Ironbark	140	Nil
23	Eucalyptus moluccana	Gum-topped Box	120	Nil
24	Lophostemon confertus	Brush-box	130	Nil
25	Eucalyptus moluccana	Gum-topped Box	180	Nil
26	Eucalyptus crebra	Narrow-leaved Ironbark	260	Scat
27	Corymbia citriodora	Spotted Gum	160	Nil
28	Eucalyptus crebra	Narrow-leaved Ironbark	140	Scat
29	Eucalyptus crebra	Narrow-leaved Ironbark	120	Nil
30	Corymbia citriodora	Spotted Gum	110	Nil
	1	otal Recorded		7
	Тс	otal Percentage		23.33%

Appendix 2 MHQA and BioCondition raw data

Itat Quality Site Assessment Template	abitat Quality Site Assessment Template						
om is useful for undertaking a habitat quality analysis of an impact and/or offset/advanced offset site. e note that this for sessessment unit under consideration. Is this Assessment for: An Impact Site An Impact Site An Offset Site an Advanced Offset Site An Offset Site An Impact Site Quality Assessment Unit Score Sheet - Administrative Case reference Habitat Quality Assessment Unit Score Sheet - Nominated Approach (FOR IMPACT SITE ONLY) = Steelet Your Nominated Nomention (FOR Nominated Nominated Nominated Nominated Nom	Complete any other forms relevant to your Provide the mandatory supporting information	very Form 1– Notice of Election ar application tion identified on the forms as bei	Ripley Road - Cat B nd Advanced Offsets Detai ing required to accompan	ils) Iy your application	PLEASE NOTE - Y	ELLOW INDICATES AN	AUTO POPULATED FIELD
is this Assessment for: An Impact Site R offset Site an Advanced Offset Site - Administrative - Administrative - Administrative - Administrative - Nominated Approach (FOR IMPACT SITE ONLY) e Select Your Nominated approach: Rapid approach Standard Approach - Standard Assessment	ais form is useful for undertaking a habitat quality ar lease note that this form should be completed individ	alysis of an impact and/or offset, dually for each assessment unit ur	/advanced offset site. nder consideration.				
Habitat Quality Assessment Unit Score Sheet A. Administrative Project Name Case reference Project Name > - Nominated Approach (FOR IMPACT SITE ONLY)	Is this Assessment for:	An Impact Site	V	An Offset Site		an Advanced Offset Site	
A - Administrative Case reference Project Name 3 - Nominated Approach (FOR IMPACT SITE ONLY)			Habitat Quality A	Assessment Unit Score She	et		
Lase reference Project Name 3 - Nominated Approach (FOR IMPACT SITE ONLY) e Select Your Nominated approach: Rapid approach Standard Assessment	art A - Administrative				Durality 1 M		
3 - Nominated Approach (FOR IMPACT SITE ONLY) e Select Your Nominated approach: Rapid approach Standard Approach Standard Assessment 	Case reference				Project Name		
e Select Your Nominated approach Rapid approach COMPLETE REMAINDER OF FORM) Standard Assessment COMPLETE REMAINDER OF FORM) C-Site Data C-Site Data C-Site Data Property Ripley Road Date Bioregion Number Southeast Queensland Southeast Q	art B – Nominated Approach (FOR IMPACT SITE ONL	Y)					
Standard Assessment	lease Select Your Nominated approach:		Rapid approach		Standard Approach	2	
Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 30.73 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. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row. Image: Comparison of the space space sprovided from row 231-355 below and include details such as Time and Mapping Coordinates in the following row.	ii) Standard Assessment					(COMPLETE REMAINDER	OF FORM)
C- Site Data Property Ripley Road Date Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 30.73 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. 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. 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. 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. 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. 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. Landscape Photo-Please attach or insert north, south, east and West photos in the space provide from row 231-355 below and include details such as Time and Mapping							
Property Ripley Road Date Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 30.73 12.9-10.2 Southeast Queensland	art C - Site Data						
Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 30.73 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. 1 0m Mark Zone Easting Northing 4 50m Mark Zone Easting Northing	Property		Ripley Road		Date		
Assessment with: Assessment with vitre (n/a) RE Bioregion Rumber 1 30.73 12.9-10.2 Southeast Queensland	Accessment Units		Init Area (ba)	DE		Diagonica	umbor
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.	Assessment Unit: 1	Assessment U 30.	73	12.9-10.2		Southeast Qu	eensland
Image: second reaction of the critical of the protocol and the protocol an	Landscape Photo, Please attach o	r insert north south east and west	nhotos in the spaces provid	ded from row 231-355 below	and include details such a	as Time and Manning Coordina	tes in the following row
1 20m Mark Zone Easting Northing 14 1 1 1 1 1 1 4 50m Mark Zone Easting Northing		,,	,,				0
Image: Name of the second se	atum		1	Zone		Easting	Northing
4 S0m Mark Zone Easting Northing	/GS 84	0m Mark				g	
	DA 94	50m Mark	2	Zone		Easting	Northing
Plot bearing Recorders	Plot bearing				Recorders		

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

	Tree species richness:		
Total number of species		4	
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
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	Jacksonia scoparia	Common Name	Dogwood
Scientific Name	Alphitonia excelsa	Common Name	Soap Tree
Scientific Name	Ozothamnus diosmifolius	Common Name	Sago Bush
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	

	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	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 richne	ss:	
Total number of species		2	
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot		10.00%	
Scientific Name	Heliotropium amplexicaule	Common Name	Blue Heliotrope
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Eleusine indica	Common Name	Indian goosegrass
Scientific Name	Oxalis spp	Common Name	Oxalis
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine
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):		204.50	
1	5.10	26	
2	14.10	27	
3	4.60	28	
4	2.20	29	
5	2.50	30	
6	1.20	31	
7	3.90	32	
8	5.40	33	
9	1.90	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: (*pro	ovide percentage cover within	each quadrat, and provide	average cover)	Quadrat 4	Quadrat F	Δυρτοπο
Native perennial grass cover		1.00%			2.50%	Average
	2.30%	1.00%	0.50%	0.0078	3.3078	1.50%
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Δυρταφο
Organic Litter	37.50%	30.00%	37.50%	27.50%	25.00%	31,50%
Part H- Number of large trees , tree canopy height, rec	ruitment of woody perennial s	species:		Non- Eucalypt Large tree		
Eucalypt Large tree DBH benchmark used :		380		DBH benchmark used:		200
Number of large eucalypt trees:		1		Number of large non eucalypt trees:		0
Total Number Large Trees:				1		
Median Tree Canopy Height Measurements	Canopy:	25.00	Sub-canopy:	14.00	Emergent:	
Number of ecologically domin	ant layer species regenerating:				3	
Part I - Tree canopy cover, Shrub canopy cover						
Tree canopy cover %	Canopy:	21.40%	Sub-canopy:	22.90%	Emergent:	
Shruh canony cover %			•	0.00%		

Note: Only assess Emergent (E) or Subcanopy (5) 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	4 - 101-200ha	3 - 50%-75% connection	2 - >10% to 30% remnant		1- Not within
SCORE	7	4	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 Hab	itat 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)	3 - High	3 - High	3 - Moderately restricted (26 – 50% reduction)	2 - Likely to be critical to species' survival
				Score	1	8	9	7	4
2				Description					
-				Score					
2				Description					
,				Score					
4				Description					
4				Score					
F				Description					
3				Score					
6				Description					
0				Score					
7				Description					
,				Score					
0				Description					
0				Score					
0				Description					
9				Score					
10				Description					
10				Score					
				Maximum Score	1.00	8.00	9.00	7.00	4.00

Attach Landscape Photos Here		
North		
South		

ast		_
		-
lest		-
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: OLD Environmental Offsets	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	

or all environmental offset applications you must: • Complete form (Environmental Offsets Deliver	v Form 1– Notice of Election an	d Advanced Offsets Deta	ails)	FLEASE NUTE - YE	LLOW INDICATES AN	
Complete norm (christoninental onsets benefit Complete any other forms relevant to your app Provide the mandatory supporting information	plication n identified on the forms as bei	ng required to accompar	ny your application			
is form is useful for undertaking a habitat quality analy	ysis of an impact and/or offset/	advanced offset site.				
ease note that this form should be completed individua	Illy for each assessment unit un	der consideration.	An Official Siles	_	an Advanced Offset Site	_
is this Assessment for:	An impact site	Habitat Quality /	An Onset Site	et	an Advanced Onset Site	
		nashat Quanty /				
Case reference				Project Name		
art B – Nominated Approach (FOR IMPACT SITE ONLY)						
lease Select Your Nominated approach:		Rapid approach		Standard Approach		
i) Rapid Assessment					(ENTER BVG FROM DROP	P-DOWN LIST BELOW)
Enter BVG:					Presumed HO Fauals	
C Cha Data						
Property		Ripley Road		Date		
Property Assessment Unit:	Assessment U	Ripley Road nit Area (ha)	RE	Date	Bioregion	Number
Art C - Site Data Property Assessment Unit: 2	Assessment U	Ripley Road nit Area (ha) 16	RE 12.9-10.7	Date	Bioregion I Southeast Qu	Number eensland
Property Assessment Unit: 2 Landscape Photo- Please attach or in:	Assessment U 14.7 sert north, south, east and west	Ripley Road nit Area (ha) 6 photos in the spaces provi	RE 12.9-10.7 ded from row 231-355 below	Date	Bioregion 1 Southeast Q. 5 Time and Mapping Coordina	Number weensland ites in the following row.
Art C - Site Data Property Assessment Unit: 2 Landscape Photo- Please attach or in: atum V/CS 84	Assessment U 14.7 Isert north, south, east and west Om Mark	Ripley Road nit Area (ha) 16 photos in the spaces provi	RE 12.9-10.7 ded from row 231-355 below Zone	Date	Bioregion f Southeast Qi 5 Time and Mapping Coordina asting	Number weensland stes in the following row. Northing
Assessment Unit: Assessment Unit: 2 Landscape Photo- Please attach or in atum /GS 84 DA 94	Assessment U 14.7 sert north, south, east and west 0m Mark 50m Mark	Ripley Road	RE 12.9-10.7 ded from row 231-355 below Zone Zone	Date Carlot Carl	Bioregion 1 Southeast Q. 5 Time and Mapping Coordina asting	Number weensland ites in the following row. Northing Northing
Property Assessment Unit: 2 Landscape Photo- Please attach or in itum GS 84 DA 94 Plot bearing Plot bearing	Assessment U 14.7 sert north, south, east and west Om Mark 50m Mark	Ripley Road nit Area (ha) 16 photos in the spaces provi	RE 12.9-10.7 ded from row 231-355 below Zone Zone	Date r and include details such as Recorders	Bioregion f Southeast Qu s Time and Mapping Coordina asting asting	Number exeesland

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

	Tree species richness:		
Total number of species		7	
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum
Scientific Name	Lophostemon suaveolens	Common Name	Swamp Box
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark
Scientific Name	Petalostigma pubescens	Common Name	Quinene Bush
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Lophostemon suaveolens	Common Name	Swamp Box

	Shrub species richness:		
Total number of species		2	
Scientific Name	Acacia disparrima	Common Name	Hickory Wattle
Scientific Name	Acacia disparrima	Common Name	Hickory Wattle
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	

	Grass species richness:		
Total number of species		3	
Scientific Name	Imperata cylindrica	Common Name	Blady Grass
Scientific Name	Eragrostis brownii	Common Name	Brown's Love Grass
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass
Scientific Name	Entolasia stricta	Common Name	Wiry Panic
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	

	Forbs and others (non grass ground) species richne	is:	
Total number of species		3	
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot		2.00%	
Scientific Name	Oxalis spp.	Common Name	Oxalis
Scientific Name	Heliotropium amplexicaule	Common Name	Blue Heliotrope
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Commelina communis	Common Name	Wandering Jew
Scientific Name	Opuntia spp.	Common Name	Prickly Pear
Scientific Name	Melinis repens	Common Name	Red Natal Grass
Scientific Name	Oxalis spp.	Common Name	Oxalis
Scientific Name	Heliotropium amplexicaule	Common Name	Blue Heliotrope
Scientific Name	Commelina communis	Common Name	Wandering Jew
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters):		324.50	
1	2.20	26	
2	4.60	27	
3	5.10	28	
4	4.30	29	
5	1.20	30	
6	3.20	31	
7	1.10	32	
8	6.40	33	
9	4.00	34	
10	1.10	35	
11	3.30	36	

12		0.60		37		
13		1.40		38		
14		6.80		39		
15		4.20		40		
16		2.20		41		
17		1.70		42		
18		0.80		43		
19		10.70		44		
20				45		
21				46		
22				47		
23				48		
24				49		
25				50		
Part G - Native perennial grass cover, organic litter: (*pro	ovide percentage cover within	each quadrat, and provide	average cover)	Quadrat 4	Quadrat E	Ανοτοπο
Native perennial grass cover	10.00%	6 00%	2 50%	2 50%	1.00%	A 40%
	10.00%	0.00%	2.30%	2.30%	1.00%	4.40%
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	20.00%	20.00%	35.00%	12.50%	22.50%	22.00%
Part H- Number of large trees , tree canopy height, recr	uitment of woody perennial sp	pecies:	•			
Eucalypt Large tree DBH benchmark used :		390		Non- Eucalypt Large tree DBH benchmark used:		200
Number of large eucalypt trees:		8		Number of large non eucalypt trees:		0
Total Number Large Trees:				8		
		-				
Median Tree Canony Height Measurements	Canony	10.00	Sub canony	10.00	Emorgont	

Median Tree Canopy Height Measurements	Canopy:	19.00	Sub-canopy:	10.00	Emergent:	
	-				•	-
Number of ecologically domin	ant layer species regenerating:				4	
Part I - Tree canopy cover, Shrub canopy cover						
Tree canopy cover %	Canopy:	39.35%	Sub-canopy:	25.70%	Emergent:	
Shrub canopy cover %				0.00%		

Note: Only assess Emergent (E) or Subcanopy (5) 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	4 - 101-200ha	3 - 50%-75% connection	2 - >10% to 30% remnant		1- Not within
SCORE	7	4	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 DEPLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

			Species Hab	itat 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)	3 - High	3 - High	3 - Moderately restricted (26 – 50% reduction)	2 - Likely to be critical to species' survival
				Score	1	8	9	7	4
2				Description					
-				Score					
3				Description					
,				Score					
4				Description					
				Score					
5				Description					
Ĵ				Score					
6				Description					
-				Score					
7				Description					
				Score					
8				Description					
-				Score					
9				Description					
-				Score					
10				Description					
				Score					
				Maximum Score	1.00	8.00	9.00	7.00	4.00

Attach Landscape Photos Here		
North		
South		

West			
West			
(
(FORM COMPLETE) Please save and			
	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets
	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets
Version 1 0 - Der	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets

Case Re	ference				SITE	ASSESSM	IENT TEM	PLATE SU	MMARY	SHEET		
Project	Area	45.49			-							
		Habitat Quality Attributes					Assessment	Unit Number				40
		Assessment Unit Area (ha)	30.73	14.76	0	4	0	0	0	0	9	10
Pa	irt	Regional Ecosystems	12.9-10.2	12.9-10.7								
		Bioregion	Southeast	Southeast								
			Queensiand	Queensiand								
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	3.00	4.00								
		2. Native plant species richness										
		- Trees	4.00	7.00								
		- Shrubs	3.00	2.00								
		- Grasses	2.00	3.00								
		- Forbs	2.00	3.00								
		3. Tree canopy height										
	tes	- Canopy Layer	25.00	19.00								
	ribut	- Sub-Canopy Layer	14.00	10.00								
	ר Att	- Emergent Layer										
1	ditio	4. Tree canopy cover	-									
	Con	- Canopy Layer	21.40%	39.35%								
	Site	- Sub-Canopy Layer	22.90%	25.70%								
		- Emergent Layer										
		5. Shrub canopy cover	0.00%	0.00%								
		6. Native perennial grass cover	1.50%	4.40%								
		7. Organic litter	31.50%	22.00%								
		8. Large trees	1.00	8.00								
		9. Coarse woody debris (Meters)	204.50	324.50								
		10. Weed cover	10.00%	2.00%								
	tes	11. Size of patch (fragmented)	7.00	7.00								
	tribu	12. Connectedness (fragmented)	4.00	4.00								
2	d Att	13. Context (fragmented)	2.00	2.00								
	ontex	14 Distance from water (intert)										
	te Co	14. Distance nom Water (intact)										
	S	15. Ecological corridors	0.00	0.00								
	ndex	16. Threats to species	1.00	1.00								
	itat II	17. Quality and availability of food and foraging habitat	8.00	8.00								
3	Habi	18, Quality and availability of shelter	9.00	9.00								
	cies	19. Species mobility capacity	7.00	7.00								
	Spe	20. Role of site location to overall population in the State.	4.00	4.00								

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Decise the	Name		SITE ASS	ESSIVIENT TE	WPLATE - B	ENCHWARK	OR BEST O	N OFFER SIT	E DETAILS -	ENTER DEL	AILS IN CELL	S RELOW
Total	Area	45.40	INFORM	ATION ON RENO				COVERNMENT	AVERSITE THAT			RENCHMAN
Total	Area	45.49	(NOTE: WHE	RE THERE IS NO BE	NCHMARK AVAILAI	BLE FOR THE REGIO	NAL ECOSYSTEM II	N QUESTION A BES	T ON OFFER SITE N	TAY BE USED AS A S	SURROGATE.)	DEINCHIMA
		Habitat Quality Attributes	1	1 1		Ber	nchMark or Best	on Offer Site D	ata 7	0	0	10
		Assessment Unit Area (ha)	30.73	14.76	0	4 0	0	0	0	0	0	0
Pa	rt	Regional Ecosystems	12.9-10.2	12.9-10.7								
		Bioregion	Southeast	Southeast								
			Queensland	Queensland								
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	6.00	3.00								
		2. Native plant species richness										
		- Trees	6.00	3.00								
		- Shrubs	7.00	5.00								
		- Grasses	7.00	8.00								
		- Forbs	13.00	26.00								
		3. Tree canopy height										
	tes	- Canopy Layer	21.00	21.00								
	tribu	- Sub-Canopy Layer	12.00	10.00								
	n At	- Emergent Layer										
1	litio	4. Tree canopy cover										
	Ğ	- Canopy Layer	64.00%	40.00%								
	Site	- Sub-Canopy Layer	20.00%	8.00%								
		- Emergent Layer										
		5. Shrub canopy cover	6.00%	3.00%								
		6. Native perennial grass cover	21.00%	61.00%								
		7. Organic litter	48.00%	20.00%								
		8. Large trees	38	18								
		9. Coarse woody debris (Meters)	506.00	272.00								
		10. Weed cover	0.00%	0.00%								

Case Reference				SITE ASSE	SSMENT	BENCHM		IPARISON	RESULTS			
Project Name				SHIE ASSE		DENCIN		Alison	RESOLIS	•		
Total Area	45.49											
Habitat Quality Attributes		Assessment Unit Number										
	nabilat Quality statistics	1	2	3	4	5	6	7	8	9		
Dent	Assessment Unit Area (ha)	30.73	14.76	0	0	0	0	0	0	0		
Part	Regional Ecosystems	12.9-10.2	12.9-10.7									
	Bioregion	Southeast Queensland	Southeast Queensland									
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	50.00%	133.33%									
	2. Native plant species richness											
	- Trees	66.67%	233.33%									
	- Shrubs	42.86%	40.00%									

10

		- Grasses	28.57	1%	37.50%					
		- Forbs	15.38	3%	11.54%					
		3. Tree canopy height								
	se	- Canopy Layer	119.0	5%	90.48%					
	ulbu 1	- Sub-Canopy Layer	116.6	7%	100.00%					
	n Att	- Emergent Layer		1						
1	ditio	4. Tree canopy cover								
	Con	- Canopy Layer	33.44	1%	98.38%					
	Site	- Sub-Canopy Layer	114.5	0%	321.25%					
		- Emergent Layer								
		5. Shrub canopy cover	0.00	%	0.00%					
		6. Native perennial grass cover	7.14	%	7.21%					
		7. Organic litter	65.63	1%	110.00%					
		8. Large trees	2.63	%	44.44%					
		9. Coarse woody debris (Meters)	40.42	!%	119.30%					
		10. Weed cover	10.00)%	2.00%					
						-				
	ites	11. Size of patch (fragmented)	7.0	D	7.00					
	tribu	12. Connectedness (fragmented)	4.0	D	4.00					
2	ext A1	13. Context (fragmented)	2.0	D	2.00					
	Cont	14. Distance from water (intact)								
	Site	15. Ecological corridors	0.0	D	0.00					
	dex	16. Threats to species	1.0	D	1.00					
	at	17. Quality and availability of food and foraging habitat	8.0	D	8.00		 	 		
3	labit	18, Quality and availability of shelter	9.0	D	9.00					
	cies F	19. Species mobility capacity	7.0	D	7.00					
	bec	20. Role of site location to overall population in the State.	4.0	0	4.00					

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET

Hobita Quality Site Assessment Template Piper Nave1 - Gett Piper Nave1 - Gett Complete form (Environmental Offsets Delivatory Form 3 - Notice of Election and Advanced Offsets Details) Complete form (Environmental Offsets Delivatory Form 3 - Notice of Election and Advanced Offsets Details) Complete form (Environmental Offsets Delivatory Form 3 - Notice of Election and Advanced Offsets Details) Complete form (Environmental Offsets Delivatory Form 3 - Notice of Election and Advanced Offsets Details) Complete form (Environmental Offsets Delivatory Form 3 - Notice of Election and Advanced Offsets Details) Devide the mandatory supporting Information Identified on the forms as being required to accompany your application Templete Name Devide the mandatory supporting Information Identified on the forms as being required to accompany your application Templete Name Part A - Advanced Offset State Part A - Advanced Offset State Part A - Advanced (FOR IMPACT STE ONLY) Please Steet Your Nominated Approach Standard Approach State State or insert north, south, east and west photos in the spaces provided from trow 231:355 below and Incide details unh a	FIELD
An unput a form la form la form la manual of fields in an Advanced Offields Details i 	
 Compute any other to your application Compute any applicati	
Provide the mandatory supporting information described on the torms as being required to accompany your application the torms is being for under a sesseement under consideration the torms is being for under a sesseement under consideration the torm is build to the torm is build to the torm is b	
is this Assessment for: An Inpact Site Rest An Offent Site In Advanced Offent Site Part - Administrative Part - Administrative Part - Bess Elect Orurn Nominated approach: Rest Site Orurn Part - Site Data Part - Site Data Part - Site Data Assessment Unit:	
Habitat Quality Assessment Unit Score Sheet Part A - Administrative Project Name Part A - Administrative Project Name Part B - Mominated Approach (FOR MMACT SITE ONLY) Please Select Your Nominated approach Standard Approach ii) Standard Assessment iii) Standard Assessment Part C - Site Data COMPLETE REMAINDER OF FORM) Part C - Site Data Date Assessment Unit: Assessment Unit Kree (ha) Assessment Unit: Assessment Unit Kree (ha) 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: Data Om Murk Zone Basting Northin Ste description and Location (including details of discrete polygons within the assessment unit)	
Part A - Administrative Case reference Project Name Part B - Nominated Approach (FOR IMPACT STE ONLY) Rapid approach Standard Approach Image: Comparison of the standard approach Pilese Select Your Nominated approach Rapid approach Standard Approach Image: Comparison of the standard Approach III) Standard Assessment Image: Comparison of the standard Approach Image	
Case reference Project Name Part B - Noninated Approach (FOR IMPACT SITE ONLY) Rapid approach Standard Approach Image: Comparison of the standard Approach Please Select Your Nominated approach: Rapid approach Standard Approach Image: Comparison of the standard Approach Ii) Standard Assessment Standard Approach Image: Comparison of the standard Approach Image: Comparison of the standard Approach Part C - Site Data Property Ripley Road Date Image: Comparison of the standard Approach Assessment Unit: Assessment Unit Area (ha) Rf Bioregion Number 1 17.3 12.9-10.2 Southeast Opeerdiand Image: Comparison of the standard Approach Image: Comparison of the standard Approach Image: Comparison of the standard Approach 2atum Om Mark Zone Easting Northin NOS 84 Om Mark Zone Easting Northin NOS 84 Om Mark Zone Easting Northin NOS 84 Ste description and Location (Including details of discrete polygons within the assessment unit) Ste description and Location (Including details of discrete polygons within the assessment unit)	
Part 8 - Nominated Approach (FOR INPACT STE ONLY) Plases Select Your Nominated approach: I) Standard Assessment Part C - Site Data Part D - Plata Assessment Utilt: Assessment Utilt: <td></td>	
Please Select Your Nominated approach: Please Select Your Nominated approach: Rapid approach II) Standard Aspersach: Part C - Site Data Part C - Site Data Assessment Unit: Assessment: Bitter Goa State Om Mark Zone	
Please Select Your Nominated approach: Rapid approach Standard Approach P i) Standard Assessment	
i) Standard Assessment Pert C- Site Data Property Property Ripley Road Date Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 3 17.3 12.9-10.2 Southeast Queendand Comment Site description and Location (including details of discrete polygons within the assessment unit) Site description and Location (including details of discrete polygons within the assessment unit)	
Part 2- Site Data Property Ripley Road Date Assessment Unit: Assessment Unit Assessment Unit Area (ha) RE Bioregion Number 1 17.3 12.9-10.2 Southeast Queensland Interview of 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. Interview of 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. Interview of 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. Interview of 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. Interview of Insert north, south, east and west photos in the spaces Interview of Insert north, south, east and west photos in the spaces Interview of Insert north, south, east and west photos in the space of Insert north interview of Insert north insert north, south, east and the space of Insert north insert n	
Part C - Site Data Property Ripley Road Date Assessment Unit:: Assessment Unit Area (ha) RE Bioregion Number 1 17.3 12.9-10.2 Southeast Queensland	
Part C - Site Data Property Ripley Road Date Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 17.3 12.9-10.2 Southeast Queendand 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. Control Easting Northin Southeast Queendand Southeast Queendand South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The and Mapping Coordinates in the following row. South as The And Th	
Property Ripley Road Date Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 17.3 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 Northin XS S4 0m Mark Zone Easting Northin S0A 34 0m Mark Zone Easting Northin S1 bearing S1 bearing Northin S1 bearing Northin	
Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 17.3 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 Om Mark Zone Easting Northin WGS 84 Om Mark Zone Easting Northin Ob 94 Om Mark Zone Easting Northin Plot bearing Site description and Location (including details of discrete polygons within the assessment unit)	
Assessment Unit: Assessment Unit Area (ha) RE Bioregion Number 1 17.3 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 Om Mark Zone Easting Northin WGS 84 Om Mark Zone Easting Northin S0m Mark Zone Easting Northin Plot bearing Site description and Location (including details of discrete polygons within the assessment unit) Site description and Location (including details of discrete polygons within the assessment unit)	
1 173 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 WGS 84 0m Mark Zone Easting Northin GDA 94 0m Mark Zone Easting Northin Plot bearing Northin Site description and Location (including details of discrete polygons within the assessment unit)	
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 Northin S0A 94 0m Mark Zone Easting Northin S0A 94 0m Mark Zone Easting Northin Plot bearing Recorders <td></td>	
Datum WGS 84 Om Mark Zone Easting Northin GDA 94 S0m Mark Zone Easting Northin Plot bearing Image: Som Mark Recorders Image: Som Mark	
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GDA 94 Cone Easting Northin 50m Mark 50m Mark 1	ng
Source Matrix Recorders Plot bearing Site description and Location (including details of discrete polygons within the assessment unit)	ng
Plot bearing Recorders Site description and Location (including details of discrete polygons within the assessment unit)	
Site description and Location (including details of discrete polygons within the assessment unit)	

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

Scientific Name

Scientific Name

	Tree species richness:								
Total number of species		7							
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum						
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark						
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple						
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood						
Scientific Name	Lophostemon suaveolens	Common Name	Swamp Box						
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum						
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash						
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum						
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark						
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash						
Scientific Name	Lophostemon suaveolens	Common Name	Swamp Box						
Scientific Name	Angophora leiocarpa	Common Name	Smooth-barked Apple						
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum						
Scientific Name	Alphitonia excelsa	Common Name	Soap Tree						

Shrub species richness: Total number of species 2 Scientific Name Acacia leiocalyx Early-flowering Black Wattle Common Name Scientific Name Acacia leiocalyx Common Name Early-flowering Black Wattle Scientific Name Acacia disparrima Common Name Hickory Wattle 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	Ottochloa gracillima	Common Name	Graceful Grass					
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass					
Scientific Name	Eragrostis brownii	Common Name	Browns Love 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						

Common Name

Common Name

	Forbs and others (non grass ground) species richness:									
Total number of species										
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush							
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons							
Scientific Name	Ozothamnus diosmifolius	Common Name	Sago Bush							
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily							
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons							
Scientific Name	Enchylaena tomentosa	Common Name	Ruby Salt Bush							
Scientific Name		Common Name								

Part E - Non-Native Plant Cover: (*list species below)			
Total percentage cover within plot		6.00%	
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Oxalis spp.	Common Name	Oxalis
Scientific Name	Commelina communis	Common Name	Wandering Jew
Scientific Name	Heliotropium amplexicaule	Common Name	Blue Heliotrope
Scientific Name	Lantana camara	Common Name	Lantana
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Oxalis spp.	Common Name	Oxalis
Scientific Name	Heliotropium amplexicaule	Common Name	Blue Heliotrope
Scientific Name	Megathyrsus maximus	Common Name	Guinea Grass
Scientific Name		Common Name	

Part F - Coarse Woody Debris: (*list lengths of individual logs in meters)							
Total Length of Course Woody Debris (Meters):		173.00	173.00				
1	3.20	26					

2	2.10	27	
3	2.90	28	
4	4.60	29	
5	1.10	30	
6	3.30	31	
7	1.40	32	
8	6.50	33	
9	3.40	34	
10	2.40	35	
11	3.70	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 perophial grass cover	Quadrat 1	Quadrat 2	Quadrat 5	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	1.00%	1.00%	3.00%	6.00%	6.00%	3.40%
Organia Littar	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	65.00%	32.50%	42.50%	42.50%	35.00%	43.50%

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:		5		Number of large non eucalypt trees:		5	
Total Number Large Trees:				10			
Median Tree Canopy Height Measurements	Canopy:	20.00	Sub-canopy:	12.00	Emergent:		
Number of ecologically domina	int layer species regenerating:				3		

Part I - Tree canopy cover, Shrub canopy cover

rate anopy cover, sinds canopy cover						
Tree canopy cover %	Canopy:	40.15%	Sub-canopy:	25.05%	Emergent:	
Shrub canopy cover %				0.00%		

Note: Only assess Emergent (E) or Subcanopy (5) 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	4 - 101-200ha	3 - 50%-75% connection	2 - >10% to 30% remnant		1- Not within
SCORE	7	4	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 Hab	itat 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)	2 - Likely to be critical to species' survival
				Score	1	5	5	4	4
2				Description					
2				Score					
2				Description					
3				Score					
4				Description					
4				Score					
-				Description					
3				Score					
				Description					

				Description					
/				Score					
				Description					
0				Score					
				Description					
5				Score					
10				Description					
10				Score					
	-	-	-						
				Maximum Score	1.00	5.00	5.00	4.00	4.00

Attach Landscape Photos Here

North

South

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(FORM COMPLETE)		
	Prease save and ionward completed form/s together with Unsets Delivery Form 5 that Can be accessed here:	
1	Version 1.0 - December - 2014 🔞 - State of Queensland, Department of Environment and Heritage Protection	

Case Refe	erence				SITE	ASSESSM	ENT TEM	PLATE SU	MMARY S	SHEET		
Project N Total A	Name Area	17.3										
	Ase Reference Project Name Total Areas Part 1 Part 1 1 1 1 1 1 1 1 1 1 1 1 1	Habitat Quality Attributes	1	2	1	4	Assessment	Unit Number	7	8	•	10
		Assessment Unit Area (ha)	17.3	0	0	0	0	0	0	0	0	0
Part		Regional Ecosystems	12.9-10.2									
		Bioregion	Southeast									
					-							
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	3.00									
		2. Native plant species richness										
	Slie Condition Attributes	- Trees	7.00									
		- Shrubs	2.00									
		- Grasses	3.00									
		- Forbs										
		3. Tree canopy height										
	ites	- Canopy Layer	20.00									
	tribu	- Sub-Canopy Layer	12.00									
	n At	- Emergent Layer										
1	te Conditio	4. Tree canopy cover									•	
		- Canopy Layer	40.15%									
	Site	- Sub-Canopy Layer	25.05%									
		- Emergent Layer										
		5. Shrub canopy cover	0.00%									
		6. Native perennial grass cover	3.40%									
		7. Organic litter	43.50%									
		8. Large trees	10.00									
		9. Coarse woody debris (Meters)	173.00									
		10. Weed cover	6.00%									
	Ites	11. Size of patch (fragmented)	7.00									
	tribu	12. Connectedness (fragmented)	4.00									
2	xt At	13. Context (fragmented)	2.00									
	onte	14. Distance from water (intact)										
	site C	1E Ecological considers	0.00									
	5	13. Ecological controlis	0.00									
	×			-	r	-	-	-				
	Inde	10. Inreats to species	1.00		-							
	oitat	17. Quality and availability of food and foraging habitat	5.00									
3	s Hat	18, Quality and availability of shelter	5.00									
	ecies	19. Species mobility capacity	4.00									
	S P	20. Role of site location to overall population in the State.	4.00									

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Project Na Total Are	me ea	17.3	INFORMATION ON BENCHMARKS IS AVAILABLE ON THE QUEENSLAND GOVERNMENT WEBSITE THAT CAN BE ACCESSED HERE: (NOTE WHERE THERE IS NO BENCHMARK AVAILABLE FOR THE REGIONAL ECOSYSTEM IN QUESTION A BEST ON OFFER SITE MAY BE USED AS A SURROGATE.)									
		Habitat Quality Attributes				Bei	nchMark or Best	t on Offer Site D	ata			
			1	2	3	4	5	6	7	8	9	10
Part		Assessment Unit Area (ha)	17.3	0	0	0	0	0	0	0	0	0
		Regional Ecosystems	12.9-10.2 Southeast									
		Bioregion	Queensland									
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	6.00									
		2. Native plant species richness		•								
		- Trees	6.00									
		- Shrubs	7.00									
		- Grasses	7.00									
		- Forbs	13.00									
		3. Tree canopy height			•							•
	s	- Canopy Layer	21.00									
	ribut	- Sub-Canopy Layer	12.00									
	n Att	- Emergent Layer										
1	litio	4. Tree canopy cover		•	•	-				•	•	
	Conc	- Canopy Layer	64.00%									
	Site	- Sub-Canopy Layer	20.00%									
		- Emergent Layer										
		5. Shrub canopy cover	6.00%									
		6. Native perennial grass cover	21.00%									
		7. Organic litter	48.00%									
		8. Large trees	38									
		9. Coarse woody debris (Meters)	506.00									
		10. Weed cover	0.00%									

Case Reference Project Name Total Area	17.3			<u>SITE ASSI</u>	SSMENT	BENCHM	ARK COM	PARISON	RESULTS	<u>.</u>	
	17.3 Habitat Quality Attributes Assessment Unit Area (ha) Regional Ecsystems Bioregion					Assessment	Unit Number				
	Habitat Quality Attributes	1	2	3	4	5	6	7	8	9	10
Death	Assessment Unit Area (ha) Regional Ecosystems	17.3	0	0	0	0	0	0	0	0	0
Part	Regional Ecosystems	12.9-10.2									
	Bioregion	Southeast Queensland									
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	50.00%									
	2. Native plant species richness										
	2. Native plant species richness - Trees	116.67%									
	- Shrubs	28.57%									

п

		- Grasses	42.86%						
		- Forbs							
		3. Tree canopy height							
	ies e	- Canopy Layer	95.24%						
	nibu	- Sub-Canopy Layer	100.00%						
	n Atl	- Emergent Layer							
1	ditio	4. Tree canopy cover							
	Con	- Canopy Layer	62.73%						
	Site	- Sub-Canopy Layer	125.25%						
		- Emergent Layer							
		5. Shrub canopy cover	0.00%						
		6. Native perennial grass cover	16.19%						
		7. Organic litter	90.63%						
		8. Large trees	26.32%						
		9. Coarse woody debris (Meters)	34.19%						
		10. Weed cover	6.00%						
					-	-	-	-	
	ites	11. Size of patch (fragmented)	7.00						
	tribu	12. Connectedness (fragmented)	4.00						
2	ext A	13. Context (fragmented)	2.00						
	Cont	14. Distance from water (intact)							
	Site	15. Ecological corridors	0.00						
	dex	16. Threats to species	1.00						
	atin	17. Quality and availability of food and foraging habitat	5.00						
3	labit	18, Quality and availability of shelter	5.00						
	cies F	19. Species mobility capacity	4.00						
	Spec	20. Role of site location to overall population in the State.	4.00						

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET
or all environm	nental offset applications you must: nete form (Environmental Offsets De	livery Form 1– Notice of Election an	 Peak Crossing Natural Advanced Offsets Details 	tails)	PLEASE NUTE -	TELLOW INDICATES AN	
 Comp Provi 	plete any other forms relevant to you ide the mandatory supporting inform	ir application ation identified on the forms as beir	ng required to accompa	any your application			
his form is usef lease note that	ful for undertaking a habitat quality : t this form should be completed indiv	analysis of an impact and/or offset/	advanced offset site. der consideration.				
	Is this Assessment for:	An Impact Site		An Offset Site	V	an Advanced Offset Site	
			Habitat Quality	Assessment Unit Score Shee	et		
Part C - Site Dat	a Property		Peak Crossing		Date		
	A	Accordment lik	ait Area (ba)	Dr.		Pierogian N	lumbar
	Assessment Unit:	Assessment of	nt Area (na)	KE		bioregion is	umber
	- Landscape Photo- Please attach	or insert north, south, east and west p	2 photos in the spaces prov	12.8.24 vided from row 231-355 below a	and include details suc	Southeast Qu	eensland tes in the following row.
Datum	- Landscape Photo- Please attach	21.6 or insert north, south, east and west p Om Mark	2 photos in the spaces prov	12.8.24 vided from row 231-355 below a	and include details suc	Southeast Qu ch as Time and Mapping Coordina Easting	eensland tes in the following row. Northing
D <u>atum</u> NGS 84 SDA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark	2 ohotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone	and include details suc	Southeast Qu ch as Time and Mapping Coordina Easting Easting	eensland tes in the following row. Northing Northing
v <u>atum</u> VGS 84 iDA 94	Landscape Photo- Please attach	Om Mark 50m Mark	2 shotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone	and include details suc	Southeast Qu ch as Time and Mapping Coordina Easting Easting	eensland tes in the following row. Northing Northing
atum GS 84 DA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark Site description	2 bhotos in the spaces prov and Location (including	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	and include details suc	Southeast Qu ch as Time and Mapping Coordina Easting Easting Inti	eensland tes in the following row. Northing Northing
Hatum VGS 84 DA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark Site description	2 shotos in the spaces prov and Location (including i	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	and include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting	eensland tes in the following row. Northing Northing
atum /GS 84 DA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark Site description	2 photos in the spaces prov and Location (including a	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
Datum VGS 84 SDA 94	Landscape Photo- Please attach	Om Mark Om Mark S0m Mark Site description	2 photos in the spaces prov and Location (including of	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
batum VGS 84 iDA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark Site description	2 photos in the spaces prov and Location (including a	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	Or insert north, south, east and west p Om Mark 50m Mark Site description	2 shotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0 or insert north, south, east and west p 0 m Mark 50 m Mark Site description	2 shotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0m Mark 0m Mark 50m Mark Site description	2 shotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0 m Mark 0 m Mark 50 m Mark Site description	2 shotos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0 m Mark 0 m Mark 50 m Mark Site description	2 photos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	and include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0 m Mark 0 m Mark 50 m Mark Site description	2 photos in the spaces prov	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	And include details suc	Southeast Qu th as Time and Mapping Coordina Easting Easting Init)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	0m Mark 0m Mark 50m Mark Site description	2 photos in the spaces prov and Location (including a	12.8.24 vided from row 231-355 below a Zone Zone details of discrete polygons with	and include details suc	Southeast Qu	eensland tes in the following row. Northing Northing

	Tree species richness:		
Total number of species		8	
Scientific Name	Eucalyptus crebra	Common Name	
Scientific Name	Corymbia citriodora	Common Name	
Scientific Name	Corymbia intermedia	Common Name	
Scientific Name	Eucalyptus carnea	Common Name	
Scientific Name	Allocasuarina torulosa	Common Name	
Scientific Name	Corymbia tessellaris	Common Name	
Scientific Name	Eucalyptus tereticornis	Common Name	
Scientific Name	Lophostemon confertus	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

	Shrub species richness:		
Total number of species		2	
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree
Scientific Name	Acacia suaveolens	Common Name	Sweet 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		5	
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass
Scientific Name	Entolasia stricta	Common Name	Wiry Panic
Scientific Name	Imperata cylindrica	Common Name	Blady Grass
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire 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 richnes	55:	
Total number of species		3	
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily
Scientific Name	Cassytha pubescens	Common Name	Devil's Twine
Scientific Name		Common Name	
Scientific Name		Common Name	
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	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine
Scientific Name	Conyza spp.	Common Name	Fleabane
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Total Length of Course Woody Debris (Meters):		318.00	
1	4.10	26	
2	0.80	27	
3	0.90	28	
4	6.10	29	
5	4.20	30	
6	4.10	31	
7	0.70	32	
8	0.70	33	
9	2.20	34	
10	1.50	35	
11	3.20	36	

12		3.30		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: (*pr	ovide percentage cover within Quadrat 1	each quadrat, and provide Quadrat 2	average cover) Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	60.00%	40.00%	5.00%	0.00%	0.00%	21.00%
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	40.00%	40.00%	65.00%	95.00%	30.00%	54.00%
Part H- Number of large trees , tree canopy height, rec	ruitment of woody perennial	species:				
Eucalypt Large tree DBH benchmark used :		420		Non- Eucalypt Large tree DBH benchmark used:		200
Number of large eucalypt trees:		2		Number of large non eucalypt trees:		
Total Number Large Trees:				2		
	·					
Median Tree Canopy Height Measurements	Canopy:	19.00	Sub-canopy:	9.00	Emergent:	
Number of ecologically domin	ant layer species regenerating:				6	
Part I - Tree canopy cover, Shrub canopy cover						
Part I - Tree canopy cover, Shrub canopy cover Tree canopy cover %	Canopy:	78.90%	Sub-canopy:	12.90%	Emergent:	

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	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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 DELEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

			Species Hab	itat 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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
2				Score					
3				Description					
5				Score					
4				Description					
-				Score					
5				Description					
5				Score					
6				Description					
v				Score					
7				Description					
•				Score					
8				Description					
-				Score					
9				Description					
-				Score					
10				Description					
10				Score					
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Attach Landscape Photos Here		
North		
South		

ast		_
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lest		-
	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: OLD Environmental Offsets	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	

Habitat Qual or all environme Comp Comp Provid	ty Site Assessment Templat intal offset applications you must: ete form (Environmental Offsets Del ete any other forms relevant to your e the mandatory supporting informa	e ivery Form 1– Notice of Election an application stion identified on the forms as bein	 Peak Crossing Natural Brid d Advanced Offsets Details) ng required to accompany y 	lge - 12.9-10.2 rour application	PLEASE NOTE -	YELLOW INDICATES A	AUTO POPULATED FIELD	
This form is usefu Please note that	I for undertaking a habitat quality a this form should be completed indivi	nalysis of an impact and/or offset/ dually for each assessment unit un	advanced offset site. der consideration.					
	s this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site		
			Habitat Quality Asse	essment Unit Score Shee	et			
Part C - Site Data								
	Property		Peak Crossing		Date			
	Assessment Unit:	Assessment Ur	t Area (ha) RE			Bioregion	Number	
	2	48.0	2	12.9-10.2		Southeast Q	ueensland	
	Landscane Photo- Please attach o							
	Landscape Frioto-Frease attach c	or insert north, south, east and west p	photos in the spaces provided	from row 231-355 below a	and include details suc	h as Time and Mapping Coordin	ates in the following row.	
Datum		or insert north, south, east and west	photos in the spaces provided	from row 231-355 below a	and include details suc	h as Time and Mapping Coordin Easting	ates in the following row. Northing	
Datum WGS 84 GDA 94		Om Mark	photos in the spaces provided Zor	from row 231-355 below a	and include details suc	h as Time and Mapping Coordin Easting Fasting	ates in the following row. Northing Northing	
Datum VGS 84 SDA 94		0m Mark	2010 Zor	from row 231-355 below a ne ne	and include details suc	h as Time and Mapping Coordin Easting Easting	ates in the following row. Northing Northing Northing	
<u>atum</u> /GS 84 DA 94	Plot bearing	0m Mark 50m Mark Site description	Abotos in the spaces provided Zor Zor and Location (including detail	from row 231-355 below a ne ne ls of discrete polygons with	And Include details suc	h as Time and Mapping Coordin Easting Easting it)	ates in the following row. Northing Northing	

Tree species richness:							
Total number of species		6					
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum				
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash				
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark				
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark				
Scientific Name	Angophora subvelutina	Common Name	Rough-barked Apple				
Scientific Name	Lophostemon confertus	Common Name	Brush Box				
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum				
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash				
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark				
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark				
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark				

Shrub species richness:							
Total number of species		6					
Scientific Name	Acacia salicina	Common Name	Sally Wattle				
Scientific Name	Acacia fimbriata	Common Name	Brisbane Wattle				
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Wattle				
Scientific Name	Acacia melanoxlyn	Common Name	Blackwood				
Scientific Name	Ficus coronata	Common Name	Sandpaper Fig				
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree				
Scientific Name	Ozothamnus diosmifolius	Common Name	Sago Bush				
Scientific Name	Dodonaea viscosa	Common Name	Hop Bush				
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle				
Scientific Name	Grewia retusifolia	Common Name	Dog's Balls				
Scientific Name	Sida cordifolia	Common Name	Sida				
Scientific Name	Alphitonia excelsa	Common Name	Soap Tree				

Grass species richness:							
Total number of species		4					
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass				
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass				
Scientific Name	Entolasia stricta	Common Name	Wiry Panic				
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	Entolasia stricta	Common Name	Wiry Panic				
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass				
Scientific Name	Aristida calycina	Common Name	Dark Aristida				
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily				

Forbs and others (non grass ground) species richness:							
Total number of species		3					
Scientific Name	Lomandra longifolia	Spiky Mat Rush					
Scientific Name	Cheilanthes distans	Common Name	Bristle Cloak Fern				
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily				
Scientific Name	Cassytha pubescens	Common Name	Devil's Twine				
Scientific Name	Sida cordifolia	Common Name	Sida				
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush				
Scientific Name	Enchylaena tomentosa	Common Name	Ruby Salt Bush				

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

Total percentage cover within plot	17.50%					
Scientific Name	Lantana camara	Common Name	Lantana			
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana			
Scientific Name	Conyza spp.	Common Name	Fleabane			
Scientific Name	Dichondra repens	Common Name	Kidney Weed			
Scientific Name	Senecio madagascariensis	Common Name	Fireweed			
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton Bush			
Scientific Name	Lantana camara	Common Name	Lantana			
Scientific Name	Lantana montevidensis	Common Name	Creeping Lantana			
Scientific Name	Opuntia spp.	Common Name	Prickly Pear			
Scientific Name	Conyza spp.	Common Name	Fleabane			
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine			

Total Length of Course Woody Debris (Meters):		119.00	
1	1.20	26	
2	1.40	27	
3	5.10	28	
4	4.10	29	
5	2.90	30	
6	0.80	31	
7	6.20	32	
8	2.10	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	

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

Notive perophial grass sever	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average		
Wative perennial grass cover	55.00%	80.00%	52.50%	70.00%	75.00%	66.50%		
Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average		
	35.00%	20.00%	35.00%	27.50%	10.00%	25.50%		

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:	2			Number of large non eucalypt trees:		0	
Total Number Large Trees:				2			
Median Tree Canopy Height Measurements	Canopy:	17.50	Sub-canopy:	9.50	Emergent:		
Number of ecologically domina	int layer species regenerating:		5				
irt I - Tree canopy cover, Shrub canopy cover							
Tree canopy cover %	Canopy:	20.30%	Sub-canopy:	15.15%	Emergent:		

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

10.95%

Part J - Site Context Score

Shrub canopy cover %

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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

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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
-				Score					
3				Description					
3				Score					
4				Description					
				Score					
5				Description					
, , , , , , , , , , , , , , , , , , ,				Score					
6				Description					
, in the second				Score					
7				Description					
				Score					
8				Description					
°				Score					
9				Description					
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10				Description					
10				Score					
		· · · · ·	-	-	-	-	-		
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Attach Landscape Photos Here		
North		
South		

East			-
			1
West			
west			1
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	QLD Environmental Offsets	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	QLD Environmental Offsets	

Case Re	terence		-		SITE	ASSESSM	ENT TEM	PLATE SU	MMARY S	SHEET		
Project	Area	69.64	-									
			-									
		Habitat Quality Attributes					Assessment	Unit Number				40
		Assessment Unit Area (ha)	21.62	48.02	0	4	0	0	0	0	9	0
Pa	rt	Regional Ecosystems	12.8.24	12.9-10.2								
		Bioregion	Southeast	Southeast								
			Queensiand	Queensiand	ļ							
		1. Recruitment of woody perennial species (Number of ecologically dominant layers resenerating)	6.00	5.00								
		2. Native plant species richness			1						1	
		- Trees	8.00	6.00								
		- Shrubs	2.00	6.00								
		- Grasses	5.00	4.00								
		- Forbs	3.00	3.00								
		3. Tree canopy height										
	s	- Canopy Layer	19.00	17.50								
	ribut	- Sub-Canopy Layer	9.00	9.50								
	1 Att	- Emergent Layer										
1	1 Condition	4. Tree canopy cover										
		- Canopy Layer	78.90%	20.30%								
	Site	- Sub-Canopy Layer	12.90%	15.15%								
		- Emergent Layer										
		5. Shrub canopy cover	10.10%	10.95%								
		6. Native perennial grass cover	21.00%	66.50%								
		7. Organic litter	54.00%	25.50%								
		8. Large trees	2.00	2.00								
		9. Coarse woody debris (Meters)	318.00	119.00								
		10. Weed cover	5.00%	17.50%								
	tes	11. Size of patch (fragmented)	10.00	10.00								
	tribu	12. Connectedness (fragmented)	5.00	5.00								
2	đ Ati	13. Context (fragmented)	4.00	4.00								
	ontex	14 Distance from water (interf)										
	te Co	14. Distance nom water (intact)										
	ŝ	15. Ecological corridors	6.00	6.00								
	ndex	16. Threats to species	5.00	5.00								
	itat II	17. Quality and availability of food and foraging habitat	9.00	9.00								
3	Habi	18, Quality and availability of shelter	9.00	9.00								
	cies	19. Species mobility capacity	10.00	10.00								
	Spe	20. Role of site location to overall population in the State.	5.00	5.00								

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Project	Name		SITE ASS		IVIPLATE - D	EINCHIVIARI	OK BEST U	N OFFER SI	E DETAILS -	ENTER DEL	AILS IN CEL	L3 DELOW
Total	Area	69.64	INFORM	ATION ON BEND	HMARKS IS AV			GOVERNMENT	WERSITE THAT	CAN BE ACCESS		BENCHMAR
Total	Area	03104	(NOTE: WHE	RE THERE IS NO BE	NCHMARK AVAILA	BLE FOR THE REGIO	ONAL ECOSYSTEM I	N QUESTION A BES	T ON OFFER SITE N	AY BE USED AS A	SURROGATE.)	Derterning
		Habitat Quality Attributes	1	3		Bei	nchMark or Best	t on Offer Site D	ata 7	0	0	10
		Assessment Unit Area (ha)	21.62	48.02	0	4	0	0	,	0	0	0
Pa	rt	Regional Ecosystems	12.8.24	12.9-10.2								
		Bioregion	Southeast Queensland	Southeast Queensland								
		1. Recruitment of woody perennial species (Number of	7.00	6.00								
		ecologically dominant layers regenerating) 2. Native plant species richness										
		- Trees	7.00	6.00								
		- Shrubs	7.00	7.00								
		- Grasses	13.00	7.00								
		- Gruppes	28.00	13.00								
		3. Tree canony height	20.00	15.00								
	s	- Canopy Laver	27.00	21.00								
	ibute	- Sub-Canopy Layer	11.00	12.00								1
	Attr	- Emergent Layer										
1	litior	4. Tree canopy cover										
	Cond	- Canopy Layer	53.00%	64.00%								
	Site	- Sub-Canopy Layer	24.00%	20.00%								1
		- Emergent Layer										
		5. Shrub canopy cover	7.00%	6.00%								_
		6. Native perennial grass cover	8.00%	21.00%								
		7. Organic litter	32.00%	48.00%								
		8. Large trees	25	38								
		9. Coarse woody debris (Meters)	764.00	506.00								
		10. Weed cover	0.00%	0.00%								

Case Reference	e			SITE ASSE	SSMENT	RENCHM			RESULTS		
Project Name					SSIVILIAI	DENCINA		ANISON	RESOLIS		
Total Area	69.64										
	Habitat Quality Attributor					Assessment	Unit Number				
	Habitat Quality Attributes	1	2	3	4	5	6	7	8	9	10
Dant	Assessment Unit Area (ha)	21.62	48.02	0	0	0	0	0	0	0	0
Part	Regional Ecosystems	12.8.24	12.9-10.2								
	Bioregion	Southeast Queensland	Southeast Queensland								
		-									
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	85.71%	83.33%								
	2. Native plant species richness										
	- Trees	114.29%	100.00%								
	- Shrubs	28.57%	85.71%								

Proj To

		- Grasses	38.46	% 57.:	14%				
		- Forbs	10.71	% 23.0	08%				
		3. Tree canopy height							
	tes	- Canopy Layer	70.37	% 83.3	33%				
	ipn	- Sub-Canopy Layer	81.82	% 79.:	17%				
	n Atl	- Emergent Layer							
1	ditio	4. Tree canopy cover							
	G	- Canopy Layer	148.87	% 31.3	72%				
	Site	- Sub-Canopy Layer	53.75	% 75.3	75%				
		- Emergent Layer							
		5. Shrub canopy cover	144.29	182.	50%				
		6. Native perennial grass cover	262.50	1% 316.	67%				
		7. Organic litter	168.75	% 53.:	13%				
		8. Large trees	8.009	6 5.2	6%				
		9. Coarse woody debris (Meters)	41.62	% 23.	52%				
		10. Weed cover	5.009	6 17.	50%				
	tes	11. Size of patch (fragmented)	10.00	0 10	.00				
	ttribu	12. Connectedness (fragmented)	5.00	5.	00				
2	ext A	13. Context (fragmented)	4.00	4.	00				
	Cont	14. Distance from water (intact)							
	Site	15. Ecological corridors	6.00	6.	00				
	dex	16. Threats to species	5.00	5.	00				
	atin	17. Quality and availability of food and foraging habitat	9.00	9.	00				
3	labit	18, Quality and availability of shelter	9.00	9.	00				
	cies F	19. Species mobility capacity	10.00	0 10	.00		 		
	Spec	20. Role of site location to overall population in the State.	5.00	5.	00				

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET

Habitat Qua or all environn Com Prov	ality Site Assessment Templa mental offset applications you must: pipete form (Environmental Offsets De uplete any other forms relevant to you ide the mandatory supporting inform	te livery Form 1– Notice of Election an ir application lation identified on the forms as beir nambris of an impact and on the forms as beir	. Cat X 12.8.24 d Advanced Offsets Details ng required to accompany	s) your application	PLEASE NOTE - \	YELLOW INDICATES AN	AUTO POPULATED FIELD
lease note tha	at this form should be completed indiv Is this Assessment for:	An Impact and/or onset/ An Impact Site	der consideration.	An Offset Site	5	an Advanced Offset Site	
			Habitat Quality As	sessment Unit Score Shee	t		
art C - Site Da	Property		Peak Crossing		Date		
					1	.	
	Assessment Onit:	Assessment Ur 28.6 or insert north, south, east and west p	nit Area (ha) 3 ohotos in the spaces provide	RE 12.8.24 ed from row 231-355 below a	ind include details such	Bioregion N Southeast Qu as Time and Mapping Coordina	umber veensland tes in the following row.
Datum NGS 84	Assessment Unit:	Assessment Ur 28.6 or insert north, south, east and west p 0m Mark	nit Area (ha) 3 ohotos in the spaces provide 20	RE 12.8.24 ad from row 231-355 below a	Ind include details such	Bioregion N Southeast Q. as Time and Mapping Coordina Easting	Number Heensland Heensland Heensland Heensland Northing
Datum NGS 84 SDA 94	Assessment Unit:	Assessment Ur 28.6 or insert north, south, east and west p 0m Mark 50m Mark	nit Area (ha) 3 shotos in the spaces provide Za	RE 12.8.24	nd include details such	Bioregion N Southeast Q as Time and Mapping Coordina Easting Easting	Number veensland tes in the following row. Northing Northing
l <u>atum</u> VGS 84 iDA 94	Assessment Unit: 1 Landscape Photo- Please attach	Assessment Ur 28.6 or insert north, south, east and west p 0m Mark 50m Mark	nit Area (ha) 3 solutions in the spaces provide Control of the space o	RE 12.8.24	nd include details such	Bioregion N Southeast Qu as Time and Mapping Coordina Easting Easting	Number veensland tes in the following row. Northing Northing
2 <u>atum</u> VGS 84 3DA 94	Assessment Unit: I Landscape Photo- Please attach	Assessment Ur 28.6 or insert north, south, east and west p 0m Mark 50m Mark Site description	nit Area (ha) 3 bototos in the spaces provide 2 2 2 2 and Location (including deta	RE 12.8.24	nd include details such	Bioregion N Southeast Q. as Time and Mapping Coordina Easting Easting Easting	Aumber veensland tes in the following row. Northing Northing

Tree species richness:							
Total number of species		7					
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum				
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark				
Scientific Name	Eucalyptus moluccana	Common Name	Gum-topped Box				
Scientific Name	Eucalyptus carnea	Common Name	Broad-leaved Mahogany				
Scientific Name	Corymbia trachyphloia	Common Name	Brown Bloodwood				
Scientific Name	Acacia disparrima	Common Name	Hickory Wattle				
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark				
Scientific Name		Common Name					
Scientific Name		Common Name					
Scientific Name		Common Name					

	Shrub species richness:		
Total number of species		5	
Scientific Name	Acacia fimbriata	Common Name	Brisbane Wattle
Scientific Name	Alphitonia excelsa	Common Name	Soap Tree
Scientific Name	Melia azedarach	Common Name	White Cedar
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	

	Grass species richness:							
Total number of species		7						
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass					
Scientific Name	Cymbopogon refractus	Common Name	Barbed-wire Grass					
Scientific Name	Entolasia stricta	Common Name	Wiry Panic					
Scientific Name	Imperata cylindrica	Common Name	Blady Grass					
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass					
Scientific Name	Aristida calycina	Common Name	Dark Aristida					
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass					
Scientific Name		Common Name						
Scientific Name		Common Name						
Scientific Name		Common Name						

Forbs and others (non grass ground) species richness:							
Total number of species		4					
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush				
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily				
Scientific Name	Cheilanthes distans	Common Name	Bristle Cloak Fern				
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla				
Scientific Name		Common Name					
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 montevidensis	Common Name	Creeping Lantana
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine
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	

Total Length of Course Woody Debris (Meters):		514.00	
1	1.50	26	
2	2.10	27	
3	9.30	28	
4	3.60	29	
5	1.20	30	
6	2.40	31	
7	8.10	32	
8	1.10	33	
9	2.70	34	
10	9.30	35	
11	5.10	36	

12		5.00		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: (*pr	ovide percentage cover within Quadrat 1	each quadrat, and provide	average cover) Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	40.00%	5 00%	15.00%	0.00%	20.00%	18.00%
	10.0070	5.0070	15.0070	0.0070	50.0070	10.00/
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	Quadrat 1 40.00%	Quadrat 2 90.00%	Quadrat 3 85.00%	Quadrat 4 90.00%	Quadrat 5 65.00%	Average 74.00%
Organic Litter Part H- Number of large trees, tree canopy height, rec	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species:	Quadrat 3 85.00%	Quadrat 4 90.00%	Quadrat 5 65.00%	Average 74.00%
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used :	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species: 420	Quadrat 3 85.00%	Quadrat 4 90.00% Non- Eucalypt Large tree DBH benchmark used:	Quadrat 5 65.00%	Average 74:00% 200
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees:	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species: 420 9	Quadrat 3 85.00%	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees:	Quadrat 5 65.00%	Average 74.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species: 420 9	Quadrat 3 85.00%	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9	Quadrat 5 65.00%	Average 74.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species: 420 9	Quadrat 3 85.00%	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9	Quadrat 5 65.00%	Average 74.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: fotal Number Large Trees: Vedian Tree Canopy Height Measurements	Quadrat 1 40.00% ruitment of woody perennial s Canopy:	Quadrat 2 90.00% species: 420 9 26.00	Quadrat 3 85.00%	Quadrat 4 90.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9 12.00	Quadrat 5 65.00% Emergent:	Average 74:00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements	Quadrat 1 40.00% ruitment of woody perennial s	Quadrat 2 90.00% species: 420 9 26.00	Quadrat 3 85.00% Sub-canopy:	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9 12.00	Quadrat 5 65.00% Emergent:	Average 74.00% 200 0
Organic Litter Part H- Number of large trees, tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Fotal Number Large Trees: Wedian Tree Canopy Height Measurements Number of ecologically domin	Quadrat 1 40.00% ruitment of woody perennial s Canopy:	Quadrat 2 90.00% species: 420 9 26.00	Quadrat 3 85.00% Sub-canopy:	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9 12.00	Quadrat 5 65.00% Emergent: 3	Average 74.00% 200 0
Organic Litter Part H- Number of large trees, tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements Number of ecologically domin Part I - Tree canopy cover, Shrub canopy cover	Quadrat 1 40.00% ruitment of woody perennial s Canopy:	Quadrat 2 90.00% species: 420 9 26.00	Quadrat 3 85.00% Sub-canopy:	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9 12.00	Quadrat 5 65.00% Emergent: 3	Average 74.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, rec Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements Number of ecologically domin Part I - Tree canopy cover, Shrub canopy cover Tree canopy cover %	Quadrat 1 40.00% ruitment of woody perennial s Canopy: canopy:	Quadrat 2 90.00% species: 420 9 26.00 65.10%	Quadrat 3 85.00% Sub-canopy: Sub-canopy:	Quadrat 4 90.00% Non-Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9 12.00	Quadrat 5 65.00% Emergent: 3 Emergent:	Average 74.00% 200 0

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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 DELEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
-				Score					
3				Description					
3				Score					
4				Description					
				Score					
5				Description					
3									
6				Description					
-				Score					
7				Description					
•				Score					
8				Description					
-				Score					
9				Description					
-				Score					
10				Description					
				Score					
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Attach Landscape Photos Here		
North		
South		

ast		_
		-
lest		-
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: OLD Environmental Offsets	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	

labitat Quality Site Assessment Template	e	. Cat X 12.9-10.2		PLEASE NOTE - Y	ELLOW INDICATES AN	I AUTO POPULATED FIELD
or all environmental offset applications you must: Complete form (Environmental Offsets Deli Complete any other forms relevant to your Provide the mandatory supporting informa	ivery Form 1– Notice of Election an application stion identified on the forms as bei	d Advanced Offsets Details) ng required to accompany y	our application			
his form is useful for undertaking a habitat quality a lease note that this form should be completed indivi	nalysis of an impact and/or offset/ dually for each assessment unit un	advanced offset site. der consideration.				
Is this Assessment for:	An Impact Site		An Offset Site		an Advanced Offset Site	
		Habitat Quality Asse	essment Unit Score Shee	et		
Property		Peak Crossing		Date		
Assessment Unit:	Assessment U	nit Area (ha)	RE		Bioregion I	Number
<u>um</u>	0m Mark	Zon	le		Easting	Northing
VGS 84		Zon	ie		Easting	Northing
NGS 84	50m Mark					
VGS 84 CL IDA 94 CL Plot bearing	50m Mark			Recorders		
VGS 84 DA 94 Plot bearing	50m Mark Site description	and Location (including detail:	s of discrete polygons with	Recorders	.)	

Tree species richness:				
Total number of species		4		
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum	
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum	
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark	
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		

Shrub species richness:				
Total number of species		7		
Scientific Name	Erythrina vespertilio	Common Name	Batwing Coral Tree	
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Black Wattle	
Scientific Name	Acacia salicina	Common Name	Sally Wattle	
Scientific Name	Ficus coronata	Common Name	Sandpaper Fig	
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle	
Scientific Name	Breynia oblongifolia	Common Name	Coffee Bush	
Scientific Name	Brachychiton rupestris	Common Name	Narrow-leaved Bottletree	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species		4		
Scientific Name	Herteropogon contortus	Common Name	Black Spear Grass	
Scientific Name	Imperata cylindrica	Common Name	Blady Grass	
Scientific Name	Entolasia stricta	Common Name	Wiry Panic	
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		3			
Scientific Name	Dianella caeurulea	Common Name	Blue Flax Lily		
Scientific Name	Lomandra multiflora	Common Name	Many-flowering Mat Rush		
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush		
Scientific Name		Common Name			
Scientific Name		Common Name			
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	Lantana montevidensis	Common Name	Creeping Lantana
Scientific Name	Passiflora suberosa	Common Name	Corky Passionvine
Scientific Name	Dichondra repens	Common Name	Kidney Weed
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Total Length of Course Woody Debris (Meters):		236.50	
1	3.30	26	
2	5.80	27	
3	3.10	28	
4	3.00	29	
5	8.45	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)

Nativo peroppial grass sever	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	15.00%	20.00%	20.00%	10.00%	30.00%	19.00%
Organia Littar	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	70.00%	80.00%	70.00%	80.00%	60.00%	72.00%

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:	22.00	Sub-canopy:	11.00	Emergent:	
		•				
Number of ecologically domina	int layer species regenerating:				2	
Part I - Tree canopy cover, Shrub canopy cover						
Tree canopy cover %	Canopy:	78.00%	Sub-canony:	22 50%	Emergent:	

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

37.20%

Part J - Site Context Score

Shrub canopy cover %

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	5 - >200ha	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

YES V 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

			Species Hab	itat 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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
				Score	5	9	9	10	5
2				Description					
-				Score					
3				Description					
3				Score					
4				Description					
				Score					
5				Description					
, , , , , , , , , , , , , , , , , , ,				Score					
6				Description					
, in the second				Score					
7				Description					
				Score					
8				Description					
0				Score					
9				Description					
, ,				Score					
10				Description					
10				Score					
		-	-	-	-	-	-		
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Attach Landscape Photos Here		
North		
South		

West			
West			
(
(FORM COMPLETE) Please save and			
	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets
	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets
Version 1 0 - Der	d forward completed form/s together with Offsets Delivery Form 5 that can	in be accessed here:	QLD Environmental Offsets

Case Reference Project Name Total Area				SITE	ASSESSM	ENT TEM	PLATE SU	MMARY S	SHEET			
Project	Area	40.12	-									
		Habitat Quality Attributes					Assessment	Unit Number				
		Assessment Unit Area (ha)	28.63	2 11.49	3	4	0	6	7	8	9	10
Pa	rt	Regional Ecosystems	12.8.24	12.9-10.2								
		Bioresion	Southeast	Southeast								<u> </u>
			Queensland	Queensland								,
		1. Recruitment of woody perennial species (Number of	3.00	2.00								
		2. Native plant species richness										
		- Trees	7.00	4.00								
		- Shrubs	5.00	7.00								
		- Grasses	7.00	4.00								
		- Forbs	4.00	3.00								
		3. Tree canopy height	· · · · · ·									
	8	- Canopy Layer	26.00	22.00								
	ibut	- Sub-Canopy Layer	12.00	11.00								
	Atti	- Emergent Layer										<u> </u>
site Condition	4. Tree canopy cover											
	Conc	- Canopy Layer	65.10%	78.00%								
	Site	- Sub-Canopy Layer	35.50%	22.50%								
	ö	- Emergent Layer										
		5. Shrub canopy cover	18.30%	37.20%								
		6. Native perennial grass cover	18.00%	19.00%								
		7. Organic litter	74.00%	72.00%								
		8. Large trees	9.00	5.00								
		9. Coarse woody debris (Meters)	514.00	236.50								
		10. Weed cover	5.00%	5.00%								
	tes	11. Size of patch (fragmented)	10.00	10.00								
	ribut	12. Connectedness (fragmented)	5.00	5.00								
2	d Att	13. Context (fragmented)	4.00	4.00								
-	ntex		4.00	4.00								-
	te Co	14. Distance from water (intact)										<u> </u>
	S	15. Ecological corridors	6.00	6.00								
	xapr	16. Threats to species	5.00	5.00								
	tat Ir	17. Quality and availability of food and foraging habitat	9.00	9.00								
3	Habi	18, Quality and availability of shelter	9.00	9.00								
	cies	19. Species mobility capacity	10.00	10.00								
	Sper	20. Role of site location to overall population in the State.	5.00	5.00								

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Drojoct	Name		SITE ASS	ESSIVIENTIE	WIPLATE - B	ENCHMAR	OR BEST O	N OFFER SIT	E DETAILS -	ENTER DET.	AILS IN CEL	T2 RELON
Total	Area	40.12	INFORM	ATION ON RENO				COVERNMENT	WEDSITE TUAT			RENCHMAN
Total	Area	40.12	(NOTE: WHE	RE THERE IS NO BE	NCHMARK AVAILA	BLE FOR THE REGIO	DNAL ECOSYSTEM I	N QUESTION A BES	T ON OFFER SITE N	IAY BE USED AS A S	URROGATE.)	DEINCHIMA
			-									
		Habitat Quality Attributes	1	1 1		Bei	nchMark or Best	t on Offer Site D	ata 7	0	0	10
		Assessment Unit Area (ha)	28.63	11.49	0	0	0	0	0	0	0	0
Pa	rt	Regional Ecosystems	12.8.24	12.9-10.2								
		Bioregion	Southeast	Southeast								
			Queensland	Queensland								
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	7.00	6.00								
		2. Native plant species richness										
		- Trees	7.00	6.00								
		- Shrubs	7.00	7.00								
		- Grasses	13.00	7.00								
		- Forbs	28.00	13.00								
		3. Tree canopy height			•		•					
	tes	- Canopy Layer	27.00	21.00								
	ribu	- Sub-Canopy Layer	11.00	12.00								
	n Att	- Emergent Layer										
1	ditio	4. Tree canopy cover										
	Cont	- Canopy Layer	53.00%	64.00%								
	Site	- Sub-Canopy Layer	24.00%	20.00%								
		- Emergent Layer										
		5. Shrub canopy cover	7.00%	6.00%								
		6. Native perennial grass cover	8.00%	21.00%								
		7. Organic litter	32.00%	48.00%								_
		8. Large trees	25	38								
		9. Coarse woody debris (Meters)	764.00	506.00								
		10. Weed cover	0.00%	0.00%								

00000											
ence				SITE ASSE	ESSMENT	BENCHM	ARK COM	PARISON	RESULTS		
ame											
ea	40.12										
	Habitat Quality Attributor					Assessment	Unit Number				
	Habitat Quality Attributes	1	2	3	4	5	6	7	8	9	10
	Assessment Unit Area (ha)	28.63	11.49	0	0	0	0	0	0	0	0
	Regional Ecosystems	12.8.24	12.9-10.2								
	Bioregion	Southeast Queensland	Southeast Queensland								
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	42.86%	33.33%								
	2. Native plant species richness										
	- Trees	100.00%	66.67%								
	- Shrubs	71.43%	100.00%								

Par

		- Grasses	53.85%	57.14%				
		- Forbs	14.29%	23.08%				
		3. Tree canopy height						
	tes	- Canopy Layer	96.30%	104.76%				
	tribu	- Sub-Canopy Layer	109.09%	91.67%				
	n At	- Emergent Layer						
1	ditio	4. Tree canopy cover						
	G	- Canopy Layer	122.83%	121.88%				
	Site	- Sub-Canopy Layer	147.92%	112.50%				
		- Emergent Layer						
		5. Shrub canopy cover	261.43%	620.00%				
		6. Native perennial grass cover	225.00%	90.48%				
		7. Organic litter	231.25%	150.00%				
		8. Large trees	36.00%	13.16%				
		9. Coarse woody debris (Meters)	67.28%	46.74%				
		10. Weed cover	5.00%	5.00%				
	tes	11. Size of patch (fragmented)	10.00	10.00				
	ttribu	12. Connectedness (fragmented)	5.00	5.00				
2	ext A	13. Context (fragmented)	4.00	4.00				
	Cont	14. Distance from water (intact)						
	Site	15. Ecological corridors	6.00	6.00				
		•						
	dex	16. Threats to species	5.00	5.00				
	at Inde	17. Quality and availability of food and foraging habitat	9.00	9.00				
3	labit	18, Quality and availability of shelter	9.00	9.00	 	 		
	cies H	19. Species mobility capacity	10.00	10.00				
	bed	20. Role of site location to overall population in the State.	5.00	5.00				

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET

labitat Qua	ality Site Assessment Templat	te	Burnett Creek Remant		PLEASE NOTE - 1	YELLOW INDICATES AN	AUTO POPULATED FIELD
or all environm Com Com Provi	nental offset applications you must: plete form (Environmental Offsets De plete any other forms relevant to you vide the mandatory supporting inform	livery Form 1– Notice of Election a ur application lation identified on the forms as be	nd Advanced Offsets Deta	ails) ny your application			
This form is use Please note that	eful for undertaking a habitat quality a at this form should be completed indiv	analysis of an impact and/or offset, vidually for each assessment unit ur	/advanced offset site. nder consideration.				
	Is this Assessment for:	An Impact Site		An Offset Site	•	an Advanced Offset Site	
			Habitat Quality	Assessment Unit Score Shee	t		
	-						
art C - Site Dat	Property		Burnett Creek		Date		
	A	Associated	hit Aroa (ba)	DC.		Piorogian	lumbor
	Assessment Unit:	Assessment u	nit Area (na)	KE		bioregion in	lumper
	1 Landscape Photo- Please attach	or insert north, south, east and west) photos in the spaces provi	12.9-10.2 ided from row 231-355 below a	and include details such	Southeast Qu as Time and Mapping Coordina	eensland tes in the following row.
Datum WGS 84	1 Landscape Photo- Please attach	or insert north, south, east and west	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone	and include details such	Southeast Qu a as Time and Mapping Coordina Easting	eensland tes in the following row. Northing
Datum WGS 84 GDA 94	Landscape Photo- Please attach	Or insert north, south, east and west	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone	and include details such	Southeast Qu as Time and Mapping Coordina Easting Easting	eersland tes in the following row. Northing Northing
) <u>atum</u> VGS 84 3DA 94	Landscape Photo- Please attach	Or insert north, south, east and west	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting	eensland tes in the following row. Northing Northing
VGS 84 DA 94	Landscape Photo- Please attach	Or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting	eensland tes in the following row. Northing Northing
<u>Yatum</u> VGS 84 IDA 94	Landscape Photo- Please attach	Or insert north, south, east and west Om Mark 50m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
<u>Jatum</u> NGS 84 SDA 94	Landscape Photo- Please attach	Or insert north, south, east and west Om Mark 50m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark 50m Mark Site description) photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone Letails of discrete polygons with	Recorders	Southeast Qu a as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum WGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark 50m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t) t)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu a as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum NGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letails of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum WGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letalls of discrete polygons with	Recorders	Southeast Qu as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum WGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone Letails of discrete polygons with	Recorders	Southeast Qu a as Time and Mapping Coordina Easting Easting t)	eensland tes in the following row. Northing Northing
Datum WGS 84 SDA 94	Landscape Photo- Please attach	or insert north, south, east and west Om Mark Om Mark S0m Mark Site description	photos in the spaces provi	12.9-10.2 ided from row 231-355 below a Zone Zone letalls of discrete polygons with	Recorders	Southeast Qu	eensland tes in the following row. Northing Northing

	Tree species richness:		
Total number of species		8	
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Eucalyptus crebra	Common Name	Narrow-leaved Ironbark
Scientific Name	Allocasuarina torulosa	Common Name	Forest She-oak
Scientific Name	Angophora subvelutina	Common Name	Rough-barked Apple
Scientific Name	Eucalyptus tereticornis	Common Name	Forest Red Gum
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark
Scientific Name	Jacksonsia scoparia	Common Name	Dogwood
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:							
Total number of species	2						
Scientific Name	Acacia irrorata	Common Name	Green Wattle				
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	4						
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass				
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass				
Scientific Name	Entolasia stricta	Common Name	Wiry Panic				
Scientific Name	Eragrostis brownii	Common Name	Brown's Love 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		3				
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat-rush			
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla			
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons			
Scientific Name		Common Name				
Scientific Name		Common Name				
Scientific Name		Common Name				
Scientific Name		Common Name				

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

Total percentage cover within plot	1.00%				
Scientific Name	Andropogon virginicus	Common Name	Whiskey Grass		
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena		
Scientific Name	Senecio madagascariensis	Common Name	Fireweed		
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton 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			

Total Length of Course Woody Debris (Meters):	229.00				
1	0.70	26			
2	0.80	27			
3	1.40	28			
4	11.40	29			
5	0.60	30			
6	1.20	31			
7	0.50	32			
8	4.20	33			
9	2.10	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		
Native perennial grass cover	Quadrat 1 20.00%	Quadrat 2 30.00%	Quadrat 3 10.00%	Quadrat 4 5.00%	Quadrat 5 10.00%	Average 15.00%
Native perennial grass cover	Quadrat 1 20.00%	Quadrat 2 30.00%	Quadrat 3 10.00%	Quadrat 4 5.00%	Quadrat 5 10.00%	Average 15.00%
Native perennial grass cover	Quadrat 1 20.00% Quadrat 1	Quadrat 2 30.00% Quadrat 2	Quadrat 3 10.00% Quadrat 3	Quadrat 4 5.00% Quadrat 4	Quadrat 5 10.00% Quadrat 5	Average 15.00% Average
Native perennial grass cover Organic Litter	Quadrat 1 20.00% Quadrat 1 60.00%	Quadrat 2 30.00% Quadrat 2 35.00%	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00%	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00%
Native perennial grass cover Organic Litter Part H- Number of large trees , tree canopy height, recru	Quadrat 1 20.00% Quadrat 1 60.00% uitment of woody perennial s	Quadrat 2 30.00% Quadrat 2 35.00% pecies:	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00%	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00%
Native perennial grass cover Organic Litter Part H- Number of large trees , tree canopy height, recru Eucalypt Large tree DBH benchmark used :	Quadrat 1 20.00% Quadrat 1 60.00%	Quadrat 2 30.00% Quadrat 2 35.00% pecies: 380	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00% Non- Eucalypt Large tree DBH benchmark used:	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00% 200
Native perennial grass cover Organic Litter Part H- Number of large trees , tree canopy height, recru Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees:	Quadrat 1 20.00% Quadrat 1 60.00%	Quadrat 2 30.00% Quadrat 2 35.00% pecies: 380 9	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees:	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00% 200
Native perennial grass cover Organic Litter Part H- Number of large tree J. tree canopy height, recru Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 20.00% Quadrat 1 60.00% sitment of woody perennial s	Quadrat 2 30.00% Quadrat 2 35.00% pecies: 380 9	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00% 200
Native perennial grass cover Organic Litter Part H- Number of large trees, tree canopy height, recru Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 20.00% Quadrat 1 60.00%	Quadrat 2 30.00% Quadrat 2 35.00% pecies: 380 9	Quadrat 3 10.00% Quadrat 3 20.00%	Quadrat 4 5.00% Quadrat 4 80.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 9	Quadrat 5 10.00% Quadrat 5 75.00%	Average 15.00% Average 54.00% 200

Number of ecologically dominant layer species regenerating:

Part I - Tree canopy cover, Shrub canopy cover							
Tree canopy cover %	Canopy:	72.80%	Sub-canopy:	22.40%	Emergent:		
Shrub canopy cover %				4.40%			

3

Note: Only assess Emergent (E) or Subcanopy (5) 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	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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

			Species Hab	itat 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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	2 - Likely to be critical to species' survival
				Score	5	9	9	10	4
2				Description					
2				Score					
3				Description					
,				Score					
4				Description					
•				Score					
5				Description					1
5				Score					
6				Description					
-				Score					
7				Description					
-				Score					
8				Description					
-				Score					
9				Description					
-				Score					
10				Description					
				Score					
				Maximum Score	5.00	9.00	9.00	10.00	4.00

Attach Landscape Photos Here		
North		
South		

ast		_
		-
lest		-
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here: OLD Environmental Offsets	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	

Case Refe	erence				SITE	ASSESSM	IENT TEM	PLATE SU	MMARY	SHEET		
Project N Total A	Name Area	20										
		Habitat Quality Attributes					Assessment	Unit Number				40
		Assessment Unit Area (ha)	20	0	0	4	0	0	0	0	9	10
Part	t	Regional Ecosystems	12.9-10.2									
		Bioregion	Southeast									
		-	Queensland									
		1. Recruitment of woody perennial species (Number of	3.00	5.00								
		2. Native plant species richness										
		- Trees	8.00									
		- Shrubs	2.00									
		- Grasses	4.00									
		- Forbs	3.00									
		3. Tree canopy height										
	8	- Canopy Layer	22.00									
	ribut	- Sub-Canopy Layer	12.00									
	ר Att	- Emergent Layer										
1	litio	4. Tree canopy cover	•		•	•		•			•	
	Con	- Canopy Layer	72.80%									
	Site	- Sub-Canopy Layer	22.40%									
		- Emergent Layer										
		5. Shrub canopy cover	4.40%									
		6. Native perennial grass cover	15.00%									
		7. Organic litter	54.00%									
		8. Large trees	9.00									
		9. Coarse woody debris (Meters)	229.00									
		10. Weed cover	1.00%									
	tes	11. Size of patch (fragmented)	10.00									
	tribu	12. Connectedness (fragmented)	5.00									
2	đ Att	13. Context (fragmented)	4.00									
	ontex	14 Distance from water (intest)										
	te C	14. Distance noni water (intact)			-							
	S	15. Ecological corridors	6.00									
	ndex	16. Threats to species	5.00									
	itat I	17. Quality and availability of food and foraging habitat	9.00									
3	Habi	18, Quality and availability of shelter	9.00									
	scies	19. Species mobility capacity	10.00									
	Spe	20. Role of site location to overall population in the State.	4.00									

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Project Na Total Are	ime ea	20	INFORMATION ON BENCHMARKS IS AVAILABLE ON THE QUEENSLAND GOVERNMENT WEBSITE THAT CAN BE ACCESSED HERE: (NOTE: WHERE THERE IS NO BENCHMARK AVAILABLE FOR THE REGIONAL ECOSYSTEM IN QUESTION A BEST ON OFFER SITE MAY BE USED AS A SUBROGATE.)									BENCHMAR
		Habitat Quality Attributes				Ber	nchMark or Best	t on Offer Site D	ata			
			1	2	3	4	5	6	7	8	9	10
Part		Assessment Ont Area (na)	120 10 2	0		0	0	0	0	0		
		Bioregion	Southeast Queensland									
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	6.00									
		2. Native plant species richness		-								
		- Trees	6.00									
		- Shrubs	7.00									
		- Grasses	7.00									
		- Forbs	13.00									
		3. Tree canopy height			•							•
	ies	- Canopy Layer	21.00									
	ribut	- Sub-Canopy Layer	12.00									
	n Att	- Emergent Layer										1
1	litio	4. Tree canopy cover	-	•	•					•	•	
	Con	- Canopy Layer	64.00%									
	Site	- Sub-Canopy Layer	20.00%									
		- Emergent Layer										
		5. Shrub canopy cover	6.00%									
		6. Native perennial grass cover	21.00%									_
		7. Organic litter	48.00%									
		8. Large trees	38									
		9. Coarse woody debris (Meters)	506.00									
		10. Weed cover	0.00%									

Case Reference Project Name Total Area	20	SITE ASSESSMENT BENCHMARK COMPARISON RESULTS									
	Habitat Quality Attailutes	Assessment Unit Number									
	Habitat Quality Attributes	1	2	3	4	5	6	7	8	9	10
Dant	Assessment Unit Area (ha)	20	0	0	0	0	0	0	0	0	0
Part	Regional Ecosystems	12.9-10.2									
	Bioregion	Southeast Queensland									
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	50.00%									
	2. Native plant species richness										
	- Trees	133.33%									
	- Shrubs	28.57%									

Г

		- Grasses	5	7.14%					
		- Forbs	2	3.08%					
		3. Tree canopy height							
	s	- Canopy Layer	10	04.76%					
	ribu	- Sub-Canopy Layer	10	00.00%					
	n Atl	- Emergent Layer							
1	ditio	4. Tree canopy cover							
	Ğ	- Canopy Layer	1:	13.75%					
	Site	- Sub-Canopy Layer	1:	12.00%					
		- Emergent Layer							
		5. Shrub canopy cover	7	3.33%					
		6. Native perennial grass cover	7	1.43%					
		7. Organic litter	1:	12.50%					
		8. Large trees	2	3.68%					
		9. Coarse woody debris (Meters)	4	15.26%					
		10. Weed cover	:	1.00%					
	tes	11. Size of patch (fragmented)		10.00					
	tribu	12. Connectedness (fragmented)		5.00					
2	ext Al	13. Context (fragmented)		4.00					
	Conte	14. Distance from water (intact)							
	Site	15. Ecological corridors		6.00					
	dex	16. Threats to species		5.00					
	atin	17. Quality and availability of food and foraging habitat		9.00					
3	Habit	18, Quality and availability of shelter		9.00					
	cies P	19. Species mobility capacity		10.00					
	Spee	20. Role of site location to overall population in the State.		4.00					

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET

abitat Qua or all environn • Com • Com • Prov	ality Site Assessment Templa nental offset applications you must: piplete form (Environmental Offsets De piplete any other forms relevant to you ide the mandatory supporting inform	te livery Form 1– Notice of Election an ur application lation identified on the forms as beil	Burnett Cat x d Advanced Offsets Details ng required to accompany	s) your application	PLEASE NOTE -)	YELLOW INDICATES AN	AUTO POPULATED FIELD
ease note tha	It this form should be completed indiv Is this Assessment for:	analysis of an impact and/or offset/ vidually for each assessment unit un An Impact Site	advanced offset site. der consideration.	An Offset Site	v	an Advanced Offset Site	
			Habitat Quality As	sessment Unit Score Shee	:		
art C - Site Dat	ta						
	Property		Burnett Creek		Date		
	Assessment Unit:	A					
	1 Landscape Photo- Please attach	or insert north, south, east and west	nit Area (ha) 5 Shotos in the spaces provide	RE 12.9-10.2	nd include details such	Bioregion N Southeast Qu as Time and Mapping Coordina	lumber eensland tes in the following row.
P <u>atum</u> VGS 84	1 Landscape Photo- Please attach	or insert north, south, east and west p	nit Area (ha) 5 ohotos in the spaces provide Zc	RE 12.9-10.2 d from row 231-355 below a	nd include details such	Bioregion M Southeast Qu as Time and Mapping Coordina Easting	iumber reensland tes in the following row.
Patum VGS 84 iDA 94	1 Landscape Photo- Please attach	or insert north, south, east and west p	hit Area (ha) 5 shotos in the spaces provide Za	RE 12.9-10.2 and from row 231-355 below a one	nd include details such	Bioregion N Southeast Qu as Time and Mapping Coordina Easting Easting	iumber eensland tes in the following row. Northing Northing
<u>atum</u> /GS 84 DA 94	1 Landscape Photo- Please attach	or insert north, south, east and west p	hit Area (ha) 5 bohotos in the spaces provide Control of the space of	RE 12.9-10.2 ed from row 231-355 below a one	nd include details such	Bioregion N Southeast Qu as Time and Mapping Coordina Easting Easting	iumber eensland tes in the following row. Northing Northing
latum VGS 84 IDA 94	1 Landscape Photo- Please attach	Om Mark Om Mark Site description	nit Area (ha) 5 shotos in the spaces provide 2c 2c and Location (including deta	RE 12.9-10.2 ed from row 231-355 below a one one ails of discrete polygons with	nd include details such	Bioregion N Southeast Qu as Time and Mapping Coordina Easting Easting t)	iumber eensland tes in the following row. Northing Northing

	Tree species richness:		
Total number of species		7	
Scientific Name	Corymbia citriodora	Common Name	Spotted Gum
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Corymbia intermedia	Common Name	Pink Bloodwood
Scientific Name	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark
Scientific Name	Eucalyptus siderophloia	Common Name	Grey Ironbark
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	Eucalyptus melanophloia	Common Name	Silver-leaved Ironbark
Scientific Name	Corymbia tessellaris	Common Name	Moreton Bay Ash
Scientific Name	Jacksonia scoparia	Common Name	Dogwood
Scientific Name	Acacia leiocalyx	Common Name	Early-flowering Black Wattle
Scientific Name	Acacia implexa	Common Name	Lightwood
Scientific Name	Exocarpos cupressiformis	Common Name	Native Cherry
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:								
Total number of species		2						
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle					
Scientific Name	Persoonia cornifolia	Common Name	Geebung					
Scientific Name	Acacia suaveolens	Common Name	Sweet Wattle					
Scientific Name	Persoonia cornifolia	Common Name	Geebung					
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	Themeda triandra	Common Name	Kangaroo Grass
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass
Scientific Name	Eragrostis brownii	Common Name	Brown's Love Grass
Scientific Name	Themeda triandra	Common Name	Kangaroo Grass
Scientific Name	Aristida latifolia	Common Name	Feathertop Wire Grass
Scientific Name	Heteropogon contortus	Common Name	Black Spear Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

	Forbs and others (non grass ground) species richne	is:					
Total number of species		3					
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla				
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush				
Scientific Name	Dianella caerulea	Common Name	Blue Flax Lily				
Scientific Name	Hardenbergia violacea	Common Name	Native Sarsaparilla				
Scientific Name	Lomandra longifolia	Common Name	Spiky Mat Rush				
Scientific Name	Chrysocephalum apiculatum	Common Name	Yellow Buttons				
Scientific Name		Common Name					

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

Total percentage cover within plot	1.00%					
Scientific Name	Senecio madagascariensis	Common Name	Fireweed			
Scientific Name	Opuntia spp.	Common Name	Prickly Pear			
Scientific Name	Conzya spp.	Common Name	Fleabane			
Scientific Name	Melinis repens	Common Name	Red Natal Grass			
Scientific Name	Lantana camara	Common Name	Lantana			
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena			
Scientific Name	Verbena bonariensis	Common Name	Purple-top Verbena			
Scientific Name	Senecio madagascariensis	Common Name	Fireweed			
Scientific Name	Gomphocarpus physocarpus	Common Name	Balloon Cotton Bush			
Scientific Name		Common Name				

Total Length of Course Woody Debris (Meters):		261.00	
1	1.10	26	
2	1.50	27	
3	0.50	28	
4	1.00	29	
5	5.80	30	
6	1.40	31	
7	4.40	32	
8	7.90	33	
9	5.10	34	
10	1.60	35	
11	7.10	36	

12		3.40		37		
13		1.00		38		
14		8.30		39		
15		2.10		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: (*pro	ovide percentage cover within Quadrat 1	each quadrat, and provide Quadrat 2	average cover) Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	50.00%	50.00%	15.00%	32 50%	32 50%	36.00%
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Organic Litter	Quadrat 1 20.00%	Quadrat 2 15.00%	Quadrat 3 25.00%	Quadrat 4 20.00%	Quadrat 5 20.00%	Average 20.00%
Organic Litter Part H- Number of large trees, tree canopy height, recu	Quadrat 1 20.00% ruitment of woody perennial s	Quadrat 2 15.00%	Quadrat 3 25.00%	Quadrat 4 20.00%	Quadrat 5 20.00%	Average 20.00%
Organic Litter Part H- Number of large trees , tree canopy height, recu Eucalypt Large tree DBH benchmark used :	Quadrat 1 20.00% ruitment of woody perennial s	Quadrat 2 15.00% species: 380	Quadrat 3 25.00%	Quadrat 4 20.00% Non-Eucalypt Large tree DBH benchmark used:	Quadrat 5 20.00%	Average 20.00% 200
Organic Litter Part H- Number of large trees, tree canopy height, reco Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees:	Quadrat 1 20.00%	Quadrat 2 15.00% species: 380 6	Quadrat 3 25.00%	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees:	Quadrat 5 20.00%	Average 20.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, recu Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 20.00% ruitment of woody perennial :	Quadrat 2 15.00% species: 380 6	Quadrat 3 25.00%	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6	Quadrat 5 20.00%	Average 20.00% 200 0
Organic Litter Part H- Number of large trees, tree canopy height, reci Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees:	Quadrat 1 20.00% ruitment of woody perennial :	Quadrat 2 15.00% species: 380 6	Quadrat 3 25.00%	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6	Quadrat 5 20.00%	Average 20.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, reco Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements	Quadrat 1 20.00% ruitment of woody perennial : Canopy:	Quadrat 2 15.00% species: 380 6 17.00	Quadrat 3 25.00% Sub-canopy:	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6 10.00	Quadrat 5 20.00% Emergent:	Average 20.00% 200 0
Organic Litter Part H- Number of large trees, tree canopy height, rece Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements	Quadrat 1 20.00% ruitment of woody perennial : Canopy:	Quadrat 2 15.00% species: 380 6 17.00	Quadrat 3 25.00% Sub-canopy:	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6 10.00	Quadrat 5 20.00% Emergent:	Average 20.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, recr Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements Number of ecologically domin	Quadrat 1 20.00% ruitment of woody perennial : Canopy: ant layer species regenerating:	Quadrat 2 15.00% species: 380 6 17.00	Quadrat 3 25.00% Sub-canopy:	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6 10.00	Quadrat 5 20.00% Emergent:	Average 20.00% 200
Organic Litter Part H- Number of large trees, tree canopy height, reci Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements Number of ecologically domin Part I - Tree canopy cover, Shrub canopy cover	Quadrat 1 20.00% ruitment of woody perennial : Canopy: ant layer species regenerating:	Quadrat 2 15.00% species: 380 6 17.00	Quadrat 3 25.00% Sub-canopy:	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6 10.00	Quadrat 5 20.00% Emergent:	Average 20.00% 200 0
Organic Litter Part H- Number of large trees , tree canopy height, reci Eucalypt Large tree DBH benchmark used : Number of large eucalypt trees: Total Number Large Trees: Median Tree Canopy Height Measurements Number of ecologically domin Part I - Tree canopy cover, Shrub canopy cover Tree canopy cover %	Quadrat 1 20.0% ruitment of woody perennial : Canopy: ant layer species regenerating: Canopy:	Quadrat 2 15.00% species: 380 6 17.00 41.90%	Quadrat 3 25.00% Sub-canopy:	Quadrat 4 20.00% Non- Eucalypt Large tree DBH benchmark used: Number of large non eucalypt trees: 6 10.00	Quadrat 5 20.00% Emergent: 5 Emergent:	Average 20.00% 200

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	4 - >75% or >500ha connection	3 - >30-75% remnant		3 - Within (whole or part)
SCORE	10	5	4		6

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

			Species Hab	itat 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	2 - Moderate threat level	3 - High	3 - High	4 - Minor restriction (0 – 25% reduction)	3 - Critical for Survival
			Score	5	9	9	10	5	
2				Description					
-				Score					
3				Description					
J				Score					
4				Description					
•				Score					
5				Description					
J				Score					
6				Description					
v				Score					
7				Description					
•				Score					
8				Description					
Ū				Score					
9				Description					
, ,				Score					
10				Description					
				Score					
						-		-	
				Maximum Score	5.00	9.00	9.00	10.00	5.00

Attach Landscape Photos Here		
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South		

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(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form S that can be accessed here:	2 Environmental Offsets										
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	2 Environmental Offsets										
(FORM COMPLETE)	Please save and forward completed form/s together with Offsets Delivery Form 5 that can be accessed here:	2 Environmental Offsets										
Case Reference		SITE ASSESSMENT TEMPLATE SUMMARY SHEET										
----------------	--------	--	-----------	---	---	---	------------	-------------	---	---	---	----
Total Area		24,25										
		Habitat Quality Attributes	1	2	3	4	Assessment	Unit Number	7	8	9	10
		Assessment Unit Area (ha)	24.25	0	0	0	0	0	0	0	0	0
Part		Regional Ecosystems	12.9-10.2									
		Bioregion	Southeast									
					-							
		1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	5.00									
		2. Native plant species richness										
		- Trees	7.00									
		- Shrubs	2.00									
		- Grasses	4.00									
		- Forbs	3.00									
		3. Tree canopy height										
	tes	- Canopy Layer	17.00									
	tribu	- Sub-Canopy Layer	10.00									
	n At	- Emergent Layer										
1	ditio	4. Tree canopy cover										
	G	- Canopy Layer	41.90%									
	Site	- Sub-Canopy Layer	8.85%									
		- Emergent Layer										
		5. Shrub canopy cover	1.65%									
		6. Native perennial grass cover	36.00%									
		7. Organic litter	20.00%									
		8. Large trees	6.00									
		9. Coarse woody debris (Meters)	261.00									
		10. Weed cover	1.00%									
	ites	11. Size of patch (fragmented)	10.00									
	tribu	12. Connectedness (fragmented)	5.00									
2	xt At	13. Context (fragmented)	4.00									
	onte	14. Distance from water (intact)										
	ite C	E Folgeland and the	6.00									
	S	15. ECOlogical corridors	6.00									
_	×				-				-	-		
	Inde	16. Threats to species	5.00									
	itat I	17. Quality and availability of food and foraging habitat	9.00		-							
3	s Hab	18, Quality and availability of shelter	9.00									
	ecies	19. Species mobility capacity	10.00									
	Spe	20. Role of site location to overall population in the State.	5.00									

PLEASE COMPLETE THE BENCHMARK OR BEST ON OFFER SITE DETAILS BELOW AS DIRECTED FOR EACH ASSESSMENT UNIT AND REGIONAL ECOSYSTEM LISTED BELOW

Dania at	erence		SITE ASS	ESSIVIENT TE	IVIPLATE - B	ENCHMARK	OK BEST O	N OFFER SIT	E DETAILS -	ENTER DET.	AILS IN CELL	S RELON	
Project	Name		INFORM					COVERNMENT	VEDCITE THAT			DENCUMAN	
Total	Area	24.25	(NOTE: WHE	RE THERE IS NO BE	NCHMARK AVAILA	BLE FOR THE REGIO	NAL ECOSYSTEM I	N QUESTION A BES	T ON OFFER SITE N	TAY BE USED AS A	SURROGATE.)	DEINCHINIA	
											,		
		Habitat Quality Attributes	BenchMark or Best on Offer Site Data										
		Assessment Unit Area (ha)	24.25	0	0	4 0	0	0	0	0	0	0	
Part		Regional Ecosystems	12.9-10.2										
		Bioregion	Southeast Queensland										
		1. Recruitment of woody perennial species (Number of	6.00										
		2. Native plant species richness											
		- Trees	6.00									_	
		- Shrubs	7.00										
		- Grasses	7.00										
		- Forbs	13.00										
		3. Tree canopy height			•							•	
	tes	- Canopy Layer	21.00										
	ribu	- Sub-Canopy Layer	12.00										
	n Att	- Emergent Layer											
	litio	4. Tree canopy cover											
	ē	- Canopy Layer	64.00%										
	Site	- Sub-Canopy Layer	12.00%										
		- Emergent Layer											
		5. Shrub canopy cover	6.00%										
		6. Native perennial grass cover	21.00%										
		7. Organic litter	48.00%										
		8. Large trees	38										
		9. Coarse woody debris (Meters)	506.00										
		10. Weed cover	0.00%										

Case Reference		SITE ASSESSMENT BENCHMARK COMPARISON RESULTS										
Project Name				SHIE ASSE		DENCIN		ANISON	RESOLIS	-		
Total Area	24.25											
		Assessment Helt Number										
	Habitat Quality Attributes	1	2	3	4	5	6	7	8	9	10	
Dent	Assessment Unit Area (ha)	24.25	0	0	0	0	0	0	0	0	0	
Part	Regional Ecosystems	12.9-10.2										
	Bioregion	Southeast Queensland										
	1. Recruitment of woody perennial species (Number of ecologically dominant layers regenerating)	83.33%										
	2. Native plant species richness											
	- Trees	116.67%										
				1					1	1		

П

		- Grasses	57.14%					
		- Forbs	23.08%					
		3. Tree canopy height						
	te s	- Canopy Layer	80.95%					
	nibu	- Sub-Canopy Layer	83.33%					
	n Atl	- Emergent Layer						
1	ditio	4. Tree canopy cover						
	Co	- Canopy Layer	65.47%					
	Site	- Sub-Canopy Layer	73.75%					
		- Emergent Layer						
		5. Shrub canopy cover	27.50%					
		6. Native perennial grass cover	171.43%					
		7. Organic litter	41.67%					
		8. Large trees	15.79%					
		9. Coarse woody debris (Meters)	51.58%					
		10. Weed cover	1.00%					
								_
	tes	11. Size of patch (fragmented)	10.00					
	tribu	12. Connectedness (fragmented)	5.00					
2	ext Ai	13. Context (fragmented)	4.00					
	Cont	14. Distance from water (intact)						
	Site	15. Ecological corridors	6.00					
	dex	16. Threats to species	5.00					
	atin	17. Quality and availability of food and foraging habitat	9.00					
3	Habit	18, Quality and availability of shelter	9.00					
	cies I	19. Species mobility capacity	10.00		 	 	 	
	Spec	20. Role of site location to overall population in the State.	5.00					

CLICK HERE TO GO TO THE FINAL SUMMARY SHEET

Appendix C

Preliminary Documentation Submission-Offsets Chapter

