Annual Compliance Report
EPBC 2016/7723

5 February 2019 – 4 February 2020

Torhaven

Rawlings Road Development, Deebing Heights, Ipswich, Qld
Defence Housing Australia
Year 2

20 May 2020

SHG Ref: 8122

Document Control

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Document Issue

Issue	Date	Prepared By	Checked By
Issue A	22.05.2020	KG	MS

Prepared by

ABN 24 144 972 949
www.saundershavill.com

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

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Acronyms and References

ACR	Annual Compliance Report
DHA	Defence Housing Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ha	hectares
kilometres	km
m	metres
PMAV	Property Map of Assessable Vegetation
QTFN	Queensland Trust for Nature
SHG	Saunders Havill Group
VMA	*Vegetation Management Act 1999* (Qld)

Year 1 ACR	Annual Compliance Report, 5 February 2018 to 4 February 2019 EPBC 2016/7723, Rawlings Road Development, Deebing Heights, prepared for Defence Housing Australia by Saunders Havill Group (August 2019)
Year 1 Offset Report	Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 596 Mt Flinders Road Peak Crossing, Year 1 Baseline, prepared by Queensland Trust for Nature (October 2018)
Year 2 Offset Report	Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 596 Mt Flinders Road Peak Crossing, Year 2 prepared by Queensland Trust for Nature (May 2020).

1. Introduction

This Annual Compliance Report (ACR) Year 2 (5 February 2019– 4 February 2020) has been prepared on behalf of Defence Housing Australia Pty Ltd (the Proponent) for the Rawlings Road development (EPBC 2016/7723), now known as 'Torhaven' (the Project).

In accordance with the approval granted on the 9th January 2018 under the *Environmental Protection and Biodiversity Act 1999* (EPBC Act), this ACR has been prepared in response to Condition 5 which states:

> *"Within 60 business days of every 12 months anniversary of the commencement of the action, the approval holder must publish a report on its website addressing compliance within each of the conditions of this approval, including the implementation of any management plans or monitoring programs as specified in the conditions… "*

1.1. Reporting Period

This ACR details the status and compliance of the Project for the 12 month reporting between the 5th February 2019 to 4th February 2020.

The ACR must be published on the Proponent's website and notification provided to the Department of the Agriculture, Water and the Environment (DAWE) (the Department) within 60 business days of the 12 month anniversary of the commencement of the action.

1.2. EPBC Approval

Defence Housing Australia (DHA), as the Proponent of the Project (EPBC Act Referral 2016/7723) was issued with an approval by the Department on the 9th January 2018, subject to conditions.

Key details related to EPBC 2016/7723 approval are provided in Table 1 below.

Table 1: Approval Details

Commonwealth Reference	EPBC 2016/7723
Approval Holder	Defence Housing Australia
ABN	72 968 504 934
Project Name on the Approval	Rawlings Road Development, Deebing Heights, Ipswich, Queensland
Approved Action	Construct a residential development consisting of 295 new lots with 332 dwellings, which a development footprint of 25.37 ha, located in Ripley Valley, Ipswich Queensland.
Controlling Provision(s)	Listed threated species and communities (sections 18 & 18A) Commonwealth actions (section 28)
Approval Date	9 January 2018
Expiry Date of the Approval	17 January 2031
Date of Commencement of the Action	5 February 2018
Address	Rawlings Road, Deebing Heights
Local Government Area	Ipswich City Council

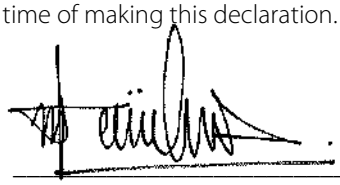
1.3. Site Context

Contextually, the Project is located in South East Queensland, approximately 6.5 km south of Ipswich. The project area covers 23.37 hectares (ha) of which 15 ha has been deemed critical habitat for the koala and to be cleared under the approval. A further 14.7 ha of habitat was deemed by the Department of be indirectly impacted by the action.

1.4. Declaration of Accuracy

This declaration has been signed by the approval holder.

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I no knowledge of that authorisation being revoked at the time of making this declaration.

Signed 

Full name (please print) Murray Saunders

Position (please print) Managing Director

Organisation (please print including ABN/ACN if applicable) Saunders Havill Group ABN 24 144 972 949

Date 22 / 05 / 2020

1.5. Overview of Key Activities and Achievements

During Year 2 of construction and compliance reporting, numerous development and environmental management activities have commenced including:

- Vegetation clearing the over Stage 2
- Road and house construction in Stage 1
- Rehabilitation in Stage 1 wetlands and open space
- Stage 2 civil and wetlands construction commenced.
- Year 2 Offset surveys and reporting including external reports:
    - All koala research and density survey results to date prepared by Dr Renee Rossini, QTFN)
    - Project report by Dr Bill Ellis of the Koala Ecology Group, The University of Queensland
    - Survey notes and report by Olivia Woosman from OWAD regarding koala scat health testing

2. Current Status of the Project

2.1. Development actions

Over the last 12 month period civil construction has continued to occur over Stage 1 and commenced in Stage 2 of the development including:

- Stage 1 park and wetlands competed – Feb 2019
- Stage 1 housing construction continues Feb 2019 through Feb 2020. 71 houses completed.
- Stage 2E construction commenced - May 2019
- Stage 2 clearing commenced in June 2019
- Stage 2A – 2D construction commenced – July 2019
- Stage 1 revegetation/rehabilitation works undertaken between April – August 2019 (on-going)
- Stage 2 park and wetlands construction commenced – Aug 2019
- Stage 2E registration – November 2019
- Stage 2A-2D completion – Feb 2020

Plan 1 spatially shows development actions over the Year 2 reporting period.

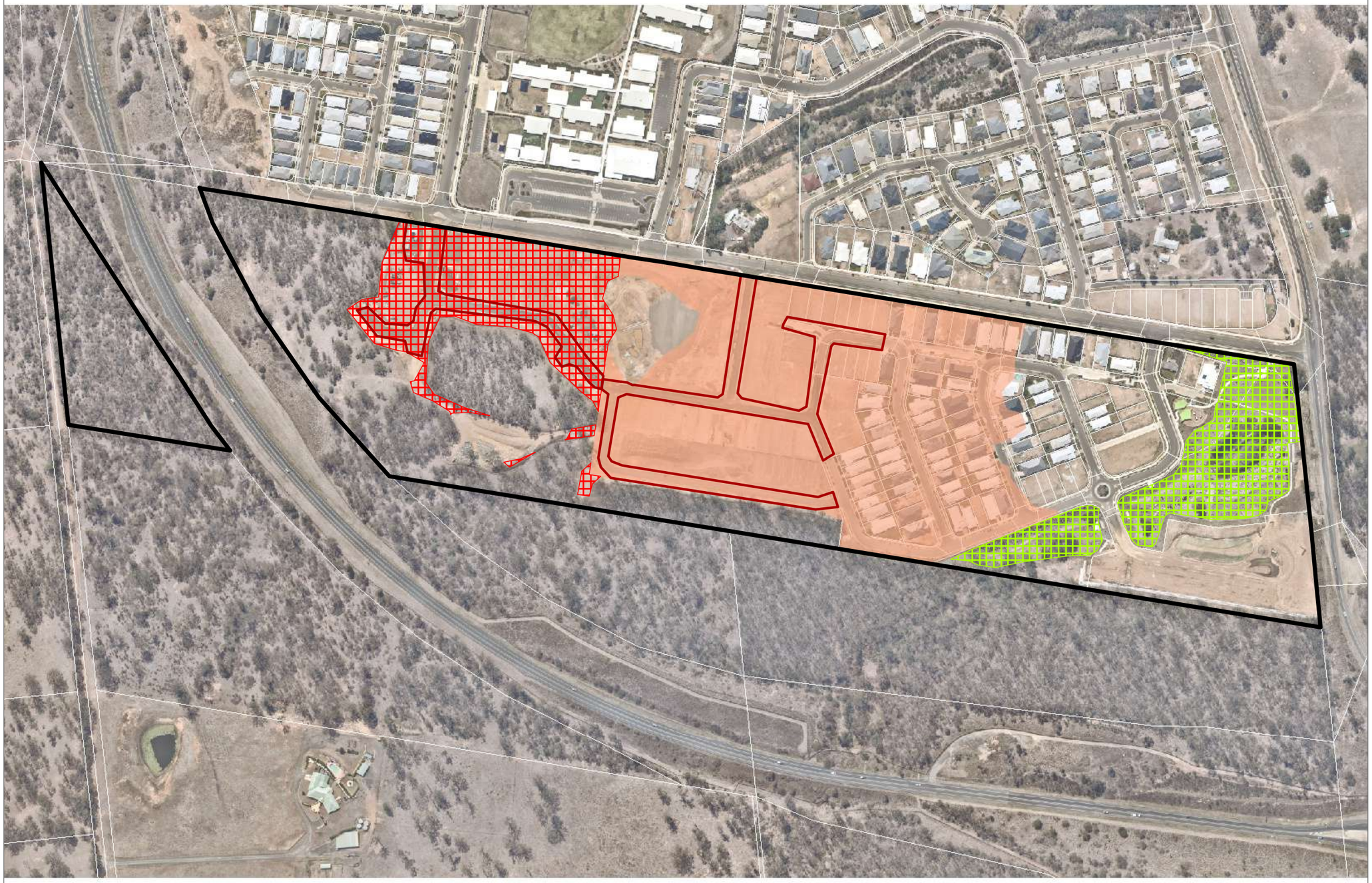
Vegetation clearing for the Stage 2 area commenced in in June 2019. Approximately 2.67 ha of bushland within Lot 7000/SP292784 was cleared. Clearing was undertaken under the supervision of Australia Wide Fauna Consultants who retain a current fauna spotter catcher permit from the Queensland Department of Environment and Science.

Plan 2 shows the extent of clearing of koala critical habitat over the Year 2 reporting period.

The following photos evidence development actions over the Year 2 reporting period.

Photo 1: Aerial view of Stage 2A-Stage2D - June 2019

1. Year 2 Development Actions



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. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2020

*This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Legend

- Site DCDB
- Qld DCDB
- Koala critical habitat clearing (Year 1)
- Year 2 - Koala critical habitat clearing
- Year 2 - Construction
- Years 1 & 2 - Rehabilitation

Issue	Date	Description	Drawn	Checked
A	19/05/2020	Preliminary	TC	MS

0 20 40 60 80 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:4,000 @ A3

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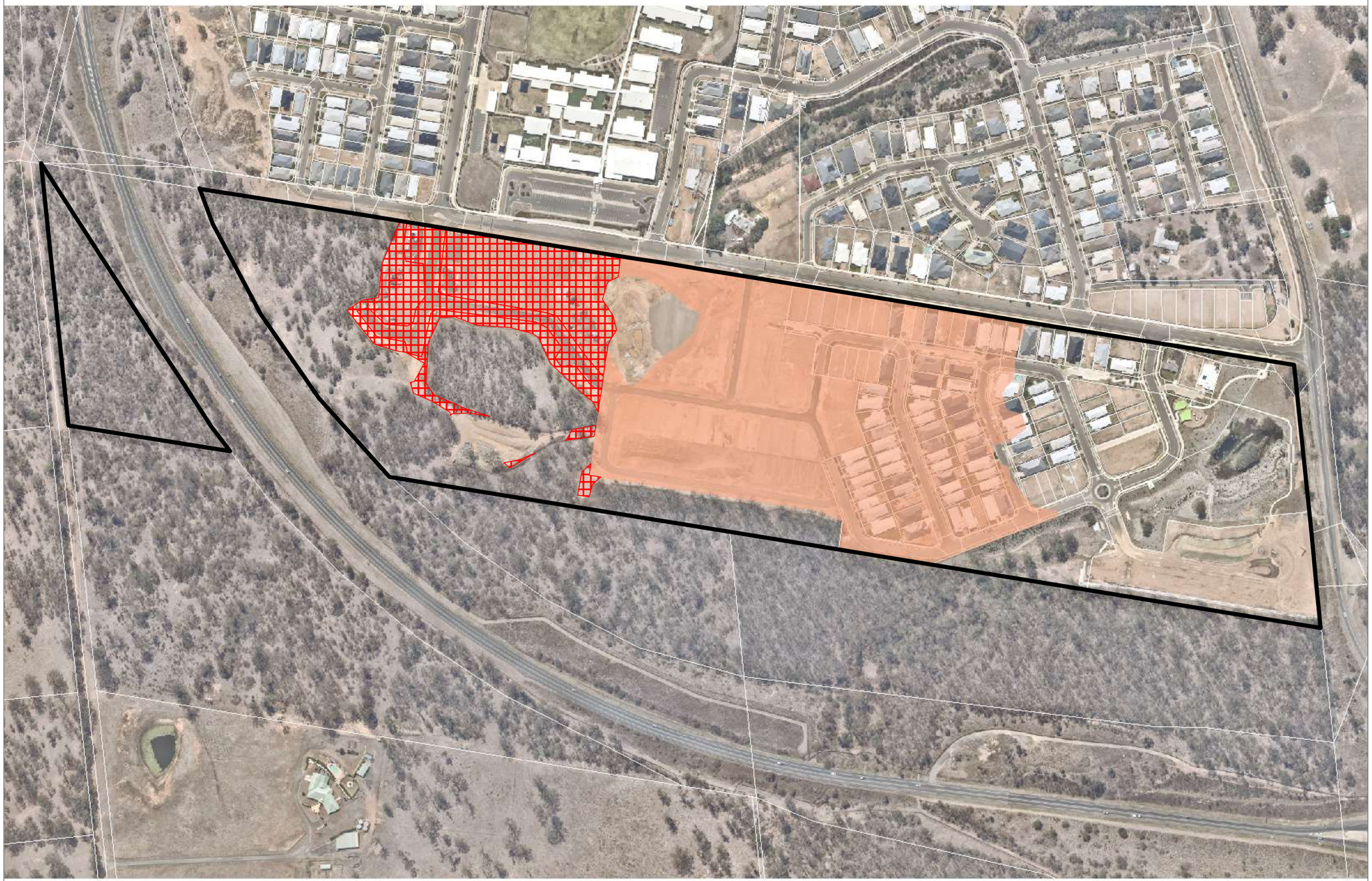
DHA
Defence Housing Australia

Rawlings Road, Deebing Heights

ADDRESS/RPD: Rawlings Road/Grampian Drive, Deebings Heights *19/05/2020* *8122 E01 ACR2 Development Actions A*

2. Year 2 Koala Critical Habitat Removed



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Aerial Imagery © Nearmap, 2020

*This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Legend

- Site DCDB
- Qld DCDB
- Koala critical habitat clearing (Year 1)
- Year 2 - Koala critical habitat clearing (2.67 ha)

Issue	Date	Description	Drawn	Checked
A	19/05/2020	Preliminary	TC	MS

0 20 40 60 80 100 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:4,000 @ A3

saunders havill group

DHA
Defence Housing Australia

Rawlings Road, Deebing Heights

ADDRESS/RPD: Rawlings Road/Grampian Drive, Deebings Heights *19/05/2020* *8122 E 02 ACR 2 KCH Clearing A*

Photo 2: Aerial view of Stage 1 and Stage 2E – Housing and civil construction June 2019

Photo 3: Aerial view of Stage 2 – Civil construction August 2019

Photo 4: Aerial view of Stage 2 Wetland Construction– December 2019

Photo 5: Aerial view of Stage 2 – Roads in– Jan 2020

Photo 6: Stage 2 Park – March 2020

Photo 7: Stage 1 Housing – December 2019

Photo 8: Stage 1 Housing – December 2019

Photo 9: Stage 1 Park – Dec 2019

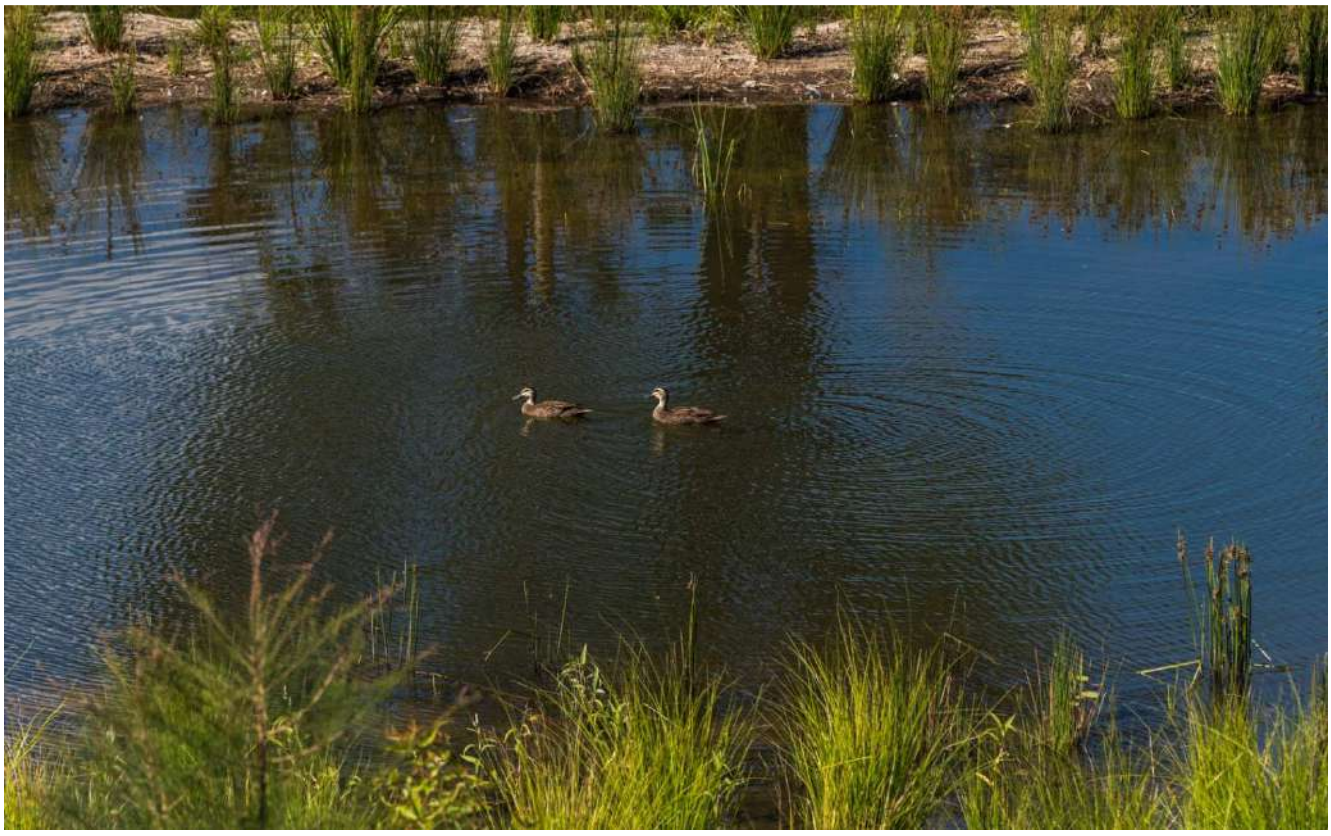


Photo 10: Stage 1 Wetland – September 2019

Photo 11: Stage 1 from Rawlings Road – September 2019

2.2. Year 2 Offset Reporting

As required by the EPBC approval baseline surveys for koala density, koala food trees and non-native predators was undertaken in Year 1 (October 2019). Survey methods, metrics and performance indicators were established to be able to demonstrate achievement of an increase in koala density and food trees and decrease in non-native predators. Details are provided in the *Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 296 Mt Flinders Road Peak Crossing, Year 1 Baseline, prepared by Queensland Trust for Nature (October 2018)* (Year 1 Offset Report).

The *Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 296 Mt Flinders Road Peak Crossing, Year2, prepared by Queensland Trust for Nature (October 2018)* (Year 2 Offset Report) was completed for this reporting period and is included as **Attachment A**. Surveys were completed in Mach 2019 by QTFN and their research partners Kola Ecology Group (of the University of Queensland) and OWAD Environmental (using koala detection dogs).

2.2.1 Koala Density

Baseline Koala surveys conducted in 2018, incorporating survey results from as far back as 2015, and reported in the Year 1 Offset Report.

Baseline Koala density was determined using the following metrics:

- **Metric 1: Koala Abundance** measured by SAT results
    - Koala SAT results show an average activity rating of 13.75% ± 6.4% adjusted for confidence intervals
- **Metric 2: Koala Occupancy** measured by the average number of trees searched before a scat is found.
    - Scats were found within the EPBC2016/7724 site after searching 7±1.2 trees
- **Metric 3: Koala Activity** measured by photographic evidence
    - Photo monitoring stations are positioned throughout the Koala Crossing property.

Year 2 Summary

Year 2 surveys indicated koala scat (metric 1 and 2) and camera trap observations (metric 3) suggest a stable population of koalas. Baseline surveys indicated a population between 10-15 Koalas using the site. Koala scat searches detected the presence at 88% of the plots examined. Year 2 surveys provided similar estimates of occupancy with Koala scats detected at 80% of the plots examined. QTFN reported the activity or density of Koalas (inferred by the number of trees that needed to be searched to find a scat) has increased since the baselined surveys (refer extracted figure from page 10 of the Year 2 Offset Report).

No koalas were captured on cameras as part of bi-annual monitoring relevant to this reporting period. Two individuals with no ear tags (i.e. not part of the already known population of approximately 9 individuals) were sighted by the Koala Ecology Group at the entrance to the Koala Crossing property in the river-valley that runs north of this offset area. Due to the transient nature of Koalas movement within the Koala Crossing offset site is expected.

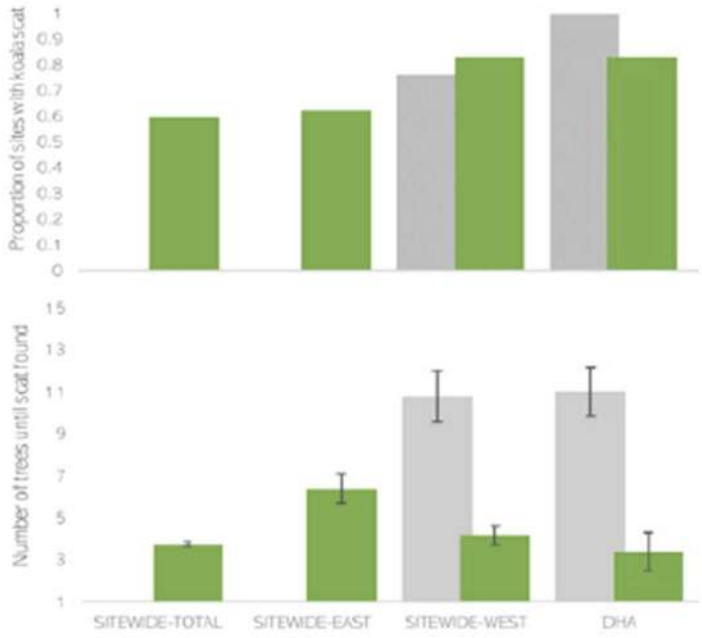


Figure 1. Occupancy (top) and activity (bottom) of koalas across the Koala Crossing site in general, and within the relevant offset area (marked INV).

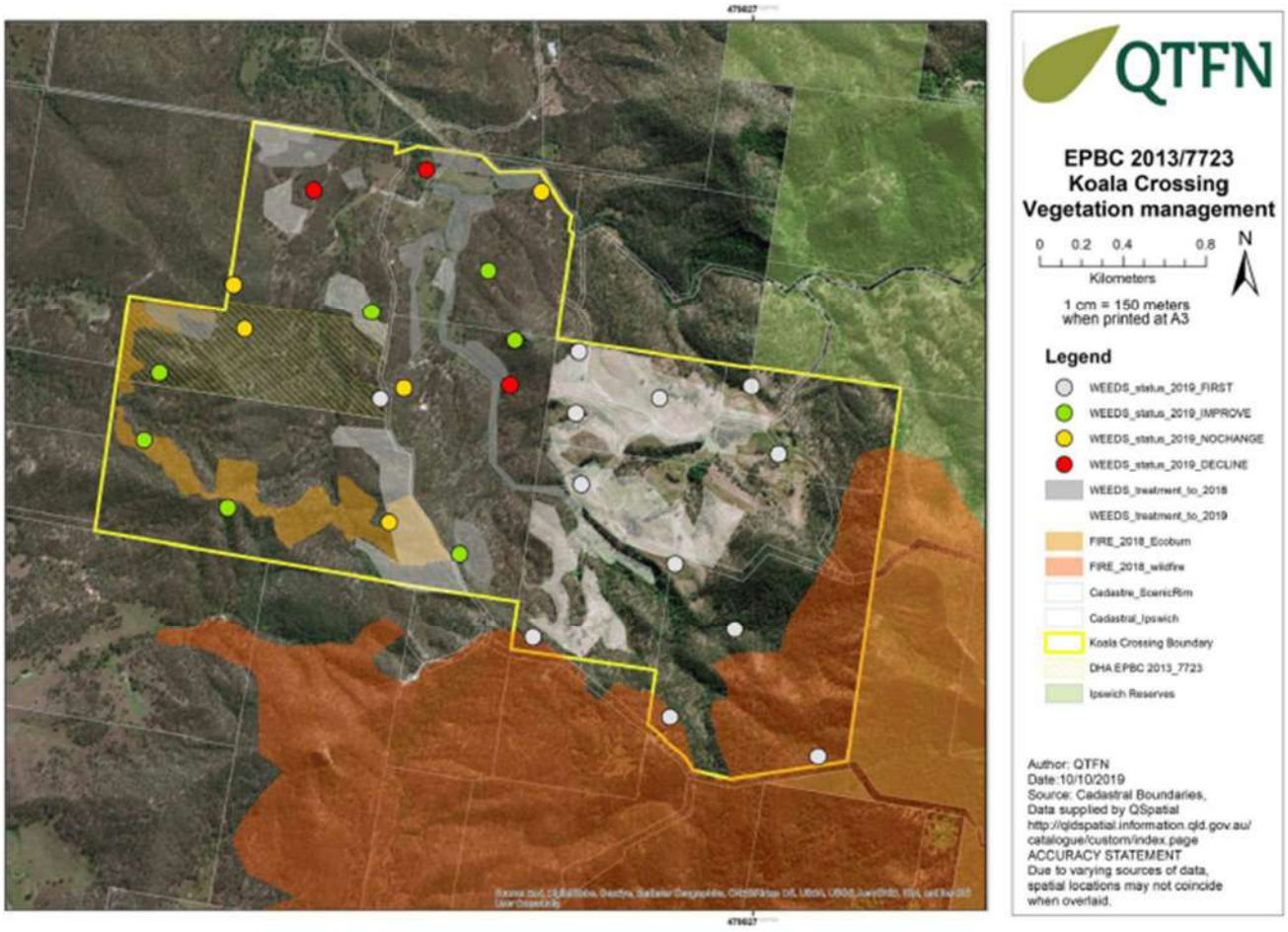
2.2.2 Koala Food Trees

Baseline kola food tree survey was determined using the following metrics:

- **Metric 1: Recruitment of young koala trees**
  - 86% of sites have evidence of recruitment occurring.
- **Metric 2: Search sites sustaining mid-sized trees**
  - On average 61±0.03% of trees at sites where koala scat was found are in the 51-100cm circumference category.
- **Metric 3: Reduction in weed coverage across the site**
  - Weed coverage does not exceed baseline levels by more than 10%

Year 2 Summary

In the Year 2 reporting period activities focused on annual weed monitoring and corrective actions (particularly targeting *Lantana camara*), ensuring there is no increase in weeds above the baseline. QTFN also commissioned a Bioconditon survey to be undertaken. At a property wide scale, abundance of weeds continues in a downwards trajectory. Refer to extracted figure from the Year 1 Offset Report.



2.2.3 Non-native Predators

Baseline survey if non-native predators was determined using the following metrics:

- **Metric 1: Relative Abundance Indices**
  - RAI and confidence intervals developed for predators to show trends in data: Species

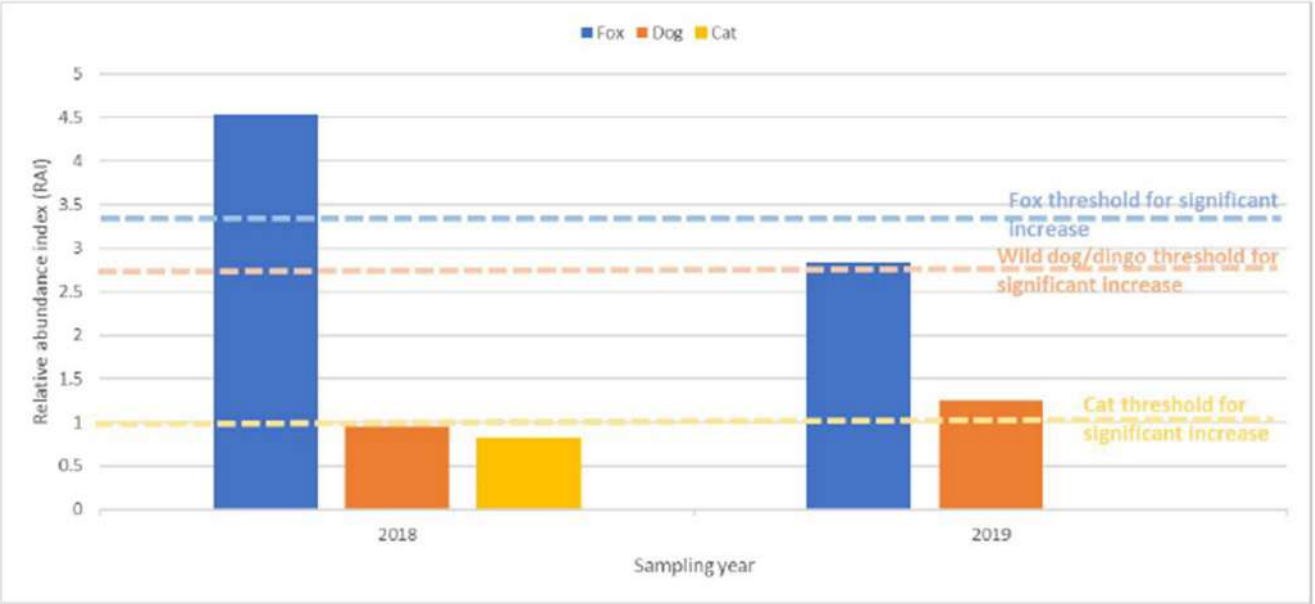
Species	Strong increase	Low increase	Low decrease	Strong decrease
Dingo	2.6	1.6	1.4	0.4
Fox	3.3	2.4	2.2	1.3
Cat		0.1		

- **Metric 2: Number of camera stations with target species**
  - Occupancy data metrics developed. Baseline occupancy set at 40% of cameras with predators recorded.

Year 2 Summary

Monitoring was conducted using remote sensing wildlife cameras and offset area wide traverses for opportunistic scat collections. For the baseline survey of 2018, this survey effort included 13 camera stations capturing a broader view of the landscape of Koala Crossing as a whole, with four cameras positioned within the EPBC 2016/7723 offset area.

The RAI data calculated for each species shows that between the 2018 baseline and the end of 2019 monitoring period there is no evidence for significant increase in dogs foxes or cats. RAI decreased for foxes and only marginally increased for dogs, but this is well inside the confidence levels for determining trends in dogs, so no trend can be determined from the data (refer to extracted figure from the Year 2 Offset Report).



QTFN's other obligations at the site meant control and monitoring has occurred within the wider landscape since 2015. Occupancy data shows dog numbers occupied a similar area to the baseline survey. Fox occupancy has increased, however a survey and attempted control event in 2019 (i.e. removal of 1 pregnant female fox) showed no active dens across the property and no individuals captured in control events.

3. EPBC Conditions and Compliance

Table 2 documents the compliance with EPBC Act conditions for the Project for the Year 2 reporting period, being 5 February 2019 to the 4 February 2020. The compliance assessment relates to the approval conditions in force at the time of the two-year anniversary.

Table 2: Compliance Audit of EPBC 2016/7723 Conditions for Torhaven

Condition Number / Reference	Condition	Is the Project compliant with this condition?	Evidence/ Comments
Part A – Conditions Specific to the action			
1	The approval holder must not clear more than 15 hectares of koala habitat within the project site.	Compliant	Measured clearing area of critical habitat = 11.27 ha Refer to **Plan 2: Year 2 Koala Critical Habitat Removed** which shows the clearing extent of Koala habitat for the Project during the reporting period. Impacts to Koala habitat were limited to the Project site.
2	To compensate for the loss of 29.7 hectares of koala habitat within, and adjacent to the project site, the approval holder must: a. Prior to commencement of the action, legally secure for the life of the approval a minimum of 53.6 hectares of koala habitat at the offset site.	Compliant	In response to Condition 2a, third party offset provider Queensland Trust for Nature (QTFN) legally secured the offset via a voluntary declaration under the *Vegetation Management Act 1999* (PMAV 2017/006736) on the 12 January 2018, which was reported in the Year 1 ACR.
	b. Within 10 business days of legally securing the offset site, provide the Department with evidence of when and how it was legally secured, what mechanism was used, and appropriate coordinates to enable the Department to map the offset site.	Compliant	In response to Condition 2b, the Department was provided with the offset attributes, shapefiles and maps and a copy the acceptance of the voluntary declaration on the 16 January 2018, which was reported in the Year 1 ACR.
	c. Within one year of commencement of the action complete a baseline koala density survey over the entire offset site.	Compliant	In response to Condition 2c, the baseline Koala density survey was completed over the offset area in October 2018 and reported in the 'Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723' prepared by QTFN (Oct 2018), which was reported in the Year 1 ACR.

Condition Number / Reference	Condition	Is the Project compliant with this condition?	Evidence/ Comments
	d. Within nine years, commencing from the date condition 2c is completed, demonstrate achievement of a statistically significant increase, maintained for two consecutive years, in koala density over the entire offset site compared to the results of the baseline koala density survey required by condition 2c.	Compliant (ongoing)	Baseline surveys were completed by QTFN in August 2018 (i.e. date of commencement of condition 2c) Year 2 surveys were completed in March 2019. Year 2 surveys indicated koala scat (metric 1 and 2) and camera trap observations (metric 3) suggest a stable population of koalas. Ongoing monitoring for this condition is required before a statistically significant increase or decrease can be demonstrated.
	e. Within one year of commencement of the action complete a baseline koala food trees survey over the entire offset site.	Compliant	In response to Condition 2e, the baseline Koala tree survey was completed over the offset area in October 2018 and reported in the 'Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723' prepared by QTFN (Oct 2018), which was reported in the Year 1 ACR.
	f. Within seven years, commencing from the date condition 2e is completed, demonstrate achievement of ongoing recruitment of koala food trees over the entire offset site, compared to the results of the baseline koala food trees survey required by condition 2e.	Compliant (ongoing)	Baseline surveys were completed by QTFN in August 2018 (i.e. date of commencement of condition 2e) Year 2 surveys were completed in March 2019. Year 2 activities focused on annual weed monitoring and corrective actions. QTFN reported at a property wide scale, abundance of weeds continues in a downwards trajectory Ongoing monitoring for this condition is required before a statistically significant increase or decrease can be demonstrated.
	g. Within one year of commencement of the action complete a baseline survey of non-native koala predators over the entire offset site.	Compliant	In response to Condition 2g, the baseline survey for non-native predators was completed over the offset area in October 2018 and reported in the 'Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723' prepared by QTFN (Oct 2018), which was reported in the Year 1 ACR.
	h. Demonstrate achievement of a reduction, maintained for 10 consecutive years, in the number of non-native koala predators over the entire offset site, compared to the results of the baseline survey of non-native koala predators established by condition 2g.	Compliant (ongoing)	Baseline surveys were completed by QTFN in August 2018 (i.e. date of commencement of condition 2g) Year 2 surveys were completed in March 2019.

Condition Number / Reference	Condition	Is the Project compliant with this condition?	Evidence/ Comments
			The RAI data calculated for each species shows that between the 2018 baseline and the end of 2019 monitoring period there is no evidence for significant increase in dogs foxes or cats. Ongoing monitoring for this condition is required before a statistically significant increase or decrease can be demonstrated.
	i. For the life of the approval, ensure there is no net loss in the extent of koala habitat over the entire offset site that is legally secured under condition 2a	Compliant	In response to Condition 2h, the offset site has been legally secured via a voluntary declaration which legally protects the extent of koala habitat within the offset. Firebreak inspections were undertaken monthly during 2017-2018. QTFN report there has been no clearing undertaken within the offset area, no chance to site connectivity (detailed in Section 3.3 and 3.8 of the Year 2 Offset Report). Nearmap imagery shows the extent of koala habitat within the offset area remains the same as that for Year 1. Refer **Appendix B**.
Part B – Administrative Conditions			
3	Within 20 business days after the commencement of the action, the approval holder must advise the Department of the actual date of commencement of the action.	Compliant	The action commenced 5 February 2019. The Department was informed in writing on the 19 February 2019, which was reported in the Year 1 ACR.
4	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement any management plans or monitoring programs required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media	Compliant	All records substantiating all activities associated with or relevant to the conditions of approval are maintained by the Proponent. If required by the Minister, these records can be made available to allow a third-party audit of the Project
5	Within 60 business days of every 12 month anniversary of the commencement of the action, the approval holder must publish a report on its website	**Non-compliant (administrative)**	This Year 2 ACR has been published on the approval holder's website on 22 May 2020, which falls outside the 60-day period of the 12 month

Condition Number / Reference	Condition	Is the Project compliant with this condition?	Evidence/ Comments
	addressing compliance with each of the conditions of this approval, including implementation of any management plans or monitoring programs as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. The Minister may provide written consent to the approval holder to cease reporting under this condition if satisfied additional reports are not warranted.		anniversary of the commencement of the action (i.e. 30 April 2020). On 6 May 2020 the Department was notified of the delay with a revised publication date of 22 May 2020, of which this ACR is compliant. Refer **Appendix C.**
6	The approval holder must report any potential or actual contravention of the conditions of this approval to the Department in writing within 5 business days of the approval holder becoming aware of the potential or actual contravention.	Compliant	An administrative non-compliance was identified for Condition 5 was identified with the date of this ACR exceeding 60 business days. This non-compliance was identified on the 6 May (i.e. within 3 business days) and an extension was sought for this non-compliance with the Department. As per Condition 6, the Department was notified in writing of the non-compliance with 5 business days of becoming aware of the non-compliance. Refer **Appendix C**.
7	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor and criteria must be approved by the Minister prior to the commencement of the audit. The audit report must address the criteria to the satisfaction of the Minister	Compliant	A request for an independent audit of the Project was not made by the Minister during the reporting period.
8	If, at any time after 5 years from the date of this approval, the approval holder has not commenced the action, then the approval holder must not commence the action without the written agreement of the Minister.	Not Applicable.	The action commenced on 5 February 2018, therefore this condition is not applicable.

4. Correcting Non-Compliances

4.1. ACR Reporting and Publication

Condition 5 of the EPBC Act approval states:

Within 60 business days of every 12 month anniversary of the commencement of the action, the approval holder must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans or monitoring programs as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. The Minister may provide written consent to the approval holder to cease reporting under this condition if satisfied additional reports are not warranted

As per Condition 5 the Year 2 ACR and publication of relevant management plans and monitoring programs was due on 30 April 2020 (i.e. within 60 business day of the 12 month anniversary of the commencement of the action). Due to a number of physical restrictions put in place during the height of the novel COVID-19 pandemic in March 2020, reporting was delayed.

On the 6 May 2020, the Department was formally notified in writing of this delay with an extension requested until 22 May 2020. Acknowledgment of this delay was made by the Department also on 6 May 2020. A copy of this correspondence is contained in **Appendix C.**

This non-compliance is considered administrative only. The project is compliant with all other approval conditions. Importantly, all Year 2 surveys, reporting and monitoring, on the both the development site and the offset site, was undertaken prior to 30 April 2020 (i.e. within 60 business days of the 12 month anniversary of the commencement of the action).

5. Appendices

Appendix A

Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 596 Mt Flinders Road Peak Crossing, Year 2 prepared by Queensland Trust for Nature (May 2020).

Appendix B

Nearmap Aerial of Offset Site (2018//2019 – 2019/2020)

Appendix C

Notification to DAWE and request for extension for the ACR

Appendix A

Koala Crossing Baseline Koala Assessment for Offset EPBC 2016/7723, 596 Mt Flinders Road Peak Crossing, Year 2 prepared by Queensland Trust for Nature (May 2020).

KOALA CROSSING

OFFSET AREA MANAGEMENT REPORT EPBC 2016/7723

569 MT FLINDERS ROAD PEAK CROSSING

Year 2 April 2020

Document Control

Current document	
Title	Koala Crossing Offset Area Management Report 2019 EPBC 2016/7723
Date	April 2020
Prepared by	Renee Rossini, Felicity Shapland and Tanya Pritchard

Document Issue			
Issue	***Date***	***Prepared by***	***Checked by***
Draft	26th November 2019	Renee Rossini	Felicity Shapland
Client Draft			
Final	13th May 2020	Felicity Shapland	Tanya Prichard

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Reports and/or plans by others may be included within this Offset Area Management Report to support the document.

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CHAPTER 1: INTRODUCTION

The purpose of this document is to report on the management actions and outcomes required for the provision of koala (*Phascolarctos cinereus*) habitat offset, by Approval EPBC 2016/7723 issued pursuant to sections 130 and 133 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC 1999). The focus of the plan is on the protection and enhancement of the koala habitat associated with the secured offset for the Ripley Road Residential Estate (EPBC ref. 2016/7723). This document will report in accordance with stipulations and requirements laid out in the Offset Area Management Plan.

The structure of the document reflects the requirements of the Department of Agriculture, Water and Environment (DAWE), and details the key threatening processes which could impact on the existing koala population. The chapters that comprise the document report on the overall health of the koala population, vegetation composition, and actions to minimise threats to Koala. The management regime put in place by QTFN will enhance existing koala habitat through the exclusion of land practices detrimental to the site and will track improvements and progress in the annual offset report over the active management period.

This report is the second submitted to date since the approval date for the offset. The past and future reporting requirements are listed below.

Table 1. Reporting schedule.

Milestone	Due date	Status
Approval of EPBC 2016/7723	-	Approved 9th January 2018
Supp. Koala baseline	October 2018	Submitted October 2018
Year 1 – Baseline and intensive review	April 2019	Submitted April 2019
Year 2	April 2020	Submitted May 2020

Table 2. Compliance summary and checklist for all conditions relevant to this reporting interval.

Condition	Supplementary koala assessment October 2018	Year 1 (Baseline) April 2019	Year 2 April 2020
2a Prior to commencement of the action, legally secure for the life of the approval a minimum of 53.6ha of koala habitat at the offset site.		***Complete***	***Compliant***
2b Within 10 business days of legally securing the offset, provide the Department with evidence of when and how it was legally secured, what mechanism was used, and appropriate coordinates to enable the Department to map the offset site. 2		***Complete***	***Complete***
2c Within one year of commencement of the action complete a baseline koala density survey over the entire offset site	***Complete***	***Complete***	***Complete***
2d. Within nine years, commencing from the date condition 2c is completed, demonstrate achievement of a statistically significant increase, maintained for two consecutive years, in koala density over the entire offset site compared to the results of the baseline koala density survey required by condition 2c.		**Metric 1 – SAT results** Koala SAT results show an average activity rating of 13.75% ± 6.4% adjusted for confidence intervals **Metric 2 – Average number of trees searched before scat found** Scats were found within the EPBC2016/7724 site after searching 7±1.2 trees **Metric 3 – Photographic evidence of koala activity** Photo monitoring stations are positioned throughout the Koala Crossing property.	***Ongoing***
2e Within one year of commencement of the action complete a baseline koala food trees survey over the entire offset site	***Complete***	***Complete***	***Complete***
2f. Within seven years, commencing from the date		**Metric 1 – Percentage of search sites with recruitment of young food trees** 86% of sites have evidence of recruitment occurring.	***Ongoing***

<table>
<tr><td>condition 2e is completed, demonstrate achievement of ongoing recruitment of koala food trees over the entire offset site, compared to the results of the baseline koala food trees survey required by condition 2e.</td><td></td><td>Metric 2 – Percentage of search sites sustaining midsize food trees
On average 61±0.03% of trees at sites where koala scat was found are in the 51-100cm circumference category.
Metric 3 – Reduction in weed coverage across the site
Weed coverage does not exceed baseline levels by more than 10%</td><td></td></tr>
<tr><td>2g Within one year of commencement of the action complete a baseline survey of non-native koala predators over the entire offset site</td><td>Complete</td><td>Complete</td><td>Complete</td></tr>
<tr><td>2.h Demonstrate achievement of a reduction, maintained for 10 consecutive years, in the number of non-native koala predators over the entire offset site, compared to the results of the baseline survey of non-native koala predators established by condition 2g.</td><td></td><td>Metric 1 – Relative Abundance Indices (RAI)
RAI and confidence intervals developed for predators to show trends in data:
<table>
<tr><th>Species</th><th>Strong increase</th><th>Low increase</th><th>Low decrease</th><th>Strong decrease</th></tr>
<tr><td>Dingo</td><td>2.6</td><td>1.6</td><td>1.4</td><td>0.4</td></tr>
<tr><td>Fox</td><td>3.3</td><td>2.4</td><td>2.2</td><td>1.3</td></tr>
<tr><td>Cat</td><td></td><td>0.1</td><td></td><td></td></tr>
</table>
Metric 2 – Occupancy data
Occupancy data metrics developed. Baseline occupancy set at 40% of cameras with predators recorded.</td><td></td></tr>
</table>

CHAPTER 2: SETTING AND LOCALITY

By way of Deed, Defence Housing Australia secured delivery of an Offset Area Management Plan and registration of a Voluntary Declaration (under the Vegetation Management Act (QLD) of 53.616ha imposed by EPBC Approval 2016/7723.

The offset area pertaining to EPBC 2016/7723 is managed as part of a larger conservation property located on Mount Flinders Road, Peak Crossing, Queensland comprised of eight lots; 86, 87, 88, 89 on RP892014, Lot 119 on CH311527, Lot 107 on CH311135, Lot 137 on CH311786 and Lot 138 on CC127 totalling approximately 654 ha. The whole site, henceforth referred to as 'Koala Crossing', was purchased by the Queensland Trust for Nature (QTFN) in 2014 to protect regrowth vegetation from future development, with the aim of utilising the property for offsets.

The tenure of the site is freehold, wholly owned by the Queensland Trust for Nature. It is included within the Scenic Rim Regional Council Local Government Area. On a regional scale, the site is part of the Flinders Karawatha Corridor, the largest remaining contiguous stretch of open eucalypt forest in South East Queensland (SEQ) (EHP 2014). The corridor stretches for 60km from the Karawatha forest in Brisbane, through Flinders Peak to Wyaralong Dam near Boonah, and encompasses 56,350 ha of land. It is an important wildlife corridor, providing habitat for a number of vulnerable species including the tusked frog (*Adelotus brevis*), glossy black-cockatoo (*Calyptorhynchus lathami*),

powerful owl (*Ninox strenua*),black-breasted button-quail (*Turnix melanogaster*), spotted-tailed quoll (*Dasyurus maculatus maculatus*), brush-tailed rock-wallaby (*Petrogale penicillata*) and koala (*Phascolarctos cinereus*).

Climate data for the area gives a mean maximum and minimum temperature of 27.3°C and 13.9°C respectively. The average annual rainfall is 674mm (BoM 2018), with the wettest month in January and the driest month in August. The site contains four Regional Ecosystems (REs):

- 12.8.24 Endangered: *Corymbia citriodora subsp. variegata* open forest on Cainozoic igneous rocks especially trachyte
- 12.9-10.7 Of concern: *Eucalyptus crebra* +/- *E. tereticornis*, *Corymbia tessellaris*, *Angophora spp*, *E. melanophloia* woodland on sedimentary rocks
- 12.9-10.2 Of least concern: *Corymbia citriodora subsp. variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks
- 12.9-10.17 Of least concern: *Eucalyptus acmenoides*, *E. major*, *E. siderophloia* +/- *Corymbia citriodora subsp. variegata* woodland on sedimentary rocks

The highest point of the site is 210m above sea level on the eastern side, close to the border of lots 86 and 87 RP892014. The Geological Survey of Queensland 1:100,000 Ipswich Geological Map (DME 2008) lists the geology as:

- Qa SEQ: Quaternary; clay, silt, sand, gravel, flood plain alluvium
- Tit SEQ: Tertiary: trachyte (anorthoclase and riebeckite trachyte)
- Jbmk: Jurassic; lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, minor coal, ferruginos oolite marker
- Jbmg: Jurassic; lithic labile and feldspathic labile sandstone

CHAPTER 3: OFFSET AREA ANNUAL REPORT

3.1 KOALA OCCURENCE

Relevant actions & monitoring requirements	Reporting requirement	Compliant
Replicated koala density/occurrence surveys undertaken within the offset area at years 5 and 10 from the date at which the offset it legally secured.	**Metric 1 – SAT results** Koala SAT results show an average activity rating of 13.75% ± 6.4% adjusted for confidence intervals **Metric 2 – Average number of trees searched before scat found** Scats were found within the EPBC2016/7724 site after searching 7±1.2 trees **Metric 3 – Photographic evidence of koala activity** Photo monitoring stations are positioned throughout the Koala Crossing property.	Y

Koalas are under significant threat in SEQ due to habitat encroachment by urbanisation, predation by feral and domestic animals and traffic accidents caused by increased road networks and motor vehicles. Koala Crossing was purchased by the Queensland Trust for Nature with the intention of finding sustainable funding models to preserve koala habitat and provide linking territories to the Flinders-Goolman Conservation Estate and the Flinders-Karawatha Corridor. The delivery of third-party project impact offsets has provided a means of funding ongoing restoration and revegetation of large parts of the property.

Surveys from 2015 to 2018 and the baseline survey conducted in 2018 (and reported on in the Year 1 Offset Area Management report) indicated a population of between 10 to 15 koalas using the Koala Crossing site. Koala scat searches detected koala presence at 76% of plots examined in a variety of habitats across the Koala Crossing site. Since 2015, five rehabilitated koalas have been released on the site, and koala scats and camera trap observations suggest a stable population of koalas.

1 MONITORING IN THIS PERIOD

This report will briefly summarise the findings of the intensive koala density and occupancy resurvey conducted by QTFN and their research partners Koala Ecology Group UQ and OWAD Environmental. External reports have been prepared by each party which summarise:

- All koala research and density survey results to date prepared by Dr Renee Rossini, QTFN (Appendix 14)
- Project report by Dr Bill Ellis of the Koala Ecology Group, The University of Queensland (Appendix 14)
- Survey notes and report by Olivia Woosman from OWAD regarding koala scat health testing (Appendix 14)

Methodologies remain unchanged from previous reports. Trees were selected at random throughout the property and searched for Koala scratch marks and scats within 1m of the base. As recommended by the Koala Ecology Group in the original baseline survey, a maximum search effort of 11 trees was conducted in any one site before a site was considered to have no evidence of recent koala activity. Where very fresh scats were found a brief visual search of the immediate area was conducted to determine if a koala was still present. Relative Activity Indices are calculated for koala in the same manner as for feral predators, the methods for which are detailed in

2 RESULTS AND MANAGEMENT OUTCOMES

Scat searches

The baseline survey of October 2018 and this survey of March 2019 provided similar estimates of occupancy – 88% in October 2018 and 80% in March 2019. The activity or density of koalas (inferred by the number of trees that needed to be searched to find scat) has increased since the original surveys of 2014 (Figure 1).

For full details regarding the koala occupancy and activity survey see Appendix 14.

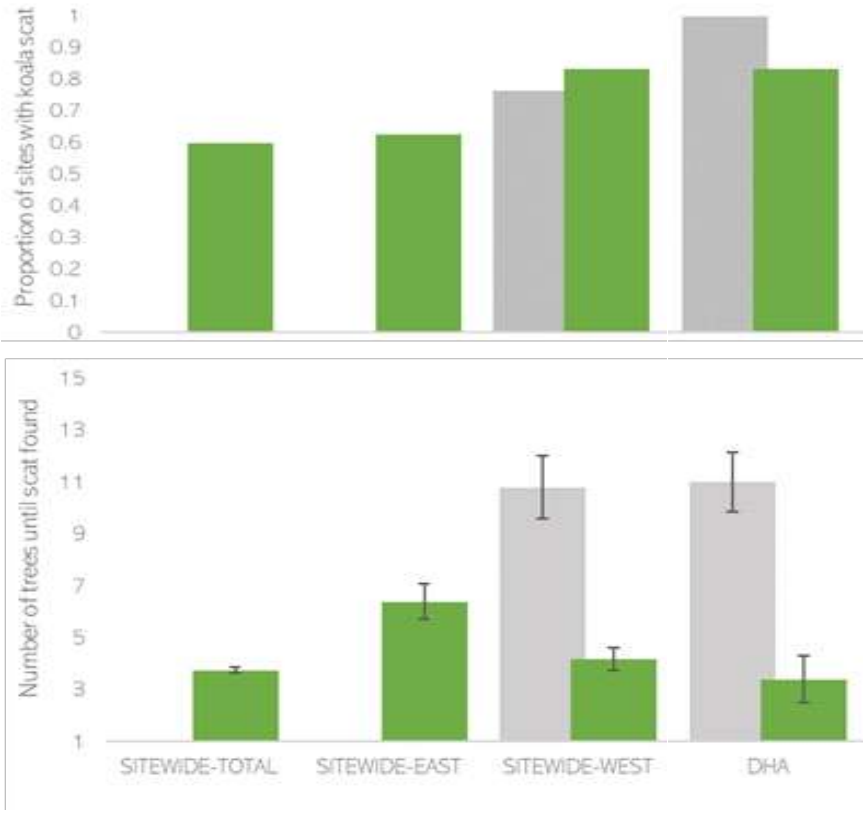
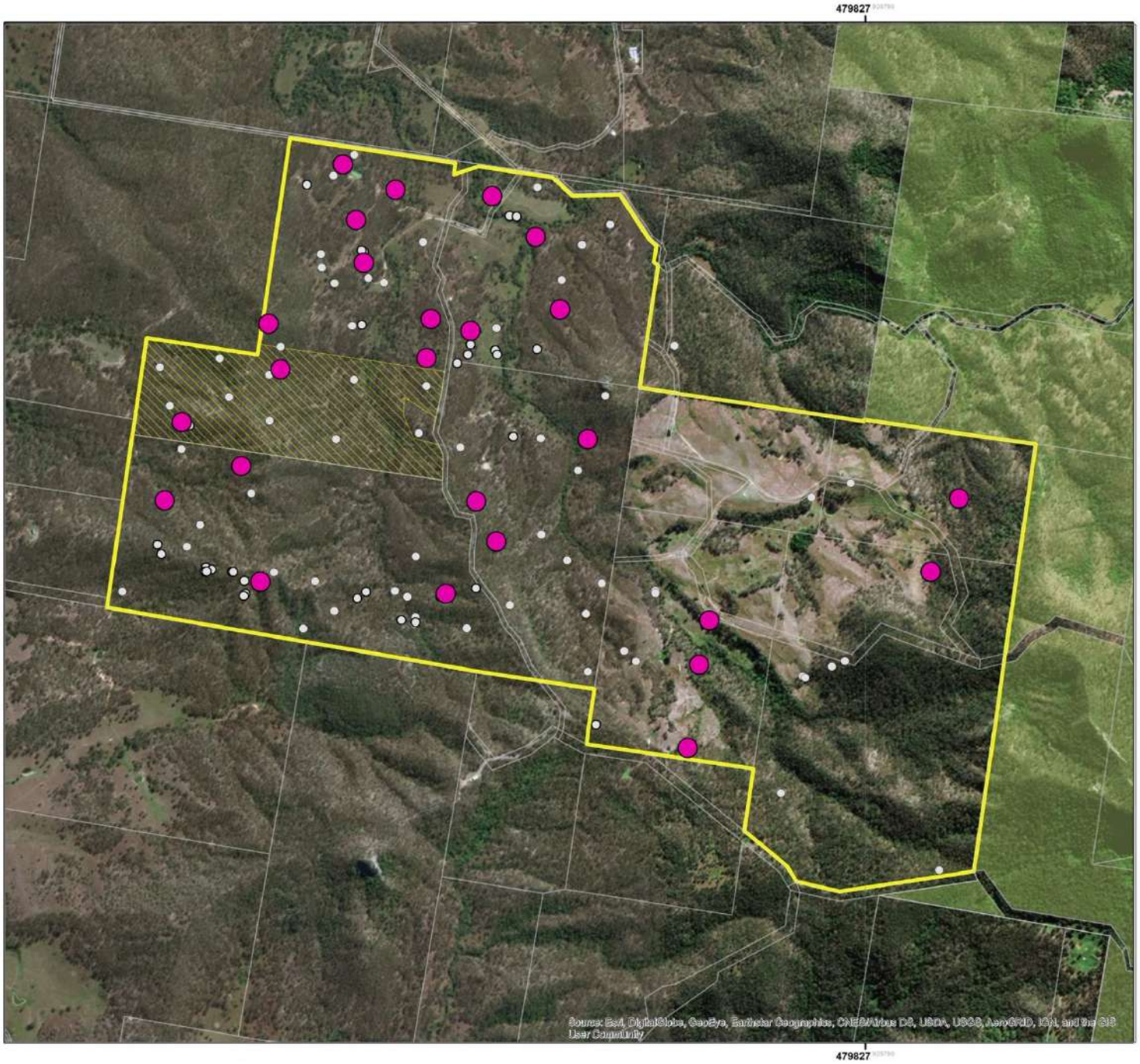


Figure 1. Occupancy (top) and activity (bottom) of koalas across the Koala Crossing site in general, and within the relevant offset area (marked INV).

Camera trap and direct observations

No koalas were captured as part of bi-annual predator monitoring in the period relevant to this report. Two individuals with no ear tags (i.e. not part of the already known population of approximately 9 individuals) were sighted by the Koala Ecology Group at the entrance to the Koala Crossing property in the river-valley that runs north of this offset area (Figure 2).

The Koala Ecology group also reported the remains of a previously tagged koala were discovered in a property adjoining Koala Crossing. This individual was discovered in poor health in 2016, treated by the team for cystitis caused by Chlamydia, and re-released onto Koala Crossing Chlamydia free. They report that, thanks to veterinary intervention, this koala's life was extended by several years despite her loss in 2019. For a summary of their full report see Appendix 14.



QTFN

EPBC 2013/7723
Koala Crossing
Koala monitoring

0 0.2 0.4 0.8
Kilometers

N

1 cm = 150 meters
when printed at A3

Legend

- KOALA_scat_locations_2019
- KOALA_scat_locations_2018
- KOALA_scat_locations_pre2018
- Cadastre_ScenicRim
- Cadastral_Ipswich
- Koala Crossing Boundary
- DHA EPBC 2013_7723
- Ipswich Reserves

Author: QTFN
Date:10/10/2019
Source: Cadastral Boundaries,
Data supplied by QSpatial
http://qldspatial.information.qld.gov.au/catalogue/custom/index.page
ACCURACY STATEMENT
Due to varying sources of data, spatial locations may not coincide when overlaid.

Figure 2. Koala Ecology Group lead Dr Bill Ellis indicating one of two koalas sighted during their one-day survey in May 2019.

Management outcomes

Opportunistic surveys will continue annually, and the next intensive survey is due in 2025. Should our opportunistic koala density surveys suggest reductions in koala numbers between 5-year survey events, a supplementary assessment will be implemented to review the likely cause of the reduced occurrence of koala within the offset area in accordance with the Offset Area Management Plan requirements (Appendix 1 action #2.1.5.7). In addition to the existing population, the property will continue to act as a release site for recuperated koalas that were found close to the property. The next intensive site-wide scat surveys, spotlighting surveys and tracking activities are planned for the Year 10 reporting period (2024).

3.2 VEGETATION COMPOSITION

Relevant actions	Reporting requirement	Compliant
Monitoring of weed infestations; adaptive management of shrub, tree and vine weed species if required. Koala food tree monitoring to occur every 5 years. For full OAMP see Appendix 2.	**Metric 1 – Percentage of search sites with recruitment of young food trees** 86% of sites have evidence of recruitment occurring. **Metric 2 – Percentage of search sites sustaining midsize food trees** On average 61±0.03% of trees at sites where koala scat was found are in the 51-100cm circumference category. **Metric 3 – Reduction in weed coverage across the site** Weed coverage does not exceed baseline levels by more than 10%	Y

The maintenance of the koala population is dependent on the health, age and distribution of koala food trees within the offset area. Monitoring and management of the vegetation is an essential part of the management plan.

In this period activities focused on annual weed monitoring and corrective actions, ensuring there is no increase in weeds above the baseline. We also commissioned a Biocondition survey of the site to mark the five-years since management commences and review the management of native vegetation.

1 MONITORING IN THIS PERIOD

Weed assessments continue to be conducted annually and compared to results from the baseline survey of 2015. Permanently marked transects were surveyed according to Nelder *et al* 2015 in a 50 x 10m transect (Map 3). Photo points were recorded at each transect so that the progress of the site could be monitored (Appendix 2). The target weed species identified as a threatening process to koalas is *Lantana camara*. Whilst other weeds were measured for overall ecological health, the focus of the weed management is the control and eradication of *L. camara*, as it has the capacity to prevent koala movement and access to food and shelter trees and alter fire regimes.

2 RESULTS AND MANAGEMENT OUTCOMES

Full detailed weed surveys were conducted across the site. Within the offset area weed trends are stable, remaining at 30% of transects with L. camara but at ≤1% coverage of the transect. At a property-wide scale, abundance of the weed increased post-purchase but continues a downward trajectory (Figure 3).

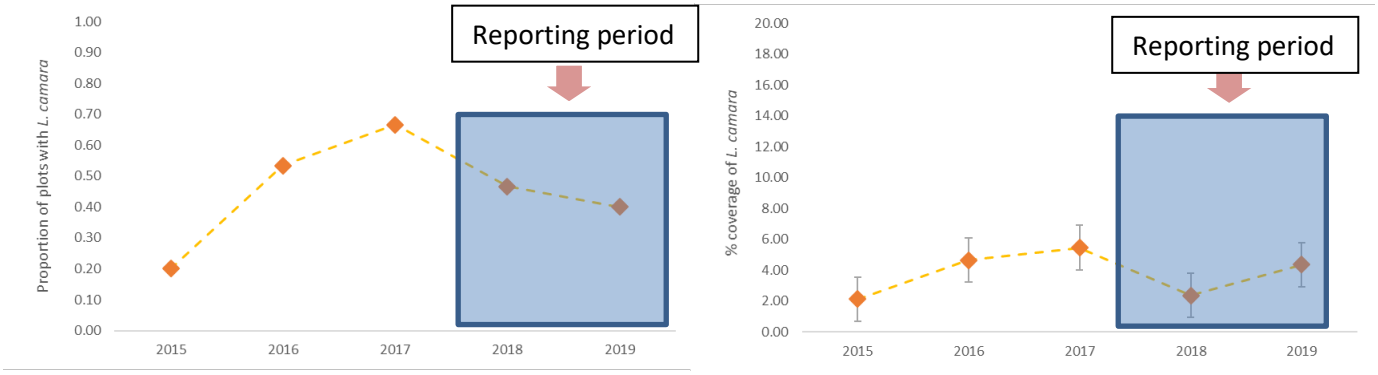
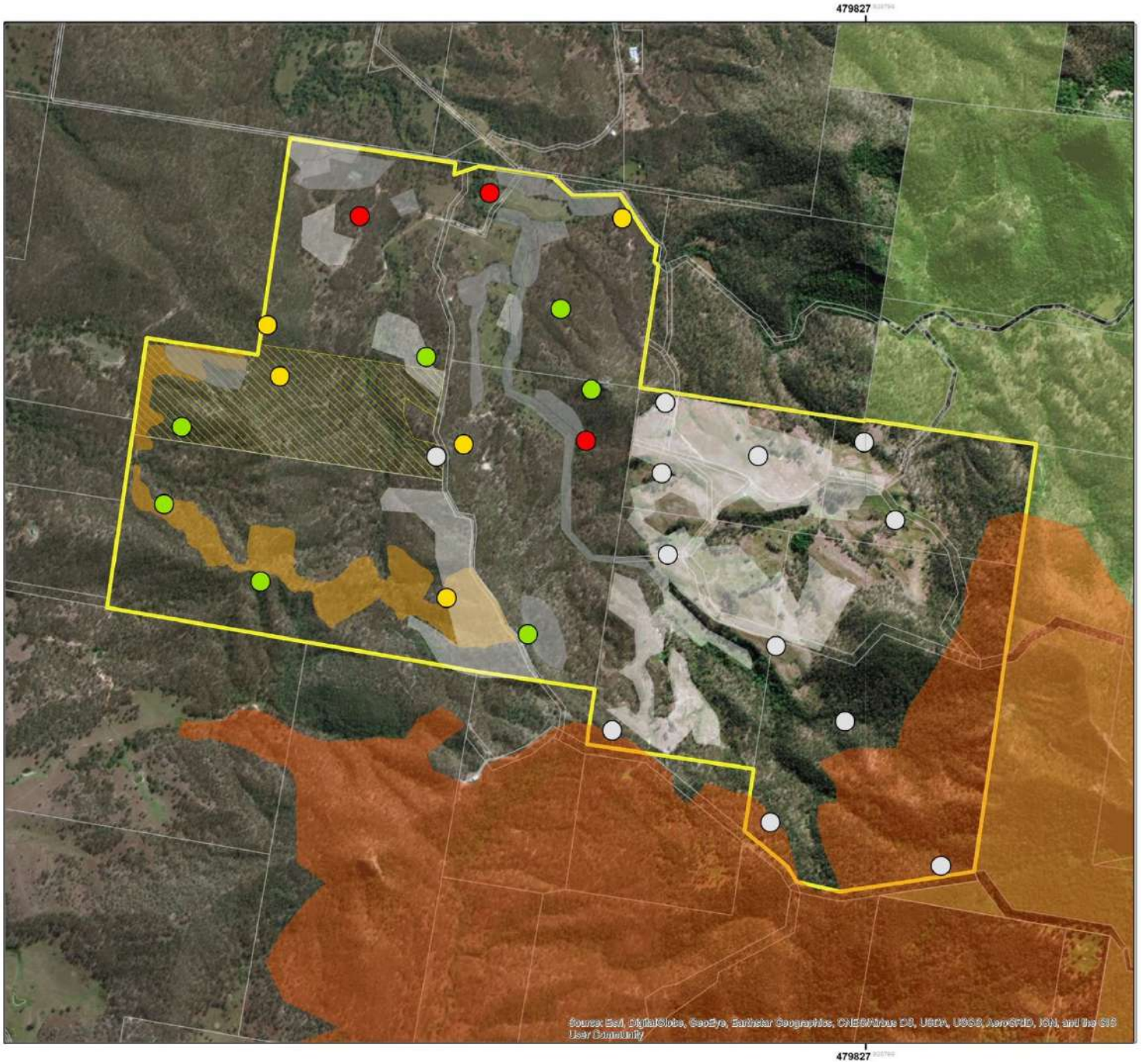


Figure 3. Occupancy (left) and coverage (right) of *Lantana camara* on Koala Crossing as a whole.

Management actions

The Weed Strategy 2018-2020 was pivotal in creating reductions in *L. camara* and QTFN will be compiling a new Weed Strategy for the next 5-year period by the beginning of 2020. Considering emerging data, this strategy will focus on continuing to reduce *L. camara* as well as testing and deploying methods for treating the emerging weed problem on-site – *Lantana montividiensis.*



QTFN

EPBC 2013/7723
Koala Crossing
Vegetation management

0 0.2 0.4 0.8
Kilometers

N

1 cm = 150 meters
when printed at A3

Legend

- WEEDS_status_2019_FIRST
- WEEDS_status_2019_IMPROVE
- WEEDS_status_2019_NOCHANGE
- WEEDS_status_2019_DECLINE
- WEEDS_treatment_to_2018
- WEEDS_treatment_to_2019
- FIRE_2018_Ecoburn
- FIRE_2018_wildfire
- Cadastre_ScenicRim
- Cadastral_Ipswich
- Koala Crossing Boundary
- DHA EPBC 2013_7723
- Ipswich Reserves

Author: QTFN
Date:10/10/2019
Source: Cadastral Boundaries,
Data supplied by QSpatial
http://qldspatial.information.qld.gov.au/catalogue/custom/index.page
ACCURACY STATEMENT
Due to varying sources of data, spatial locations may not coincide when overlaid.

3.3 HABITAT CONNECTIVITY

Relevant actions	Reporting requirement	Compliant
Vegetation clearing will not be undertaken within the offset area under any circumstances. Firebreaks and fire control lines to be inspected at a minimum quarterly frequency or after major storm events. For full OAMP see Appendix 4.	The location, extent and associated purpose for any vegetation clearing undertaken within the offset area will be detailed within the annual Offset Area Assessment Report. Any change to site connectivity is to be detailed within the annual Offset Area Assessment Report.	Y

1 MONITORING AND MANAGEMENT OUTCOMES

Firebreak inspection has been undertaken monthly during the 2017-2018 monitoring period. There has been no clearing undertaken within the offset area, nor a change to site connectivity. No major changes in koala habitat resulted from the prescribed burn (details of which can be found in Section 3.8).

Management actions

Continue to follow the offset area management plan.

3.4 THREAT TO KOALA FROM DOGS, FOXES AND CATS

Relevant actions	Reporting requirement	Compliant
Post initial control event, abundance surveys for wild dogs to be undertaken bi-annually by a suitably qualified person (e.g. pest animal control professional or ecologist with at least two years relevant professional experience) Offset area-wide traverse by the landholder each two months to record the presence/absence of signs of wild dogs (including scats). The monitoring will take place along a set route utilising the existing network of tracks within the offsets area (e.g. fire control lines) to allow for replication of the monitoring events. Where post control surveys indicate there has been a recurrence of wild dogs within the offset area, control measures will be actioned using methods (controlled shooting or baiting) determined by a pest control professional in consideration of monitoring results. Any injured koala found on site will be sent to a veterinary clinic/wildlife rescue facility for rehabilitation. For full OAMP see Appendix 5 & 6.	**Metric 1 – Relative Abundance Indices (RAI)** RAI and confidence intervals developed for predators to show trends in data: Species / Baseline / 2019 Dingo / 1.1 / 1.2 Fox / 4.5 / 2.8 Cat / 1.6 / 0 **Metric 2 – Occupancy data** Occupancy data metrics developed. Baseline occupancy set at 40% of cameras with predators recorded.	Y

1 MONITORING

Monitoring was conducted using remote sensing wildlife cameras (see Appendix 7 for examples of images) and offset area wide traverses for opportunistic scat collections. For the baseline survey of 2018, this survey effort included 13 camera stations capturing a broader view of the landscape of Koala Crossing as a whole, with four cameras positioned within the EPBC 2016/7723 offset area.

Methodologies remain unchanged from previous monitoring, with relative abundance indices calculated using a standardised set of trapping days (40), with an independence threshold of 10mins (i.e. each observation of an animal ten minutes after the first observation is considered a new observation) analysed using the software 'Camelot'. Given that the movement range of these feral predators extends beyond the specific offset area, RAI are presented including the data from any camera trapping station with projected territories of any feral animal that overlap with the offset area. Observations specific to cameras within the offset area are presented in maps.

Estimating predator abundance using camera trapping relies on assumptions regarding how the time that elapses between photos relates to the point at which we count a new observation (i.e. is a string of photos one dingo or three). This time is called the independence threshold (from here on IT). At present, abundance estimates for all species in QTFN's camera trapping data are estimated using an IT of 10 seconds. If this threshold is too short, a string of photos of the same individual will be counted as multiple individuals (overestimation of abundance), too long and multiple individuals are counted as one (underestimation). To assess whether the current IT is appropriate we reviewed the number of seconds each individual dingo spends on camera across all sampling periods. Using the optimum IT recommended by the IT threshold assessment, RAI was calculated for each predator species.

Determining clear trends from Relative Abundance Index data can be problematic, due to the variability of presence-absence of species, including variations in response to seasonal changes and year to year changes (rainy year or drought year) (Eyre et al 2018). For this reason, QTFN has determined a confidence interval to accurately test whether trends in predator numbers are increasing, decreasing or maintained at baseline. This was calculated

through an estimate of the average maximum proportion of cameras that captured any predator and the standard deviation to estimate 95% confidence intervals (table 3). Confidence intervals for RAI and occupancy were calculated based on data QTFN has collected since 2015. This allows a more accurate picture of overall populations of non-native predators and acceptable limits around trends.

Table 3. Confidence limits for estimates of occupancy by all introduced predators on Koala Crossing.

Offset	Strong evidence of decrease	Conservative evidence of decrease	Conservative evidence of increase	Strong evidence of increase
RAI limits: Dog; Fox; Cat	0.4; 1.3; n/a	1.4; 2.2; n/a	1.6; 2.4; 0.1	2.6; 3.3; n/a
Site-based estimate occupancy	*The % occupied falls below the 2015 estimate minus the confidence interval* <28%	*Beyond the lowest estimate recorded on site* <30%	*Beyond the average for property in the 2015 survey* >58%	*The % occupied falls above the 2015 estimate plus the confidence interval* >88%

Statistical inferences for RAI also contain no variance element which limits analysis techniques for testing for a significant departure from baseline. At baseline, RAI estimates across summer and winter 2015 for each species were: *C. lupus* 0.8 ± 1.1 and *V. vulpes* 2.3 ± 0.99. Therefore, this report will consider any estimate of RAI equal to the baseline estimate (± 0.1) as no evidence of change, an estimate beyond this but within the confidence limits as conservative evidence of change (C. lupus between 0 - 1.9, *V. vulpes* 1.4 - 3.2 and *F. catus* anything over 0). Any estimate beyond the confidence limits is considered significant evidence of change.

2 RESULTS AND MANAGEMENT OUTCOMES

Monitoring of RAI for wild dogs, foxes and cats

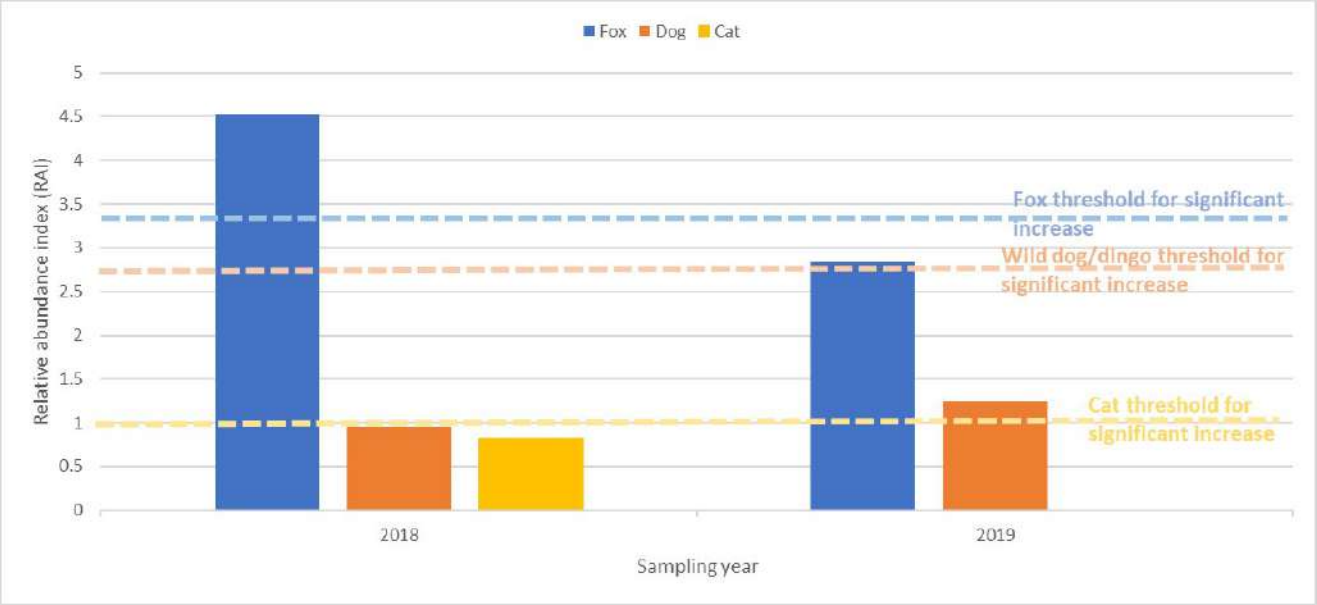


Figure 4a. Relative Abundance Index of wild dogs/dingo (orange), foxes (blue) and cats (yellow) and confidence limit thresholds showing no significant increase for each since baseline.

The RAI data calculated for each species shows that between the 2018 baseline and the end of 2019 monitoring period there is no evidence for significant increase in dogs foxes or cats. RAI decreased for foxes and only marginally increased for dogs, but this is well inside the confidence levels for determining trends in dogs, so no trend can be determined from the data.

QTFN's other obligations at the site meant control and monitoring has occurred within the wider landscape since 2015. Control events targeting all predators between 2015 and 2017 resulted in the capture and removal of 2 foxes and 3 dogs. Following the control event the fox numbers increased, a more than two-fold increase above the previous maximum RAI was recorded for foxes (Winter 2015 = 3, Winter 2018 = 8). Cats were seen on site for the first time since monitoring commenced in this period as well (winter 2018); one was captured on a camera trap, then later seen nearby in the proximity of a freshly killed wallaby.

Control events in 2018 and 2019 resulted in the removal of 1 pregnant female fox. In 2019 a survey of fox dens using a conservation dog determined one historically active den present onsite, and recent fox activity present along one of the main creeks.

Occupancy data is a measure of the proportion of cameras recording predators across the site ie a spatial measure of predator presence. Occupancy data shows dog numbers occupied a similar area to the baseline survey. Fox occupancy has increased, however a survey and attempted control event in 2019 showed no active dens across the property and no individuals captured in control events.

Preliminary data from the 2020 monitoring season shows a decrease below baseline in dogs and foxes in both RAI and occupancy across the site.

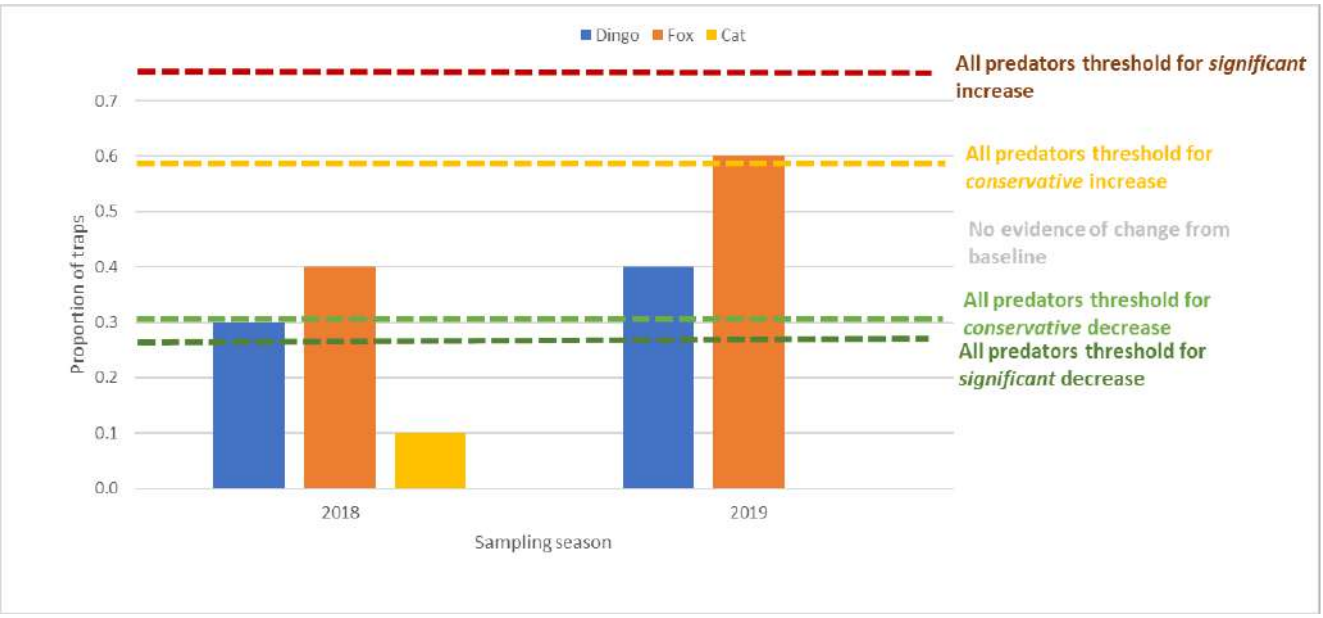


Figure 4b. Occupancy predators across camera traps. Occupancy is a measure of cameras across property measuring predators. All data collected to date is included to demonstrate the rapid increase in foxes in the last reporting period, and subsequent decline due to management actions in this management period.

Analysis of predator scat

As in previous years, no listed threatened species has appeared in the collected predator scats. The large proportion of eastern chestnut mouse (Pseudomys gracillicaudatus) in the scat in the previous monitoring season has declined to <10% of individuals with this species. The majority of scat in this monitoring period was composed of eastern grey kangaroo and swamp wallaby.

Other observations

None of note.

Management actions

Management in this reporting period has focussed on securing declines in fox numbers by completing den surveys throughout the Koala Crossing site. A single den was found in the proximity of camera trap G, however there was no activity around this den in this season. This is in stark contrast to last reporting period, where pregnant vixens were captured by animal control contractors.

Conclusions regarding abundance of predators

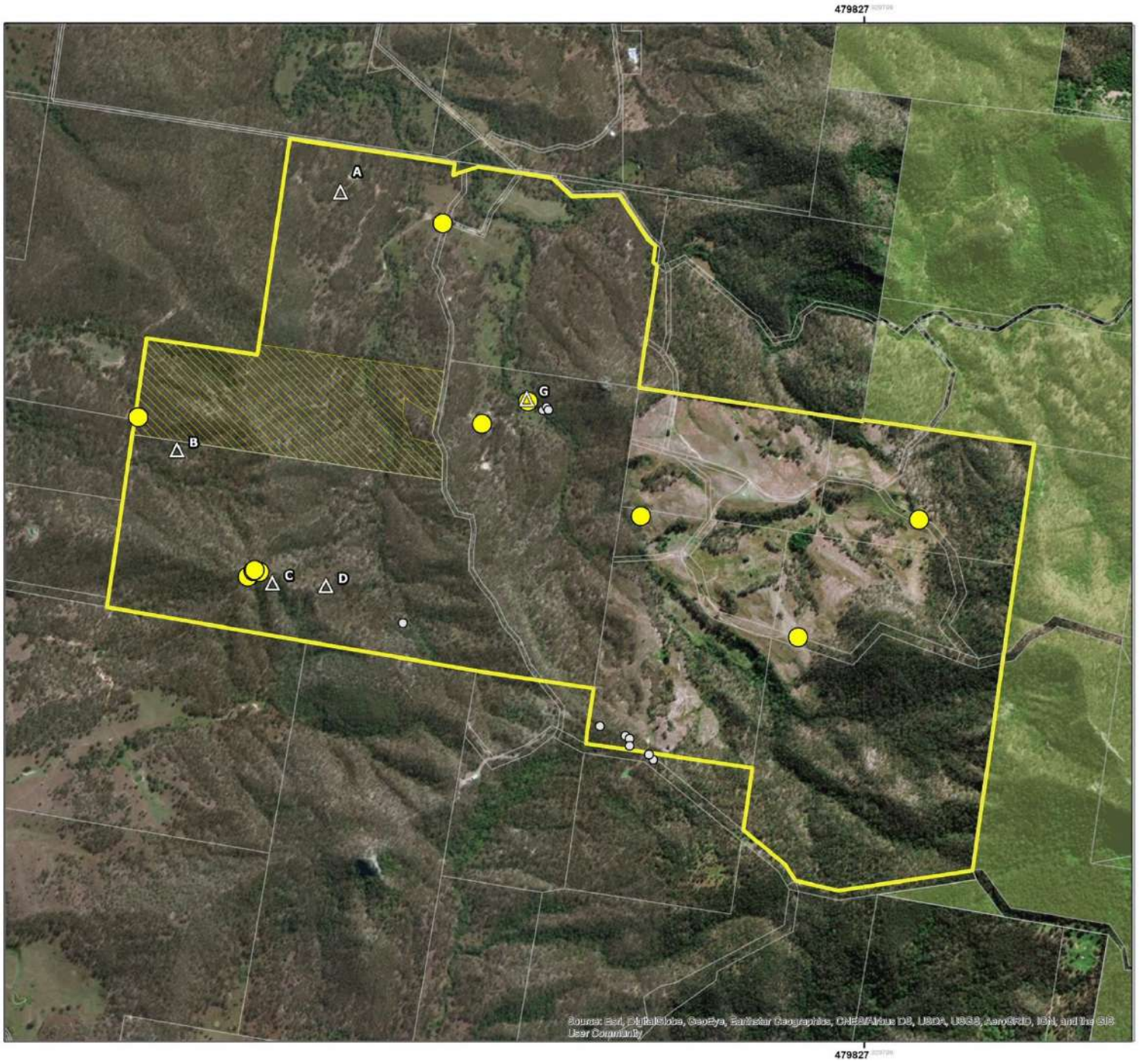
Animal management on Koala Crossing has been occurring for a relatively short period, and the numbers of animals living on or utilising this relatively small property is low. However, in this time relationships between predatory species and space, and between each other can be inferred and these relate strongly to evidence from the prevailing literature.

Predator abundance and diversity has remained highest at the three camera trap stations within the cleared section adjoining the Sandy Creek within the western parcel of Koala Crossing (stations A, G and F). These areas are topographically the most alluvial, are the most disturbed, are situated on a creek and all have nearby access to permanent water. Outside of this area, *C. lupus* has been recorded in the ridgeline area of the western parcel where another dam exists (camera station B) since 2015, whilst *V. vulpes* were absent in this high-country area until 2017. The only sighting of *F. cattus* is from the lowland area of the site where foxes are most common and where dogs have failed to return post control event.

There is growing evidence to suggest that the presence of dingoes, or dingo-wild dog hybrids, results in reduced abundance of introduced meso-predators (cats and foxes) (Johnson and Ritchie 2013, Newsome et al 2017). The data presented in this report aligns with this paradigm – generally referred to as meso-predator release theory – and highlights potential subtleties in predator management QTFN may need to consider. The literature concerning dingo-wild dog management generally favours more remote or desert contexts, and whilst conclusions are conflicting, the presence of *C. lupus* generally results in lower abundance of meso-predators and particularly foxes, benefits for small native mammals, and control of larger macropods.

As detailed in the remainder of this report, no dog scat found on site to date has contained a threatened species. There is considerable dietary overlap between these *C. lupus* and *V. vulpes*, and *F. cattus*, however scat analysis from Koala Crossing indicates that fox scats from this site contained higher proportions of bird and reptile remains than dogs. There is also evidence in the literature to suggest the narrower home-ranges and tendency to surplus kill in

both meso-predators warrants a stronger focus on their removal. Numerous conservation organisations are shifting their philosophy regarding predator management away from the removal of *C. lupus* toward a stronger focus on their retention and targeted control of meso-predators.



QTFN

EPBC 2013/7723 Koala Crossing Predator management

0 0.2 0.4 0.8
Kilometers

N

1 cm = 150 meters
when printed at A3

Legend

SymbolID

- FERALS_camera trap location
- FERALS_Predator_scat_2018_2019
- FERALS_Predator_scat_2017_2018
- Cadastre_ScenicRim
- Cadastral_Ipswich
- Koala Crossing Boundary
- DHA EPBC 2013_7723
- Ipswich Reserves

Author: QTFN
Date:10/10/2019
Source: Cadastral Boundaries,
Data supplied by QSpatial
http://qldspatial.information.qld.gov.au/catalogue/custom/index.page
ACCURACY STATEMENT
Due to varying sources of data, spatial locations may not coincide when overlaid.

3.5 THREAT TO KOALA FROM VEHICLE STRIKE

Relevant actions	Reporting requirement	Compliant
Any observed koala injury/mortality on roads/tracks within the offset area or roads that front Lots 86, 87, 88 or 89 RP892014 to be recorded. For full OAMP see Appendix 8.	Incident to be recorded in annual Offset Area Assessment Report.	Y

There were no vehicle strike incidents in any part of the property.

3.6 THREAT TO KOALA VIA BARRIERS TO DISPERSAL

Relevant actions	Reporting requirement	Compliant
Vegetation clearing will not be undertaken within the offset area under any circumstances. For full OAMP see Appendix 9.	The location, extent and associated purpose for any vegetation clearing or damage through natural disaster within the offset area will be detailed within the annual Offset Area Assessment Report.	Y

There was no vegetation clearing (excluding weeds) undertaken in any part of the offset area.

There was no damage associated with a natural disaster within any part of the offset area.

3.7 THREAT TO KOALA HABITAT THROUGH HYDROLOGICAL CHANGE

Relevant actions	Reporting requirement	Compliant
If any actions are proposed that may significantly impact the current (at time of offset area being legally secured) hydrological regime and therefore potentially impact koala habitat within the offset area then actions are required. For full OAMP see Appendix 10.	Where DoE approved hydrological change has occurred within the offset area, monitoring of the impact to the sites vegetation communities will be a component of an annual site assessment.	Y

There have been no hydrological changes made on any part of the property.

3.8 THREAT TO KOALA THROUGH FIRE

Relevant actions	Reporting requirement	Compliant
Except for prescribed burning, which will only be undertaken for the purposes of biodiversity enhancement, the offset area is to be managed to avoid the occurrence of fire by maintaining fire control lines. Prescribed burning will be undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade. For full OAMP see Appendix 11.	To be informed by an Offset Area Bushfire Management Plan. Monitoring results and maintenance log will be detailed within the annual Offset Area Assessment Report.	Y

Threat to koala from fire was addressed in accordance with table 2.9 of the OAMP by referring to the 'Koala Crossing Fire Management Plan'.

The Koala Crossing Fire Management Plan divides the property into Fire Management Zones: Land Management Zones, Exclusion Zones and Asset Protection Zones. Within the Land Management Zones the landscape is broken up into subzones (Fire Management Areas) according to practicable containment lines. The Fire Management plan details burning intervals recommended for these FMAs (KCFMP 2015 p.16). The EPBC 2016/7723 offset area is located in FMA 2.

2 RESULTS AND MANAGEMENT OUTCOMES

Two burns have occurred in this management window. The first, in December 2018, was a wildfire that spread from the Flinders-Goolman estate into the south-eastern portions of the Koala Crossing reserve. QTFN, Rural Fire Service and Fireland Consultants all attended the scene and protected the revegetation area on the east of Koala Crossing. The fire burnt remnant areas of RE12.8.24 outside of this offset area. The second fire was a small controlled ecological burn conducted by QTFN staff to control weeds in the properties north-west. This fire was also outside of the offset area (see Map 3).

3.9 THREAT TO KOALA AND KOALA HABITAT FROM DISEASE AND PATHOGENS

Relevant actions	Reporting requirement	Compliant
To reduce the risk of introducing Chlamydia and Koala retrovirus into the resident population; uncontrolled translocation of koala is not permitted within the offset area. Vegetation management activities which include tree lopping/felling, weed removal, tree planting (including nursery suppliers) are deemed to be high risk in the context of introducing pathogens that may potentially impact koala habitat. As such, any person engaged to undertake these activities must satisfy the landholder that they have undertaken all reasonable steps to prevent the introduction of a pathogen/disease to the site (e.g. vehicle and equipment washdown prior to site entry). For full OAMP see Appendix 12.	Incidence of koalas exhibiting disease to be recorded if encountered during any monitoring events within the offset area. Confirmation of translocation activity within the offset area is to be included within annual Offset Area Assessment Reports.	Y

1 MONITORING

The initial baseline survey for koala health (July 2015) indicated no incidence of koala diseases within the population at Koala Crossing, however subsequent surveys indicated two instances of koalas infected with chlamydia. Chlamydia is a bacterial infection which affects most koalas within South East Queensland. The disease weakens the immune system and causes various problems, including blindness and female infertility. Stress within a population can cause outbreaks of Chlamydia. Stressors include habitat clearing, fragmentation and lack of food resources.

Continued monitoring was conducted from November 2016 to November 2019 with incidental sightings and monitoring events carried out by QTFN Ecologists and UQs KEG researchers. An ongoing program is in place to continue monitoring Koala Crossing's koala population to ensure they are healthy and thriving.

2 RESULTS AND MANAGEMENT OUTCOMES

Disease records taken throughout the past 5 years suggest that QTFN and KEG intervention is reducing the incidence of Chlamydia in the broader population, and that koalas from the offset area have lower incidence of disease generally than those from the agricultural matrix to the west of Koala Crossing (Figure 5). To confirm disease status in 2019, and begin a more standardised mode of monitoring disease status and its changes through the years, OWAD environmental were contracted to collect fresh koala scat for genetic disease. Five scats fresh enough to conduct disease testing were collected by the team and are currently being processed.

No signs of plant disease have been observed on-site.

Figure 5. Disease incidence (as a percentage of individuals with Chlamydia) in 2015 (green) and 2019 (orange) in the Koala Crossing reserve and the broader region. Estimates without intervention assume animals who were cured and re-released remained uncured. Photographs of koalas in opposite states of health, Sheree with a severe Chlamydia infection of the eye and 'dirty bum' indicative of Urogenital tract infection (left), and Lynette in excellent health Chlamydia-free (right). Photographs from Fitzgibbon et al. (2019).

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APPENDIX

APPENDIX 1

Table 2.1 Occurrence of Koala within offset area from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 12-13.

Outcome	2.1.1.1 Increase koala density within offset area
Actions	2.1.2.1 Baseline koala density survey completed in June 2015 using Koala Rapid Assessment Method (Woosnam-Merches et al. 2012) and SAT and line transect surveys (Phillips and Callaghan. 2011; Dique et al. 2003) 2.1.2.2 Replicated koala density/occurrence surveys undertaken within the offset area at years 5 and 10 from the date at which the offset is legally secured 2.1.2.3 Koala density surveys to be undertaken by a suitably qualified environmental scientist
Performance Indicators	2.1.3.1 Baseline koala density/occurrence survey undertaken and documented 2.1.3.2 Koala density/occurrence surveys (years 5 and 10) records an increase in koala density/activity within offset area 2.1.3.3 Offset area is legally secured for conservation purposes
Monitoring	2.1.4.1 Baseline assessment of koala density to be undertaken in June 2015 2.1.4.2 Outside of the formal koala density survey event, opportunistic koala sightings to be recorded (location and date) within the Annual Offset Area Assessment Report
Reporting	2.1.5.1 Results of pre-survey methodology review is to be documented within the Annual Offset Area Report 2.1.5.2 Details of expert that undertook the review and the survey study term are also be included 2.1.5.3 The koala density survey results will be incorporated within the relevant Annual Offset Area Assessment Report (years 0, 5 and 10) 2.1.5.4 Opportunistic koala sightings to be incorporated into the Annual Offset Area Assessment Report 2.1.5.5 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.1.5.6 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective Action	2.1.5.7 Should the koala density be found to significantly reduce (as defined by the applied survey method or koala expert) between survey events; a supplementary assessment will be implemented to review the likely cause of the reduced occurrence of koala within the offset area. The outcomes of the review inform adaptation of the management approach

APPENDIX 2

Table 2.2 Vegetation composition from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 13-15.

Outcomes	2.2.1.1 Vegetation composition maintains a 'high' score value in relation to habitat that is critical to the survival of the koala 2.2.1.2 No significant increase in weed cover for species that could adversely affect the structural composition of vegetation within the offset area in relation to koala habitat value (i.e. weed species that are shrubs, trees or vines) 2.2.1.3 Retain and enhance the structure and floristic diversity of canopy vegetation 2.2.1.4 Retain and enhance the structure and floristic diversity of middle and understorey vegetation 2.2.1.5 Ongoing retention and recruitment of Koala food trees 2.2.1.6 Permanently remove existing threat of habitat degradation associated with clearing, development or other incompatible land uses 2.2.1.7 Domestic livestock excluded from offset area (unless controlled grazing required for fire risk management)
Actions	2.2.2.1 Monitoring of canopy composition with respect to koala food tree species; adaptive management if required. Monitoring to include representative surveys of all applicable (koala habitat) vegetation communities within the offset area. For example, tertiary-level vegetation surveys in accordance with Neldner et al (2012) 2.2.2.2 Monitoring of weed infestations; adaptive management of shrub, tree and vine weed species if required 2.2.2.3 Flora surveys to be undertaken by a suitably qualified environmental scientist 2.2.2.4 To remove the risk of habitat degradation associated with clearing, development or other incompatible land uses, the entire 161.11 ha offset area will be managed for conservation purposes 2.2.2.5 Given that the subject property boundary is currently fenced in koala-permeable fencing, livestock will be excluded from the offset area through at least one of the following mechanisms: Livestock will not be kept within balance areas of Lots 87 or 88 RP892014 or, Koala-friendly fencing will be erected along the northern boundary of the offset area to exclude livestock grazing outside of the offset area yet within the subject property in accordance with a relevant guidelines 2.2.2.6 Domestic livestock will only be introduced in the event that a fire risk professional and a suitably qualified environmental scientist deem that conditions are not suitable for an ecological burn and that grazing is appropriate to manage a high level of fire risk. In the event, a maximum head of 12 domestic livestock may be introduced for no more than three consecutive weeks. Level of risk is to be re-assessed by the aforementioned professionals following the grazing event 2.2.2.7 Vegetation clearing will not be undertaken within the offset area under any circumstances, except the following: Removal of weeds To establish and maintain fencing around the boundary of the offset area To establish and maintain firebreaks and fire trails in accordance with an Offset Area Bushfire Management Plan that has been prepared by a suitably qualified professional To remove or reduce imminent risk of serious personal injury or damage to infrastructure posed by the vegetation and only to the extent necessary to mitigate the risk. This action to be undertaken in accordance with the relevant legislative requirements in place at the time of clearing
Performance Indicators	2.2.3.1 Vegetation composition retains structural attributes of forest or woodland, and maintains koala food tree species diversity recorded by baseline survey 2.2.3.2 Weed cover (shrub, tree and vine) does not exceed baseline levels by more than 10% 2.2.3.3 Offset area is legally secured as an area of High Conservation Value under section 19F of the vegetation management act 1999
Monitoring	2.2.4.1 Baseline assessment of koala food tree species richness to be undertaken within 6 months of the offset area being legally secured 2.2.4.2 Baseline assessment of offset area weed infestation levels (shrub, tree and vine species) to be undertaken within 6 months of the offset area being legally secured

	2.2.4.3 Weed assessment and monitoring to be undertaken annually, during spring or summer to optimise detection 2.2.4.4 If livestock are kept on the balance of the property, the offset area fencing to be monitored on a monthly basis
Reporting	2.2.5.1 Monitoring results to be recorded in annual Offset Area Assessment Report 2.2.5.2 The location, extent and associated purpose for any vegetation clearing undertaken within the offset area will be detailed within the annual Offset Area Assessment Report 2.2.5.3 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.2.5.4 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective Action	2.2.6.1 Supplementary planting/assisted natural regeneration of koala food trees to be undertaken where koala food tree species diversity is recorded to have declined from baseline levels 2.6.2 Weed control to be undertaken in accordance with accepted best practice principles 2.2.6.3 If livestock-proof fencing is breached: Within 7 days livestock will be removed from offset area and temporary fencing measures put in place to ensure livestock are excluded and permanent repairs can be completed Within 28 days: repairs to fencing undertaken to achieve a koala-friendly livestock-proof standard
Term	2.2.7.1 Baseline monitoring for koala food tree species richness to be undertaken within 6 months of the offset area becoming legally secured 2.2.7.2 Subsequent koala food tree species richness monitoring to be undertaken every 5 years for the life of the offset 2.2.7.3 Subsequent weed assessments and monitoring to be undertaken annually during the active management period

APPENDIX 3 Photos of weed transects

2018	2019
Transect 7 - same	
	
0% *L. camara*	0% *L. camara*
Transect 9 - Improved	
	
30% *L. camara*	27% *L. camara*

APPENDIX 4

Table 2.3 Habitat connectivity from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 16-17.

Outcomes	2.3.1.1 Maintain contiguous landscapes to allow koalas to establish new territories, facilitate gene flow and respond to environmental changes 2.3.1.2 Permanently remove existing threat of habitat degradation associated with clearing, development or other incompatible land uses 2.3.1.3 Contribute to koala movement and dispersal through the Flinders Karawatha corridor through the establishment of a protected habitat corridor (minimum 700m width)
Actions	2.3.2.1 To remove the risk of habitat degradation associated with clearing, development or other incompatible land uses, the entire 161.11 ha offset area will be managed for conservation purposes 2.3.2.2 Vegetation clearing will not be undertaken within the offset area under any circumstance, except the following: • Where necessary for the removal of weeds • To establish and maintain fencing around the boundary of the offset area in accordance with relevant legislation • To establish and maintain firebreaks and fire trails in accordance with an Offset Area Bushfire Management Plan that has been prepared by a suitably qualified professional and relevant legislation • To remove or reduce imminent risk of serious personal injury or damage to infrastructure posed by the vegetation and only to the extent necessary to mitigate the risk. This action to be undertaken in accordance with the relevant legislative requirements in place at the time of clearing 2.3.2.3 The subject property boundary is currently fenced in koala-permeable fencing. Any new or replacement fencing is to be 'fauna-friendly' in accordance with a relevant guidelines
Performance indicators	2.3.3.1 Offset area is legally secure as an area of High Conservation Value under section 19F of the Vegetation Management Act 1999
Monitoring	2.3.4.1 Firebreaks and fire control lines to be inspected at a minimum quarterly frequency or after major storm events
Reporting	2.3.5.1 The location, extent and associated purpose for any vegetation clearing undertaken within the offset area will be detailed within the annual Offset Area Assessment Report 2.3.5.2 Any change to site connectivity is to be detailed within the annual Offset Area Assessment Report 2.3.5.3 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.3.5.4 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective Action	2.3.5.5 In the event of a koala entanglement in fencing, the 'problem area' is to be retro-fitted with an appropriate control measure as per those described in relevant guidelines

APPENDIX 5

Table 2.4 Threat to koala from wild dogs from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 17-19.

Outcome	2.4.1.1 Reduction of risk of koala mortality or injury by dog attack within the offset area through reduction in wild dog abundance
Actions	2.4.2.1 Initial survey to establish a baseline of wild dog abundance within the offset area. The survey method used for the initial abundance survey will be informed using best practice methodology and applicable guidelines available at the time of survey and will be undertaken within 6 months of the offset being legally secured 2.4.2.2 Baseline predator abundance survey is to be undertaken by a suitably qualified person 2.4.2.3 Offset area wide wild dog control program to be undertaken with the aim of removing all wild dogs from the offset area. The specific control method will be informed by the results of the initial wild dog abundance survey. Where practicable and to increase the effectiveness of a control program the landholder will seek to coordinate control programs with comparable activities being undertaken by neighbouring landholders. 2.4.2.4 Post the initial control event, presence/absence surveys for wild dogs to be undertaken each two months 2.4.2.5 Post initial control event, abundance surveys for wild doges to be undertaken bi-annually by suitably qualified person 2.4.2.6 Where post control surveys indicate there has been a recurrence of wild doges within the offset area, control measures will be actioned using methods (controlled shooting or baiting) determined by a pest control professional in consideration of monitoring results 2.4.2.7 Any injured koala found on the site will be sent to a veterinary clinic/wildlife rescue facility for rehabilitation 2.4.2.8 Installation of appropriate hazard warning signage indicating the offset area is subject to dog control for the purpose of managing the offset site for the benefit of koalas
Performance Indicators	2.4.3.1 Data collected from the initial control action to indicate the successful reduction of wild dog density (based on control method data e.g. bait takes, kills from shooting) 2.4.3.2 No records of feral dog abundance within the site 2.4.3.3 No records of injury and or death to koala relating to dog attacks recorded from within the offset area
Monitoring	2.4.4.1 Offset area-wide traverse every two months to record the presence/absence of signs of wild doges (including scats). The monitoring will take place along a set route utilising the existing network of tracks within the offsets area (e.g. fire control lines) to allow for replication of the monitoring events 2.4.4.2 Bi-annual abundance surveys to be undertaken by a suitably qualified professional 2.4.4.3 Opportunistic monitoring of koala/dog interactions in the form of injured, koala mortality records
Reporting	2.4.5.1 Wild dog abundance baseline survey results will be incorporated within the initial annual Offset Area Assessment Report 2.4.5.2 Results of all presence/absence surveys will be reported upon on an annual bases as a component on the Annual Offset Areas Assessment Report 2.4.5.3 All records of koala injury or death resulting from a dog attack are to be reported within the annual Offset Areas Assessment Report 2.4.5.4 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of initial baseline survey 2.4.5.5 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective action	2.4.6.1 Should the efficacy of the initial and ongoing wild dog control measure no result in a reduction of wild dog numbers (based on initial baseline survey), alternative and/or additional control measures will be implemented and the efficacy evidenced through the ongoing monthly/quarterly monitoring survey results 2.4.6.2 Any incidence of koala injury/mortality resulting from a dog attack will initiate supplementary monitoring and control measures in addition to the scheduled monthly and quarterly monitoring 2.4.6.3 Any required adaptation to wild dog management measures in response to failure to meet the objectives of the OAMP are to be approved by a suitably qualified person

APPENDIX 6

Table 2.5 Threat to koala from feral cats and foxes from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 19-20.

Outcome	2.5.1.1 Reduction of risk of koala mortality or injury by feral cat or fox attack within the offset area through reduction in feral cat or fox abundance
Actions	2.5.2.1 Initial survey to establish a baseline of feral cat or fox abundance within the offset area. The survey method used for the initial abundance survey will be informed using best practice methodology and applicable guidelines available at the time of survey and will be undertaken within 6 months of the offset being legally secured 2.5.2.2 Baseline predator abundance survey is to be undertaken by a suitably qualified person 2.5.2.3 Offset area wide feral cat or fox control program to be undertaken with the aim of removing all feral cat or foxes from the offset area. The specific control method will be informed by the results of the initial feral cat or fox abundance survey. Where practicable and to increase the effectiveness of a control program the landholder will seek to coordinate control programs with comparable activities being undertaken by neighbouring landholders. 2.5.2.4 Post the initial control event, presence/absence surveys for feral cat or foxes to be undertaken each two months 2.5.2.5 Post initial control event, abundance surveys for feral cat or foxes to be undertaken bi-annually by suitably qualified person 2.5.2.6 Where post control surveys indicate there has been a recurrence of feral cat or foxes within the offset area, control measures will be actioned using methods (controlled shooting or baiting) determined by a pest control professional in consideration of monitoring results 2.5.2.7 Any injured koala found on the site will be sent to a veterinary clinic/wildlife rescue facility for rehabilitation 2.5.2.8 Installation of appropriate hazard warning signage indicating the offset area is subject to feral cat or fox control for the purpose of managing the offset site for the benefit of koalas
Performance Indicators	2.5.3.1 Data collected from the initial control action to indicate the successful reduction of feral cat or fox density (based on control method data e.g. bait takes, kills from shooting) 2.5.3.2 No records of feral cat or fox abundance within the site 2.5.3.3 No records of injury and or death to koala relating to feral cat or fox attacks recorded from within the offset area
Monitoring	2.5.4.1 Offset area-wide traverse every two months to record the presence/absence of signs of feral cat or foxes (including scats). The monitoring will take place along a set route utilising the existing network of tracks within the offsets area (e.g. fire control lines) to allow for replication of the monitoring events 2.5.4.2 Bi-annual abundance surveys to be undertaken by a suitably qualified professional 2.5.4.3 Opportunistic monitoring of koala/feral cat or fox interactions in the form of injured, koala mortality records
Reporting	2.5.5.1 Feral cat or fox abundance baseline survey results will be incorporated within the initial annual Offset Area Assessment Report 2.5.5.2 Results of all presence/absence surveys will be reported upon on an annual bases as a component on the Annual Offset Areas Assessment Report 2.5.5.3 All records of koala injury or death resulting from a feral cat or fox attack are to be reported within the annual Offset Areas Assessment Report 2.5.5.4 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of initial baseline survey 2.5.5.5 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective action	2.5.6.1 Should the efficacy of the initial and ongoing feral cat or fox control measure no result in a reduction of feral cat or fox numbers (based on initial baseline survey), alternative and/or additional control measures will be implemented and the efficacy evidenced through the ongoing monthly/quarterly monitoring survey results 2.5.6.2 Any incidence of koala injury/mortality resulting from a feral cat or fox attack will initiate supplementary monitoring and control measures in addition to the scheduled monthly and quarterly monitoring 2.5.6.3 Any required adaptation to feral cat or fox management measures in response to failure to meet the objectives of the OAMP are to be approved by a suitably qualified person

APPENDIX 7 – IMAGES FROM WILDLIFE MONITORING CAMERAS\

<table>
<tr><td colspan="2">Dogs – Canis lupus</td></tr>
<tr><td> 

Winter 2018</td><td> 

Summer 2018-19</td></tr>
<tr><td colspan="2">Fox – Vulpes vulpes</td></tr>
<tr><td> 

Winter 2018</td><td>na</td></tr>
<tr><td colspan="2">Pig – Sus scrofa</td></tr>
<tr><td> 
Winter 2018</td><td> 

Summer 2018-19</td></tr>
</table>

APPENDIX 8

Table 2.6 Threat to koala from vehicle strike from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 20-21.

Outcome	2.6.1.1 Contribute to the reduction of risk of injury or death to koala in relation to vehicle strike both within the offset area and on adjacent roads
Actions	2.6.2.1 Installation of koala awareness signage on the property boundary adjacent to unnamed public road that bisects the offset area to alert traffic of the koala offset area and the presence of koalas in the local area prior to the offset area being legally secured 2.6.2.2 Installation of koala awareness signage on the property boundary adjacent to the unnamed public road along the frontage to Lot 89 RP892014 to alert east bound traffic of the presence of koalas in the area prior to the offset area being legally secured 2.6.2.3 Installation of koala awareness signage on the property boundary adjacent to Mount Flinders Road along the frontage to Lot 86 RP892014 to alert west-bound traffic of the presence of koalas in the local areas within 6 months of the offset being legally secured 2.6.2.4 Implementation of a slow speed requirement (40km/h) for vehicles traversing the offset area 2.6.2.5 Installation of slow speed signage at the main entry points to the offset area
Performance Indicators	2.6.3.1 No koala mortalities from vehicle strike within the offset area
Monitoring	2.6.4.1 Any observed koala injury/mortality on roads/tracks within the offset area or roads that front Lots 86, 87, 88 or 89 RP892014 to be recorded
Reporting	2.6.5.1 Incident to be reported to: Local Government authority (e.g. currently Beaudesert Regional Council) Relevant State Government department (e.g. currently the DoEHP) 2.6.5.2 Incident to be recorded in annual Offset Area Assessment Report 2.6.5.3 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.6.5.4 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective Action	2.6.6.1 Injured animals to be transported to a vet or suitably qualified and experienced wildlife carer as soon as possible 2.6.6.2 Capture and method of transport for injured animals will be in accordance with accepted best practice principles at time of incident: Relevant local or state government websites Non-profit koala organisations

APPENDIX 9

Table 2.7 Threat to koala via barriers to dispersal from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 22-23.

Outcomes	2.7.1.1 Maintain and improve contiguous landscapes to allow koalas to establish new territories, facilitate gene flow and respond to environmental changes 2.7.1.2 Retain and enhance the structure and floristic diversity of canopy vegetation 2.7.1.3 Retain and enhance the structure and floristic diversity of middle and understorey vegetation 2.7.1.4 Ongoing retention and recruitment of koala food trees 2.7.1.5 Permanently remove existing threat of habitat degradation associated with clearing, development or other incompatible land uses 2.7.1.6 Contribute to koala movement and dispersal through the Flinders Karawatha through the establishment of a protected habitat corridor (minimum 700m width)
Actions	2.7.2.1 To remove the risk of habitat degradation associated with clearing, development or other incompatible land uses, the entire 161.11ha offset area will be legally secured as an area of High Conservation Value under section 19F of the vegetation management act 1999 2.7.2.2 Given that the subject property boundary is currently fenced in koala permeable fencing, livestock will be excluded from the offset area through at least one of the following mechanisms: Livestock will not be kept within the balance areas of Lots 87 or 88 RP892014 Koala friendly fencing will be erected along the northern boundary of the offset area to exclude livestock grazing outside of the offset area yet within the subject property in accordance with a relevant guideline 2.7.2.3 Domestic livestock will only be introduced in the event that a fire risk professional (e.g. representative of Qld Rural Fire Service) and a suitably qualified environmental scientist deem that conditions are not suitable for an ecological burn and that grazing is appropriate to manage a high level of fire risk (and any need to repeat this grazing cycle) is to be re-assessed by the aforementioned professionals following the grazing event. 2.7.2.4 Any fencing installed or replaced within the offset area is to be fauna-friendly in design as per a relevant guideline 2.7.2.5 Vegetation clearing will not be undertaken within the offset area under any circumstances except the following: Where necessary for the removal of weeds To establish and maintain fencing around the boundary of the offset area To establish and maintain firebreaks and fire trails in accordance with an Offset Area Bushfire Management Plan that has been prepared by a suitably qualified professional To remove or reduce imminent risk of serious personal injury or damage to infrastructure posed by the vegetation and only to the extend necessary to mitigate the risk
Performance indicators	2.7.3.1 Offset area is legally secured as an area of High Conservation Value under section 19F of the vegetation management act 1999
Monitoring	2.7.4.1 If livestock are kept on the balance of the property, offset are fencing to be monitored on a monthly basis 2.7.4.2 Firebreaks and fire control lines to be inspected at a minimum quarterly frequency and after major storm events
Reporting	2.7.5.1 The location, extent and associated purpose for any vegetation clearing or damage through natural disaster within the offset area will be detailed within the annual Offset Area Assessment Report 2.7.5.2 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.7.5.3 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective Action	2.7.5.4 If livestock are kept on the balance of the property and livestock proof fencing is breached: Within 7 days: livestock will be removed from offset area and temporary fencing measures put in place to ensure livestock are excluded until permanent fence repairs can be completed Within 28 days: Repairs to fencing undertaken to achieve koala-friendly livestock-proof standard

APPENDIX 10

Table 2.8 Threat to koala habitat through hydrological change from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 23-24.

Outcome	2.8.1.1 To ensure the koala habitat within the offset area is maintained and the potential carrying capacity of the area is not reduced due to anthropogenic hydrological change
Actions	2.8.2.1 If any actions are proposed that may significantly impact the current (at time of offset area being legally secured) hydrological regime and therefore potentially impact koala habitat within the offset area then the following actions will be required: Presentation of proposed hydrological change to DoE, detailing the potential impact koala habitat within the offset area. This will include specialist reports detailing the nature of the hydrological change and the expected impact to the offset areas vegetation communities Only DoE approved hydrological change will be permitted within the offset area
Performance Indicators	2.8.3.1 The overall performance indicator resulting from the stated actions will be no significant impact to koala habitat as a result of hydrological change within the site
Monitoring	2.8.4.1 Where DoE approved hydrological change has occurred within the offset area, monitoring of the impact to the sites vegetation communities will be a component of annual site assessment
Reporting	2.8.5.1 The annual Offset Area Assessment Report will present details relating to requested hydrological change requests made to DoE 2.8.5.2 Assessment of vegetation in relation to potential impacts resulting from hydrological change will be presented within the Annual Offset Area Assessment Report
Corrective Action	2.8.6.1 Only DoE-approved actions which could potentially significantly impact the hydrological status quo within the offset area are permissible. Should it be determined that there is an impact to koala habitat from hydrological change (as evidenced through annual vegetation assessments) then corrective actions, as determined by a suitably qualified professional within affected areas will occur

APPENDIX 11

Table 2.9 Threat to koala through fire from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 24-26.

Outcomes	2.9.1.1 Minimise the risk of high intensity fire within the offset area 2.9.1.2 Minimise the risk of koala mortality within the offset area due to prescribed burning
Actions	2.9.2.1 A suitably qualified professional will prepare an Offset Area Bushfire Management Plan, detailing: current vegetation condition and fire risk, locations of current and required firebreaks and fire control lines, current fuel loads, recommended actions and timeframes for maintenance of bushfire risk within the context of he adapted Regional Ecosystem Description Database guidelines (refer below) and biodiversity outcomes sought for the offset area. 2.9.2.2 With the exception of prescribed burning, which will only be undertaken for the purposes of biodiversity enhancement, the offset area is to be managed to avoid the occurrence of fire by: Maintaining fire control lines relative to the offset area; and Co-locating fire control lines with existing tracks and fence lines on the property where possible 2.9.2.3 Existing fencing, firebreaks and fire control lines are to be kept clear of encroaching vegetation to a width as defined by the Offset Area Bushfire management Plan and in accordance with relevant legislation (e.g. Sustainable Planning act 2009) 2.9.2.4 Vegetation within the offset area will be managed in accordance with the following specifications, which area adapted from the Regional Ecosystem Description Database fire management guidelines for the two vegetation types that occur within the offset area (RE 12.9-10.2 and RE 12.9-10.7) SEASON: Summer to winter INTENSITY: Low to moderate INTERVAL: 4-25 years STRATEGY: 40-60% mosaic burn. Burn with soil moisture and with a spot ignition strategy so that a patchwork of burn/unburn country is achieved ISSUES: The fire regime will maintain a mosaic of grassy and shrubby understoreys. Ground litter and fallen timber habitats will be maintained by burning only with sufficient soil moisture. Burning will produce fine scale mosaics of unburnt areas. Variability in season and fire intensity will occur, as well as spot ignition in cooler or moister periods to encourage mosaics. 2.9.2.5 The following parameters will be adhered to throughout the planning and implementation of any prescribed burning: Undertake pre-burn survey to identify areas of high koala activity; No prescribed burning will be undertaken when female koalas are likely to be carrying dependent young Prescribed burning will only be carried out during appropriate weather conditions (e.g. low temperature, low wind, high soil moisture) Post-fire practices will be implemented to mitigate the risk of uncontrolled fire damage (e.g. extinguishing burning of large trees) Minimise the extent of burning so that the risk of injury or mortality to koalas is reduced, the risk of canopy scorch is lowered, whilst other biodiversity benefits to other species are achieved 2.9.2.6 Prescribed burning will be undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade 2.9.2.7 Domestic livestock will only be introduced in the event that a fire risk professional and environmental scientist deems that conditions are not suitable for an ecological burn. In this even, a maximum of 12 head of domestic livestock may be introduced for no more than 3 consecutive weeks.
Performance Indicators	2.9.3.1 Fuel levels and burning regime maintained in accordance with Offset Area Bushfire Management Plan
Reporting	2.9.4.1 Offset Area Bushfire Management Plan will be prepared within 6 months of the offset area being legally secured 2.9.4.2 Monitoring results and maintenance log will be detailed within the annual Offset Area Assessment Report 2.9.4.3 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.9.4.4 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email

Corrective action	2.9.5.1 If a wildfire occurs, the following actions will be taken by the landowner to remedy the situation: Inspect the fencing, undertake any repairs required to ensure livestock-proof standard Inspect fire control lines, undertake maintenance required to achieve compliance with the Offset Area Bushfire Management Plan Remove all livestock from the offset area within 7 days of commencing remedial action Engage suitably qualified professional to assess offset area and update Offset Area Bushfire Management Plan

APPENDIX 12

Table 2.10 Treat to koala and habitat from disease and pathogens from the Offset Area Management Plan, New Ground 2014b, NGID-3695-28, version 16.0, pp. 26-27.

Outcome	2.10.1.1 Reduce risk of the spread of koala and vegetation diseases within the offset area and adjacent areas of koala habitat 2.10.1.2 Third party contractors do not enter the site carrying pathogens
Actions	2.10.2.1 Baseline offset area condition survey is to include assessment for signs of Phytophthora cinnamomi and myrtle rust and is to be undertaken within six months of securing the offset area 2.10.2.2 To reduce the risk of introducing Chlamydia and Koala retrovirus into the resident population; uncontrolled translocation of koala is not permitted within the offset area 2.10.2.3 Vegetation management activities which include tree lopping/felling, weed removal, tree planting (including nursery suppliers) are deemed to be high risk in the context of introducing pathogens that may potentially impact koala habitat. As such, any person engaged to undertake these activities must satisfy the landholder that they have undertaken all reasonable steps to prevent the introduction of pathogen/disease to the site (e.g. vehicle equipment washdown prior to site entry)
Performance Indicators	2.10.3.1 In the event that regulator approved translocation of koala is proposed on the site the animal is to be assessed by a veterinarian prior to introduction 2.10.3.2 Incidence of koala feed trees exhibiting disease to be recorded if encountered during any monitoring events within the offset area
Monitoring	2.10.4.1 Incidence of koalas exhibiting disease to be recorded if encountered during any monitoring events within the offset area
Reporting	2.10.4.1 Baseline data concerning observations around koala and koala habitat diseases and pathogens is to be documented within initial annual Offset Area Assessment Report 2.10.4.2 Confirmation of translocation activity within the offset area is to be included within annual Offset Area Assessment Reports 2.10.4.3 Incidence of koalas exhibiting symptoms of disease to be reported within annual Offset Area Assessment Report 2.10.4.4 All annual Offset Area Assessment Reports are to be submitted to DoE on an annual basis within three months of the anniversary of the completion of the initial baseline survey 2.10.4.5 All annual Offset Area Assessment Reports and any records of non-compliance are to be submitted to DoE via email
Corrective action	2.10.5.1 Should there be an increase in trees exhibiting disease symptoms and/or evidence of vegetation dieback (as noted during annual offset area assessments) the following corrective actions will take place: Review of the efficacy of current biosecurity measures Review of plant stock/management services suppliers should it be suspected plant pathogens have been introduced via external sources.

APPENDIX 13

KOALA MANAGEMENT AND RESCUE PROTOCOL QTFN-KC-010115

If injured or orphaned koalas are found, note its condition and location and contact the following **emergency phone number**:

- Ipswich Koala Protection Society operate two 24/7 ambulances
- RUTH LEWIS - 0419 760 127/ 5464 6274.
- HELEN DARBELLAY – 0490 005 948/3282 5035.

IKPS is licenced with EHP to care for injured and orphaned wildlife, specialising in koala rescue and rehabilitation. They have appropriate facilities and members who are appropriately skilled and have access to reliable sources of a variety of recognised koala food tree species and an ability to collect it.

Other wildlife emergency numbers:

- RSPCA Qld on 1300 ANIMAL, 1300 264 625. *RSPCA will usually refer calls to IKPS.*
- Australia Zoo Wildlife Hospital 1300 369 652. *Based on the Sunshine Coast.*

SYMPTOMS OF SICK OR INJURED KOALAS

- Puffy or inflamed eyes which may have a crust or a weepy discharge surrounding them;
- Dribbling saliva from the mouth:
- Fur that appears constantly wet or matted;
- A dirty tail with brown staining;
- Weakness or unusual behaviour;
- Remaining in the same tree for more than a few days;
- Sitting on the ground or very low down in a tree and not moving when approached. (This may indicate that the animal is too weak to climb);
- Not using all four limbs normally while walking or climbing;
- Very skinny and emaciated appearance;
- Signs of trauma such as cuts or blood on fur.

Signs of a dog attack could be wet, matted fur from the dog's saliva, and bleeding. Because koalas have very little fat under their skin, their internal organs can be easily punctured by the sharp teeth of a dog even though there may be very little damage to the skin surface, so it is very important that the animal is assessed by a vet or carer if a koala is found that is suspected to have been the victim of a dog attack.

PROTOCOL FOR ROAD INJURIES OR DOG ATTACKS

Follow the instructions below for road injuries in handling sick or orphaned koalas or koalas which have been attacked by dogs or injured in some other way. However, unless the koala is in immediate danger, it is better to leave it to the experts to catch it if they think it necessary.

For road injuries:

1. Pull off the road safely. If possible, phone the IKPS for instructions.
2. Make sure it is safe before you go onto the road to attend to the animal. Stop any traffic if necessary.
3. Approach the animal carefully from behind.
4. Place a sack, blanket, towel or box over the koala, enclosing its arms and head. Remember, the koala is frightened and has very sharp claws, so be careful. Injured or orphaned animals need immediate dark, warmth and quiet. They may never have been touched by humans and any stress can cause further injury and death from shock. Also you may be injured.
5. Move the animal to a safe place away from any traffic.
6. Handle the koala as little as possible and keep the environment quiet. Keep it contained until help arrives or you get it to a Vet or Carer.
7. Keep people and dogs away from the animal. Do not allow people to peek at or touch it.
8. Do not try to feed the koala or give it anything to drink.

PROTOCOL FOR DEAD KOALAS

The information on the death of a koala is valuable to record, and samples from these koalas can contribute to research. IKPS will collect dead koalas as well as sick/injured/orphaned. Accurate records can and have made significant impacts and changes to the future conservation and protection of koala habitat. IKPS collects and records data, statistics and produces mapping of koala habitat and populations.

Look for ear tags which may have been placed by wildlife authorities or researchers so they can be notified of the death. Collect all relevant information, where possible, such as location, cause of death, date, sex and age of koala (age can only be determined by looking at teeth – this is done post mortem).

Samples can be made available for research, where possible. All koalas should be autopsied where cause of death is not positively known. An option that can possibly be utilised is the calling the Moggill Koala Hospital on 3202 0267. The Moggill Koala Hospital is the involved in ongoing koala research alongside University of Queensland researchers and scientists. Australian Zoo Wildlife Hospital on the Sunshine Coast (1300 369 652) also conducts autopsies.

Always check in the pouch of a dead female Koala for the **presence of a joey** which may have survived. Call one of the wildlife emergency phone numbers and ask for instructions on what to do. If not able to contact someone, follow the procedure below:

- If the joey is still attached to the teat, do not remove it as you may cause injury to the tiny baby. Get the dead mother and joey to a vet, or carer as soon as possible.
- If the joey is not attached, gently remove it from the pouch and wrap it in a towel or article of clothing and place it somewhere warm, such as under your jumper. (Very young joeys rely on their mother's body heat for warmth.) Alternatively use a warm hot water bottle or a plastic bottle filled with warm water. Use warm, not hot, water and cover the bottle with a jumper or other fabric so that you do not overheat or burn the joey. A backpack lined with soft towels or fabric is a good way to transport the infant.
- Handle the infant as little as possible and do not let other people peek at it or handle it. Remember, these tiny infants can die very easily from stress and noise.
- Do not give the joey anything to drink. Young Koalas need a specialised diet and feeding the wrong formula could cause the infant to die.
- Get the joey to a vet or carer as soon as possible (Contact IKPS as soon as possible.)

RECORD KEEPING

All koalas observed on the property will be recorded. Information to be collected includes date, time, GPS location, type of tree, condition of koala, sex if known and behaviour.

Copies of records will be provided to the Moggill Koala Hospital, State Government database, Wildnet, and to the Ipswich Koala Protection Society on a regular basis. Sightings will be recorded on Koala Record Sheets provided by EHP.

APPENDIX 14

Five-year review of koala populations on Koala Crossing accompanied by two expert reports has been included as an additional attachment pdf.

APPENDIX 15

Five-year review of vegetation composition on Koala Crossing included as an additional attachment pdf.

APPENDIX 16

Five-year review of native and invasive mammals on Koala Crossing included as an additional attachment pdf.

Appendix B

Nearmap Aerial of Offset Site (2018//2019 – 2019/2020)

3. Year 2 Offset Koala Habitat

NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Qld State Cadastre and Mapping layers © State of Queensland (Department of Natural Resources and Mines) 2020. Updated data available at http://qldspatialinformation.qld.gov.au/catalogue//
Aerial Imagery © Nearmap, 2020

*This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Legend

Offset site

Qld DCDB

Issue	Date	Description	Drawn	Checked
A	18/05/2020	Preliminary	TC	MS

0 100 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:6,000 @ A3

saunders havill group

DHA
Defence Housing Australia

Rawlings Road, Deebing Heights

ADDRESS/RPD: Rawlings Road/Grampian Drive, Deebings Heights *18/05/2020* *8122 E03 ACR2 KCH Offset Site A*

Appendix C

Notification to DAWE and request for extension for the ACR

Keira Grundy

From: EPBC Monitoring <EPBCMonitoring@awe.gov.au>
Sent: Wednesday, 6 May 2020 2:48 PM
To: Murray Saunders; EPBC Monitoring
Cc: Meaghan.O'Shea@dha.gov.au
Subject: RE: EPBC 2016/7723 - Delay in ACR Publication [SEC=OFFICIAL]

Good Afternoon Murray,

Thank you for contacting the Department in regards to the submission of the Annual Compliance Report for EPBC Approval 2016/7723.

We acknowledge that the submission of this report will be delayed, and we will anticipate the report submission by 22 May 2020

If you have further questions or concerns, please do not hesitate to contact Michaela Ballard at the EPBC Monitoring Inbox.

Warm regards,

Michaela Ballard
Compliance Monitoring Team
Environment Compliance Branch
Compliance Division
Department of Agriculture, Water and the Environment
GPO Box 787, CANBERRA ACT 2601

From: Murray Saunders <murraysaunders@saundershavill.com>
Sent: Wednesday, 6 May 2020 1:28 PM
To: EPBC Monitoring <EPBCMonitoring@environment.gov.au>
Cc: Meaghan.O'Shea@dha.gov.au
Subject: EPBC 2016/7723 - Delay in ACR Publication

Good Afternoon,

Saunders Havill has been commissioned by DHA in the preparation of the Year 2 ACR for the Torhaven Project located at Rawlings Road, Deebing Heights, Queensland. Under condition 5 of EPBC 2016/77723 ACR Year 2 should have been completed and published by the 30th of April 2020. There has been a minor delay in this occurring.

We are currently awaiting an update report from Offset Provider QTFN which will be attached in the ACR and then published on DHA website and issued to the Department. Its anticipated the full ACR will be complete by the Friday the 22nd of May 2020. The report and evidence of its publication (Web link) will be issued at this date.

Please don't hesitate to contact me regarding this delay and or any other matters the Department requires in this interim period.

Best Regards

Murray Saunders Director **Saunders Havill Group**
direct line (07) 3251 9415 mobile 0400 927 757 email murraysaunders@saundershavill.com

phone 1300 123 SHG web www.saundershavill.com head office 9 Thompson St Bowen Hills Q 4006

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