

PREPARED FOR:

SUNLAND GROUP PROJECT MANAGEMENT PTY LTD

OFFSET AREA MANAGEMENT PLAN – Stage 1B EPBC 2014/7190

23 May 2018






REPORT TITLE	OFFSET AREA MANAGEMENT PLAN - Stage 1B
PROJECT	Lot 119 on CH311527 on MT FLINDERS RD PEAK CROSSING QLD
CLIENT	SUNLAND GROUP PROJECT MANAGEMENT PTY LTD

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Glossary of Terms

Acronym	Description
DES	Department of Environment and Science (Queensland) (Formerly DEHP)
DEE	Department of the Environment and Energy (Commonwealth)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
OAMP	Offset Area Management Plan
QTFN	Queensland Trust for Nature
VM Act	<i>Vegetation Management Act 1999</i>



1 Introduction

1.1 Overview

The purpose of this Offset Area Management Plan – Stage 1B (OAMP) is to identify the management objectives, actions and outcomes necessary to fulfil a statutory requirement, pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (C'th) (EPBC Act), for the provision of an advanced koala (*Phascolarctus cinereus*) habitat offset. This OAMP is focussed on the protection, enhancement and installation of koala habitat values present within the offset site, which occurs within lot 119 on CH311527 (Appendix A).

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

- *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (DEE, 2014);
- *EPBC Act Environmental offsets policy, 2012*;
- Policy statement: Advanced environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999*;
- *Vegetation Management Act 1999 (legally securing the offset through a Voluntary Declaration under Section 19F)*;
- *Queensland Environmental Offsets Act 2014*; and
- *Queensland Environmental Offsets Regulation 2014*.

1.2 Objectives of the Plan

The objective of this Offset Area Management Plan is to summarise existing habitat quality for the koala (*Phascolarctos cinereus*) present on the offset site and to recommend land management actions designed to achieve a net gain in koala habitat quality.

1.3 Plan structure

This plan includes the following sections:

1. Section 1: provides an introduction to the plan, including a description of the offset site (Departmental reference details) and the offset proposition summary.
2. Section 2: presents the OAMP management objectives, actions, performance indicators, reporting requirements, monitoring, term and responsibility for each management measure required to achieve a net gain in koala habitat quality within the offset area over the specified time frame.
3. Section 3: Conclusion.



2 Offset proposition summary

Table 2-1 describes the koala offset area details, including landholder details, property details and legally binding mechanism proposed to secure the offset area.

Table 2-1 Offset area details

Landholder details	
Registered Owner/s on Title: Molly Robson, Adrian Volders and Graham Marshall as Trustees for Queensland Trust for Nature	
Lessee: N/A	
Business/Company name: Queensland Trust for Nature	
ABN/ACN: ABN 66 583 550 652	
Phone Number: 0414 966 129	Mobile phone: 0414 966 129
Facsimile number:	Contact person (if required): Nerida Bradley GM
Email: nerida@qtnf.org.au	
Postal Address: GPO Box 162, Brisbane, QLD 4001	
Property details	
Property name:	Koala Crossing
Tenure:	Freehold
Offset area location	Part of Lot 119 on CH311527
Primary Local Government Area:	Scenic Rim Regional Council
Planning Scheme Zone:	Rural B and Rural E
Property area (ha):	Offset area/site accounts for 5.15 ha (Appendix A). The portion of the subject lot not part of the offset area ('balance area') is 33.43 ha.
Landzone/geology:	The offset area occurs within an area mapped as land zones 8 and 9-10 (Ausecology, 2016). Landzone 8 is described as Cainozoic igneous rocks, predominantly flood basalts forming extensive plains and occasional low scarps. Also includes hills, cones and plugs on trachytes and rhyolites, and associated interbedded sediments, and talus. Excludes deep soils overlying duricrust (land zone 5). Landzone 9 is described as fine grained sedimentary rocks, generally with little or no deformation and usually forming undulating landscapes.



Property details	
	<p>Siltstones, mudstones, shales, calcareous sediments, and labile sandstones are typical rock types although minor interbedded volcanics may occur (EHP, 2012b).</p> <p>Landzone 10 is described as medium to coarse grained sedimentary rocks, with little or no deformation, forming plateaus, benches and scarps. Includes siliceous (quartzose) sandstones, conglomerates and minor interbedded volcanics, and springs associated with these rocks (EHP, 2012b).</p>
Soils:	<p>Landzone 8 - Soils include Vertosols, Ferrosols, and shallow Dermosols.</p> <p>Landzone 9 – Includes a diverse range of fine textured soils of moderate to high fertility, predominantly Vertosols, Sodosols, and Chromosols (EHP 2012b).</p> <p>Landzone 10 – Soils are predominantly shallow Rudosols and Tenosols of low fertility, but include sandy surfaced Kandosols, Kurosols, Sodosols and Chromosols (EHP 2012b).</p>
Pre-clearing Regional Ecosystems	12.9-10.2/12.9-10.7/12.9-10.17
Regional Ecosystems in vegetated parts of the offset area	12.9-10.2/12.9-10.7/12.9-10.17 (Ausecology, 2016)
Pre-clearing Regional Ecosystems in offset area to be rehabilitated (planted)	Predominantly RE 12.9-10.2.
Is there a PMAV over all or part of the property?	No

Proposed Legally Binding Mechanism	
<input checked="" type="checkbox"/> Voluntary Declaration (<i>Vegetation Management Act 1999</i>) Reference Number: To be advised	<input type="checkbox"/> Covenant (<i>Land Act 1994/ Land Title Act 1994</i>) Reference Number:
<input type="checkbox"/> Nature Refuge (<i>Nature Conservation Act 1992</i>) Reference Number:	<input type="checkbox"/> Other Reference Number:

2.1 Suitability of property as an offset site

The property was determined to be suitable for the implementation of this OAMP to achieve an offset for the Koala (*Phascolarctus cinereus*). Targeted land management actions will be implemented, which are designed to result in a net gain in koala habitat quality. The existing koala habitat values in the offset area will be legally protected from incompatible land uses. The offset will be legally secured through a Voluntary Declaration under Section 19F of the *Vegetation Management Act 1999*. Appendix A shows the proposed koala offset area.

The suitability of the property as an offset for the koala was determined through field surveys, undertaken by Ausecology from 19th-21st January 2016, as well as work undertaken by the Queensland Trust for Nature and



associated parties, such as scat surveys, deploying koala detection dogs and radio-collar tracking of koalas in the greater area. The field surveys included tertiary and quaternary vegetation surveys, fauna habitat assessments, a night survey, high-level weed surveys and BioCondition Assessments in accordance with Eyre *et al.* (2015). Further detail in relation to the field surveys is presented in the report *Assessment of Advanced Offset Values for the Koala (Phascolarctos cinereus) on the ‘Schmitke’ Property, Peak Crossing, Queensland* (Ausecology 2016).

Live koalas have been identified on the property as part of the ecological investigations. Koala scats were found during the 2016 field survey, as well as through previous scat surveys undertaken by the University of the Sunshine Coast. A scat detection dog was employed in 2015, which picked up scats widely spread throughout the property. Koala radio-collar tracking has also been undertaken, which showed that koalas use the site. No koala density surveys have been undertaken across the property.

The combined results of the ecological assessments confirm that the site contains high value habitat for koalas, and that it is therefore suitable for the purpose of functioning as a koala offset area.

2.1.1 Description of proposed offset area

The proposed koala (*Phascolarctos cinereus*) offset (EPBC2014/7190) consists of the following vegetation communities shown in Table 2-2.

Table 2-2 Vegetation communities and their coverage on the offset area

Regional Ecosystem	Area (ha)	Percentage of offset area
<i>Mature Regrowth</i>		
12.9-10.2	0.95	18.45%
<i>Cleared</i>		
	4.2	81.55%

Koala food trees are abundant, in particular *Corymbia citriodora*. Other koala food trees that are present include *Eucalyptus tereticornis*, *Eucalyptus mollucana*, *Eucalyptus crebra*, *Eucalyptus microcorys*, *Eucalyptus acmenoides*, *Corymbia tesellaris*, *Eucalyptus tereticornis* and *Eucalyptus major*.

The offset area is adjacent to the original EPBC2014/7190 area, secured in 2016, and is connected to the vegetated areas of the Flinders-Goolman Conservation Estate. Furthermore, the property is located in a corridor of State significance, the Flinders-Karawatha corridor, one of the largest contiguous vegetated areas in South East Queensland. This offset, in conjunction with the four koala offsets currently being managed by QTFN on the “Koala Crossing” property, will contribute to the objectives of the Flinders-Karawatha corridor.

2.1.2 Threats to koalas and koala habitat on the property

Various threats to koalas and koala habitat were identified or assumed based on the ecological field study (Ausecology, 2016). The threats to the koalas include:

- Potential risk of future clearing due to site planning zone classification (‘Rural B’ and ‘Rural E’) and associated permissible land uses (if approved by Council);
- Presence of feral pest animal such as foxes (*Vulpes vulpes*), dogs (*Canis lupis familiaris*) and cats (*Felis catus*) based on database records;
- Habitat fragmentation due to historic clearing/logging on the property;



- High intensity fires directly and indirectly threatening koala survival;
- Weed incursion currently suppressing recruitment of koala food and shelter trees as well as restricting movement of koalas in some areas of the property;
- Potential for vehicle strike along Flinders Road and internal tracks;
- Vegetation pathogens affecting the health of koala food and shelter trees; and
- Koala diseases.

The OAMP actions described in Section 2 of this report aim to enhance koala habitat quality via the reduction of the threat level from each of the above-mentioned processes. Additional threats cited by the *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (CoA, 2014) will be addressed.

2.1.3 Koala habitat quality

Koala habitat quality was scored in accordance with the EPBC Act referral guidelines as well as the *Offset Assessment Guide* contained within the EPBC Act environmental offsets policy under the EPBC Act 1999. The scoring takes three components into account that contribute to habitat quality scoring prior to and following the implementation of management plans:

- Site condition;
- Site context; and
- Species stocking rate (or threats to it).

Site condition in the vegetated areas was judged through the use of BioCondition Assessments (Eyre et al., 2015). Site context was judged through the use of GIS analysis. Species stocking rate is currently partly known. The site has been confirmed as habitat for the koala with active use of the site. To determine the role of the site in relation to providing habitat values for the koala, a judgement was made as per the habitat quality scoring index in the *Guide to determining terrestrial habitat quality* (DEHP, 2014), which includes:

- Threats to species;
- Quality and availability of food and foraging habitat;
- Quality and availability of shelter;
- Species mobility capacity; and
- Role of site location to species overall population in the state.

Using the Koala habitat assessment scoring – EPBC Referral Guidelines (Commonwealth of Australia, 2014) a **score of 4** was calculated for the currently cleared areas and a **score of 7** for the vegetated areas. Additional management action will allow for further improvement of the habitat quality score for the vegetated areas.

Further detail is described in the report *Assessment of Advanced Offset Values for the Koala (Phascolarctos cinereus)* on the 'Schmitke' Property, Peak Crossing, Queensland (2016).



3 Management actions

The management strategy for the koala offset is threefold. The common objective is to achieve a net gain in koala habitat quality. The three high-level strategies include:

- Protect the existing remnant and mature regrowth koala habitat from incompatible land management practices such as vegetation clearing, logging and grazing;
- Enhance the existing vegetation through active management of key threatening processes such as fire, weeds and feral pests; and
- Revegetate the cleared areas to eventually achieve a self-sustaining forest representative of pre-clearing Regional Ecosystems including the presence of koala food and shelter trees.

The proposed management actions cover the key threats to the recovery of the koala as described in the EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (CoA, 2014). The objective of achieving net gain in koala habitat is described by the EPBC Act Environmental Offsets Policy (CoA, 2012) and verified through use of the Offsets Assessment Guide (CoA, 2012). The intent of the management actions is to reduce the threats to koala recovery.

For consistency purposes, the following subsections are based on a previously submitted Offset Area Management Plan Lots 87 and 88 on RP892014 Mt Flinders Rd, Peak Crossing Qld (NewGround, 2014). These subsections are related to the koala habitat attributes (based on the coastal habitat context) as per the koala habitat assessment tool (DEE, 2014) as well as the threats presented in the Referral Guidelines (DEE, 2014). For each koala habitat attribute (as per koala habitat assessment tool) and the threats to recovery, the following factors have been described:

- Attribute
- Outcome
- Actions
- Performance Indicators
- Monitoring
- Reporting
- Corrective Action
- Anticipated Term
- Responsibility.

The management actions, which should result in a net gain of the overall koala habitat quality on the property, and are anticipated to take ten (10) years of active management, maintenance, monitoring and reporting, if best practice implementation is followed. It is anticipated that after this 10-year active management period, QTFN will secure the property as a Nature Refuge under the provisions of the *Nature Conservation Act 1992*, with ongoing management actions based on this OAMP.

For the purposes of this plan, the offset area has been divided into two main management units:

- Cleared areas that will be revegetated or be allowed to naturally regenerate. This area is 4.2 ha and is shown as MU-01 in Appendix B



- Vegetated areas that fall under the LGA planning scheme as Rural B and Rural E. This area is 0.95 ha and is shown as MU-02 in Appendix B

The koala habitat attributes to be covered in the next Sections include:

- Koala occurrence
- Vegetation composition
- Habitat connectivity
- Attack by feral animals
- Vehicle strike
- Barriers to dispersal
- Fire (in particular high intensity fire)
- Introduction of spread of disease or pathogens
- Recovery value

3.1 Koala occurrence

Koala occurrence refers to whether evidence is present that koalas have used the site over a particular time period and/or within a particular distance from the site. Based on radio collar and scat evidence of at least one koala that has used the site within the last 2 years. However for the cleared areas, it is anticipated that koalas could traverse these, but these won't be used for feeding and shelter.

The objective in relation to koala occurrence is to maintain the koala occurrence score over the long-term for the currently vegetated areas, and to increase the koala occurrence score for the currently cleared areas through active revegetation and regrowth management.

Table 3-1 describes factors relating to the koala occurrence attribute on the offset area.

Table 3-1 Koala occurrence

Attribute	Koala occurrence
Outcome	<ul style="list-style-type: none"> ▪ Net gain in koala population density on the property. ▪ Koala occurrence on currently cleared areas.
Actions	<ul style="list-style-type: none"> ▪ Conduct a baseline koala density survey within the offset area within 12 months of the offset area being legally secured using best practice methodologies, such as the Spot Assessment Technique and line transect surveys (Phillips and Callaghan, 2011). ▪ Repeat the koala density/occurrence surveys undertaken within the offset area at least once in every 5 year period commencing on the date the baseline koala density survey is conducted. ▪ Koala density surveys to be undertaken by a suitably qualified ecologist with extensive experience with koala surveys. ▪ Legally secure the offset area by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>.
Performance Indicators	<ul style="list-style-type: none"> ▪ Koala density surveys undertaken and documented withing stated timeframes. ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>
Monitoring	<ul style="list-style-type: none"> ▪ Record opportunistic koala sightings inclusive of scat findings (location and date).
Reporting	<ul style="list-style-type: none"> ▪ Incorporate the koala density survey results within the relevant Offset Area Assessment Report (in the year conducted). ▪ Incorporate opportunistic koala sightings into Offset Area Assessment Reports. ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ If koala densities are not maintained or are significantly reduced, then an assessment needs to be undertaken by a koala expert in relation to the potential cause/s and remediation actions undertaken where feasible through the implementation of adaptive management.
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner.

3.2 Vegetation Composition

The attribute vegetation composition (Table 3-2) refers to the presence of vegetation (forest or woodland) with a specific number of known koala food tree species.

Table 3-2 Vegetation Composition

Attribute	Vegetation composition
Outcome	<ul style="list-style-type: none"> ▪ Self-sustaining vegetation resembling the pre-clearance Regional Ecosystem/s present on the site in the currently cleared areas (4.2 ha) (excluding potential future infrastructure footprints and gazetted roads) is established. ▪ Weed cover impacting koala movement across the site and adversely affecting structural composition of koala habitat (number of koala food and shelter species and their recruitment) is reduced. ▪ Structure and floristic diversity of canopy vegetation surrounding cleared areas is retained and enhanced. ▪ Structure and floristic diversity of middle and understorey vegetation surrounding cleared areas is retained and enhanced. ▪ Preservation and recruitment of koala food and shelter trees. ▪ Threat of habitat degradation associated with clearing, development and incompatible land uses is permanently removed. ▪ Domestic livestock excluded from offset area (unless controlled grazing required for fire risk management).
Actions	<ul style="list-style-type: none"> ▪ Incorporate offset area into property Bushfire Management Plan within 6 months of the offset area being legally secured. ▪ Install fire breaks/trails in accordance with the Bushfire Management Plan. ▪ Retain all vegetation in remnant and mature regrowth areas except where necessary for the removal of weeds, to establish and maintain fencing around the offset area perimeter, establish and maintain fire breaks/trails as per Bushfire Management Plan, or to reduce or remove health and safety risk to persons and/or infrastructure. ▪ Undertake baseline Tertiary Vegetation Condition Assessments, including photo point monitoring. ▪ Implement a revegetation program in cleared areas using best practice techniques with tree and shrub species representative of the pre-clearance Regional Ecosystem including koala food and shelter trees (see Appendix C for proposed species list). ▪ Implement a weed management plan, with a particular focus on weeds declared under the <i>Land Protection (Pest and Stock Route Management) Act 2002</i>, as well as weeds with potential to impact on koala movement and structural vegetation composition (mainly <i>Lantana camara</i>). ▪ Legally secure the offset area by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>. ▪ Domestic livestock will only be introduced in the event that a fire risk professional (e.g. representative of Queensland 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. Level of risk (and any need to repeat this grazing cycle) is to be re-assessed by the aforementioned professionals following the grazing event.



Attribute	Vegetation composition
Performance Indicators	<ul style="list-style-type: none"> ▪ A self-sustaining ecosystem is established on the currently cleared areas resembling pre-clearance Regional Ecosystems with koala food and shelter species present targeting a minimum plant survival rate of 80% is required during the establishment phase. ▪ Livestock are excluded from offset area. ▪ Declared weed cover is reduced across the property, and weeds are not impacting on the movement of koalas across the site and not negatively impacting on recruitment of koala food and shelter trees. ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>.
Monitoring	<ul style="list-style-type: none"> ▪ Tertiary Vegetation Condition Assessments at least twice in the 10 year management period. ▪ Weed surveys (during spring or summer to optimise weed detection). ▪ Photo monitoring. ▪ If livestock are kept on the balance of the property, the offset area fencing to be monitored on a monthly basis.
Reporting	<ul style="list-style-type: none"> ▪ Monitoring results to be recorded in Offset Area Assessment Report. ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ If tree height and foliar projective cover monitoring indicate tree growth less than performance indicators, implement additional weed control, fertiliser, amelioration or other management actions necessary to stimulate tree growth. ▪ If weed survey indicates weed cover is not reduced since previous survey, weed control program to be expanded/adapted to improve outcomes. ▪ If livestock-proof fencing is breached: <ul style="list-style-type: none"> - Within 7 days: Livestock will be removed from offset area and temporary fencing measures put in place to ensure livestock are excluded and permanent fence repairs can be completed; and - Within 28 days: Repairs to fencing undertaken to achieve a koala-friendly livestock-proof standard.
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner

3.3 Habitat Connectivity

Habitat connectivity refers to the offset area in a landscape context and whether the offset area is part of a contiguous landscape of a certain hectare size without barriers for koala movement.

Table 3-3 Habitat connectivity

Attribute	Habitat connectivity
Outcome	<ul style="list-style-type: none"> ▪ Maintain contiguous landscapes to allow koalas to establish new territories, facilitate gene flow and respond to environmental changes. ▪ Achieve good connectivity with the neighbouring offset property also owned by QTFN. ▪ Contribute to koala movement and dispersal through the Flinders Karawatha corridor.
Actions	<ul style="list-style-type: none"> ▪ Retain all vegetation in remnant and mature regrowth areas except where necessary for the removal of weeds, to establish and maintain fencing around the offset area perimeter, establish and maintain fire breaks/trails as per Bushfire Management Plan, or to reduce or remove health and safety risk to person and/or infrastructure. ▪ Implement a revegetation program in the cleared areas using best practice techniques using tree and shrub species representative of the pre-clearance Regional Ecosystem including koala food and shelter trees (see Appendix C for proposed species list). ▪ Legally secure the offset area by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>. ▪ No livestock will be allowed on the offset area.
Performance Indicators	<ul style="list-style-type: none"> ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>.
Monitoring	<ul style="list-style-type: none"> ▪ Monitor for any (illegal) clearing in the area (highly unlikely) or any natural events that might impact on habitat connectivity.
Reporting	<ul style="list-style-type: none"> ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ Report any suspected illegal clearing to the Queensland Department of Environment and Science.
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner (QTFN)



3.4 Key Existing threats

Various threatening processes have been identified or are anticipated to be impacting on the recovery of the koala species and/or have the potential to result in an actual decline of the current population. The EPBC Act Referral Guidelines (DEE, 2014) mention the following primary threats for the coastal koala population:

- Loss, fragmentation and degradation of habitat, including barriers to dispersal.
- Mortality due to vehicle strikes, dog (*Canis familiaris*) attacks and disease.
- High-intensity fire.

Based on ecological investigations and knowledge of the local area, the following additional threat has been identified:

- Mortality due to feral cat (*Felis catus*) and/or fox (*Vulpes vulpes*) attacks.

Mortality due to feral pest animals, including wild dogs, feral cats and fox attacks is discussed in Section 3.4.1.

Table 3-4 to Table 3-8 detail each of the identified threats, the outcome required to achieve the overall offset objective, and management actions, monitoring and reporting required to significantly reduce the impact of each individual threat.

3.2.1 Threat: Attack by feral animals

Table 3-4 Threat to koala from feral animal attack

Attribute	Attack by (feral) animals
Outcome	Risk of koala mortality or injury by feral animal attack is reduced within the offset area through reduction in abundance of feral animals.
Actions	<ul style="list-style-type: none"> ▪ Conduct a baseline survey to establish feral animal abundance and location on the property. This can be undertaken through the use of remote motion-activated cameras and/or identification of scats. ▪ Implement feral animal control program. The control program and techniques (trapping, baiting, shooting) will be informed based on the results of the abundance surveys. Where practical, 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. ▪ Conduct follow-up monitoring and implement further control efforts if feral animals recur. Implement adaptive management techniques if initial control techniques are not working effectively. ▪ Install appropriate hazard signage informing that the offset area is under feral control. ▪ Council is to be engaged to work towards the objectives of the offset property, specifically in regard to prohibiting dog and cat ownership on the property. ▪ Set-up a community engagement program including but not limited to interpretive signs, fact sheets and community presentations with the aim to raise community awareness and encourage responsible pet ownership.
Performance Indicators	<ul style="list-style-type: none"> ▪ Ensure relative abundance index DEEs not increase from baseline for feral animal abundance.

	<ul style="list-style-type: none"> No records of injury and/or death to koala relating to feral animal attacks recorded from within the offset area. Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>
Monitoring	<ul style="list-style-type: none"> Monitoring of the presence of feral pest animals through the use of remote motion-activated cameras; Survey the site to record the presence/absence of signs of feral animals (sightings, killings and/or scats and tracks). Establishment and maintenance of register documenting injured/killed koalas and any observed koala/feral animal interactions interactions.
Reporting	<ul style="list-style-type: none"> Offset Area Assessment Reports to include all feral animal survey data. Offset Area Assessment Reports to include all records of koala injury or death related to feral animal attacks. Submit all Offset Area Assessment Reports to DEE as required. Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> Should the initial and ongoing wild dog control measures not result in a reduction of wild dog numbers (compared to baseline survey), feral control program to be expanded/adapted to improve outcomes. Any incidence of koala injury/mortality resulting from feral animal attack will initiate supplementary monitoring and control measures. In the event that a koala is found injured, transport immediately to a local vet, or suitably qualified and experienced wildlife carer.
Management Period	<ul style="list-style-type: none"> 10 years
Responsibility	<ul style="list-style-type: none"> Landowner (QTFN)

3.2.2 Threat: Vehicle Strike

Table 3-5 Koala injury or mortality due to vehicle strike

Attribute	Koala injury or mortality due to vehicle strike
Outcome	Reduced risk of koala mortality or injury due to vehicle strike within the offset area and the roads leading up to the offset area.
Actions	<ul style="list-style-type: none"> Installation of koala awareness signage on Mount Flinders Road to inform traffic in both directions of presence of koalas in the area* within 6 months of offset area being legally by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>. Implementation of a slow speed requirement (40km/h) for vehicles traversing the offset area. Installation of slow speed signage at the main entry points to the offset area. <p>*Note: Action is subject to approval from Scenic Rim Regional Council.</p>
Performance Indicators	<ul style="list-style-type: none"> No koala mortalities from vehicle strike within the offset area. Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>.
Monitoring	<ul style="list-style-type: none"> Record any observed koala injury/mortality on roads/tracks within the offset area or Flinders Road.



Reporting	<ul style="list-style-type: none"> ▪ Report any koala injuries/deaths to Local Government authority (e.g. Scenic Rim Regional Council) and relevant State Government department (e.g. currently the Department of Environment and Science) ▪ Incidents to be recorded in Offset Area Assessment Reports. ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ In the event that a koala is found injured, transport immediately to a local vet, or suitably qualified and experienced wildlife carer.
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner (QTFN)

3.2.3 Threat: Barriers to Dispersal

Table 3-6 Barriers to dispersal

Attribute	Barriers to Dispersal
Outcome	<ul style="list-style-type: none"> ▪ Area contributes to a contiguous landscape facilitating gene flow and resilience to environmental changes. ▪ Contribute to koala movement and dispersal through the Flinders Karawatha by establishment of a protected habitat corridor. ▪ Establish self-sustaining vegetation resembling the pre-clearance Regional Ecosystem/s present on the site in the currently cleared areas (excluding potential future infrastructure footprints and gazetted roads). ▪ Reduction of weed cover impacts on koala movement across the site and could adversely affect the structural composition of the koala habitat. ▪ Retain and enhance where possible the structure and floristic diversity of canopy vegetation in vegetation surrounding offset area. ▪ Retain and enhance the structure and floristic diversity of middle and understorey vegetation in vegetation surrounding offset area. ▪ Ongoing preservation and recruitment of koala food and shelter trees.
Actions	<ul style="list-style-type: none"> ▪ Retain all vegetation in remnant and mature regrowth areas except where necessary for the removal of weeds, to establish and maintain fencing around the offset area perimeter and/or property boundary, establish and maintain fire breaks/trails as per Bushfire Management Plan, or to reduce or remove health and safety risk to person and/or infrastructure. ▪ Implement a revegetation program in the cleared areas using best practice land management techniques using tree and shrub species representative of the pre-clearance Regional Ecosystem including koala food and shelter trees (see Appendix C for proposed species list). ▪ Implement a weed management plan, with a particular focus on weeds declared under the <i>Land Protection (Pest and Stock Route Management) Act 2002</i> and those which may impact koala (mainly <i>Lantana camara</i>). ▪ Legally secure the offset area by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>.



	<ul style="list-style-type: none"> Domestic livestock will only be introduced in the event that a fire risk professional (e.g. representative of Queensland 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. Level of risk (and any need to repeat this grazing cycle) is to be re-assessed by the aforementioned professionals following the grazing event.
Performance Indicators	<ul style="list-style-type: none"> A self-sustaining ecosystem is established on the currently cleared areas resembling pre-clearance Regional Ecosystems with koala food and shelter species present. During the establishment phase a minimum plant survival rate of 85% is required. Average canopy tree height in cleared areas exceeds one metre at end of year one, two metres at end of year two and four metres at end of year four. Declared weed cover is reduced across the property, and weeds are not impacting on the movement of koalas across the site and not negatively impacting on recruitment of koala food and shelter trees. Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>
Monitoring	<ul style="list-style-type: none"> Tertiary Vegetation Condition Assessments at least twice during the active management period (10 years). Regular weed survey (during spring or summer to optimise weed detection). Photo monitoring on an annual basis. If livestock are kept on the balance of the property, offset area fencing to be monitored on a monthly basis.
Reporting	<ul style="list-style-type: none"> Monitoring results to be recorded in Offset Area Assessment Reports. Submit all Offset Area Assessment Reports to DEE as required. Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> If survival counts indicate less than 85% survival, replanting and/or in-fill planting to be carried out. If tree height and foliar projective cover monitoring indicate tree growth less than performance indicators, implement additional weed control, fertiliser, amelioration or other management actions necessary to stimulate tree growth. If weed surveys indicate weed cover is not reduced since previous survey, weed control program to be expanded/adapted to improve outcomes. If livestock are kept on the balance of the property and livestock-proof fencing is breached: <ul style="list-style-type: none"> 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
Management Period	<ul style="list-style-type: none"> 10 years
Responsibility	<ul style="list-style-type: none"> Landowner (QTFN)

3.2.4 Fire (in particular high intensity fire)

Table 3-7 Fire

Attribute	High intensity fire
Outcome	<ul style="list-style-type: none"> ▪ Minimise the risk of high-intensity fire within the offset area. ▪ Minimise the risk of koala mortality within the offset area due to prescribed burning.
Actions	<ul style="list-style-type: none"> ▪ Incorporate the offset area into the Bushfire Management Plan within six (6) months of the offset being legally secured, for the purpose of protecting the offset area from high intensity wildfires as well as for conducting ecological burns with the aim to enhance biodiversity in line with the Regional Ecosystem Description Database fire management guideline. The Bushfire Management Plan will be prepared by a suitably qualified professional and will detail: 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 the adapted Regional Ecosystem Description Database guidelines and biodiversity outcomes sought for the offset area. ▪ Install firebreaks and fire trails (access tracks). ▪ Prescribed burning will be undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade and in compliance with the <i>Fire and Emergency Services Act 1990</i>. ▪ Inspect firebreaks and access tracks, undertake any maintenance required to achieve compliance with Bushfire Management Plan. ▪ Domestic livestock will be only be introduced in the event that a fire risk professional (e.g. representative of Queensland 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. Level of risk (and any need to repeat this grazing cycle) is to be re-assessed by the aforementioned professionals following the grazing event.
Performance Indicators	<ul style="list-style-type: none"> ▪ Fuel levels and burning regime maintained in accordance with Bushfire Management Plan. ▪ Vegetation composition not negatively affected by fire regime. ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>
Monitoring	<ul style="list-style-type: none"> ▪ To be informed by the Bushfire Management Plan
Reporting	<ul style="list-style-type: none"> ▪ Report on prescribed burn results (area covered, any potential negative impact, intensity of burn, learnings) ▪ Report any high intensity (wildfire) to the relevant authorities and report on any impact on the offset area. ▪ Monitoring results and maintenance log will be detailed within the Offset Area Assessment Reports. ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ If a wildfire occurs in the area, the following actions will be taken by the landowner:



	<ul style="list-style-type: none"> ▪ Activate Bushfire Management Plan Emergency Response ▪ Stay informed through the Rural Fire Service. ▪ Be prepared to engage in fire control.
	<ul style="list-style-type: none"> ▪ Repair any fire breaks and access tracks
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner (QTFN)

3.2.5 Introduction or spread of disease or pathogens

Table 3-8 Introduction or spread of disease or pathogens

Attribute	Introduction or spread of disease or pathogens
Outcome	<ul style="list-style-type: none"> ▪ Reduce risk of the spread of koala and vegetation diseases and/or pathogens within the offset area and adjacent areas of koala habitat. ▪ Third party contractors do not enter site-carrying pathogens.
Actions	<ul style="list-style-type: none"> ▪ Document baseline condition survey to include assessment for signs of <i>Phytophthora cinnamomi</i> and Myrtle Rust. ▪ 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. In the event that regulator-approved translocation of koala is proposed onto the site, the animal(s) is to be assessed by a veterinarian prior to introduction. ▪ 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 wash-down prior to site entry). ▪ Enforce biosecurity procedures for all persons and vehicles that may carry vegetation pathogens known to affect koala food and shelter trees. ▪ Monitor the neighbouring habitat in order to identify disease occurrence. ▪ Implement measures such as myrtle rust control in revegetation stock. Certification of nursery, inspection of planting stock, quarantine/destruction of contaminated material, sterilisation of planting equipment and vehicles/wheel washes.
Performance Indicators	<ul style="list-style-type: none"> ▪ Incidence of koala feed trees exhibiting disease DEEs not increase within the offset areas, based on comparison to baseline vegetation health assessment. ▪ Regulator approved translocations of koala are assessed by a veterinarian as being free from disease. ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>.



Monitoring	<ul style="list-style-type: none"> ▪ Incidence of koalas exhibiting disease to be recorded during any monitoring events within the offset area. ▪ Monitor the neighbouring habitat in order to identify disease occurrence at least once per annum.
Reporting	<ul style="list-style-type: none"> ▪ Baseline data concerning observations around koala and koala habitat diseases and pathogens is to be documented within Offset Area Assessment Report in the year it is conducted. ▪ Confirmation of koala translocation activity within the offset area (if approved) is to be included within Offset Area Assessment Reports. ▪ Incidence of koalas exhibiting symptoms of disease to be reported within Offset Area Assessment Report. ▪ Submit all Offset Area Assessment Reports to DEE as required. ▪ Submit all Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ Should there be an increase in trees exhibiting disease symptoms and/or evidence of vegetation dieback (as noted during 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 (if applicable) should it be suspected plant pathogens have been introduced via external sources.
Management Period	<ul style="list-style-type: none"> ▪ 10 years
Responsibility	<ul style="list-style-type: none"> ▪ Landowner (QTFN)

3.5 Recovery Value

The ‘recovery value’ attribute detailed in the Koala habitat assessment tool of the EPBC Act Referral Guidelines (DEE, 2014) is based on the following interim recovery objective: “*Protect and conserve large, connected areas of koala habitat, particularly large, connected areas that support koalas that are:*

- *genetically diverse/distinct; or*
- *free of disease or have a very low incidence of disease; or*
- *breeding (i.e. presence of back young or juveniles).” (DEE, 2014).*

The offset area falls within the Flinders Karawatha Corridor, a partnership between the Queensland Government, local governments and the community to protect, enhance and restore one of the largest continuous stretches of bushland in South East Queensland (SEQ). This corridor covers the area from Karawatha Forest in Brisbane’s southern suburbs to Flinders Peak, on to the south side of Ipswich and down to the Wyaralong Dam near Boonah, totalling 56,350 hectares in size and is about 60km long. It is regarded as one of SEQ’s most important regional biodiversity corridors. It provides habitat and movement opportunities for a range of species that have state, regional and local significance, including the koala (*Phascolarctos cinereus*). A five-year management plan, the Flinders Karawatha Corridor Management Strategy, has been developed that identifies actions with the aim to maintain and enhance the environmental, recreational and cultural heritage values.

The objective of the koala offset for matter EPBC 2015/7628, for which this OAMP describes management actions, is in line with the objectives of the above-mentioned strategy. Securing the property as an area of High Conservation Value under section 19F of the *Vegetation Management Act 1999*, in conjunction with the proposed management actions, will contribute to achieving the biodiversity objective of “*To preserve and enhance remnant, significant and riparian vegetation in viable corridors to enhance biodiversity, and facilitate wildlife movement and gene flow*” (DEHP, 2014) as described in the strategic plan.

Table 3-9 Recovery value

Attribute	Recovery Value
Outcome	<ul style="list-style-type: none"> ▪ Maintain contiguous landscapes to allow koalas to establish new territories, facilitate gene flow and respond to environmental changes. ▪ Permanently remove existing threat of habitat degradation associated with clearing, development or other incompatible land uses. ▪ Contribute to koala movement and dispersal through the Flinders Karawatha through the addition of koala habitat to the landscape scale corridor. ▪ Protect and conserve large, connected areas of koala habitat, particularly large, connected areas that support koalas that are: <ul style="list-style-type: none"> - genetically diverse/distinct; or - free of disease or have a very low incidence of disease; or - breeding (i.e. presence of back young or juveniles). ▪ Offset objective and outcomes aligned with the Flinders Karawatha Corridor Management Strategy.
Actions	<ul style="list-style-type: none"> ▪ To remove the risk of habitat degradation associated with clearing, development or other incompatible land uses, the entire offset area will be managed for conservation purposes. ▪ Retain all vegetation in remnant and mature regrowth areas except where necessary for the removal of weeds, to establish and maintain fencing around the offset area perimeter, establish and maintain fire breaks/trails as per Bushfire Management Plan, or to reduce or remove health and safety risk to person and/or infrastructure. ▪ Implement a revegetation program in the cleared areas using tree and shrub species representative of the pre-clearance Regional Ecosystem including koala food and shelter trees (see Appendix C for proposed species list). ▪ Implement a weed management plan, with a particular focus on weeds declared under the <i>Land Protection (Pest and Stock Route Management) Act 2002</i>, and weeds impacting koala movement and structural vegetation composition (mainly <i>Lantana camara</i>). ▪ Check property for bell minor associated die-back based on significant presence of lantana and some dieback. ▪ Legally secure the offset area by way of voluntary declaration under the <i>Vegetation Management Act 1999</i>. ▪ Install fire breaks/trails in accordance with the Bushfire Management Plan.
Performance Indicators	<ul style="list-style-type: none"> ▪ Offset area is legally secured as an area of High Conservation Value under section 19F of the <i>Vegetation Management Act 1999</i>.
Monitoring	<ul style="list-style-type: none"> ▪ Monitor all management actions as per previous sections.
Reporting	<ul style="list-style-type: none"> ▪ Submit Offset Area Assessment Reports to DEE as required. ▪ Submit Offset Area Assessment Reports and any records of non-compliance to DEE via email to PostApproval@environment.gov.au
Corrective action	<ul style="list-style-type: none"> ▪ Not Applicable
Anticipated term	<ul style="list-style-type: none"> ▪ Duration of the active management period (10 years).
Responsibility	<ul style="list-style-type: none"> ▪ Landowner (QTFN)

4 Conclusion

This Offset Area Management Plan (OAMP) has been developed with the objective to summarise existing habitat quality for the koala (*Phascolarctos cinereus*) present on the EPBC 2014/7190 offset area and to recommend land management actions designed to achieve a net gain in koala habitat quality.

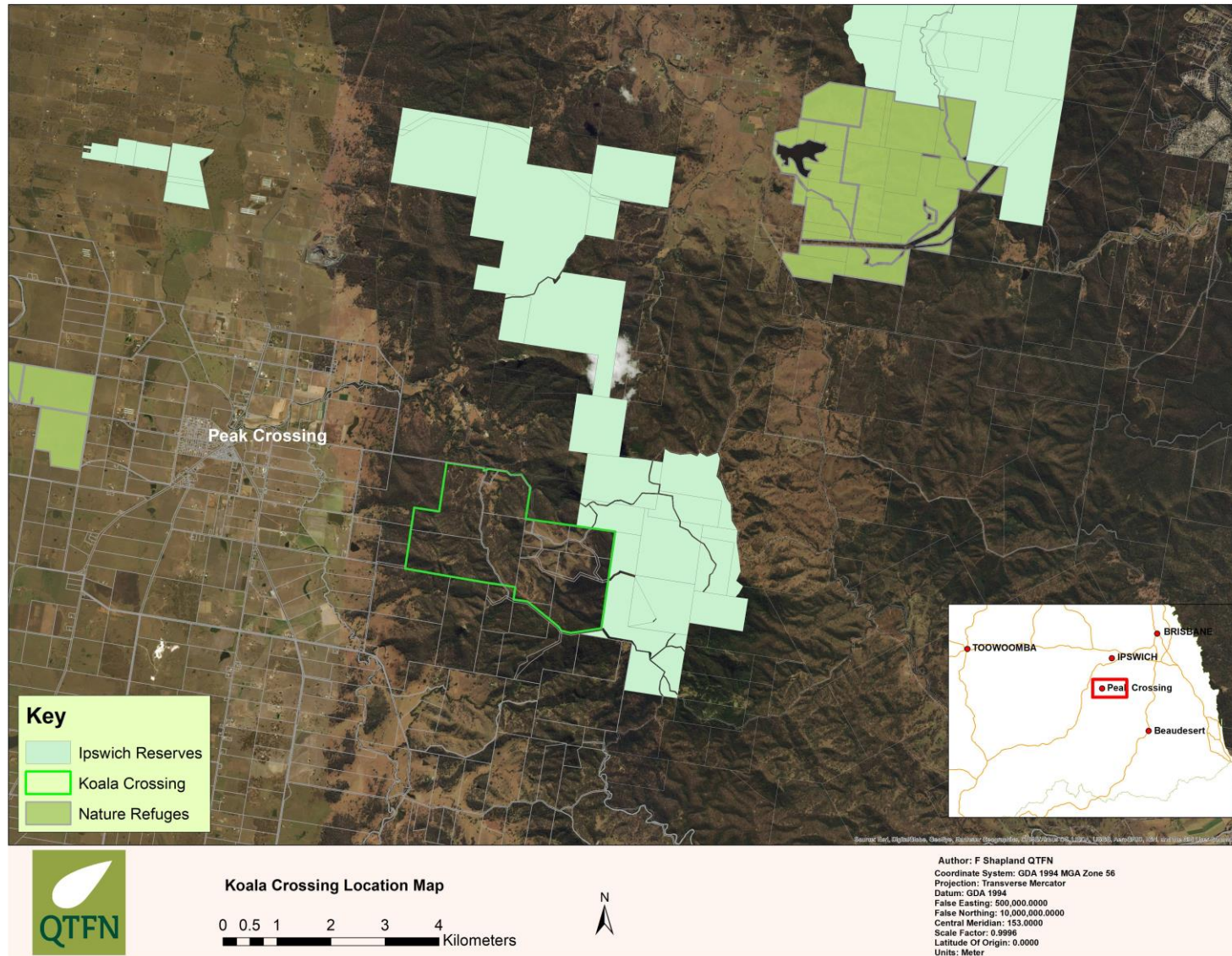
The cleared areas offers an opportunity to achieve the most significant increase in koala habitat quality since currently there are no koala food and shelter trees present. Revegetating this area with the appropriate koala food and shelter trees will provide for future koala habitat and an increase in connectivity and context. Weed control, fire management and feral animal management across the property also represent significant programs of work to be undertaken under the OAMP. These combined actions will result in improvements to the quality of the koala habitat compared to baseline levels, as well as a significant reduction in risk to the resident koala population in the long term.

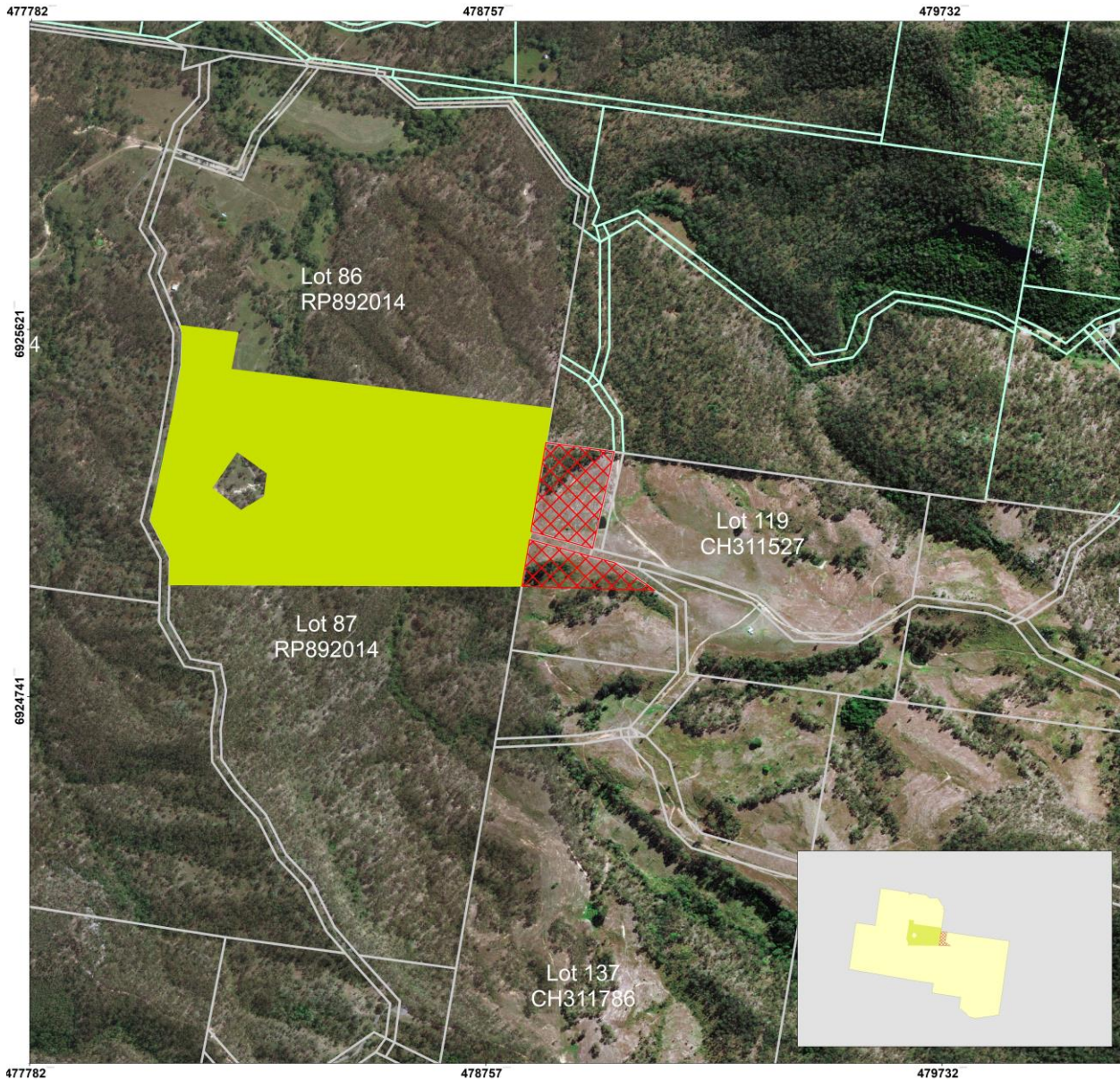
Implementation of management actions specified in this OAMP should result in a significant discernible increase in the quality of koala habitat. The OAMP has been written in a way that it allows for adaptive management when monitoring indicates that the target outcomes are not in line with expectations. The management term proposed in the OAMP is ten (10) years. However, the aim is to secure the property as a Nature Refuge under the provisions of the *Nature Conservation Act 1992*, with ongoing management actions based on this OAMP to be carried out on an ongoing basis.

References

- Ausecology (2016). "Assessment for Advanced Offset Values for the Koala (*Phascolarctos cinereus*) on the 'Schmitke' Property, Peak Crossing, Queensland"
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- Eyre, T.J., Kelly, A.L, Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. (2015). BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual. Version 2.2. Queensland Herbarium, Department of Science, Information Technology, Innovation and Arts, Brisbane
- Newground (2014). Offset Area Management Plan, LOTS 87 and 88 on RP892014, Mt Flinders Rd, Peak Crossing, QLD.
- Phillips, S., Callaghan, J. (2011). The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*.

Appendix A – Proposed koala offset location





**Management Units
EPBC 2014/7190
_ Stage 1 and 1B**

**Lot 119
on CH311527**

1:3,035

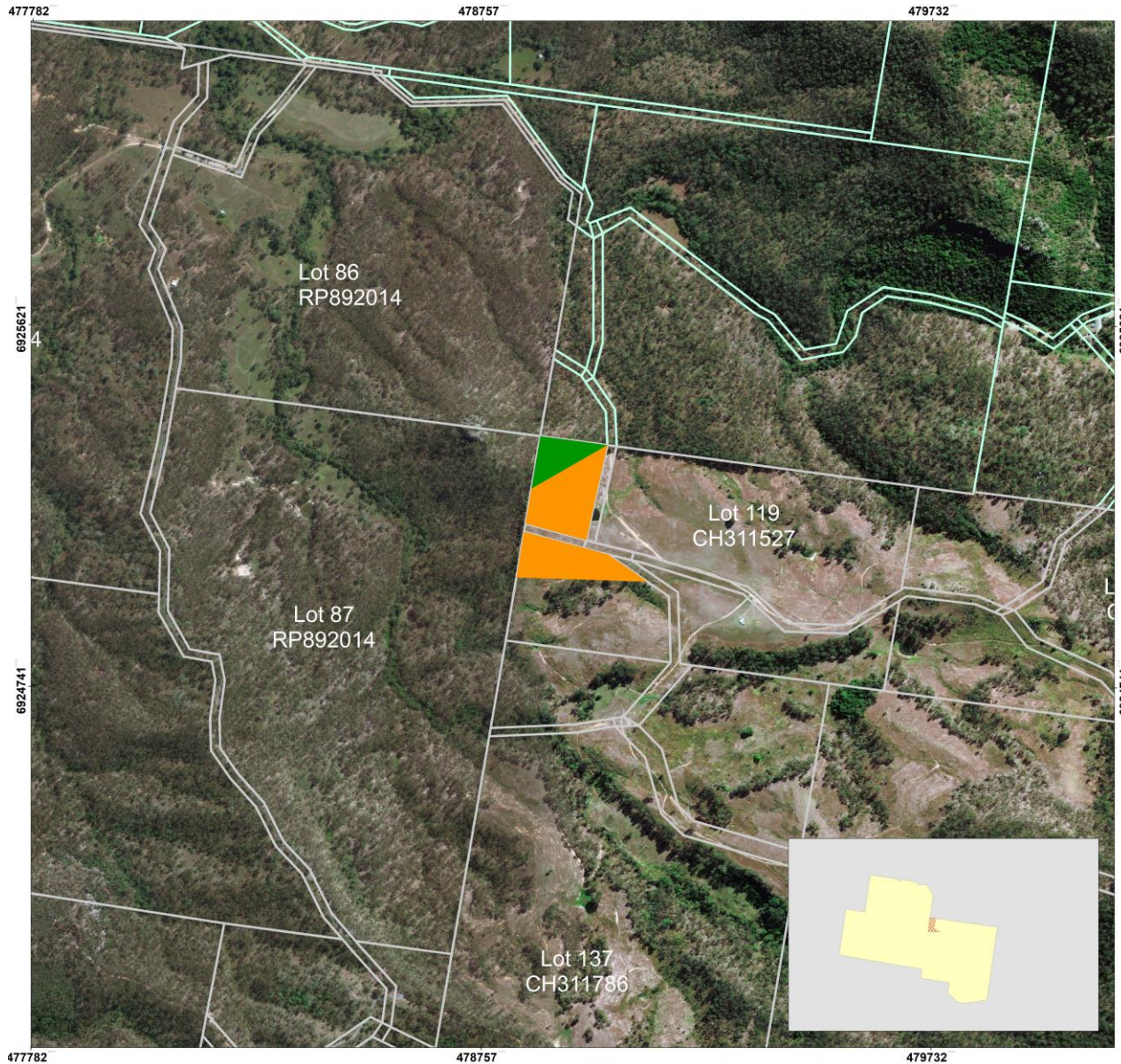


Legend

-  EPBC 2014/7190_1B
-  EPBC 2014/7190_1

Author: F Sheppard QTFN
Date: 7/3/2018
Source: Cadastral Boundaries,
Data supplied by QCAT
<http://disp.spatialinformation.qld.gov.au/catalogue/custom/index.page>
ACCURACY STATEMENT
Due to varying sources of data, spatial locations may not coincide when overlaid.

Appendix B – Management Units



Management Units
EPBC 2014/7190
_Stage 1B

Lot 119
on CH311527

1:3,035



Legend

- MU-01_EPBC2014/7190_1B
- MU-02_EPBC2014/7190_1B

Author: F.Shapland QTFN
Date: 7/3/2018
Source: Cadastral Boundaries,
Data supplied by QSpatial
<http://qspatial.information.qld.gov.au/catalogue/customer/index.page>
ACCURACY STATEMENT
Due to varying sources of data, spatial locations may not coincide when overlaid

Appendix C – Plant species list

Canopy Species (>30m)

Corymbia citriodora subsp. *variegata*
Eucalyptus crebra
Eucalyptus tereticornis
E. moluccana
E. acmenoides
E. siderophloia
Corymbia tessellaris
Corymbia intermedia
E. melanophloia
E. major

Midstorey Species (10-30m)

Lophostemon confertus
Lophostemon suaveolens
Brachychiton populeneous
Angophora leiocarpa
Angophora subvelutina
Allocasuarina cunninghamiana
Allocasuarina torulosa
Allocasuarina littoralis
Allocasuarina luehmanii
Melaleuca bracteata
Erythrina vespertilio

Understorey Species (<10m)

Exocarpos cupressiformis
Alphitonia excelsa
Acacia irrorata
Acacia concurrens
Acacia disparima
Acacia salicina
Acacia melanoxyton
Acacia leiocalyx
Acacia falcata
Acacia maidenii
Acacia fimbriata
Melaleuca viminalis