



Annual Compliance Report

03 February 2021 to 02 February 2022 EPBC 2016/7797
Ormeau Quarry Expansion, 12 km north-west of Oxenford,
Queensland
Prepared for Boral Resources (QLD) Pty Ltd
29 April 2022

Job No. 10233 E

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 have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed



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Position	Principal Ecologist
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Date	29 April 2022

Document Control

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Prepared by

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Table of Contents

1. Introduction	1
1.1. Reporting Period	1
1.2. EPBC Approval	1
1.3. Site Context	2
1.4. Overview of Key Activities and Achievements	2
2. Current Status of the Project	5
2.1. Offset Area Legally Secured	5
2.2. Vegetation Clearing	5
2.3. Key Consultants and Roles	5
2.4. Year 1 Offset Reporting	5
3. EPBC Conditions and Compliance	19
4. Non-compliances	25
4.1. Weed Management	25
4.2. Bushfire Management	25
4.3. Vertebrate Pest Management	26
4.4. Offsets Area Adjacent Landholder Encroachment	26
5. Appendices	29

Figures

Figure 1:	Site Context	3
Figure 2:	Site Aerial	4

Tables

Table 1:	Approval Details	1
Table 2:	Key Consultants and Roles	5
Table 3:	Offset Management Plan implementation	7
Table 4:	Modified Habitat Quality Assessment Transects Scores	11
Table 5:	Comparison of MHQT Scores	13
Table 6:	Compliance Audit of EPBC 2016/7797 Conditions for Ormeau Quarry	19

Plans

Plan 1:	Clearing Extent (Year 1)	14
Plan 2:	Offset Area – Habitat Management Zones Map	15
Plan 3:	Modified Habitat Quality Transects and Field Effort – Year 1	16
Plan 4:	Weed Mapping Results – Year 1	17
Plan 5:	Weed Management Areas – Year 1	18

Acronyms and Abbreviations

ACR	Annual Compliance Report
BMP	Bushfire Management Plan, prepared by Land and Environment Consultants.
DAWE	Department of Agriculture, Water and Environment (Cth)
EMP	Environmental Management Plan, prepared by Saunders Havill Group, dated November, 2018.
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
GCCC	Gold Coast City Council
ha	hectares
KHMP	Koala Habitat Management Plan, prepared by Saunders Havill Group, dated September 2021.
KMP	Koala Management Plan, prepared by Saunders Havill Group, dated December 2021.
km	kilometres
m	metres
MNES	Matters of National Environmental Significance
NCA	<i>Nature Conservation Act 1992</i> (Qld)
OMP	Offset Management Plan (EPBC 2016/7797), prepared by Saunders Havill Group, dated December 2018.
PMR	Protected Matters Report
RE	Regional Ecosystem
TEC	Threatened Ecological Community (under the EPBC Act)
VMA	<i>Vegetation Management Act 1999</i> (Qld)
VPMP	Vertebrate Pest Management Plan, prepared by Saunders Havill Group, dated September 2021.
WMP	Weed Management Plan, prepared by Saunders Havill Group, dated July 2021.

1. Introduction

This Annual Compliance Report (ACR) Year 1 (3 February 2021 – 2 February 2022) has been prepared on behalf of Boral Resources (Qld) Pty Ltd (the Proponent) as per the EPBC approval transfer granted on 16 February 2018 for the Ormeau Quarry Expansion (the Project) located on Upper Ormeau Road, Kingsholme, Queensland (EPBC 2016/7797).

In accordance with the approval granted on the 16 February 2018 under the *Environmental Protection and Biodiversity Act 1999* (EPBC Act), this ACR has been prepared in response to Condition 10 of the approval which states:

“Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans 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. ”

1.1. Reporting Period

This ACR details the status and compliance of the Project for the 12-month reporting period between the 3 February 2021 and 2 February 2022.

The ACR must be published on the Proponent’s website and notification provided to the Department of the Environment and Energy (now the Department of Agriculture, Water and the Environment, DAWE) within 3 months of the 12-month anniversary of the commencement of the action (3 May 2021).

1.2. EPBC Approval

Boral Resources (Qld) Pty Ltd, as the Proponent of the Project (EPBC Act Referral 2016/7797) was issued with an approval by the Department of the Environment and Energy (now DAWE) on the 16 February 2018, subject to conditions.

Key details related to the EPBC 2016/7797 approval, including variation conditions, are provided in **Table 1** below.

Table 1: Approval Details

Commonwealth Reference	EPBC 2016/7797
Approval Holder	Boral Resources (Qld) Pty Ltd
ACN	009 671 809
Project Name on the Approval	Ormeau Quarry Expansion, 12km north-west of Oxenford, Queensland.
Approved Action	Thirty-eight hectare (38 ha) expansion of the existing Ormeau Quarry, including clearing of 38 ha of vegetation. The quarry expansion site is located on Upper Ormeau Road, 12 km north west of Oxenford; as

described in the referral received by the Department on 13 October 2016 [See EPBC Act referral 2016/7797].

Controlling Provision(s)	Listed threatened species and communities (sections 18 & 18A)
Approval Date	16 February 2018
Expiry Date of the Approval	8 November 2057
Date of Commencement of the Action	3 February 2021
Address	578 Upper Ormeau Road, Kingsholme, Queensland, 4208
Local Government Area	Gold Coast City Council

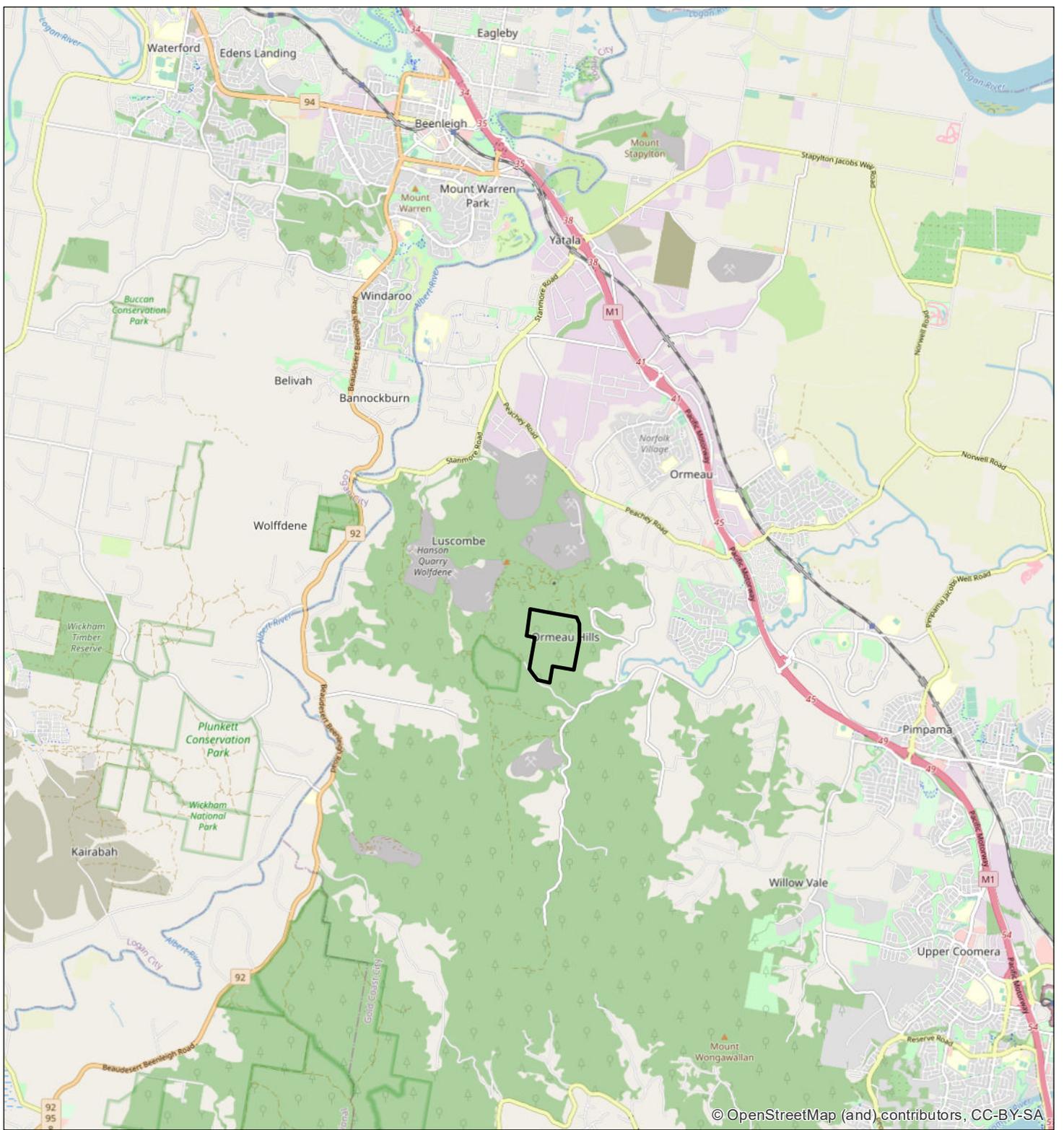
1.3. Site Context

Contextually, the Project is located in south-east Queensland, approximately 12 km north-west of Oxenford within the Gold Coast City Council Local Government Area. The Project is surrounded by rural and rural residential allotments, remnant vegetation with other quarries in the greater landscape. Refer to **Figure 1** for the Site Context and **Figure 2** for Site Aerial.

1.4. Overview of Key Activities and Achievements

During Year 1 of compliance reporting, the following development and environmental management activities occurred:

- Clearing of 5.16274 ha Koala habitat in impact land, triggering the action.
- Preparation and implementation of Bushfire Management Plan, Weed Management Plan, Koala Habitat (Rehabilitation) Management Plan and Vertebrate Pest Management Plan for offset site.
- Monitoring MHQA surveys of the offset area to ascertain habitat quality of vegetation in to determine baseline conditions.
- Baseline weed mapping targeting Weeds of National Significant (WONS), conducted by SHG across offset area.
- Bushcare Services began the treatment of WONS across the offset site.
- Engaged vertebrate pest management services to be carried out over the offset area. Vertebrate Pest Management on-site was hindered by the rainfall, access issues and issues with the chosen Pest Management contractor. Boral is currently in the process of engaging a new Pest Management contractor to undertake Vertebrate Pest Management across the offset site.



Legend

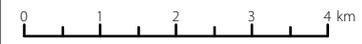
 Offset Site

Figure 3
Offset Site Context



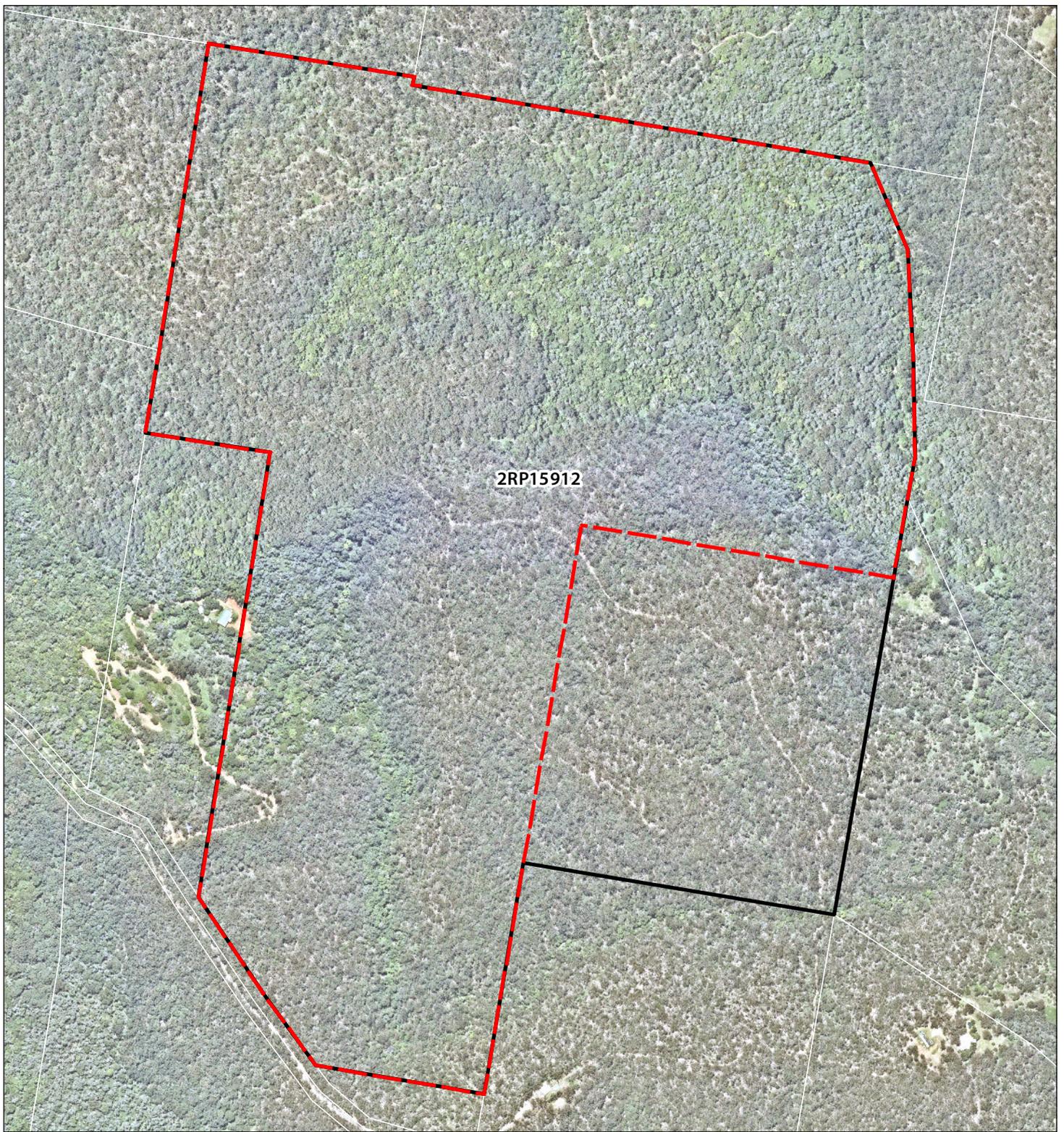
File ref. 10233 E Figure 3 Offset Site Context A
Date 7/03/2022
Project Upper Ormeau Road, Ormeau




Scale (A4): 1:100,000 [GDA 1994 MGA Z56]



THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT SAUNDERS HAVILL GROUP. CANNOT ACCEPT RESPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWINGS BY ANY THIRD PARTY.



Legend

-  Offset Site
-  Offset Area
-  Qld DCDB

Figure 4
Offset Site Aerial

File ref. 10233 E Figure 4 Offset Site Aerial A
Date 4/03/2022
Project Upper Ormeau Road, Ormeau

0 60 120 180 240 m
 Scale (A4): 1:7,000 [GDA 1994 MGA Z56]



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2. Current Status of the Project

2.1. Offset Area Legally Secured

As required by Condition 5 of the EPBC Act approval, the offset land, which is located over parts of Lot 2 on RP15912 Cliff Barrons Road, Kingsholme, was legally secured via a Voluntary Declaration under the VMA by the Proponent on 22 February 2019 (refer to **Appendix B**). The Chief Executive of the Queensland Department of Natural Resources, Mines and Energy (DNRME) (now Department of Resources, DOR) declared the offset area in a Declared Area Map (DAM 2018/007110) as an area of high nature conservation value in accordance with section 19F(1) of the VMA. The offset area is shown as Category A on a Property Map of Assessable Vegetation (PMAV) (PMAV 2018/007111) and is subject to management provisions of the Offset Management Plan EPBC 2016/7797, prepared by Saunders Havill Group, December 2018 (Offset Management Plan) (refer to **Appendix C**).

2.2. Vegetation Clearing

Clearing commenced on 3 February 2021 (refer **Appendix D** for written notification of the commencement of the action). A total of 5.16 ha of Koala habitat was cleared in Year 1. Refer **Plan 1** for clearing extent area in Year 1.

2.3. Key Consultants and Roles

Table 2 below is a list of the key appointed contractors and their roles in the Project during Year 1.

Table 2: Key Consultants and Roles

Role	Appointed Contractor
Proponent / Project Coordinator	Kelli Adair
Environmental Coordinator	Matthew Allan
Site Supervisor / Quarry Manager	Liam Elsworth
Environmental Consultant	Saunders Havill Group
Bush Regeneration Contractor	Bushcare Services
Bushfire Management Contractor	Land and Environment Consultants
Pest Management Contractor	Pest Animal Management Queensland (2021)

2.4. Year 1 Offset Reporting

Management activities have been conducted across the site in accordance with the management actions outlined in the OMP (refer to **Plan 2** for Offset Area and **Plan 3** for Year 1 Field Effort). The following Management Plans were developed within 6 months of the commencement:

- Weed Management Plan

And the following Management Plans were developed within 12-months of the commencement of the action:

- Rehabilitation (inclusive of Koala Habitat) Management Plan

- Pest Management Plan
- Bushfire Management Plan

Weed Management was conducted across the offset. Due to the large rainfall events and the process of obtaining approvals under GCCP and State, pest management and bushfire management were impacted during the Year 1 reporting period.

A review of the OMP commitments and implementation is provided in **Table 3**.

Table 3: Offset Management Plan implementation

Management Action	Commitment	Evidence / Comments / Status
<p>OMP 1</p>	<p>WONS Management</p> <p>Management measures for the control of WONS, specifically <i>Lantana camara</i> will include;</p> <ul style="list-style-type: none"> • Baseline weed mapping for WONS will be completed in 2019 will be conducted throughout the offset area and site specific treatment techniques developed depending on the location and extent of weed coverage within six months of commencement of the action. • All identified WONS will be treated within 12 months of commencement of the action. • WONS will be monitored and treated annually, including in 2019, until they are not observed on the property. Once WONS are not detected where they have previously been detected, every 2 years: <ul style="list-style-type: none"> ○ Comprehensive monitoring for WONS will be conducted. ○ WONS that are reported or detected by comprehensive monitoring will be treated. • A suitably qualified bush regeneration contractor will be engaged to undertake the necessary weed control. • Control of infestations will utilise techniques that avoid disturbance to surrounding area. 	<p>The OMP specified baseline weed mapping should be completed across the site in 2019 however, this did not occur. As weed status and coverage has the ability to change quickly, dependent on weather and rainfall, conducting baseline weed mapping across the site prior to the know commencement date (triggering the additional actions under the OMP) may have resulted in incorrect representation to inform management actions. Despite this, this is considered a minor non-compliance.</p> <p>A Weed Management Plan (WMP) was produced by SHG to fulfil the requirements of the OMP (refer Appendix E). The WMP details baseline surveys of weed cover and weed species detected within the offset area. Specific management actions and timeframes have been developed for the control of weeds on-site as well as regular and annual monitoring techniques.</p> <p>SHG Ecologists mapped the extent of WONS across the offset area during the 2021/2022 reporting period (June 2021). WONS identified and mapped were predominantly <i>Lantana camara</i> (Lantana) (refer Plan 4). A detailed summary of weed mapping results is included in the WMP (refer Appendix E).</p> <p>Bushcare Services were engaged early to complete ongoing weed management across the offset site. Despite the contractor providing continual management services across the offsets site throughout the year, this work was significantly limited by the damage to access tracks. The main access track was severely eroded, preventing use by any type of vehicle, thus restricting management efforts to those which could be carried in by foot. This increased the timeframes required to complete management actions. A combination of the severe tracks damage and an overall lack of accessibility due to too few tracks available across the site, prevented safe access by Bushcare Services whilst transporting essential equipment. Track repair and rebuild design are currently awaiting approval under the Gold Coast City Planning Scheme under an operational works application. Bushcare Service commenced treating WONS in the southern portion the site and moved northwards (refer to Plan 5).</p> <p>A full assessment of all likely approvals required to commence maintenance of tracks has been undertaken, with approvals pathways currently underway at local and state levels. Once completed, track s will be maintained, thus affording</p>

Management Action	Commitment	Evidence / Comments / Status
		<p>better access to the entire offsets site and allowing for weed treatment across the entire site.</p> <p>It is noted that as all WONS were not treated across the offset site this is considered a minor non-compliance. Once access tracks have been re-instated, Bushcare Services will be able to complete the weed treatment efficiently.</p> <p>A minor non-compliance has been recognised where baseline weed mapping and treatment did not commence in 2019 as specified within the OMP. As the action did not commence until 2021, this baseline weed mapping and treatment occurred following this and will continue until WONS are not identified on the property, as per the OMP.</p>
<p>OMP 2</p>	<p>Rehabilitation and Regeneration Management Plan</p> <p>Management measures for rehabilitation and regeneration include:</p> <ul style="list-style-type: none"> • Baseline mapping to identify rehabilitation and regeneration areas and development of a rehabilitation plan specifying techniques and species to be utilised will be completed within 12 months of commencement of the action. • Rehabilitation areas are to consist of one canopy tree per 10m², three shrubs per 10m² and one groundcover per 2m². Where natural regeneration is the preferred approach, infill planting will be implemented where regeneration has been unsuccessful after three years. • All rehabilitation activities are to be carried out by a suitably qualified bush regeneration contractor. • The plants reinstated in any particular location must be consistent with the mapped regional ecosystem or pre-clear regional ecosystem over that area. • All rehabilitation is to commence within three years of commencement of the action. Regeneration areas that require infill planting will be identified and regeneration actions outlined in the third annual compliance report. 	<p>A Koala Habitat Rehabilitation Plan (KHRP) and Weed Management Plan have been completed by SHG to identify areas for rehabilitation and regeneration (refer to Appendix F). Baseline mapping across the site identified areas suitable for different restoration management techniques (see Plan 2, KHRP).</p> <p>Treatment of WONS has been carried out across the subject site by Bushcare Services. Once the Weed Management aspect has been completed, areas identified for rehabilitation can commence, including infill planting.</p> <p>This is required to begin within 3 years of the commencement of the action. The action is currently in Year 1.</p>
<p>OMP 3</p>	<p>Legally securing the offset area</p> <p>A Voluntary Declaration will be placed over the offset area to legally secure the conservation use on the land prior to the action commencing. Boral will continue to manage the offset area for the life of the approval.</p>	<p>The Proponent legally secured the offset via a Voluntary Declaration under the <i>Vegetation Management Act 1999</i> on the 22 February 2019 (refer Appendix B). In accordance with Condition 5, the offset was legally secured prior to the official commencement of the action on the 3 March 2021.</p>
<p>OMP 4</p>	<p>Pest Management Plan</p> <p>Management measures for the control of feral or unwanted domestic dogs across the offset site include:</p>	<p>Baseline monitoring of pest species across the offset site was conducted by SHG in 2021 which identified <i>Vulpes vulpes</i> (Red fox) as utilising the site. While camera trapping was not successful in detecting <i>Canis familiaris</i> (Feral Dogs), dog prints were observed across the offset area during baseline surveys. The</p>

Management Action	Commitment	Evidence / Comments / Status
	<ul style="list-style-type: none"> • Baseline pest monitoring including motion activated cameras and scat analysis to identify evidence of feral or unwanted dogs (and other pest species), and development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed within 12 months of commencement of the action. • Annual pest monitoring by a suitably qualified pest management contractor, with evidence of pest animals GPS recorded. Where there is evidence of pest animals, targeted trapping and baiting programs will be implemented by an independent suitably qualified pest management contractor. Where annual monitoring does not identify any feral or pest species monitoring will reduce to 2 yearly. • Where practical and appropriate, participate cooperatively in pest management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective pest management in the locality of the offset area. • Install appropriate signage informing the area is under feral control. 	<p>results of the baseline monitoring are detailed in the Vertebrate Pest Management Plan (VPMP) produced by SHG (refer Appendix G). The VPMP outlines specific pest management measures and methods to be undertaken throughout the life of the offset.</p> <p>The on-ground pest management aspect was impacted in the current reporting period by the large amount of rainfall received between October 2021 and January 2022. Site access was highly restricted due to the main access track being severely eroded, with the above-average rainfall contributing to the deterioration of access tracks. This restricted access removed any ability for vehicular access onto the site for management purposes, placing limitations on work which could be completed, while prioritising compliance with animal ethics requirements for pest management.</p> <p>This track deterioration, in conjunction with the need to obtain approvals to clear vegetation and allow for detailed engineering design and construction of an all-weather access track, under the GCCP and State legislation, placed severe restrictions on site access and limited the ability to achieve management actions as planned.</p> <p>In addition, Boral's chosen contractor postponed and cancelled several planned trapping/management events, leading to the recent transition to a new suitably qualified pest management contractor.</p> <p>The lack of implementation of these techniques constitutes a minor non-compliance, which is aimed to be rectified in the first few months of the second year of the action.</p> <p>Clearing of Management tracks throughout the offset site will allow for increased access, affording the efficient and appropriate use of pest management techniques across the offset site. Change of contractors is anticipated to allow for more reliable on-ground trapping and management during Year 2 of the action.</p> <p>Signage will be installed as a component of the commencement of onsite trapping and pest species management. Refer Appendix G for Vertebrate Pest Management Report.</p>
<p>OMP 5</p>	<p>Koala Habitat Quality Management Plan</p>	<p>A Koala Habitat Management Plan (KHMP) (Rehabilitation Plan) was developed for the offset area which details strategies that will be implemented in order to</p>

Management Action	Commitment	Evidence / Comments / Status
	<p>The use of the habitat quality assessment methodology prepared by the Queensland Herbarium (DEHP 2017) provides a repeatable and consistent method for determining habitat quality specific to koalas. The method also utilises benchmark scores to ensure all sites measured are calibrated against a known standard. This calibration provides additional confidence and assurance in the accuracy of the method to score habitat quality.</p> <p>The habitat quality monitoring is to be undertaken at six (6) permanent transect locations established during baseline habitat quality score assessments within the koala offset area.</p> <p>The total area of the offset site is 77 ha consisting of non-remnant vegetation and three REs, which are sized as follows:</p> <ul style="list-style-type: none"> • 32.6 ha of RE12.11.3 • 37.5 ha of RE12.11.5 • 1.6 ha of RE12.11.10 • 5.3 ha of non-remnant vegetation <p>Habitat quality monitoring will be undertaken annually for the first three (3) years and then once every five (5) years to determine if the target quality score has been maintained for the offset area over the EPBC Act period of approval (maintain a habitat quality score of eight (8)). The habitat quality monitoring is to be reported in the ACR every five (5) years or the subsequent year that the monitoring is completed.</p> <p>Koala usage monitoring will be carried out as part of the habitat monitoring. Surveys will be carried out using the Spot Assessment Technique (SAT) at all six (6) permanent transect locations.</p>	<p>achieve the Koala habitat rehabilitation aims set out in the OMP (refer Appendix F).</p> <p>The management zones within the offset area include 'Remnant Vegetation' and 'Habitat Rehabilitation.' In accordance with the OMP, management of WONS, namely Lantana, occurred across the entire offset area, assisting with natural regeneration of native vegetation. Management of WONS was not able to be completed throughout the entirety of the offset site due to the lack of suitable access tracks which created safety concerns for the weed management personnel as well as not being able to access the entire site with the necessary equipment.</p> <p>Annual habitat quality monitoring of Koala habitat using the Modified Habitat Quality Assessment (MHQA) technique was conducted at six permanent locations across the offset area during the 2021/2022 reporting period. MHQA scores for the offset area are reported within this ACR. This includes five transects within the Remnant vegetation area and one transect within the non-remnant vegetation area (refer Plan 3).</p> <p>Variations occurred within the Year 1 Modified Habitat Quality Assessment transects compared to Baseline surveys as the transects were located within different areas. While variations occurred, the results were minor, with the rounded scores remaining the same. This minor change in location was to ensure accessible, long-term monitoring sites, representative of the habitat onsite, presenting baseline scores.</p> <p>As the reporting years progress, the MHQT scores will be monitored to ensure no decrease in scoring across the offset site.</p> <p>Koala scats were observed during SAT surveys, demonstrating Koalas continue to use the offset site.</p>
<p>OMP 6</p>	<p>Bushfire Management Plan</p> <p>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.</p>	<p>A Bushfire Management Plan (BMP) was developed for the site by Land and Environment Consultants (LEC) in accordance with OMP Management Action 6. This BMP details management measures that will be implemented across the site to reduce risk of bushfire (refer Appendix H for full report).</p> <p>Bushfire Management of the offset has not commenced during the current reporting period due to the high level of rainfall and the process of obtaining approvals for both vegetation clearing and construction access to allow the only access road to be rebuilt. This requires specific approvals under Gold Coast City</p>

Management Action	Commitment	Evidence / Comments / Status
	<p>Management measures will be outlined in the BMP for the control of bush fire across the offset area but will include:</p> <ul style="list-style-type: none"> • Installation of firebreaks and fire trails. • Annual inspection and maintenance of firebreaks and access tracks required to achieve compliance with Offset Area Bushfire Management Plan. • Prescribed burning undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade and in compliance with the Fire and Emergency Services Act 1990. • Use of domestic livestock or other methods to reduce fuel loads 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 reassessed by the aforementioned professionals following the grazing event. 	<p>Planning Scheme For construction of an all-weather access crossing and rebuild of parts of the road.</p> <p>Refer Appendix H for Bushfire Management Plan (BMP).</p>

Table 4: Modified Habitat Quality Assessment Transects Scores

Condition characteristics	Max. score	Score (RE12.11.3)	Score (RE12.11.5)	Score (RE12.11.10)	Score (non-remnant)
Site Condition (30%)					
Recruitment of woody perennial species	5	5	3	3	3
Native plant species richness - trees	5	5	5	2.5	2.5
Native plant species richness - shrubs	5	2.5	2.5	0	0
Native plant species richness - grasses	5	2.5	2.5	5	5
Native plant species richness - forbs	5	2.5	2.5	2.5	0
Tree canopy height	5	5	5	3.33	5
Tree canopy cover	5	4	4	3.33	3.5
Shrub canopy cover	5	3	3	3	3

Condition characteristics	Max. score	Score (RE12.11.3)	Score (RE12.11.5)	Score (RE12.11.10)	Score (non-remnant)
Native perennial grass cover	5	3	0	5	3
Organic litter	5	5	5	5	3
Large trees	15	5	15	5	5
Coarse woody debris	5	5	5	5	2
Weed cover	10	0	5	3	3
Quality and availability of food and foraging habitat	10	10	10	10	10
Quality and availability of shelter	10	10	10	10	10
Site condition score	100	67.5	77.5	65.66	60.5
Site condition score (out of 3)	3	2.03	2.33	1.97	1.82
Site Context (30 %)					
Size of the patch	10	7	7	7	7
Connectedness	5	4	4	4	4
Context	5	5	5	5	5
Ecological corridors	6	6	6	6	6
Role of site location to species overall population	5	4	4	4	4
Threats to the species	15	15	15	15	15
Species mobility capacity	10	10	10	10	10
Site context score	56	51	51	51	51
Site context score (out of 3)	3	2.73	2.73	2.73	2.73
Species Stocking Rate (40 %)					
Species stocking rate score	70	45	45	45	40
Species stocking rate score (out of 4)	4	2.57	2.57	2.57	2.29
Unit Scores Total	(rounded)	7.42	7.63	7.27	6.83

Table 5: Comparison of MHQT Scores

Biocondition Score	Baseline	Year 1 (2021)	Comment
RE 12.11.3			
Site Condition	2.13	2.12	Baseline surveys and Year 1 transects were completed in different locations, resulting in variations to the MHQT scores.
Site Context	2.57	2.57	
Species Stocking Rate	2.57	2.57	
RE 12.11.5			
Site Condition	2.26	2.33	Baseline surveys and Year 1 transects were completed in different locations, resulting in variations to the MHQT scores.
Site Context	2.57	2.73	
Species Stocking Rate	2.57	2.57	
RE 12.11.10			
Site Condition	2.15	1.97	Baseline surveys and Year 1 transects were completed in different locations, resulting in variations to the MHQT scores.
Site Context	2.57	2.57	
Species Stocking Rate	2.57	2.57	
Non-remnant			
Site Condition	-	1.82	No surveys were completed during Baseline surveys. This transect will monitor the rehabilitation efforts within the non-remnant areas.
Site Context	-	2.57	
Species Stocking Rate	-	2.29	

1. Clearing Extent



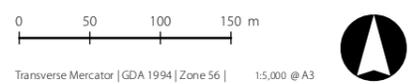
Notes:
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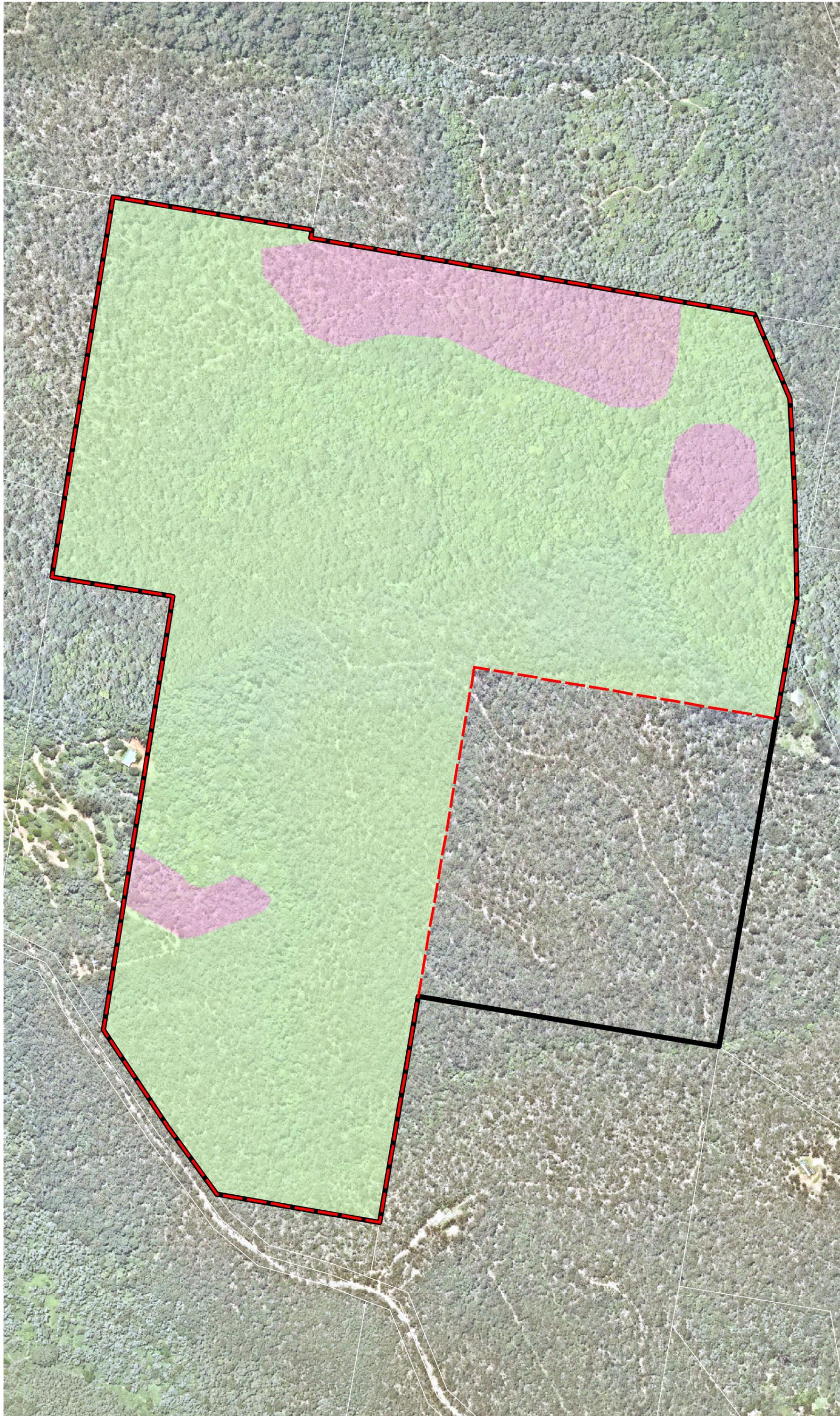
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- Legend**
-  Project Site
 -  Project Area
 -  Qld DCDB
 -  Year 1 Clearing Extent

Issue	Date	Description	Drawn	Checked
A	17/03/2022	Preliminary	TF	MM



2. Offset Area Management Zones



Notes:
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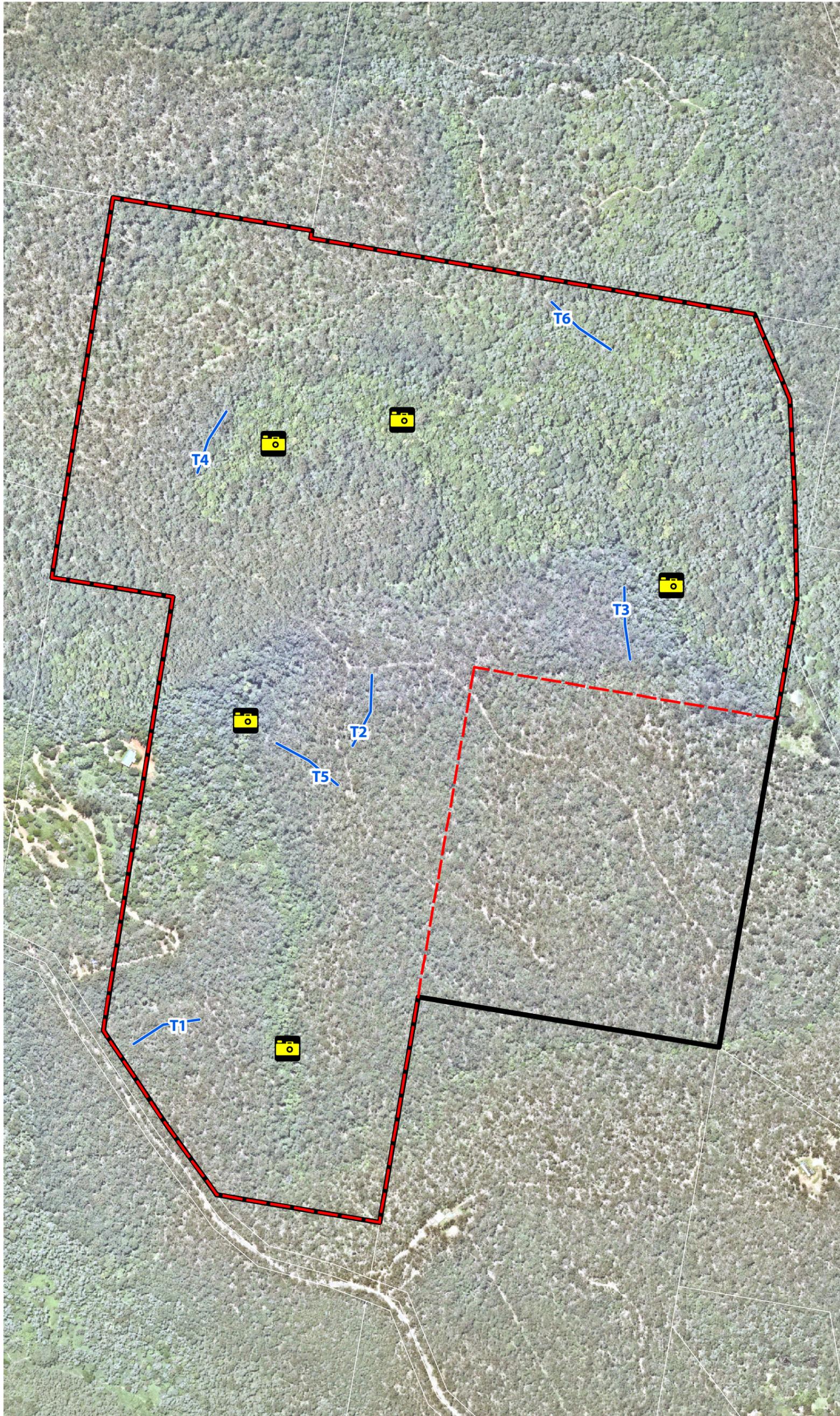
Legend

-  Offset Site
-  Offset Area
-  Qld DCDB
- Management Zones**
-  Habitat Rehabilitation Areas
-  Remnant Vegetation Management Areas

Issue	Date	Description	Drawn	Checked
A	7/03/2022	Preliminary	TF	MM



3. Baseline Field Survey Effort



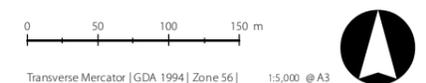
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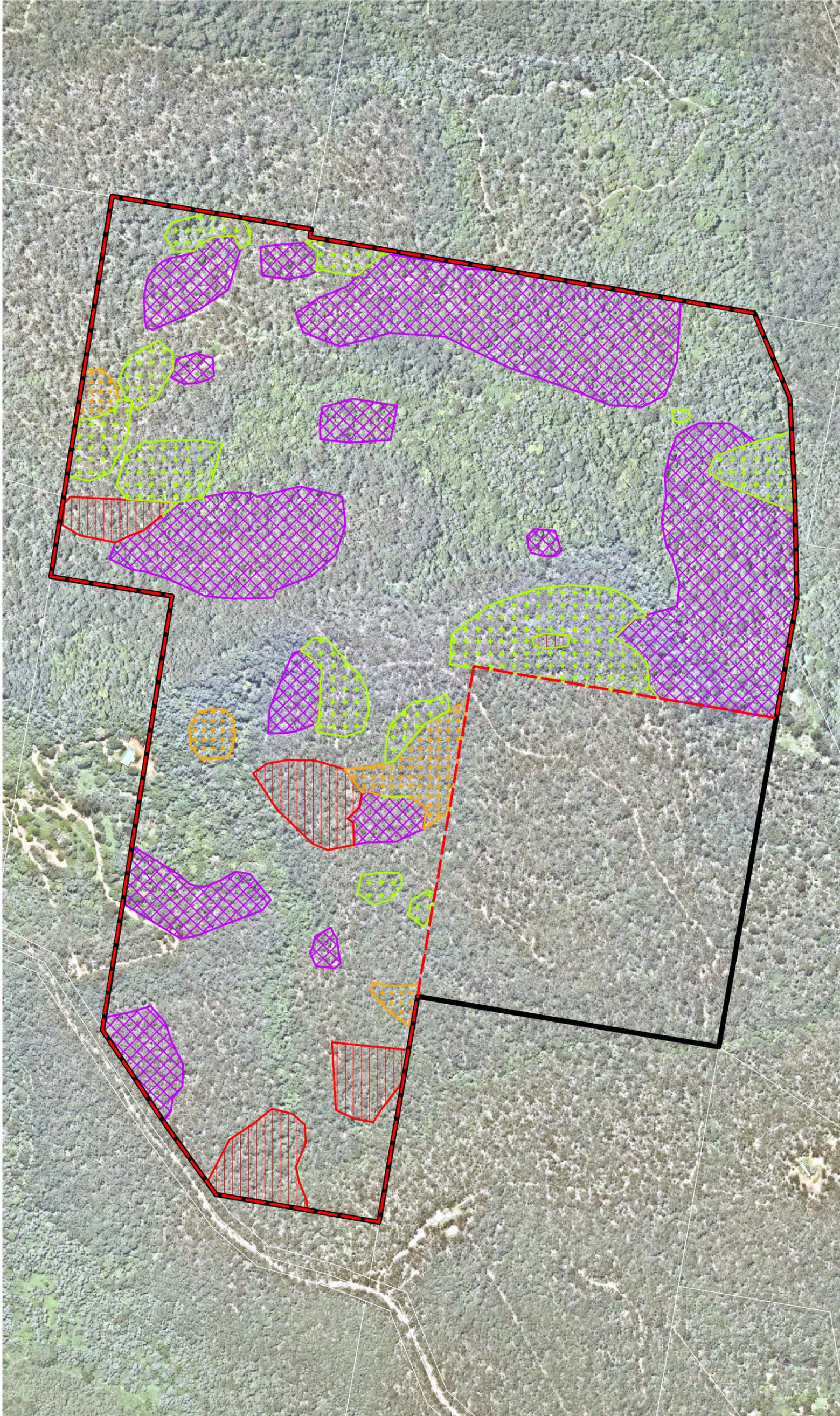
Legend

-  Offset Site
-  Offset Area
-  Qld DCDB
-  Camera Trap Locations
-  Habitat Transects

Issue	Date	Description	Drawn	Checked
A	9/03/2022	Preliminary	TF	MM



4. Baseline Weed Mapping



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.

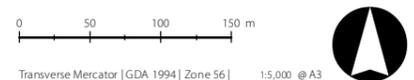
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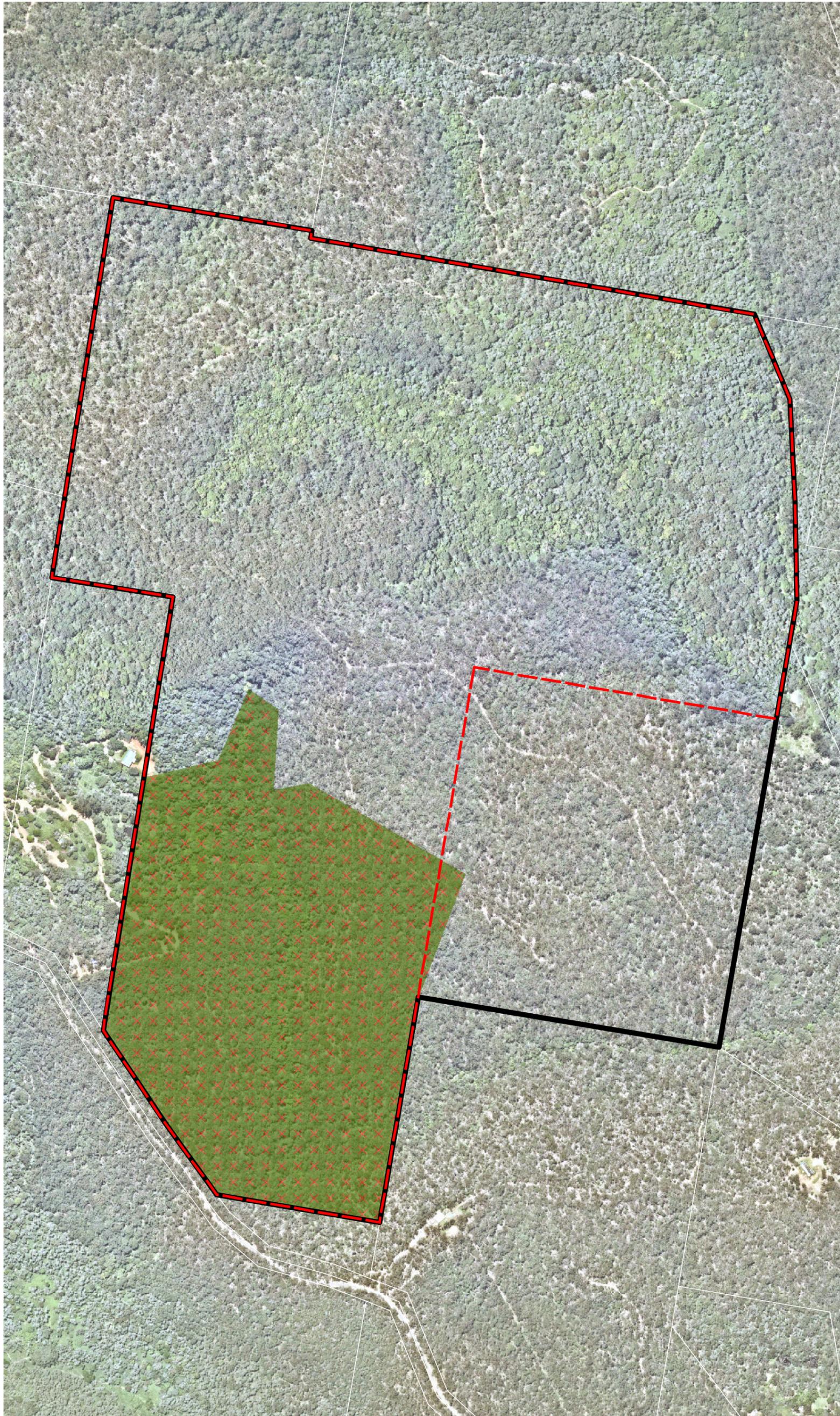
Legend

-  Offset Site
-  Offset Area
-  Qld DCDB
- Weed Mapping Results**
-  Scattered Thinning
-  Low to Medium Density
-  Medium Density
-  High Density

Issue	Date	Description	Drawn	Checked
A	7/03/2022	Preliminary	TF	MM



5. Offset Site Weed Treatment Areas



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.

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Legend

-  Offset Site
-  Offset Area
-  Qld DCDB
-  Weed Treatment Areas

Issue	Date	Description	Drawn	Checked
A	7/03/2022	Preliminary	TF	MM



3. EPBC Conditions and Compliance

Table 6 details the Conditions attached to the Ormeau Quarry Approval (EPBC 2016/7797). Sections 2-5 above provide details on process, steps and methodologies used to achieve the Conditions under the approval.

Table 6: Compliance Audit of EPBC 2016/7797 Conditions for Ormeau Quarry

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
1	The person taking the action must not undertake the action outside the Project Site as shown in Attachment A.	Compliant	The action has not occurred outside of the Project Site as shown in Attachment A of the EPBC Approval.
2	The person taking the action must not clear more than 38 hectares of koala habitat in the Project Site as shown in Attachment A.	Compliant	Plan 1 demonstrates the clearing that has occurred within the project site in the current reporting period. A total of 5.16 ha has been cleared, located within the project site as shown in Attachment A of the Approval notice.
3	The person taking the action must implement the Offset Strategy.	Compliant	The Project is compliant with implementing the Offset Strategy, refer to Table 6 .
4	In the case that the Offset Strategy cannot be implemented on Lot 2 RP15912 and in accordance with the EPBC Act Environmental Offsets Policy (2012), an alternate Offset Strategy must be submitted to the Minister for approval prior to the commencement of the action.	Not applicable	Lot 2 on RP15912 was legally secured under Voluntary Declaration on 22nd February 2019.
5	The person taking the action must not commence the action until the offset area is legally secured.	Compliant	Lot 2 on RP15912 was legally secured under Voluntary Declaration on 22nd February 2019.
6	The person taking the action must prepare and submit an Offset Management Plan for the Minister's approval to offset the loss of 38 hectares of koala habitat. The person taking the action must not commence the action unless the Minister has approved the Offset Management Plan in writing. The approved Offset Management Plan must be implemented by the person taking the action. The Offset	Compliant	The Offset Management Plan was completed by Saunders Havill Group in December 2018, provided in Appendix D.

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
	Management Plan must be prepared in accordance with the Department's Environmental Management Plan Guidelines, and the EPBC Act Environmental Offsets Policy (2012) and include:		
6a	detail of the offset area(s) required to address the loss of 38 hectares of koala habitat consistent with the Offset Strategy or subsequent Offset Strategy described at condition 4;	Compliant - As per Condition 6	
6b	detail of the proposed legal mechanism and timeframes for securing the offset area(s);	Compliant - As per Condition 6	
6c	a map of the offset area(s) in relation to other habitats and biodiversity corridors;	Compliant - As per Condition 6	
6d	information about how the offset area(s) provide connectivity with other koala habitat and biodiversity corridors;	Compliant - As per Condition 6	
6e	a description of the current condition (prior to any management activities) of the offset area(s), including baseline survey data;	Compliant - As per Condition 6	
6f	a description of the management measures (including timing, frequency and longevity) that will be implemented, including discussion of how measures outlined take into account relevant conservation advice;	Compliant - As per Condition 6	
6g	performance and completion criteria for evaluating the management of the offset area(s), and detailed criteria that will trigger corrective actions;	Compliant - As per Condition 6	
6h	a detailed program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;	Compliant - As per Condition 6	
6i	potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks, including a bushfire management plan and a pest species management plan.	Compliant - As per Condition 6	

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
7	The person taking the action must prepare and submit an Environmental Management Plan for the Minister's approval to ensure the protection of EPBC Act listed species on the project site. The Environmental Management Plan must include:	Compliant	An Environmental Management Plan was completed by Saunders Havill Group in November 2018, provided in Appendix D.
7a	Details of the mitigation and management measures that will be implemented on the Project Site including, but not limited to:	Compliant – as per Condition 7	
7a. i.	all vehicles within the Project Site be restricted to travel at 40km/hr or less except in an emergency;	Compliant – as per Condition 7	
7a. ii.	signage alerting drivers to the risk of collisions with koalas;	Compliant – as per Condition 7	
7a. iii.	measures to avoid or minimise impacts to the Ormeau Bottle Tree (<i>Brachychiton</i> sp. Ormeau [L.H.Bird AQ435851]) during clearing or operations; and	Compliant – as per Condition 7	
7a. iv.	measures to avoid or minimise impacts to the Grey-Headed Flying Fox (<i>Pteropus poliocephalus</i>) during clearing or operations.	Compliant – as per Condition 7	
General			
8	Within 20 days after the commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement.	Compliant	The action began on the 03 March 2021, the Department was advised on the 04 March 2021. Confirmation email provided in Appendix E.
9	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans 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	Compliant	Boral Resources and Saunders Havill Group are responsible for maintaining accurate records of all activities associated with the action. No request from the Department was made.

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
	posted on the Department's website. The results of audits may also be publicised through the general media.		
10	Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans 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.	Compliant	The final day of Year 1 was 2 March 2022, the ACR is due to be published to Boral's website by the 3 May 2022.
11	Upon the direction of the Minister, the person taking the action 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 must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not applicable	No request from the Minister was made to complete an independent audit.
12	The person taking the action may choose to revise a Management Plan approved by the Minister under conditions 3, 4, 6 and 7 without submitting it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan would not be likely to have a new or increased impact. If the person taking the action makes this choice it must:	Not applicable	No revisions to the Management Plans were made in the reporting period.
12 i.	Notify the Department in writing that the approved plan has been revised and provide the Department with an electronic copy of the revised plan;	Not applicable	No revisions to the Management Plans were made in the reporting period.
12 ii.	Implement the revised plan from the date that the plan is submitted to the Department; and	Not applicable	No revisions to the Management Plans were made in the reporting period.

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
12 iii.	For the life of this approval, maintain a record of the reasons the person taking the action considers that taking the action in accordance with the revised plan would not be likely to have a new or increased impact.	Not applicable	No revisions to the Management Plans were made in the reporting period.
13	The person taking the action may revoke their choice under condition 12 at any time by notice to the Department. If the person taking the action revokes the choice to implement a revised plan without approval under section 143A of the EPBC Act, the plan approved by the Minister must be implemented.	Not applicable	The proponent did not revoke their choice under condition 12 within the current reporting period.
14	Condition 12 does not apply if the revisions to the approved plan include changes to environmental offsets provided under the plan in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the Minister. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan would, or would not, be likely to have new or increased impacts.	Not applicable	No revisions to the Management Plans were made in the reporting period.
15	If the Minister gives a notice to the person taking the action that the Minister is satisfied that the taking of the action in accordance with the revised plan would be likely to have a new or increased impact, then:	Not applicable	No revisions to the Management Plans were made in the reporting period.
15 i.	Condition 12 does not apply, or ceases to apply, in relation to the revised plan; and	Not applicable	No revisions to the Management Plans were made in the reporting period.
15 ii.	The person taking the action must implement the plan approved by the Minister.	Not applicable	No revisions to the Management Plans were made in the reporting period.
16	To avoid any doubt, this condition does not affect any operation of conditions 12, 13 and 14 in the period before the day the notice is given. At the time of giving the notice the Minister may also notify that for a specified period of time that condition 12 does not apply for one or more specified plans required under the approval. Conditions 12, 13, 14 and 15 are not intended to limit the operation of section 143A of the EPBC Act which allows the	Not applicable	No revisions to the Management Plans were made in the reporting period.

Condition Number	Condition	Is The Project compliant with this condition?	Evidence
	person taking the action to submit a revised plan to the Minister for approval.		
17	If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.	Compliant	The action was approved in 2018, with the action commencing 3 rd February 2021.
18	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans referred to in these conditions of approval on its website. Each management plan must be published on the website within one month of being approved by the Minister or submitted under condition 12.	Compliant	All Management Plans referred to under this approval (the Environmental Management Plan and Offset Management Plan) were published to Boral's Website within one month of approval by the Minister.

4. Non-compliances

4.1. Weed Management

The OMP states that all WONS will be treated within 12 months of the commencement of the Action. As detailed in **Section 2.4**, management of WONS was unable to be completed across the entirety of the Offset site. This was due to a combination of the prolonged wet season and the difficulty accessing the site. The approval process under the local and state legislation, required to allow clearing for management purposes within the offset site, is relatively complex and is currently underway. Full site access via a well-maintained network of minimal impact tracks is essential for moving necessary equipment through the site to achieve this management objective. The restricted access both prevents optimal weed management by Bushcare Services (the suitably qualified contractor) via preventing access to the offset site with the necessary equipment and poses a safety issue e.g. potential injury in a remote area.

A large area of WONS were treated, however, as this is not 100% of the site, this is identified as a minor non-compliance under the requirements of the EPBC Act OMP (Condition 6). The inaccessibility of the site during Year 1 has led to a revision of weed treatment timeframes over the 12-month period. Subsequent years will factor this potential prolonged lack of access during the wet season into the management schedule, aiming to treat the majority of weeds prior to December each year, with smaller sections aimed at being completed in the limited timeframe following the wet season. In addition, track improvement is currently under investigation, to increase site accessibility.



Images of track washouts preventing vehicle access for site management through ACR Year 1.

4.2. Bushfire Management

In addition to the Weed Management, the inaccessibility of the site resulted in on-ground Bushfire Management actions, identified within the BMP, not commencing during the Year 1 reporting period. Specifically, a large washout along the main entry track prevented entry to the site by vehicles from late 2021, with local approvals for track works to repair this, currently pending under the Gold Coast Planning Scheme.

A Bushfire Management Plan has been completed for the offset site. However, the eroded and damaged state of the main access track in conjunction with an overall lack of access tracks inhibited the commencement of Bushfire Management across the offset site. As the process of approval to address this issue, via an operational works application to construct all-weather access and additional tracks, is currently being addressed under

the local planning scheme (GCCPS), it is anticipated that bushfire management will commence early within Year 2.

This is considered a minor non-compliance under Condition 6.

4.3. Vertebrate Pest Management

Vertebrate Pest Management was also impacted due to the inaccessibility of the site, caused by the severe damage and erosion of the main access track in addition to the overall lack of tracks and accessibility across the site. This limits the potential to remain compliant with animal ethics requirements, with succinct checking and removing of animals in traps each morning, minimising distress and suffering. Thus, this resulted in on-ground trapping and management not commencing within the Year 1 reporting period. In addition, as detailed in Section 3, the contractor employed to deliver pest management services on-ground cancelled several management events, resulting in further time impacts in conjunction with extensive rain events during the latter part of 2021. The lack of reliability of the contractor has now been addressed via a change of pest management contractor, with these management actions to occur within the first few months following the commencement of Year 2.

A Vertebrate Pest Management Plan was completed by Saunders Havill Group to provide specifications and guidance for the on-ground Pest Management Strategies.

This is considered a minor non-compliance under Condition 6.

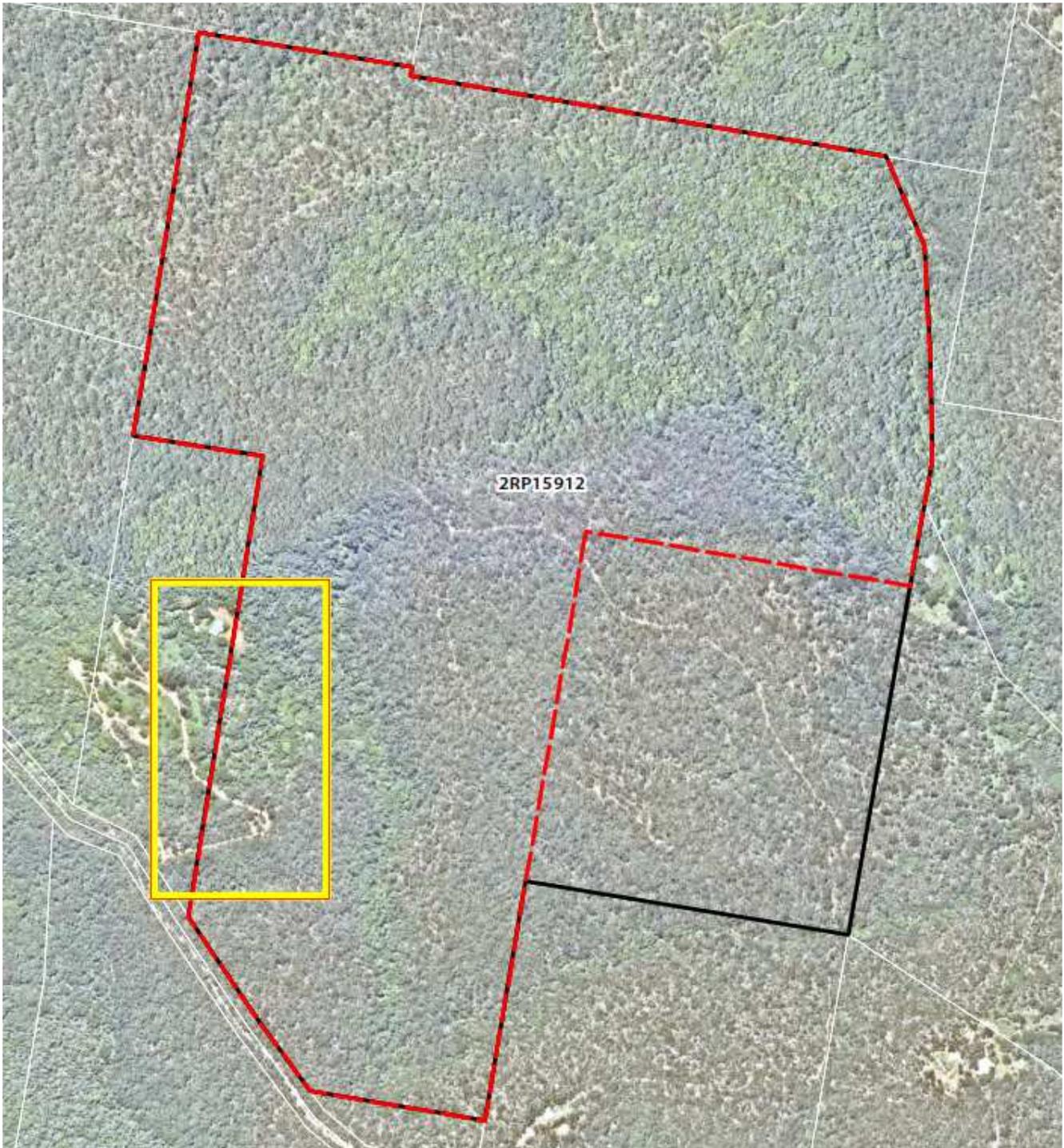
4.4. Offsets Area Adjacent Landholder Encroachment

Boral proactively surveyed the offset area to ensure all works completed under the OMP were completed within the offsets area boundary. During this process minor encroachment within the offset area was detected, historically and unknowingly caused by an adjacent landholder. Discussions have taken place between Boral and the landholder and the following actions have been achieved between July 2021 and February 2022 to address the matter which it now considers resolved, with follow up actions put in place.

- The access track has been retained by Boral (allowing the adjacent landowner to use the track) whilst also providing Boral, its contractors and consultants safe access into a steep area of the offset site for rehabilitation and monitoring activities.
- The dam (encroachment by approximately 5m) has been retained however Boral will plant the edge with seedlings in accordance with the OMP. Seedlings will be maintained in accordance with the Koala Habitat Rehabilitation Plan.
- The front of house area (encroachment by approximately 20m) will be rehabilitated by Boral by planting seedlings in accordance with the OMP. Seedlings will be maintained in accordance with the Koala Habitat Rehabilitation Plan.

This is considered an historical issue and was only discovered during the boundary check. This clearing did not occur during the reporting period and is considered a pre-existing condition of the vegetation and will be rectified as per offsets requirements. The clearing, which included a large hole with steep banks, has been

filled, the bank has been battered and is ready to be planted. Planting has been delayed due to weather conditions, is planned for the coming months.



Location of accidental historical encroachment by neighbour, discovered during surveying of offsets site boundary.



Aerial showing the western boundary of the offsets site and the prior encroachment into the site unknowingly by neighbouring landholders.

5. Appendices

Appendix A

EPBC Approval Conditions (EPBC 2016/7797)

Appendix B

Written Notification of Commencement of the Action

Appendix C

Offset Area Voluntary Declaration Package

Appendix D

Offset Management Plan

Environmental Management Plan

Appendix E

Weed Management Plan

Appendix F

Koala Habitat Management Plan

Appendix G

Vertebrate Pest Management Plan

Appendix H

Bushfire Management Plan

Appendix A

EPBC Approval Conditions (EPBC
2016/7797)



Approval

Ormeau Quarry Expansion, 12 km north-west of Oxenford, Queensland (EPBC 2016/7797).

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	BORAL RESOURCES (QLD) PTY. LIMITED
proponent's ACN	009 671 809
proposed action	To expand the existing Ormeau Quarry Site, approximately 12 kilometres (km) north-west of Oxenford and 43 km from Brisbane, Queensland [See EPBC Act referral 2016/7797].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved

Conditions of approval

This approval is subject to the conditions specified below.

Expiry date of approval

This approval has effect until 8 November 2057

Decision-maker

name and position	James Barker Assistant Secretary Assessments and Governance Branch
signature	
date of decision	16 / 2 / 2018

Conditions attached to the approval

Conditions
1. The person taking the action must not undertake the action outside the Project Site as shown in <u>Attachment A</u> .
2. The person taking the action must not clear more than 38 hectares of koala habitat in the Project Site as shown in <u>Attachment A</u> .
3. The person taking the action must implement the Offset Strategy .
4. In the case that the Offset Strategy cannot be implemented on Lot 2 RP15912 and in accordance with the EPBC Act Environmental Offsets Policy (2012) , an alternate Offset Strategy must be submitted to the Minister for approval prior to the commencement of the action.
5. The person taking the action must not commence the action until the offset area is legally secured .
6. The person taking the action must prepare and submit an Offset Management Plan for the Minister's approval to offset the loss of 38 hectares of koala habitat . The person taking the action must not commence the action unless the Minister has approved the Offset Management Plan in writing. The approved Offset Management Plan must be implemented by the person taking the action. The Offset Management Plan must be prepared in accordance with the Department's Environmental Management Plan Guidelines , and the EPBC Act Environmental Offsets Policy (2012) and include: <ol style="list-style-type: none">detail of the offset area(s) required to address the loss of 38 hectares of koala habitat consistent with the Offset Strategy or subsequent Offset Strategy described at condition 4;detail of the proposed legal mechanism and timeframes for securing the offset area(s);a map of the offset area(s) in relation to other habitats and biodiversity corridors;information about how the offset area(s) provide connectivity with other koala habitat and biodiversity corridors;a description of the current condition (prior to any management activities) of the offset area(s), including baseline survey data;a description of the management measures (including timing, frequency and longevity) that will be implemented, including discussion of how measures outlined take into account relevant conservation advice;performance and completion criteria for evaluating the management of the offset area(s), and detailed criteria that will trigger corrective actions;a detailed program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks, including a bushfire management plan and a pest species management plan.

7. The person taking the action must prepare and submit an Environmental Management Plan for the **Minister's** approval to ensure the protection of EPBC Act listed species on the project site. The Environmental Management Plan must include:
- a. Details of the mitigation and management measures that will be implemented on the **Project Site** including, but not limited to:
 - i. all vehicles within the **Project Site** be restricted to travel at 40km/hr or less except in an **emergency**;
 - ii. signage alerting drivers to the risk of collisions with koalas;
 - iii. measures to avoid or minimise impacts to the Ormeau Bottle Tree (*Brachychiton* sp. *Ormeau* [L.H.Bird AQ435851]) during clearing or operations; and
 - iv. measures to avoid or minimise impacts to the Grey-Headed Flying Fox (*Pteropus poliocephalus*) during clearing or operations.
 - b. Details of the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing.

The person taking the action must not commence the action unless the **Minister** has approved the Environmental Management Plan in writing. The approved Environmental Management Plan must be implemented

General

8. Within 20 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.
9. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans 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.
10. Within three months of every 12 month anniversary of the **commencement** of the action, the person taking the action must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of any management plans 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.

11. Upon the direction of the **Minister**, the person taking the action 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 must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

12. The person taking the action may choose to revise a Management Plan approved by the **Minister** under conditions 3, 4, 6 and 7 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the action in accordance with the revised plan would not be likely to have a **new or increased impact**. If the person taking the action makes this choice it must:

- i. Notify the **Department** in writing that the approved plan has been revised and provide the **Department** with an electronic copy of the revised plan;
- ii. Implement the revised plan from the date that the plan is submitted to the **Department**; and
- iii. For the life of this approval, maintain a record of the reasons the person taking the action considers that taking the action in accordance with the revised plan would not be likely to have a **new or increased impact**.

13. The person taking the action may revoke their choice under condition 12 at any time by notice to the **Department**. If the person taking the action revokes the choice to implement a revised plan without approval under section 143A of the **EPBC Act**, the plan approved by the **Minister** must be implemented

14. Condition 12 does not apply if the revisions to the approved plan include changes to environmental offsets provided under the plan in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the **Minister**. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan would, or would not, be likely to have **new or increased impacts**.

15. If the **Minister** gives a notice to the person taking the action that the **Minister** is satisfied that the taking of the action in accordance with the revised plan would be likely to have a **new or increased impact**, then:

- i. Condition 12 does not apply, or ceases to apply, in relation to the revised plan; and
- ii. The person taking the action must implement the plan approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 12, 13 and 14 in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 12 does not apply for one or more specified plans required under the approval.

16. Conditions 12, 13, 14 and 15 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the person taking the action to submit a revised plan to the **Minister** for approval.

17. If, at any time after 5 years from the date of this approval, the person taking the action has not substantially **commenced** the action, then the person taking the action must not substantially **commence** the action without the written agreement of the **Minister**.

18. Unless otherwise agreed to in writing by the **Minister**, the person taking the action must publish all management plans referred to in these conditions of approval on its website. Each management plan must be published on the website within one month of being approved by the **Minister** or submitted under condition 12.

Definitions:

Commence(d)/commencement: The clearing of vegetation or construction of any infrastructure, excluding fences and signage, associated with the proposed action.

Department: The Australian Government Department or any other agency administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) from time to time.

Emergency: a serious, unexpected, or dangerous situation requiring immediate action.

Environmental Management Plan Guidelines (2014): the *Environmental Management Plan Guidelines, Commonwealth of Australia 2014*, or subsequent revision.

<http://environment.gov.au/epbc/publications/environmental-management-plan-guidelines>

EPBC Act: the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

EPBC Act Environmental Offsets Policy (2012): the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012), or subsequent revision, including the Offset Assessment Guide.

Koala habitat: forest or woodland with two or more **known koala food tree species**, or one food tree species that alone accounts for >50% of the vegetation in the relevant strata, as described in *EPBC Act referral guidelines for the vulnerable koala (combined populations of Qld, NSW and the ACT)*. Commonwealth of Australia, 2014.

Known koala food tree species: species of trees whose leaves are consumed by koalas as agreed by the **Minister** or defined in the following webpage:

www.ehp.qld.gov.au/wildlife/koalas/koala-ecology.html.

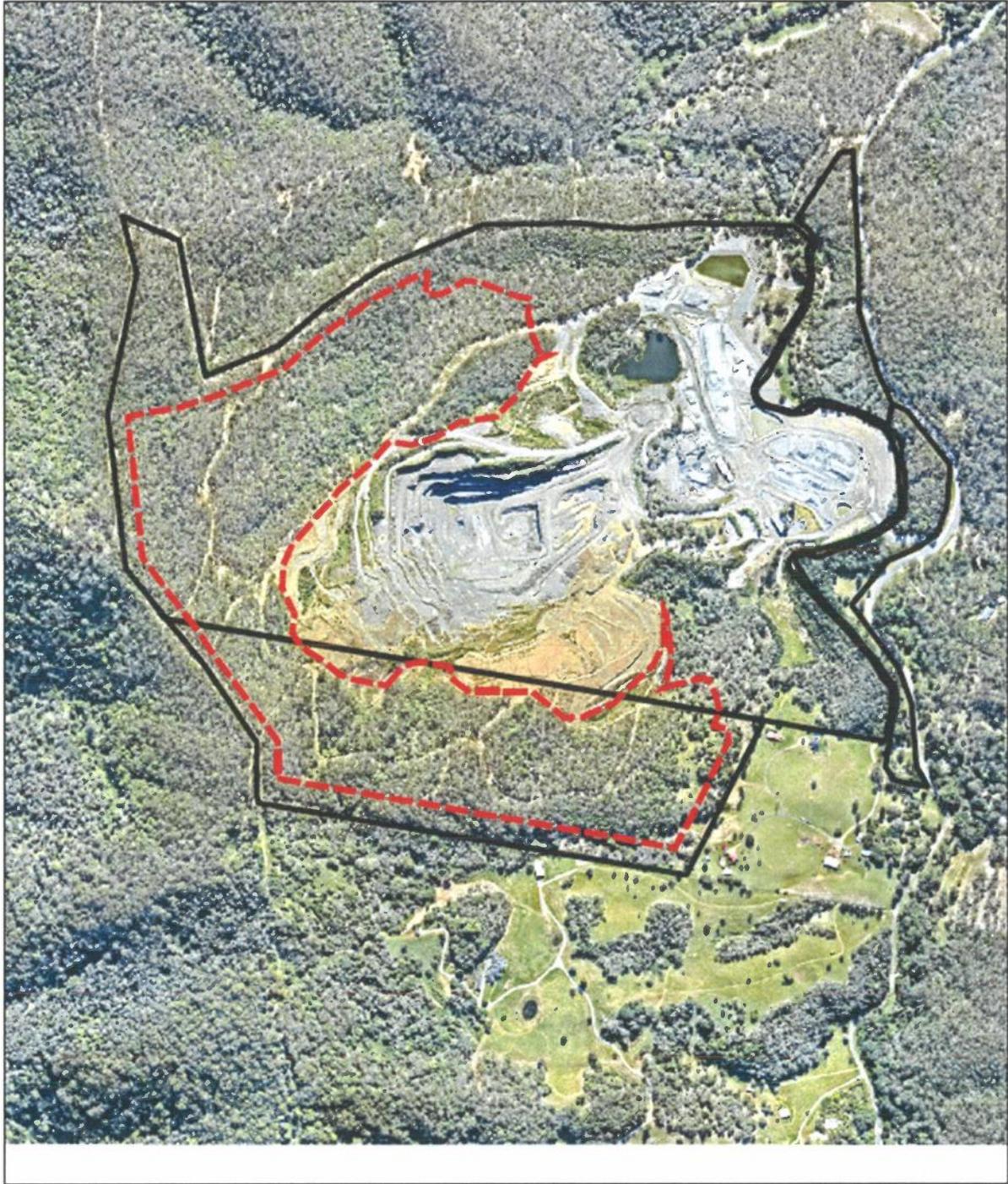
Legally secured: to secure a covenant or similar legal agreement in relation to a site, to provide enduring protection for the site against development incompatible with conservation.

Minister: the Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and includes a delegate of that Minister.

New or increased impact: A new or increased impact on any matter protected by the controlling provisions for the action, when compared to the plan that has been approved by the **Minister**.

Offset Strategy: *Environmental Offset Strategy*, dated 31 January 2018, prepared by Saunders Havill Group.

Project Site: The site at 580—582 Upper Ormeau Road, Kingsholme, Queensland (Lot 1 on RP164904 and Lot 43 on SP243239) designated as 'Project Site' in Appendix A.



Legend

-  Site DCDB
-  Project Site

Figure 2 Site Aerial

File ref. 8354 E Figure 2 Aerial B
 Date 21/07/2017
 Project EPBC

0 50 100 200 300 400 m
 Scale (A4): 1:9,000 (GDA 1994 MGA 256)



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Appendix B

Written Notification of Commencement of the Action



Australian Government
**Department of Agriculture,
Water and the Environment**

Ref: 17/008014

Email: epbcmonitoring@awe.gov.au

Megan McKinney
Principal Ecologist
Saunders Havill Group
9 Thompson St
BOWEN HILLS QLD 4006

Dear Ms McKinney,

**Commencement of Action – Ormeau Quarry Expansion, 12 km north-west of Oxenford,
QLD (EPBC 2016/7797)**

I refer to your email of 4 February 2021 on behalf of Boral Resources (QLD) Pty Ltd notifying the Department of Agriculture, Water and the Environment (the Department) of commencement of the Ormeau Quarry Expansion in accordance with condition 8 the *Environment Protection and Biodiversity Conservation Act 1999* (the Act) approval EPBC 2016/7797.

I note that the action commenced on 3 February 2021.

Condition 10 – Annual Compliance Reporting

Condition 10 of the approval states that the approval holder must prepare an Annual Compliance Report for each 12-month period following the date of commencement of the action. The approval holder must continue to publish each report and notify the Department of publication until the expiry of this approval on 8 November 2057. The reports must be published within 3 months of every 12-month anniversary of commencement. Documentary evidence providing the date of publication must be provided to the Department at the same time the report is published.

Please notify the Department of publication of the reports by email, including a link to where the report is publicly available to epbcmonitoring@awe.gov.au. Please note the first Annual Compliance Report is due by 3 May 2022.

When preparing the report please refer to the Department's Annual Compliance Report Guidelines available on the Department's website at <http://www.environment.gov.au/epbc/publications/annual-compliance-report-guidelines>

Please note that the conditions of approval require the approval holder to maintain accurate records of all activities associated with, or relevant to, the approval conditions so that they can be made available to the Department on request. These documents may be subject to audit and be used to verify compliance. Summaries of audits may be published by the Department.

More information about the Department's Monitoring and Audit program is available on the Department's website at <http://www.environment.gov.au/epbc/compliance-and-enforcement/auditing>.

Section 142 of the Act requires an approval holder to comply with conditions attached to an approval. Penalties may apply to approval holders who contravene conditions.

If you would like to discuss this matter further, please contact Michaela Ballard at epbcmonitoring@awe.gov.au

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Th' or 'Thomas', written in a cursive style.

Thomas Long
A/g Assistant Director
Environmental Audit Section

09 February 2021

Appendix C

Offset Area Voluntary Declaration Package

Voluntary Declaration Notice

ss19E – 19L of the Vegetation Management Act 1999

1. Details of request

- 1.1. **Proponent's name:** Boral Resources (QLD) Pty Limited
- 1.2. **Date request received:** 11 December 2018
- 1.3. **Request:** declaration request as an area of high nature conservation value.
- 1.4. **Property description:** Lot 2 RP15912 - Gold Coast City Council
- 1.5. **Land tenure:** Freehold
- 1.6. **Decision reference:** 2018/007110

2. Declaration information

2.1. Declaration made:

The Chief Executive of the Department of Natural Resources, Mines and Energy declares the area identified on Declared Area Map DAM 2018/007110 as an area of high nature conservation value in accordance with s19F of the *Vegetation Management Act 1999* (VMA).

The chief executive considers the declared area to meet the following criteria under s19G of the VMA—

The declared area is an area of high nature conservation value under s19G(1)(b), as the area is:

- a wildlife refugium;
- an area containing a vegetation clump or corridor that contributes to the maintenance of biodiversity;
- an area that makes a significant contribution to the conservation of biodiversity;

The documents outlined in 2.2 form part of this declaration.

2.2. Voluntary declaration documents:

The following documents are part of this area declaration and must be read in conjunction with this notice:

- Declared area map (DAM 2018/007110)
- Declared area management plan (DAMP 2018/007110)

2.3. **Property Map of Assessable Vegetation**

In accordance with s20B (1) (a) of the VMA, the following Property Map of Assessable Vegetation (PMAV) has been made for the declared area. This PMAV will replace PMAV 2009/002945, for lot 2 on RP15912 only, under s20D of the VMA.

Declared area PMAV (PMAV 2018/007111)

2.4. **Date of declaration:** 22 February 2019

3. **Delegated officer's signature**



Michael Gordon
Senior Natural Resource Management Officer (VM1)

Date: 22 February 2019

Appendix D

Offset Management Plan

Environmental Management Plan



Offset Management Plan

Ormeau Quarry Expansion
Prepared for Boral Resources (QLD) Pty Limited
6 December 2018

EPBC 2016/7797
Job No. 8354

Build something great™



Declaration of Accuracy

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth).

The offence is punishable on conviction by imprisonment or a fine, or both.

I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

An extract of section 491 of the EPBC Act is attached.

Signed: 

Full Name: Russel Wilson

Organisation: Boral Resources (Qld) Ltd Pty

Date: 09/11/2018

491 Providing false or misleading information to authorised officer etc.

- (1) A person is guilty of an offence if the person:
 - (a) provides information or a document to another person (the *recipient*); and
 - (b) knows the recipient is:
 - (i) an authorised officer; or
 - (ii) the Minister; or
 - (iii) an employee or officer in the Department; or
 - (iv) a commissioner;
performing a duty or carrying out a function under this Act or the regulations; and
 - (c) knows the information or document is false or misleading in a material particular.
- (2) The offence is punishable on conviction by imprisonment for a term not more than 1 year, a fine not more than 60 penalty units, or both.

Note: Subsection 4B(3) of the *Crimes Act 1914* lets a court fine a body corporate up to 5 times the maximum amount the court could fine a person under this subsection.

Executive summary

The Ormeau Quarry Expansion was referred under the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) on 13 October 2016 and subsequently declared a “Controlled Action” requiring assessment by “Preliminary Documentation” pursuant to section 18 and 18A (*listed threatened species and communities*) (EPBC Act reference 2016/7797). Approval was issued on 14 February 2018. The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*), which is listed as ‘vulnerable’ under the EPBC Act.

As part of the application process and in consultation with **Department of the Environment and Energy** (DoEE), an offset strategy was developed to compensate for the impacts from clearing 38 hectares of habitat critical to the survival of the Koala (Environmental Offset Strategy dated 31 January 2018 by Saunders Havill Group).

Condition 6 of the approval requires that the approval holder must submit an Offset Management Plan for the Minister's written approval. The Offset Management Plan must be prepared in accordance with the DoEE's Environmental Management Plan Guidelines, and the EPBC Act Environmental Offset Policy (2012) and include:

- a) Detail of the offset area(s) required to address the loss of 38 hectares of koala habitat consistent with the Offset Strategy (Environmental Offset Strategy dated 31 January 2018 by Saunders Havill Group) or subsequent Offset Strategy described in Condition 4.
- b) Detail of the proposed legal mechanism and timeframes for securing the offset area(s).
- c) A map of the offset area(s) in relation to other habitats and biodiversity corridors.
- d) Information about how the offset area(s) provide connectivity with other koala habitat and biodiversity corridors.
- e) A description of the current condition (prior to any management activities) of the offset area(s), including baseline survey data.
- f) A description of the management measures (including timing, frequency and longevity) that will be implemented, including discussion of how measures outlined take into account relevant conservation advice.
- g) Performance and completion criteria for evaluating the management of the offset area(s), and detailed criteria that will trigger corrective actions.
- h) A detailed program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria.
- i) Potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks, including bushfire management plan and a pest species management plan.

The offset proposal included the dedication and rehabilitation of 77 hectares of vegetation constituting Koala habitat.

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

- The dedication as an offset of 77 hectares of vegetation constituting Koala habitat within the land identified on Cliff Barrons Road, Kingsholme.
- Rehabilitation and revegetation works to improve the condition of the offset area.
- Implementation of management plans for:
 - Weeds of national significance
 - Pest management (feral and unwanted dog usage)
 - Maintaining koala habitat
 - Bush fire
- Monitoring and reporting to ensure that the offset area achieves and maintains the completion criteria.
- Adaptive management is applied to mitigate unforeseen risks and incorporate new information as it becomes available.
- Putting in place legal mechanisms available through Queensland legislation to secure the offset area by a Voluntary Declaration.

The implementation of these offset mechanisms will create a self-sustaining, continuous conservation area of high quality Koala habitat.

Table of contents

1. Introduction	1
1.1. Offset site summary	2
1.2. Environmental outcomes and objectives	3
2. Offset property values	6
2.1. Bioregional context	6
2.2. Offset area values	6
2.3. Koala offset area calculation	6
2.4. Koala habitat offset area	7
3. Offset area management	10
3.1. Offset area management measures	10
3.1.1 Management Action 1 – weeds of national significance (WONS) management plan	10
3.1.2 Management Action 2 – rehabilitation and regeneration management plan	11
3.1.3 Management Action 3 – legally securing the offset area	11
3.1.4 Management Action 4 – pest management (feral and unwanted dog usage) plan	12
3.1.5 Management Action 5 – koala habitat quality management plan	12
3.1.6 Management Action 6 – bush fire management plan	15
3.2. Risk assessment	15
3.3. Monitoring	19
3.3.1 Management Action 1 monitoring	19
3.3.2 Management Action 2 monitoring	19
3.3.3 Management Action 3 monitoring	20
3.3.4 Management Action 4 monitoring	20
3.3.5 Management Action 5 monitoring	21
3.3.6 Management action 6 monitoring – bush fire management plan	22
3.4. Timeline for management, monitoring and reporting actions	22
3.5. Performance and completion criteria	24
3.5.1 Performance criteria	24
3.5.2 Completion criteria	26
3.5.3 Corrective actions	26
3.6. Adaptive management	26
3.7. Annual compliance reporting	27
4. Appendices	28
Appendix A: Environmental Offsets Strategy	28
Appendix B: Offset Site Baseline Report	28

Tables

Table 1:	Offset site summary
Table 2:	Regional ecosystem short descriptions
Table 3:	Timeline for the management actions, monitoring and reporting
Table 4:	OMP actions, timing and responsibilities
Table 5:	Risk assessment for the management actions

Figures

Figure 1:	Site Context
Figure 2:	Site Aerial
Figure 3:	Regional Ecosystems
Figure 4:	Koala habitat and usage transects

1. Introduction

The *Environmental Management Division* of **Saunders Havill Group** was engaged by **Boral Resources (QLD) Pty Ltd** to prepare an Offset Management Plan for the Ormeau Quarry Expansion, located at Kingsholme in South East Queensland. The proposal is for the 38 hectare expansion of the Ormeau Quarry.

The Ormeau Quarry Expansion was referred under the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) on 13 October 2016 and subsequently declared a “Controlled Action” requiring assessment by “Preliminary Documentation” pursuant to section 18 and 18A (*listed threatened species and communities*) (EPBC Act reference 2016/7797). The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*), which is listed as ‘vulnerable’ under the EPBC Act.

As part of the **Department of the Environment and Energy’s** (DoEE) Preliminary Documentation requirements, a proposal was developed to compensate for the impacts from clearing 38 hectares of habitat critical to the survival of the Koala. This offset was approved by a delegate of the Minister as part of the EPBC Act approval for 2016/7797. The offset includes the dedication and rehabilitation of 77 hectares of vegetation constituting Koala habitat.

The project was approved under the EPBC Act subject to conditions on 16 February 2018 with effect until 8 November 2057. Condition 6 of the approval requires that the approval holder must submit an Offset Management Plan for the Minister’s written approval. The Offset Management Plan must be prepared in accordance with the DoEE’s Environmental Management Plan Guidelines, and the EPBC Act Environmental Offset Policy (2012) and include:

- a) Detail of the offset area(s) required to address the loss of 38 hectares of koala habitat consistent with the Offset Strategy (Environmental Offset Strategy dated 31 January 2018 by Saunders Havill Group) or subsequent Offset Strategy described in Condition 4.
- b) Detail of the proposed legal mechanism and timeframes for securing the offset area(s).
- c) A map of the offset area(s) in relation to other habitats and biodiversity corridors.
- d) Information about how the offset area(s) provide connectivity with other koala habitat and biodiversity corridors.
- e) A description of the current condition (prior to any management activities) of the offset area(s), including baseline survey data.
- f) A description of the management measures (including timing, frequency and longevity) that will be implemented, including discussion of how measures outlined take into account relevant conservation advice.
- g) Performance and completion criteria for evaluating the management of the offset area(s), and detailed criteria that will trigger corrective actions.
- h) A detailed program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria.

- i) Potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks, including bushfire management plan and a pest species management plan.

The action cannot commence until the Offset Management Plan is approved by the Minister in writing and the offset area is legally secured.

This Offset Management Plan (OMP) has been developed to satisfy the requirements of the conditions of approval accompanying the controlled action determination and the *EPBC Act Environmental Offsets Policy (2012)* to guide the implementation and management of offset activities.

1.1. Offset site summary

The offset site is located on Boral-owned land at Cliff Barrons Road, Kingsholme (Lot 2 on RP15912) approximately 1.7 km north of the expansion site. The site context in relation to the expansion is shown Figure 1 and an aerial shown on Figure 2.

Table 1: Offset site summary

Address	Cliff Barrons Road, Kingsholme
Lot / Plan	L2/RP15912
Area	77 hectares
Tenure	Freehold
Local government area	Gold Coast City Council
Action commencement date	Third or Fourth Quarter 2018

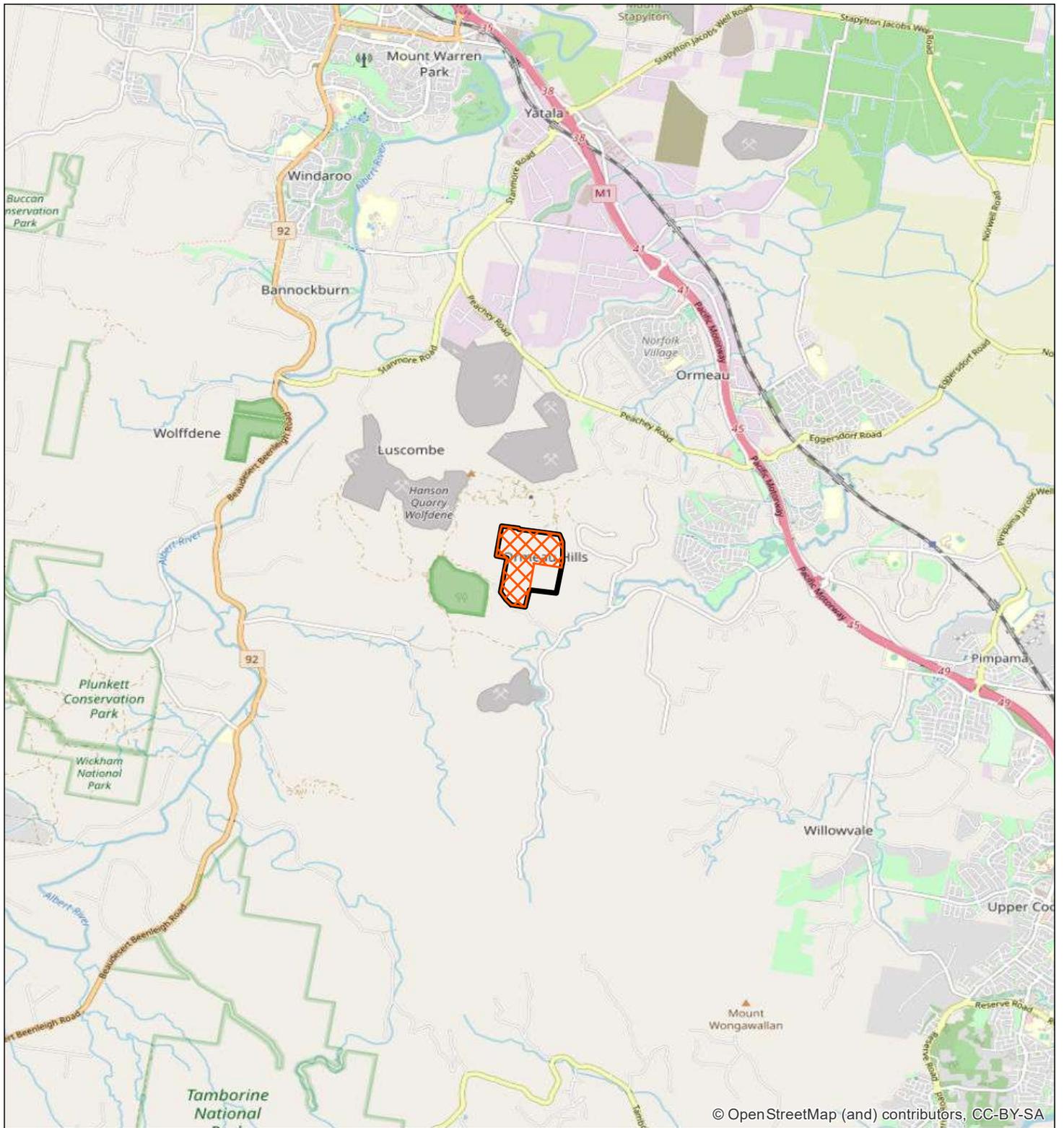
1.2. Environmental outcomes and objectives

In accordance with the EPBC Act approval, the environmental outcomes to be achieved through implementing the Offset Management Plan (OMP) for the offset area are:

- Maintain koala habitat quality across the offset site which is measured as a condition value of 8 out of 10.
- Rehabilitation and revegetation of disturbed non-remnant areas within the offset area.
- Implementation of a vegetation management plan to ensure the integrity of existing remnant vegetation is maintained.
- Facilitate adaptive management of the offset area including the nomination of milestone targets and a monitoring program.
- Annual compliance reporting detailing the implementation of management measures and achievement towards, and maintenance of, performance and completion criteria.

The management objectives for the offset area, in alignment with the EPBC Act Environmental Offsets Policy will:

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



© OpenStreetMap (and) contributors, CC-BY-SA

Legend

-  Offset site
-  Offset area

Figure 1
Site Context

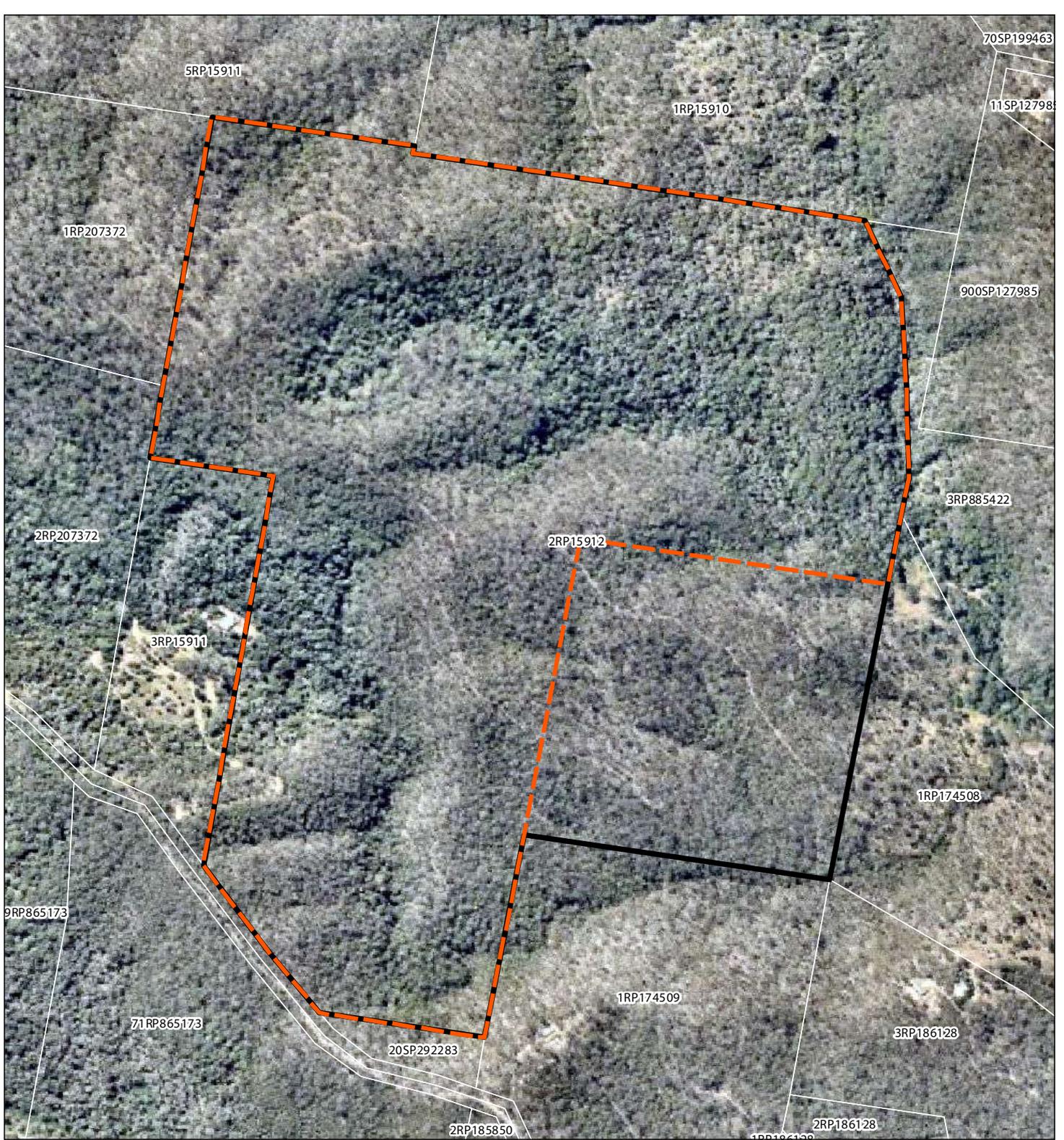
File ref. 8354 E Figure 1 Site Context B
Date 26/10/2018
Project Ormeau Quarry (EPBC No. 2016/7797)

0 0.5 1 2 3 km

Scale (A4): 1:90,000 [GDA 1994 MGA Z56]



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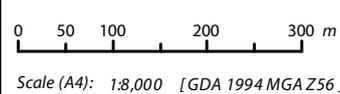


Legend

-  Offset site
-  Offset area
-  Qld DCDB

Figure 2
Site Aerial

File ref. 8354 E Figure 2 Site Aerial B
Date 26/10/2018
Project Ormeau Quarry (EPBC No. 2016/7797)



THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. SAUNDERS HAVILL GROUP CANNOT ACCEPT RESPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY.

2. Offset property values

2.1. Bioregional context

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

2.2. Offset area values

The offset area forms part of the SEQ regional biodiversity corridor which spans from the Noosa headland in the north, down to Mount Barney and Lamington National Park on the Queensland border. The SEQ regional biodiversity corridor aims to encompass large tracts of vegetation, terrestrial connectivity, aquatic connectivity, species richness, diversity and refugia, ecosystem representation and uniqueness and climate resilience areas (Queensland Government 2017).

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

The offset area will conserve freehold land within the SEQ biodiversity corridor, linking habitat incorporating legally bound environmental offset areas associated with adjacent quarrying activities to the north and east with National Parks and reserves to the south. Without this linkage, the offset site is likely to have been developed into a quarry and would have further fragmented the SEQ regional biodiversity corridor. Further, this linkage provides a valuable contiguous habitat corridor, ensuring the possibility of habitat fragmentation is minimised and improving the connectivity of koala habitat within SEQ. The offset area possesses high conservation value and through the management actions proposed in this OMP, the property will provide biodiversity offsets that ensure an ecological gain on the residual impacts resulting from the impact site which aligns with offset principle 1 of the EPBC Act Environmental Offsets Policy.

2.3. Koala offset area calculation

As per condition 2 of the EPBC approval (2016/7797), the proponent must not clear more than 38 hectares of koala habitat within the project site. The Offset Assessment Guide calculator (DoEE 2012) was used in consultation with DoEE to identify 77 hectares of habitat critical to the survival of the koala is required to offset

the impact. The details of how this offset area was identified is outlined in the Environmental Offset Strategy which has been included as **Appendix A**.

The offset area calculation has been determined through the use of the Koala Habitat Assessment Tool (KHAT) scores for the impact site and proposed offset site, derived according to methodology in 'EPBC Act referral guidelines for the vulnerable koala' (DoEE 2014). The key indicators for determining a koala habitat score of a land based impact site or an offset site are:

- Koala occurrence – Evidence of koala activity.
- Vegetation composition – Forest or woodland with two (2) or more known koala food tree species.
- Habitat connectivity – The area forms part of a contiguous landscape.
- Key existing threats – Evidence of koala mortality from vehicle strike or dog attack.
- Recovery value – Likelihood that the area is important for achieving the interim recovery objectives.

Implementation of the KHAT (DoEE 2014) to determine the quality of koala habitat at the impact and offset sites resulted in a score of 7 out of 10 for the impact site and a score of 8 out of 10 for the offset site. The offset site is expected to maintain a habitat quality score of 8 out of 10 for the lifetime of the offset through the implementation of rehabilitation and management measures over the period of EPBC Act approval and legally binding the land via a voluntary declaration (VDEC).

2.4. Koala habitat offset area

Evidence of koala was identified during ecological surveys utilising the Spot Assessment Technique (SAT) survey and scat meander as per Phillips & Callaghan (2011). The offset site is within a contiguous polygon of regional ecosystems mapped by the Department of Environment and Science (DES). The regional ecosystems within the offset site consist of two (2) 'least concern' (RE12.11.5 and RE12.11.3) regional ecosystems. Refer to **Table 2** for the short technical descriptions of the regional ecosystems and **Figure 3** regional ecosystem mapping. The offset site is predominantly mapped as 'remnant' vegetation, with the dominance of *eucalyptus*, *corymbia* and *angophora* species ensuring the presence of suitable koala food and shelter trees.

Ecological field surveys were undertaken by Saunders Havill Group over 2 days in September and October 2015. Findings from the field surveys include:

The majority of the site is mapped as containing remnant vegetation consistent with the regional ecosystem mapping. Three regional ecosystems (RE12.11.3, RE12.11.5 and RE12.11.10) are mapped as occurring within the subject site.

- Vegetation was dominated by Eucalyptus and Corymbia species and made up the largest proportion of vegetation within the assessment area.
- RE 12.11.10 was observed in the south western portion of the site. RE 12.11.10 is described as Notophyll vine forest +/- Araucaria cunninghamii on metamorphics +/- interbedded volcanics. This regional ecosystem is also associated with the "Lowland rainforest of Subtropical Australia" threatened ecological community.

- The area mapped as RE 12.11.10 also contained specimens of *Brachychiton sp.* (Mt Ormeau bottle tree) which is protected under the EPBC Act and *Macadamaia integrifolia* (Macadamia Nut) which is protected under State legislation.
- In general, the majority of the site is consistent with Eucalypt and Corymbia woodlands/forests that would be generally utilised by *Phascolarctos cinereus* (Koala). No koalas were spotted during surveys however numerous scats were observed in low densities throughout the site suggesting that resident koalas may be located within the investigation area.
- Weed infestation within the site was relatively low however patches of *Lantana camara* (Lantana) were observed in places which would impede koala movement.
- A number of old overgrown and eroded tracks traverse the ridgelines throughout the property. Evidence of historical logging was also observed in some locations.
- A number of these tracks and other areas through the site contain barbed wire fencing, which would impede fauna movement.
- Two (2) bitumen roads are located to the south and the east of the property.
- A few areas throughout the property contain non-remnant vegetation. The regrowth vegetation observed was consistent with vegetation associated with RE 12.11.3/12.11.5.

Field surveys identified that non remnant areas contained vegetation in good condition that would be considered critical koala habitat as defined by the EPBC Act. The survey also found that, while generally in good condition, the site had been impacted in areas by logging, and weed incursion. Refer to **Appendix B** for the Offset Site Baseline Report including data from terrestrial habitat transects carried out at the site.

Table 2: Regional ecosystem short descriptions

Regional ecosystem community	VMA status	Short description
12.11.5	Least Concern	<i>Corymbia citriodora subsp. variegata</i> woodland to open forest +/- <i>Eucalyptus siderophloia</i> / <i>E. crebra</i> , <i>E. carnea</i> , <i>E. acmenoides</i> , <i>E. propinqua</i> on metamorphics +/- interbedded volcanics.
12.11.3	Least Concern	<i>Eucalyptus siderophloia</i> , <i>E. propinqua</i> +/- <i>E. microcorys</i> , <i>Lophostemon confertus</i> , <i>Corymbia intermedia</i> , <i>E. acmenoides</i> open forest on metamorphics +/- interbedded volcanics.
12.11.10	Least Concern	<i>Notophyll vine forest</i> +/- <i>Araucaria cunninghamii</i> on metamorphics +/- interbedded volcanics.
Non Remnant	None	<i>None</i>

3. Offset area management

3.1. Offset area management measures

This section describes the management actions and measures necessary to meet the identified environmental outcomes of the offset area. The management measures are designed to minimise the risks associated with key threatening processes to the koala and maintain the quality of the habitat within the offset area.

Although the management measures have been developed to achieve the required koala offset environmental outcomes as a priority, they will bring an overall improvement in the condition and quality of a wide range of native species present within the offset area.

The measures outlined below are deemed to be suitable given the listed status of the koala, the size and scale of the offset and the focus on priority management actions, which are efficient, effective, timely and transparent (i.e. able to be monitored and are auditable). Additionally, a number of these measures correspond to Priority Management Actions outlined in the *Approved Conservation Advice for Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (koala Northern Designatable Unit)* (Conservation Advice).

3.1.1 Management Action 1 – weeds of national significance (WONS) management plan

The control of weeds is fundamental to improving biodiversity and the ecological condition of the koala habitat within the offset area. The historical land uses across the offset area have resulted in the introduction, spread and persistence of a variety of environmental weeds (SHG 2017). Whilst there have been a wide variety of environmental weeds recorded across the site, the key species to be controlled in the offset area in regard to koala habitat values is *Lantana camara* (Lantana), a Weed of National Significance (WONS). The listing and prioritisation of WONS is a joint initiative of the States, Territories and Australian Government and their long-term control is of national interest.

It is not possible to remove lantana from the offset area on a single occasion, as there will be a persistent seed bank that can remain viable for long periods of time. Germination can occur rapidly after the parent plant has been removed due to increases in light and resource availability. It is therefore important that the offset area is revisited following the initial treatment for follow-up weed control and to prevent seed set and dispersal. Baseline weed mapping will be conducted before the weed removal program is initiated. Weed mapping is then to be conducted annually and reported in the Annual Compliance Report (ACR). The measures for the control of WONS, specifically Lantana will include:

- Baseline weed mapping for WONS will be conducted throughout the offset area and site specific treatment techniques developed depending on the location and extent of weed coverage within six months of commencement of the action.
- All identified WONS will be treated within 12 months of commencement of the action.

- WONS will be monitored and treated annually, including in 2019, until they are not observed on the property. Once WONS are not detected where they have previously been detected, every 2 years:
 - comprehensive monitoring for WONS will be conducted;
 - WONS that are reported or detected by comprehensive monitoring will be treated.
- A suitably qualified bush regeneration contractor will be engaged to undertake the necessary weed control.
- Control of infestations will utilise techniques that avoid disturbance to surrounding areas.

3.1.2 Management Action 2 – rehabilitation and regeneration management plan

Rehabilitation and regeneration is a key action that will improve existing koala habitat values within the offset area, while also expanding habitat values in areas that have been subject to weed infestation issues. It also is a Priority Management Action listed under “Habitat Loss, Disturbance and Modification” of the Conservation Advice for the koala. Rehabilitation aims to reinstate existing degraded areas and areas exposed as a result of management action 1 (weed removal), with koala food and shelter trees consistent with the mapped regional ecosystem in that specific location.

Within the mapped remnant areas, natural regeneration is preferred to reconstruction of the vegetation community (i.e. importation of soil, dense planting, etc). Where natural regeneration is unsuccessful minor infill planting will be implemented to facilitate recovery. Barbed wire will also be removed from fences located in areas of koala habitat, or areas where koala are likely to traverse. Evidence of rehabilitation and the success and survival rate will be reported annually within the ACR.

Management measures for rehabilitation and regeneration include:

- Baseline mapping to identify rehabilitation and regeneration areas and development of a rehabilitation plan specifying techniques and species to be utilised will be completed within 12 months of commencement of the action.
- Rehabilitation areas are to consist of one canopy tree per 10m², three shrubs per 10m² and one groundcover per 2m². Where natural regeneration is the preferred approach, infill planting will be implemented where regeneration has been unsuccessful after three years.
- All rehabilitation activities are to be carried out by a suitably qualified bush regeneration contractor.
- The plants reinstated in any particular location must be consistent with the mapped regional ecosystem or pre-clear regional ecosystem over that area.
- All rehabilitation is to commence within three years of commencement of the action. Regeneration areas that require infill planting will be identified and regeneration actions outlined in the third annual compliance report.

3.1.3 Management Action 3 – legally securing the offset area

A Voluntary Declaration will be placed over the offset area to legally secure the conservation use on the land prior to the action commencing. **Boral** will continue to manage the offset area for the life of the approval.

Legally securing the offset area is listed in the Conservation Advice as a Priority Management Action, under “Habitat Loss, Disturbance and Modification”.

3.1.4 Management Action 4 – pest management (feral and unwanted dog usage) plan

Feral or unwanted domestic dogs have been identified as a key threatening process under the EPBC Act, and are confirmed as a direct predation risk to Koalas. Managing animal predation is listed as a Priority Management Action under the koala Conservation Advice. The control and prevention of invasive animal incursions is to be undertaken in accordance with the relevant legislation (such as the Commonwealth *Biosecurity (Consequential Amendments and Transitional Provisions) Act 2015* and the Queensland *Biosecurity Act 2014*) and to include the control of pest animals by legal methods by suitably qualified pest management contractor(s). Any required hazardous materials must be handled and stored in accordance with the material's safety data sheets and the Approved Code of Practice for the Storage and Handling of Dangerous Goods. Pest animal control is to be undertaken in a humane manner. Annual pest monitoring is to be reported and included in the ACR.

Management measures for the control of feral or unwanted domestic dogs across the offset area include:

- Baseline pest monitoring including motion activated cameras and scat analysis to identify evidence of feral or unwanted dogs (and other pest species), and development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed within 12 months of commencement of the action.
- Annual pest monitoring by a suitably qualified pest management contractor, with evidence of pest animals GPS recorded. Where there is evidence of pest animals, targeted trapping and baiting programs will be implemented by an independent suitably qualified pest management contractor. Where annual monitoring does not identify any feral or pest species monitoring will reduce to 2 yearly.
- Where practical and appropriate, participate cooperatively in pest management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective pest management in the locality of the offset area.
- Install appropriate signage informing the area is under feral control.

3.1.5 Management Action 5 – koala habitat quality management plan

The use of the habitat quality assessment methodology prepared by the Queensland Herbarium (DEHP 2017) provides a repeatable and consistent method for determining habitat quality specific to koalas. The method also utilises benchmark scores to ensure all sites measured are calibrated against a known standard. This calibration provides additional confidence and assurance in the accuracy of the method to score habitat quality.

A habitat quality monitoring assessment, including koala specific habitat attributes will be conducted in accordance with the published methodology (DEHP 2017) and by a suitably qualified environmental consultant. The habitat quality monitoring is to be undertaken at six (6) permanent transect locations established during baseline habitat quality score assessments within the koala offset area (refer to Appendix B).

The habitat quality assessment methodology suggests locations for transects should be selected considering mapped Regional Ecosystem (RE) polygons, and size of isolated vegetation patches (assessment units), etc. Sampling sites should be located in areas typical of the assessment unit. The size of the assessment unit guides the number of transects required, as follows:

- Assessment unit size: 0-50 ha = at least two sampling units
- Assessment unit size: 50-100 ha = three sampling units
- Assessment unit size: 100-500 ha = four sampling units
- Assessment unit size: 500-1,000 ha = five sampling units
- Assessment unit size: more than 1,000 ha = six sampling units

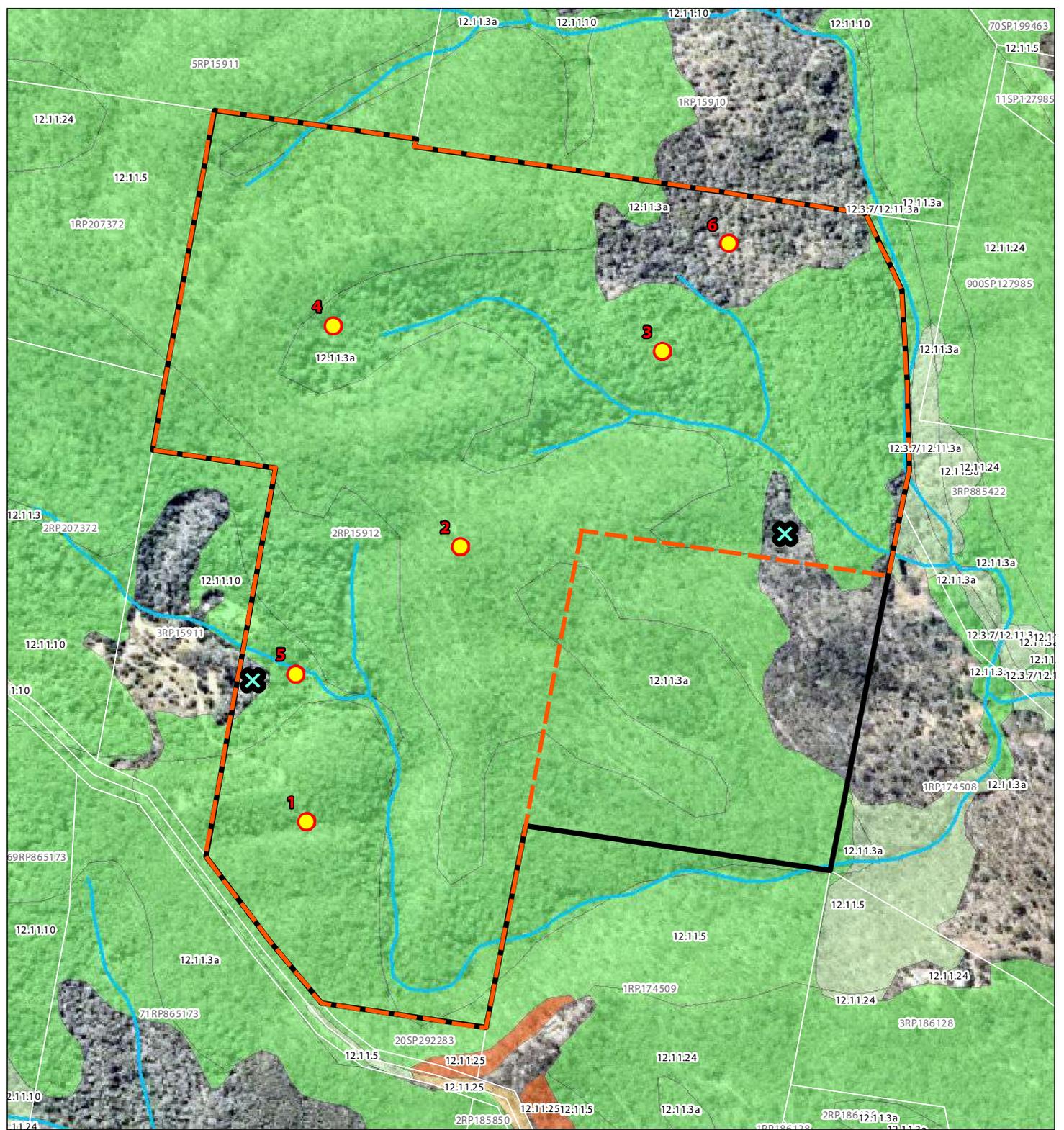
The total area of the offset site is 77 ha consisting of non-remnant vegetation and three REs, which are sized as follows:

- 32.6 ha of RE12.11.3
- 37.5 ha of RE12.11.5
- 1.6 ha of RE12.11.10
- 5.3 ha of non-remnant vegetation

The regional ecosystems and non-remnant vegetation would each form assessment units. While the guidelines suggest two sample sites for each assessment unit RE 12.11.10 and non-remnant vegetation cover a small portion of the site making it impractical to have more than 1 habitat transect in these assessment units. Non-remnant vegetation is split over three separate geographic locations within the offset area therefore observation sites will be carried out in areas

Habitat quality monitoring will be undertaken annually for the first three (3) years and then once every five (5) years to determine if the target quality score has been maintained for the offset area over the EPBC Act period of approval (maintain a habitat quality score of eight (8)). The habitat quality monitoring is to be reported in the ACR every five (5) years or the subsequent year that the monitoring is completed.

Koala usage monitoring will be carried out as part of the habitat monitoring. Surveys will be carried out using the Spot Assessment Technique (SAT) at all six (6) permanent transect locations. Indicative transect and SAT locations are shown on **Figure 4**.



Legend

-  Offset site
 -  Offset area
 -  Qld DCDB
 -  Habitat transects and koala SAT locations
 -  Habitat observation site
 -  VM Watercourses
- Regional Ecosystems mapping**
-  Category A or B area containing endangered regional ecosystems
 -  Category A or B area containing of concern regional ecosystems
 -  Category A or B area that is a least concern regional ecosystem
 -  Category C area containing endangered regional ecosystems
 -  Category C area containing of concern regional ecosystems
 -  Category C area that is a least concern regional ecosystem

Figure 4

Regulated Vegetation Supporting Map and Koala Transects

File ref. 8354 E Figure 4 RVSM and Koala B
Date 26/10/2018
Project Ormeau Quarry (EPBC No. 2016/7797)



Scale (A4): 1:8,000 [GDA 1994 MGA Z56]



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3.1.6 Management Action 6 – bush fire management plan

An Offset Area Bushfire Management Plan (BMP) will be developed within 12 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.

Management measures will be outlined in the BMP for the control of bush fire across the offset area but will include:

- Installation of firebreaks and fire trails.
- Annual inspection and maintenance of firebreaks and access tracks required to achieve compliance with Offset Area Bushfire Management Plan.
- Prescribed burning undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade and in compliance with the Fire and Emergency Services Act 1990.
- Use of domestic livestock or other methods to reduce fuel loads 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.

3.2. Risk assessment

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the offset site is presented in **Table 3**. The risk assessment is completed in accordance with the EPBC Act Environmental Management Plan Guidelines (2014) and characterises risk as low, medium, high or severe, as derived from the likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical) risk matrix.

The risk analysis assesses the risk of failure to achieve the OMPs management objectives. It is necessary to re-evaluate and modify the risk analysis and contingency measures throughout the period of EPBC Act approval, particularly if any unforeseen risks emerge or any negative outcomes identified are greater than expected.

During the first five (5) years of monitoring and annual compliance reporting, **SHG/Boral** will review management commitments in this plan, and if the review results in the need to revise the OMP, the plan will be revised and the DoEE informed in writing in accordance with the condition 12 of the approval. It is noted that events are only addressed once in the risk assessment under the most relevant management objective, however some events are likely to impact on multiple management objectives.

Table 3: Risk assessment for the management objectives

Management objective	Event or consequence*	Likelihood	Consequence	Risk level	Trigger	Contingency/s	Related monitoring activity
Maintain or improve habitat quality score	Unplanned fire causing degradation of habitat quality through the loss of native plant diversity and abundance within the offset area.	Unlikely	High	Medium	Unplanned fire outbreaks.	In the event of an unplanned fire adversely impacting the offset area, fire management measures will be reviewed in consultation with GCCC and Queensland Fire Services.	Ongoing during the monitoring and maintenance of the offset area and the annual monitoring of the replanting and regeneration.
	Unauthorised access and use of the offset area by 4WD, trail bikes and ATVs, resulting in degradation of habitat within the offset area.	Unlikely	Minor	Low	Evidence of unauthorised access, such as tracks, soil disturbances, rubbish, damaged barrier fencing or degradation to native vegetation.	Investigate the entry location, with GPS points and photographs noting tyre tracks and damage circumventing barrier structures. Repairable damage is to be remediated as soon as possible, however where a barrier is in disrepair and unable to prevent access, the barrier is to be replaced within 30 days of detection. Review and audit the control measures and the timing and frequency of the management actions.	Ongoing during the monitoring and maintenance of the offset area and the annual monitoring of the replanting and regeneration.
	Habitat quality score decreases from baseline score	Unlikely	Moderate	Low	Monitoring and ACR identifies that the habitat quality score has decreased from the baseline score, or an unplanned event causes significant damage to offset area.	Investigate cause of decrease in score. Repairable damage is to be remediated. Review and audit the control measures and the timing and frequency of the management actions. Replanting of lost stock to ensure specified densities are met.	Ongoing during the monitoring and maintenance of the offset area and annual monitoring.

Management objective	Event or consequence*	Likelihood	Consequence	Risk level	Trigger	Contingency/s	Related monitoring activity
Control WONS	Increase in WONS infestations, specifically Lantana.	Unlikely	Minor	Low	Annual weed mapping indicates that weed coverage percentage has increased by Year 5.	Investigate cause of WONS infestation. Remedial action will include revising the control measures for the species and revising the timing and frequency of the management action.	Annual weed monitoring.
	WONS infestations inhibiting the maintenance of ecological condition and habitat quality score.	Unlikely	Minor	Low	Annual weed mapping indicates that weed coverage percentage has increased by Year 5.	Investigate cause of WONS infestation. Remedial action will include revising the control measures for the species and revising the timing and frequency of the management action.	Annual weed monitoring.
Replanting and regeneration	High rainfall or flood events create exacerbated areas of erosion and degradation habitat quality in rehabilitation areas.	Possible	Minor	Low	Evidence of new sheet or gully erosion within the offset area. Or, the loss of revegetation stock utilised to stabilise identified erosion points.	Promote vegetation establishment and stabilisation through the use of alternative rehabilitation measures (i.e. jute matting). Replanting of lost stock to ensure specified densities are met.	Inspect access tracks, creek line crossings and internal creek lines within seven (7) days following high rainfall or flood events and when it is safe to do so.
	Newly planted areas do not establish as expected	Unlikely	Moderate	Low	Monitoring and ACR identifies that replanted areas are not achieving establishment criteria, or an unplanned event causes significant damage to vegetation.	Investigate cause of issue. Repairable damage is to be remediated as soon as possible. Review and audit the control measures and the timing and frequency of the management actions. Replanting of lost stock to ensure specified densities are met.	Ongoing during the monitoring and maintenance of the offset area and the annual monitoring of the replanting and regeneration.
Control predation	Presence of foxes, feral and unwanted dog usage within the offset area.	Unlikely	Moderate	Low	Annual pest monitoring indicates the presence of feral or unwanted dogs.	Increase the level of targeted trapping and baiting by a suitably qualified pest management	Annual pest monitoring and reporting.

■ Offset Management Plan

Management objective	Event or consequence*	Likelihood	Consequence	Risk level	Trigger	Contingency/s	Related monitoring activity
						contractor. Review and audit the invasive animal control measures to evaluate their effectiveness and revise the measures accordingly.	
	Predation of koalas by feral or unwanted dogs.	Unlikely	Moderate	Low	Evidence of predation on Koala by dog, or annual pest monitoring indicates the presence of feral or unwanted dogs.	Increase the level of targeted trapping and baiting by a suitably qualified pest management contractor. Review and audit the invasive animal control measures to evaluate their effectiveness and revise the measures accordingly.	Annual monitoring and pest reporting.

3.3. Monitoring

The following program describes the monitoring activities that will occur within the offset area. The monitoring approach has been developed to assess success of the management actions to maintain the overall biodiversity and habitat values of the offset area.

The following monitoring methodologies have been designed to measure the effectiveness of the management actions in maintaining koala habitat quality.

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

- Ecological gain or maintenance within the koala offset area.
- WONS and pest animal activity as per **Section 3.4.1** and **Section 3.4.4**, successful controlling actions and subsequent benefit to the koala offset area.
- Increased habitat quality and if it has been maintained or improved, as per **Section 3.4.5**.

3.3.1 Management Action 1 monitoring

The presence of WONS in the offset area will be monitored annually commencing in 2019 until they are not observed, at which point monitoring will be carried out every 2 years. The monitoring will be undertaken during the same time of year, each year, to ensure that the timing is consistent and aligns with the baseline assessment. The following procedures will be implemented to ensure that the annual monitoring event aligns with the baseline monitoring methodology:

- GPS locate the presence of weeds either via a GPS waypoint or where a large weed infestation is present, create a GPS polyline and walk the extent of the infestation.
- On a field datasheet, detail the time of year of the monitoring event, list of observed WONS, photo location and direction and notes of any notable positive and/or negative changes in weed density and coverage.
- Carry the previous year's weed survey mapping, field datasheet and photos for noting changes in weed infestations and densities.
- Transfer GPS data to the necessary programs to generate weed survey mapping extent and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring purposes.

3.3.2 Management Action 2 monitoring

The progress and success of the koala habitat rehabilitation will be monitored annually. The monitoring timing is dependent on the planting cycle of the engaged bush regeneration contractor. Once planting has been completed, the engaged suitably qualified environmental consultant will be notified. Photo point monitoring and GPS locational and extent survey will be utilised.

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

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

- GPS co-ordinates of the photo point.
- Date, time and number of each photo.
- Direction in which the photo was taken (north, south, east and west).

After each photo monitoring event, a GPS waypoint of the location of the rehabilitation and a GPS polyline of the extent will be recorded. The following elements will be noted on a field datasheet:

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

3.3.3 Management Action 3 monitoring

Management action 3 does not require any specific monitoring as the securing of the site as a legal offset is to be completed via a VDEC, and that registration date of the VDEC will be reported in each annual compliance report.

3.3.4 Management Action 4 monitoring

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

The following pest animal monitoring methodology will be implemented:

- GPSs will be used to locate the presence of pest animals, in particular feral dogs via notable tracks or scats.
- Field datasheet will detail the time of year of the monitoring event, record observed pest animal scats or tracks, photo location and notes of any evidence of positive and/or negative changes in pest animal occurrence.

- Carry the previous year's pest animal survey mapping, field datasheet and photos for noting positive and/or negative changes in pest animal occurrences.
- Transfer GPS data to spatial data programs to generate pest animal occurrences and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring and reporting purposes.
- Where pest animal presence is detected, targeted trapping and baiting programs will be implemented on completion of the monitoring program.

Annual pest monitoring will be reported and outcomes of that monitoring included in the ACR. The annual pest management report is to provide detail on detected pests, control efforts, and total trapped/baited individuals during the given management period and identified trends of the population of pest animals within the offset area.

3.3.5 Management Action 5 monitoring

For the first three (3) years and then every five (5) years after that a habitat quality monitoring assessment, including koala specific habitat attributes, will be conducted in accordance with the published methodology (DEHP 2017).

Thirteen field-based ecological condition indicators will be monitored to track the effectiveness and success of the management plan for the koala offset, including:

1. Recruitment of woody perennial species – includes koala canopy feed and shelter tree species.
2. Native plant species richness (trees, shrubs and grasses) – as an indicator of ecological succession and regeneration progress after mitigating ecosystem threats.
3. Tree canopy height – indicates progress towards ecological maturity and increases in Koala habitat availability.
4. Tree canopy cover – indicates progress towards ecological maturity and increases in Koala habitat availability.
5. Shrub canopy cover – indicates progress towards ecological maturity and increases in Koala habitat availability.
6. Native perennial grass cover – which suppresses weeds and thereby encourages recruitment of juvenile eucalypt feed and shelter trees.
7. Organic litter cover – important for surface soil moisture retention, cycling of nutrients and providing interstitial spaces to enhance tree seed germination and growth and recruitment of canopy species including actively-growing Koala feed and shelter species.
8. Large trees per hectare – as a measure of important as shelter trees for Koalas and the production of seeds for recruitment.
9. Coarse woody debris per hectare – an increase relative to the benchmark could indicate a decline in canopy tree health / increase in senescence.

10. Invasive plant cover – which can compete with native plants for light, moisture and nutrients, especially recruiting koala food and shelter tree canopy species. Invasive plants can increase fuel load and change fire regimes and susceptibility to unplanned fires.
11. Quality and availability of food and foraging – e.g., Number, size and health of feed trees.
12. Quality and availability of shelter – e.g., Density and health of shelter trees.
13. Threats to species – e.g., Wild dog activity and the documented number of culled dogs.

Koala SAT surveys will also be carried out as part of this assessment.

3.3.6 Management action 6 monitoring – bush fire management plan

Monitoring requirements will be informed by the bush fire management plan and include regular review of access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock.

3.4. Timeline for management, monitoring and reporting actions

The timing of management actions, performance review, risk management and responsibilities for the offset area will be undertaken in accordance with **Table 4** and **Table 5**.

Table 4: Timeline for the management actions, monitoring and reporting

Management action	Frequency and timing of action(s)	Monitoring	Responsible person(s) for activity
Management Action 1 - weeds of national significance (WONS) management plan			
WONS, including <i>Lantana camara</i> (Lantana) control	Baseline weed mapping for WONS will be completed and treatment will commence in 2019. WONS will continue to be monitored and treated annually until they are not observed on the property.	Once the target has been achieved reviews will be carried out 2 yearly to ensure control measures are effective.	Suitably qualified bush regeneration contractor and Suitably qualified environmental consultant, as directed by the proponent (boral).
Management Action 2 - Rehabilitation and regeneration management plan			
Replanting and regeneration	Baseline mapping to identify rehabilitation and regeneration areas and development of a rehabilitation plan specifying techniques and species to be utilised will be completed within 12 months of commencement of the action.	Evidence of koala habitat rehabilitation and the success and survival rate will be monitored annually for at least the first 3 years after commencement of regeneration works.	Suitably qualified bush regeneration contractor and Suitably qualified environmental

Management action	Frequency and timing of action(s)	Monitoring	Responsible person(s) for activity
	All rehabilitation is to commence within three years of commencement of the action. Regeneration areas that require infill planting will be identified and regeneration actions outlined in the third annual compliance report.	If vegetation establishment is confirmed after three years monitoring will be carried out 5 yearly to ensure control measures are effective.	consultant, as directed by the proponent (Boral).
Management Action 3 – legally secure the offset area			
Legally securing the offset area	A Voluntary Declaration (VDEC) will be placed over the offset area to legally secure the conservation use on the land. The VDEC will be secured before the action is to commence.	Not required.	Proponent (Boral).
Management Action 4 - pest management (feral and unwanted dog usage) plan			
Feral and unwanted dog control	Baseline monitoring to identify evidence of feral or unwanted dogs and development of a property wide feral animal management program will be completed within 12 months of commencement of the action.	Annual pest activity monitoring is to be reported and included in the ACR. Where there is evidence of pest animals, targeted trapping and baiting programs will be implemented by an independent suitably qualified pest management contractor.	Suitably qualified pest management contractor and environmental consultant as directed by offset area manager.
	Annual pest monitoring, with evidence of pest animals GPS recorded.	Where annual monitoring does not identify any feral or pest species monitoring will reduce to 2 yearly.	
	Where there is evidence of feral or unwanted dog activity trapping or baiting by a suitably qualified pest management contractor will be conducted.		
Management Action 5 - koala habitat quality management plan			
Maintain koala habitat	Habitat quality monitoring is to be undertaken annually for the first three years and then once every five years to determine if the target quality score has been maintained for the offset area over the period of approval.	The habitat quality monitoring is to be reported in the ACR every five (5) years for the period of the EPBC Act approval.	Suitably qualified environmental consultant, as directed by the offset area manager.
Management Action 6 – bush fire management plan			
Protect the offset area from high intensity wild fires	Develop an Offset Area Bushfire Management Plan within 12 months of the offset being legally secured. Prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.	Monitoring requirements will be informed by the bush fire management plan and include regular review of access tracks, fire breaks, fuel loads and outcomes of controlled burns or other	Proponent (Boral)

Management action	Frequency and timing of action(s)	Monitoring	Responsible person(s) for activity
		management techniques such as use of livestock.	

Table 5: OMP actions, timing and responsibilities

Action	Frequency and timing of action(s)	Responsible person(s) for activity
Baseline monitoring	Within 12 months of the action commencing	Suitably qualified environmental professional as directed by the Offset Area Manager.
OMP monitoring reporting as part of the ACR	Annually	Suitably qualified environmental professional as directed by the Offset Area Manager.
OMP review	Every three years or upon failure to meet performance criteria	Suitably qualified environmental professional as directed by the Offset Area Manager.
OMP auditing	Annually	Suitably qualified environmental professional as directed by the Offset Area Manager.
Risk management implementation	Annually	Suitably qualified environmental professional as directed by the Offset Area Manager.
Adaptive implementation program and contingency response	Annually	Suitably qualified environmental professional as directed by the Offset Area Manager.

3.5. Performance and completion criteria

3.5.1 Performance criteria

Monitoring results will be used to determine if the following performance criteria are met, as interim outcomes and targets, prior to completion criteria being achieved. These criteria provide an indication of the success of the management measures being implemented for koala habitat offsets, and serve as trigger values where failure to achieve will result in the implementation of corrective actions. Performance criteria are provided for each of the management actions, although it is noted management action 3 – legally securing the offset does not have any specific performance criteria:

Management Action 1 – weeds of national significance (WONS) management plan

- Baseline weed mapping completed for the offset site and a weed management strategy developed and implemented in 2019.

■ Offset Management Plan

- All WONS identified on site to be treated within 12 months of the commencement of the action.
- WONS are treated until they are not observed on the Offset Site.

Management Action 2 - rehabilitation and regeneration management plan

- Baseline mapping of rehabilitation areas completed for the offset site and a rehabilitation strategy developed within 12 months of the commencement of the action.
- Rehabilitation to commence within 12 months of weeds being treated in non-remnant and remnant areas.
- Rehabilitation areas will have a 90% plant survival rate after 12 months of planting being carried out.
- Areas allowed to regenerate will display signs of native vegetation regrowth at rates expected for those species.

Management Action 3 - legally securing the offset

- A voluntary declaration will be placed over the offset prior to commencement of the action.

Management Action 4 – pest management (feral and unwanted dog usage) plan

- Baseline monitoring of feral or unwanted dogs completed for the offset site within 12 months of the commencement of the action and a management strategy developed.
- Feral or unwanted dogs will be minimised through ongoing monitoring and management.
- The pest management strategy will be updated annually based on the outcomes of monitoring.

Management Action 5 – maintain koala habitat quality

- Habitat quality monitoring will be completed annually for the first three years after commencement of the operation and every five years ongoing.
- Habitat quality will not reduce from the values identified in the baseline report. If a reduction occurs monitoring will continue annually until the values return to the baseline level.

Management Action 6 – bush fire management plan

- Fuel levels and burning regime maintained in accordance with Offset Area 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 Vegetation Management Act 1999

3.5.2 Completion criteria

Completion criteria for the offset site are as follows:

- WONS eradicated from the offset area.
- Rehabilitated areas are established and regenerate and mapped as remnant vegetation under the Vegetation Management Act 1999 or successor legislation.
- Dogs or evidence of dog presence are not detected on the offset area for a period of three years.
- Koala habitat quality remains at baseline levels or better for two consecutive five year monitoring events.

3.5.3 Corrective actions

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

- If pest animals are detected, the control measures and the timing and frequency of management measures will be increased and maintained at a higher rate of control until the completion criteria have been attained.
- Where unplanned fires or flooding occurs during the monitoring interval, any negative impacts to ecological score will be noted and compared to unaffected monitoring sites of previously the same quality and resulting potential weed infestations following disturbance will be managed to ensure the weed control completion criteria are achieved.
- Where koala habitat rehabilitation has a success rate below 90%, the active regeneration measures will be repeated until the completion criteria are achieved.

3.6. Adaptive management

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

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

1. Assimilation of new data or information - such as, updates to conservation advice or new threat abatement plans relevant to the koala.

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

3.7. Annual compliance reporting

In accordance with EPBC Approval (EPBC 2016/7797), an annual compliance report will be prepared and published on the **Boral** website. The report will address the compliance with each of the conditions of approval, including any incident reports of undesirable impacts upon koalas (including Koala habitat), and any monitoring and management milestones achieved during the previous 12 months, including progress on key management measures, attainment of performance targets and completion criteria, and adaptive implementation outcomes. The compliance report will also address the effectiveness of the management measures and how the site is progressing against performance and completion criteria.

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

4. Appendices

Appendix A: Environmental Offsets Strategy

Appendix B: Offset Site Baseline Report

Appendix A

Environmental Offsets Strategy

ENVIRONMENTAL OFFSET STRATEGY

INTRODUCTION AND DESCRIPTION OF THE ACTION

The *Environmental Management Division* of **Saunders Havill Group (SHG)** acting on behalf of **Boral Resources (QLD) Pty Limited (Boral)** have developed this **Environmental Offset Strategy** to provide details of the offset requirements under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for clearing koala habitat associated with the **Ormeau Quarry Expansion at Kingsholme (2016/7797)**.

The action relates to a 38 ha extension to the existing Ormeau Quarry, including approximately 38 ha of vegetation clearing. The existing quarry has been operating since 1979, with Boral operating it for over 20 years, and produces a range of aggregate and road base materials. The expansion is expected to allow the quarry to operate for more than 40 years and increase output from 700,000 tonnes per annum (tpa) to approximately 2,000,000 tpa, in line with recently approved State & Local Government land use approvals and Environmental Authorities.

An offset site has been identified to mitigate residual impacts on Koala habitat resulting from the expansion of Ormeau quarry. The offset site is located on Boral-owned land at Cliff Barrons Road, Kingsholme (Lot 2 on RP15912) approximately 1.7 km north of the expansion site.

This strategy assesses both the impact and offset sites using the following tools:

- EPBC Act environmental offsets policy;
- EPBC Acts referral guidelines for the vulnerable koala;
- How to use the offsets assessment guide; and
- The Offsets assessment guide spreadsheet.

The assessment of the impact and offset sites are outlined below.

IMPACT SITE

Residual Impacts

The quarry expansion is calculated as having a residual impact caused by the actual and functional loss of 38 hectares of habitat critical to the survival of the Koala. The site has been assessed as containing habitat with a value of 7 using the Habitat Assessment Tool.

Residual Impact: Removal of 38 hectares of critical habitat

Annual probability of extinction

The annual probability of extinction is an estimate of the average chance that a species or ecological community will be completely lost in the wild each year, given recent rates of decline. The annual probability of extinction is incorporated into the impact and offset calculation process as a discounting factor for aligning activities that occur at different points in time. This figure is derived from the International Union for the Conservation of Nature (IUCN) Red List for threatened species.

As the Koala is listed as 'Vulnerable' under the EPBC Act, an annual probability of extinction, based on ICUN category definitions, is 0.2%.

Impact Calculator

The Protected Matter Attribute relates to habitat critical to the survival of the Koala therefore the attribute the offset will be assessed against is "area of habitat". The impact calculator generates the total quantum of impact on habitat by multiplying the residual impact area by the quality of the habitat. As noted a residual impact of 38 hectares of critical Koala habitat will be removed as a result of the action.

The quality score for area of habitat is a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability. There are three components that contribute to the calculation of habitat quality: site condition, site context, and species stocking rates. However, the Koala Referral Guidelines include a habitat assessment tool which can be used to identify habitat values of a site specific to koalas. The Guidelines state “[the habitat assessment tool] can help you determine ‘habitat quality’ referred to in the offset calculator. [It] may be used instead of the three generic habitat quality categories found in the Offsets Assessment Guide and be applied once to the entire area of habitat being offset. [It] can also be used to calculate the starting quality of a proposed offset site and to estimate the future quality, with and without the proposed offset/management intervention”.

As a result, the assessment tool has been used to develop habitat quality scores for the start and future habitat values parameters for the offset areas by comparing them to the impact area. **Table 1** provides a summary of the habitat assessment carried out for the impact area which was originally carried out for the EPBC Act referral and preliminary documentation reports.

Table 1: Koala Habitat Assessment Summary

Attribute	Score	Description
Koala occurrence	+2 Surveys indicate one or more Koalas may have been present within 2 km of the site within the last 2 years.	<u>Desktop Surveys</u> A Wildlife Online search generated under the <i>Nature Conservation Act 1992</i> (QLD) (NCA) found 7 Koalas as being identified within a 2 km radius of the site. It is noted that wildlife online doesn’t provide dates for the sightings therefore it is unknown whether any of these occurred in the last 2 years. A search of the Koala Tracker database did not find any positive sightings within 2 km of the site. <u>Field Surveys</u> During a 2006 field survey, BAAM recorded evidence of koala within the proposed quarry expansion area. Koala scats were also observed on the eastern section of the referral area during the 2016 field surveys by Saunders Havill Group . It is noted that only evidence of usage has been found and no koalas have ever been observed on the site.
Vegetation composition	+2 The site contains forest or woodland with 2 or more known koala food tree species in the canopy.	Habitat assessments at the site identified both primary and secondary Koala food species within the expansion footprint and in surrounding areas. These primary and secondary species included <i>Eucalyptus siderophloia</i> (Grey Ironbark), <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) and <i>Eucalyptus major</i> (Grey Gum).
Habitat connectivity	+1 The impact area is an extension of the existing quarry.	The site is relatively segregated from urban development and main roads and is located within a rural context. While it is part of a contiguous landscape greater than 500 hectares, the proposal is an extension off the already existing Boral quarry with four other quarries located within a 5 km radius. From a contextual point of view, the expansion will not result in the significant fragmentation of habitat areas in the broader landscape and is unlikely to impact on connectivity surrounding the quarry area. Given that the quarry already exists, the connectivity value of the site is reduced as it is to be located adjacent to the existing quarry site.
Key existing threats	+1 Little or no evidence of koala mortality from vehicle strike or dog	Field surveys did not identify any evidence of dogs throughout the subject site, which is known to be one of the most significant threats to Koala injury and mortality. It is likely domestic dogs and other animals would occur commonly throughout adjoining properties given the rural nature of the area. The site is nearly 5 km from the nearest main road, being the Pacific

Attribute	Score	Description
	attack at present in areas that score 1 or 2 for koala occurrence.	motorway. Upper Ormeau road provides the main access from the site to the motorway and has high vehicle usage including trucks used to haul product from the quarry. Records of koala vehicle strikes within the region (for example Ormeau and Coomera – Biolink 2007) were located however there is little evidence available immediately surrounding the site. This may be a reflection of the low usage of the site by koalas and prevalence of commercial uses surrounding the site. Most reported koala sightings are in highly populated or closely monitored locations such as urban areas and environmental reserves.
Recovery value	+1 It is uncertain whether the site is important in achieving interim recovery objectives.	The interim recovery objectives for sites within the coastal geographical context are to “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)”. While clearing will occur in areas providing Koala habitat, it is uncertain as to whether the protection of the vegetation will achieve the interim recovery objectives for coastal areas. This is due to the relatively high prevalence of disease of Koalas as well as the fact that these Koalas are not known to be genetically diverse from other Koalas in South East Queensland.
Total Score	7	As the habitat score is greater than or equal to 5, the impact area is considered to provide Critical Habitat for the koala as defined by the EPBC referral guidelines.

Impact area habitat quality: 7

Quantum of Impact

The residual impact area (38 hectares) and habitat quality (7/10) are multiplied to provide the total quantum of impact for the action. When the area and quality of critical habitat to be removed are combined the Total Quantum of impact is identified as 26.6 ha.

Total quantum of impact: 26.6 hectares

OFFSET SITE

Start Area and Quality of Offset

The proposed offset site is predominantly remnant vegetation with only a small area of the site mapped as non remnant. Ecological field surveys were undertaken by Saunders Havill Group over 2 days in September and October 2015. Findings from the field surveys include:

- The majority of the site is mapped as containing remnant vegetation consistent with the regional ecosystem mapping. Three regional ecosystems (RE12.11.3, RE12.11.5 and RE12.11.10) are mapped as occurring within the subject site.
- RE 12.11.3 and 12.11.5 were dominated by Eucalyptus and Corymbia species and made up the largest proportion of vegetation within the assessment area.
- RE 12.11.10 was observed in the south western portion of the site. RE 12.11.10 is described as Notophyll vine forest +/- Araucaria cunninghamii on metamorphics +/- interbedded volcanics. This regional ecosystem is also associated with the "Lowland rainforest of Subtropical Australia" threatened ecological community.
- The area mapped as RE 12.11.10 not only is a threatened ecological community but it also contained specimens of *Brachychiton* sp. (Mt Ormeau bottle tree – would need to be confirmed with the herbarium) which is protected under the EPBC Act and *Macadamaia integrifolia* (Macadamia Nut) which is protected under State legislation.
- In general, the majority of the site is consistent with Eucalypt and Corymbia woodlands/forests that would be generally utilised by *Phascolarctos cinereus* (Koala). No koalas were spotted during surveys however numerous scats were observed in low densities throughout the majority of the site suggesting that resident koalas may be located within the investigation area.
- Weed infestation within the site was relatively low and generally the vegetation was intact. Some patches of *Lantana camara* (Lantana) were observed throughout the site.
- A number of old overgrown and eroded tracks traverse the ridgelines throughout the property. Evidence of logging was also observed in some locations.
- A number of these tracks and other areas through the site contain barbed wire fencing, which would impede fauna movement.
- Two (2) bitumen roads are located to the south and the east of the property.
- A few areas throughout the property contain non-remnant vegetation. The regrowth vegetation observed was consistent with vegetation associated with RE 12.11.3/12.11.5.

Field surveys identified that non remnant areas contained vegetation in good condition that would be considered critical koala habitat as defined by the EPBC Act. The survey also found that, while generally in good condition, the site had been impacted in areas by logging, agricultural practices and weed incursion.



Photo 1: Lantana Infestation of the offset site

Table 2 provides a summary of the assessment carried out using the habitat assessment tool.

Table 2: Koala Habitat Assessment Summary

Attribute	Score
Koala occurrence	+2 Desktop investigations did not identify any koalas within 2 km of the site in the last 2 years. SAT surveys found low levels of usage throughout the site.
Vegetation composition	+2 The site contains forest or woodland with 2 or more known koala food tree species in the canopy.
Habitat connectivity	+2 The offset area currently sits within a large, contiguous patch of vegetation \geq 500 ha. The patch is surrounded by a number of uses with the potential to result in further impacts including three quarries, urban and rural residential estates and agricultural land however most of these areas do not currently have approval for clearing under the various Local, State and Federal planning and legislative frameworks. The exception to this is the Wolffdene Quarry extension (2014/7384), which has all required approvals and is located to the north of the site.

Attribute	Score
Key existing threats	+1 Field surveys did not identify any evidence of dogs throughout the subject site, which is known to be one of the most significant threats to Koala injury and mortality. It is likely domestic dogs and other animals would occur commonly throughout adjoining properties given the rural nature of the area. Records of koala vehicle strikes within the region (for example Ormeau and Coomera – Biolink 2007) were located however there is little evidence available immediately surrounding the site. This may be a reflection of the low usage of the site by koalas and prevalence of commercial uses surrounding the site. Most reported koala sightings are in highly populated or closely monitored locations such as urban areas and environmental reserves.
Recovery value	+1 It is uncertain whether the site is important in achieving interim recovery objectives, which are to <i>“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)”</i> .
Total Score	8

The site is identified as having a habitat value of 8 indicating it is in good condition but shows minor signs of disturbance that could be improved through rehabilitation works.

Start area and quality: 8/10

Future Quality without the Offset

The site is mapped as a Key Resource Area under the State Planning Policy and is within the Extractive Resources – Resource Area / processing area overlay under the GCCC Planning Scheme. An EPBC Act controlled action approval (Ref No. 2007/3772) has also been obtained for the site for a proposed quarry use however it has not yet been acted upon. Furthermore an application for extractive industry has previously been lodged for local and State government approvals, however was withdrawn due to a change in ownership.

If the site is not protected through an offset agreement it is highly likely applications for resource extraction would be progressed with activities likely to commence within the next 5 – 10 years.

While there is significant potential for clearing to occur at the site as a result of extraction activities, this is addressed in the ‘risk of loss without offset’. Therefore, the future quality without the offset is likely to remain the same as the current quality.

Future quality without offset: 8/10

Future Quality with the Offset

The quality of the proposed offset area would be maintained and enhanced as it is protected and managed through initial development controls and ultimately weed management and bushland revegetation and regeneration. The importance of the offset site as a refuge and linkage area within the region will increase in the future should development pressures encroach into existing rural areas.

Land within the offset area will be proactively managed in order to enhance its ecological value. This will include rehabilitation and revegetation in certain areas through:

- Protection of existing vegetation and minimisation of risks to protected areas from adjoining operational works;
- Control of weed species; and

- Implementation of a Vegetation Management Plan to ensure the integrity of the existing vegetation is maintained.

While environmental management and monitoring programs proposed for the site will improve the habitat values for koalas by improving koala habitat on the site, when assessed using the koala assessment habitat tool no additional value is attributed for the proposed on ground works.

Future quality with offset: 8/10

Risk of loss without offset

For reasons already outlined under ‘future quality without the offset’ risk of loss without offset is considered to be high.

Remnant vegetation on the site is mapped as ‘least concern’ under the *Vegetation Management Act 1999* and located within a Key Resource Area and agricultural zoning therefore both extractive and agricultural uses would be considered a ‘relative purpose’ for clearing and allowed under the VMA. It is acknowledged that it is unlikely approval would be given for clearing of the entire site however the Commonwealth Government has provided approval for the quarry. While this approval has not been acted on it has effect until July 2045 and if the site is not used as an offset Boral are likely to progress Local and State government approvals for the quarry use within the next five years.

An application for extractive industry was previously lodged for local and State government approvals however was withdrawn due to change in ownership. Notwithstanding this, extractive industry on the Site is supported at both a State and local Council level with the site included in the Key Resource Area under the State Planning Policy and the Extractive Resources Overlay under the GCCC Planning Scheme. It is possible that approvals could be obtained in a 2 year period if extraction activities were planned.

In addition to the likely quarry use various exemptions and accepted development provisions also apply for clearing in agricultural and extractive areas that would allow clearing of several hectares of remnant vegetation without any further approval. As an example relevant exemptions under the VMA are listed in **Table 3**.

Table 3: VMA exemptions relevant to the Offset site

Clearing Purpose	Details
Establish new infrastructure	Clearing to construct necessary built infrastructure where the total clearing extent and the extent of the infrastructure does not exceed 2ha. Clearing to source construction timber to establish necessary infrastructure on the land.
Fences, roads or tracks	Clearing to establish a necessary fence, road or vehicular track to a maximum width of 10m.
Fire management line	Clearing for a necessary fire management line to a maximum width of 10m.
Firebreaks	Clearing to establish or maintain a necessary firebreak to protect infrastructure (other than fences, roads and tracks) to a maximum width of 20m or 1.5 times the height of the tallest adjacent tree, whichever is the greater.
Hazardous fuel load reduction	Clearing by fire to reduce hazardous fuel load under the Fire and Emergency Services Act 1990.
Maintain existing infrastructure	Clearing necessary to maintain existing infrastructure, including buildings, fences, roads and watering points.

Clearing Purpose	Details
	Clearing to source construction timber to maintain existing infrastructure on the land.
Risk to people or infrastructure	Clearing necessary to remove or reduce the imminent risk the vegetation poses to people or infrastructure.

As a result of the above a risk of loss without offset of 50% has been applied. This is considered conservative as if the site is not utilised as an offset the quarry use is highly likely to be progressed. The fragmentation caused by the clearing will also impact on vegetation surrounding the site reducing its habitat value for koalas. This also reflects the generally high potential for clearing to be carried out on the site whether for agricultural or extraction purposes if not protected.

Risk of loss without offset: 50%

Risk of loss with offset

As a result of the offset dedication, it is highly unlikely that the areas natural values will be lost because:

- Negotiations will be undertaken to legally secure the offset site so that land cannot be used for other purposes, including the approved extraction use; and
- The offset land is substantial in size and width and robust enough to withstand periodical impacts of bushfire, weed incursion, and native and feral species impacts.

Overall, the risk of loss with the offset is considered to be negligible therefore a value of 2% has been given to this parameter.

Risk of loss with offset: 2%

Confidence in result

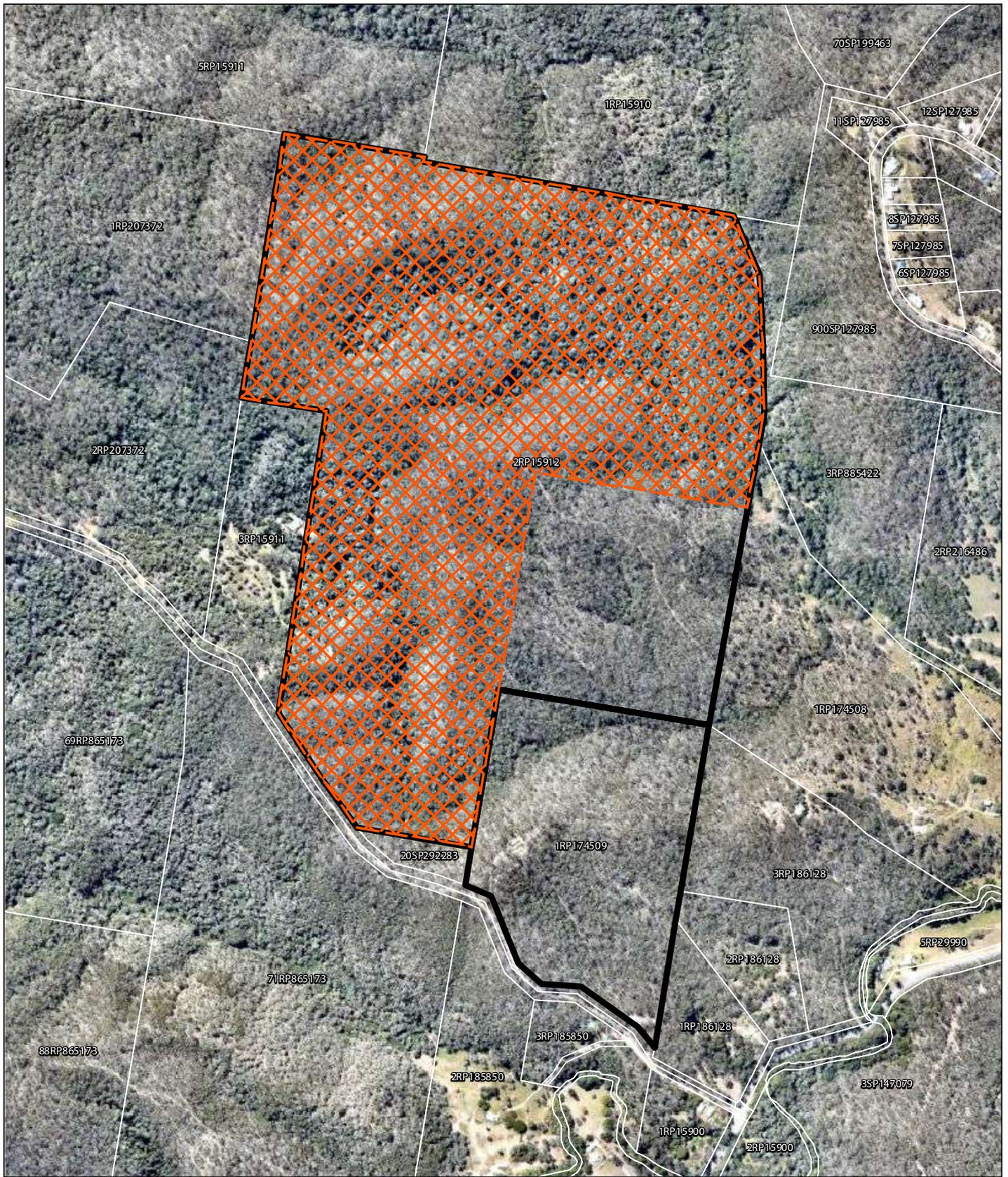
A confidence result of 90% has been given to the averted loss attributes. The ‘How to Use the Offsets Assessment Guide’ provided on DoEEs website states: “For the averted loss component, confidence in result captures the level of certainty about the strength and effectiveness of the proposed risk-mitigation measures and the capacity of these measures to mitigate the risk of loss of the site”. Protecting the offset area through a voluntary declaration or similar provides a high level of confidence that that no part of the offset site will be lost. In addition, given existing approvals over the site and the wide range of clearing that can be carried out under exemption, there can be high level of confidence that at least a portion of the site will be cleared if not protected through the offset.

A confidence result of 75% has been given to the future quality attributes. Boral is a large, viable, experienced and award winning business entity who have track record of compliance with approval conditions and in particular rehabilitation of their quarry sites and buffer land. As such there can be a high level of confidence that the measures implemented on site will be carried out effectively. Boral have no influence on clearing on surrounding land as a result of other uses such as agriculture and extraction. As the additional values are associated with the enhancement of corridors and connective habitat for Koalas confidence has been reduced to 75%. As can be seen on Plan 1 protection and enhancement of the proposed offset site will provide connectivity to existing conservation areas.

Confidence in Results – risk of loss: 90%

Confidence in Results – future quality: 75%

Based on the inputs described above, approximately 77 ha of the site at Kingsholme would provide a relative net offset for impacts at the Ormeau site using the EPBC Offset assessment guide calculator. A copy of the completed EPBC Offset Calculator is included as Attachment 1.



Legend

-  Qld DCDB
-  Offset Site DCDB
-  Proposed offset area (77 ha)

Figure 1

Ormeau Quarry - Offsite Site

File ref. 8354 E Figure 1 Offset Area Op 1 B
Date 1/02/2018
Project Ormeau Quarry

0 50 100 200 300 m

Scale (A4): 1:10,000 [GDA 1994 MGA Z56]



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Appendix B

Offset Site Baseline Report

1. Habitat Quality Assessment Method

The habitat quality assessment methodology prepared by the Queensland Herbarium (DEHP 2017) was utilised to assess habitat values of the Kingsholme Offset Site. The methodology provides a repeatable and consistent method for determining habitat quality.

To accurately assess the habitat values the site needs to be broken into Habitat Assessment Units based on prevailing Regional Ecosystems and other ecological and topographical features. Within each Habitat Assessment Unit, Site Condition, Site Context and the Species Habitat Index are determined based on field transects and observations and desktop studies. In a general sense, it is the scores for each of these attributes that are combined to determine the site's overall Habitat Quality Score. Refer to the schematic below.



1.1. Habitat Assessment Units

The site was divided into three Habitat Assessment Units (refer to **Table 1** and **Plan 1**). A single transect has been conducted within each Habitat Assessment Unit. The purpose of the transects are to determine attribute scores for Site Condition and to also provide the necessary information to complete additional assessments.

Table 1: Habitat Assessment Unit Descriptions

Habitat Assessment Unit	Area (ha)	Status	Regional Ecosystem	Description
AU1	32.6	Least Concern Remnant	12.11.3	Eucalyptus siderophloia, E. propinqua +/- E. microcorys, Lophostemon confertus, Corymbia intermedia, E. acmenoides open forest on metamorphics +/- interbedded volcanics
AU2	37.5	Least Concern Remnant	12.11.5	Corymbia citriodora subsp. variegata woodland to open forest +/- Eucalyptus siderophloia/E. crebra, E. carnea, E. acmenoides, E. propinqua on metamorphics +/- interbedded volcanics
AU3	1.6	Least Concern Remnant	12.11.10	Notophyll vine forest +/- Araucaria cunninghamii on metamorphics +/- interbedded volcanics

1.2. Site Condition

The on-site condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community, compared to the expected range for a relatively undisturbed community.

The following components of Site Condition were assessed, compared to benchmarks and assigned a score within each Habitat Assessment Unit on-site:

1. Recruitment of Woody Species
2. Tree Species Richness
3. Shrub Species Richness
4. Grass Species Richness
5. Forb Species Richness
6. Tree Canopy Height
7. Tree Canopy Cover
8. Shrub Canopy Cover
9. Native Perennial Grass Cover
10. Organic Litter
11. Large Trees
12. Coarse Woody Debris
13. Weed Cover

1.3. Species Habitat Index

The Species Habitat Index measures the capacity of a site to support a species and requires field survey data, available modelling and current species records. The index represents an analysis of the quality and availability of habitat for the species, and the likelihood of continued existence of the species at the site.

The Species Habitat Index consists of the following attributes assessed and assigned a score within each Habitat Assessment Unit on-site:

1. Threats to Species
2. Quality and Availability of Food and Foraging Habitat
3. Quality and Availability of Shelter
4. Species Mobility Capacity
5. Role of Site Location to Overall Population

Koala habitat values have been assessed for the site.

1.4. Habitat Quality Score

To determine each assessment area's **Habitat Quality Score**, the scores for each attribute listed above are averaged across transects and summed to provide the *Habitat Quality Score (measured)* for each of the Habitat Assessment Units. These scores are then compared to the maximum attainable (*Habitat Quality Score max*) to calculate the *Assessment Unit Habitat Quality Score* for each assessment unit. These scores are then weighted according to the relative size of each Habitat Assessment Unit before being summed to give the overall Area **Habitat Quality Score** rounded to the nearest whole number.

2. Habitat Quality Results

2.1. Assessment Unit 1

The Habitat Quality Score (measured) for Assessment Unit 1 was derived from one data transect and an observation survey point (refer to **Plan 1** and photos below). A walkover of the site confirmed the transect was representative of RE12.11.3 condition throughout most of the site.

Assessment Unit 1 Transect

Photos



2.2. Assessment Unit 2

The Habitat Quality Score (measured) for Assessment Unit 1 was derived from one data transect and a quaternary vegetation survey point (refer to **Plan 1** and photos below). A walkover of the site confirmed the transect was representative of RE12.11.5 condition throughout most of the site.

Assessment Unit 2 Transect

Photos



2.3. Assessment Unit 3

The Habitat Quality Score (measured) for Assessment Unit 1 was derived from one data transect (refer to Plan 1 and photos below). A walkover of the site confirmed the transect was representative of RE12.11.10 condition throughout most of the site.

Assessment Unit 3 Transect

Photos



2.4. Overall Habitat Quality Score

Using the assessment template, the Habitat Quality Score for the Impact Area on site was determined to be **7.64** (refer to **Attachment A**).

Attachment A

Habitat Transect Data

2		27
3		28
4		29
5		30
6		31
7		32
8		33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

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

	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	9.00%	6.00%	3.00%	13.00%	7.00%	19.00%
Organic Litter	70.00%	56.00%	64.00%	63.00%	85.00%	47.00%

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

Eucalypt Large tree DBH benchmark used :	45cm	Non- Eucalypt Large tree DBH benchmark used:	n/a
Number of large eucalypt trees:	26	Number of large non eucalypt trees:	0
Total Number Large Trees:	26		

Median Tree Canopy Height Measurements	Canopy:	26.00	Sub-canopy:	8.50	Emergent:	0.00
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Number of ecologically dominant layer species regenerating:	85
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Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	89.60%	Sub-canopy:	44.60%	Emergent:	0.00%
Shrub canopy cover %	48.40%					

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	4 - 101-200ha	3 - 50%-75% connection	4 ->75% remnant	3 - 1-3km	2 - Within (whole or part)
SCORE	7	4	5	5	6

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

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

NO PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes										
No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population	
1	Phascolarctos cinereus	koala	SL	Description	3 - Low threat level	3 - High	3 - High	3 - Moderately restricted (26 - 50% reduction)	2 - Likely to be critical to species' survival	
				Score	15	10	10	7	4	
2				Description						
				Score						
3				Description						
				Score						
4				Description						
				Score						
5				Description						
				Score						
6				Description						
				Score						
7				Description						
				Score						
8				Description						
				Score						
9				Description						
				Score						
10				Description						
				Score						
					Maximum Score	15.00	10.00	10.00	7.00	4.00

Habitat Quality Site Assessment Template

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

For all environmental offset applications you must:

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

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

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

Habitat Quality Assessment Unit Score Sheet

Part C - Site Data

Property	Kingsholme Offset Site	Date	
----------	------------------------	------	--

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
2	37.5	12.11.5	Southeast Queensland

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

Datum	0m Mark	Zone	Easting	Northing
WGS 84	<input type="checkbox"/>	56		
GDA 94	<input checked="" type="checkbox"/>	56		
Plot bearing			Recorders	Andrew Craig

Site description and Location (including details of discrete polygons within the assessment unit)
 Corymbia citriodora subsp. variegata open forest to woodland, usually including Eucalyptus siderophloia/E. crebra (sub coastal ranges), E. propinqua and E. acmenoides or E. carnea. Other species that may be present and abundant locally include Corymbia intermedia, C. trachyphloia subsp. trachyphloia, Eucalyptus tereticornis, E. microcorys, E. portuensis, E. helidonica, E. major, E. longirostrata, E. biturbinata, E. moluccana and Angophora leiocarpa. Lophostemon confertus often present in gullies and as a sub-canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.

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

Tree species richness:			
Total number of species			9
Scientific Name	<i>Corymbia citriodora</i>	Common Name	
Scientific Name	<i>Eucalyptus major</i>	Common Name	
Scientific Name	<i>Lophostemon confertus</i>	Common Name	
Scientific Name	<i>E. acmenoides</i>	Common Name	
Scientific Name	<i>E. tinidulise</i>	Common Name	
Scientific Name	<i>C. intermedia</i>	Common Name	
Scientific Name	<i>E. tereticornis</i>	Common Name	
Scientific Name	<i>E. siderophloia</i>	Common Name	
Scientific Name	<i>E. carnea</i>	Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species			7
Scientific Name	<i>Acacia concurrens</i>	Common Name	
Scientific Name	<i>A. littoralis</i>	Common Name	
Scientific Name	unidentified <i>Acacia</i> sp.	Common Name	
Scientific Name	<i>Cassinia</i> sp.	Common Name	
Scientific Name	<i>A. leucalyx</i>	Common Name	
Scientific Name	<i>A. excelsa</i>	Common Name	
Scientific Name	<i>Hovea</i> sp.	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species			3
Scientific Name	<i>Themeda triandra</i>	Common Name	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species			8
Scientific Name	<i>Laxmannia compacta</i>	Common Name	<i>B. oblongifolia</i>
Scientific Name	<i>Lomandra multiflora</i>	Common Name	
Scientific Name	<i>Geodorum densiflorum</i>	Common Name	
Scientific Name	<i>Eustraphus latifolius</i>	Common Name	
Scientific Name	<i>Dianella caerulea</i>	Common Name	
Scientific Name	<i>Cheilanthes distans</i>	Common Name	
Scientific Name	<i>Bursaria spinosa</i>	Common Name	

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

Total percentage cover within plot		12.50%	
Scientific Name	<i>Lantana camara</i>	Common Name	
Scientific Name	<i>Bidens pilosa</i>	Common Name	
Scientific Name	<i>Passiflora suberosa</i>	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters):		810.00	
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	

20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
						6.70%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
						78.30%

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

Eucalypt Large tree DBH benchmark used :	45cm	Non- Eucalypt Large tree DBH benchmark used:	45cm
Number of large eucalypt trees:		Number of large non eucalypt trees:	
Total Number Large Trees:	24		

Median Tree Canopy Height Measurements	Canopy:	23.00	Sub-canopy:	12.00	Emergent:	0.00
--	---------	-------	-------------	-------	-----------	------

Number of ecologically dominant layer species regenerating:	64
---	----

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	73.10%	Sub-canopy:	37.50%	Emergent:	0.00%
Shrub canopy cover %				13.80%		

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	4 - 101-200ha	3 - 50%-75% connection	4 - >75% remnant	3 - 1-3km	3 - Within (whole or part)
SCORE	7	4	5	5	6

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

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

NO PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1	Phascolarctos cinereus	koala	SL	Description	3 - Low threat level	3 - High	3 - High	4 - Minor restriction (0 - 25% reduction)	2 - Likely to be critical to species' survival
				Score	15	10	10	10	4
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
Maximum Score					15.00	10.00	10.00	10.00	4.00

Habitat Quality Site Assessment Template

PLEASE NOTE - YELLOW INDICATES AN AUTO POPULATED FIELD

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

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

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

Habitat Quality Assessment Unit Score Sheet

Part C - Site Data

Property	Kingsholme offset site	Date	
----------	------------------------	------	--

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
3	1.6	12.11.10	Southeast Queensland

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

Datum	0m Mark	Zone	Easting	Northing
WGS 84	<input type="checkbox"/>	56		
GDA 94	<input checked="" type="checkbox"/>	56		
Plot bearing		Recorders		Andrew Craig

Site description and Location (including details of discrete polygons within the assessment unit)
 Notophyll and notophyll/microphyll vine forest +/- Araucaria cunninghamii. Characteristic species include Argrodendron trifoliolatum, Argrodendron sp. (Kin Kin W.D.Francis AQ81198), Backhousia subargentea, Dissiliaria baloghioides, Brachychiton discolor, Beilschmiedia obtusifolia, Diospyros pentamera, Grevillea robusta, Gmelina leichhardtii and Ficus macrophylla forma macrophylla. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.

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

Tree species richness:			
Total number of species		14	
Scientific Name	<i>Macadamaia integrifolia</i>	Common Name	<i>Backhousia subargentea</i>
Scientific Name	<i>Lophastemon confertus</i>	Common Name	<i>Grevillea robusta</i>
Scientific Name	<i>Eucalyptus major</i>	Common Name	<i>Ficus macrophylla</i>
Scientific Name	<i>Eucalyptus micarcaris</i>	Common Name	<i>Polyscias elegans</i>
Scientific Name	<i>Corymbia intermedia</i>	Common Name	
Scientific Name	<i>Argrodendron sp.</i>	Common Name	
Scientific Name	<i>E. propinquus</i>	Common Name	
Scientific Name	<i>E. laticornis</i>	Common Name	
Scientific Name	<i>Argrodendron trifoliolatum</i>	Common Name	
Scientific Name	<i>Araucaria cunninghamii</i>	Common Name	

Shrub species richness:			
Total number of species		12	
Scientific Name	<i>Brachychiton sp.</i>	Common Name	<i>A. littoralis</i>
Scientific Name	<i>Findleria schottiana</i>	Common Name	<i>Cheilanthes distans</i>
Scientific Name	<i>Cordyline stricta</i>	Common Name	
Scientific Name	<i>Smilax australis</i>	Common Name	
Scientific Name	<i>Cassinia sp.</i>	Common Name	
Scientific Name	<i>A. leiocalyx</i>	Common Name	
Scientific Name	<i>A. excelsa</i>	Common Name	
Scientific Name	<i>Havea sp.</i>	Common Name	
Scientific Name	<i>A. leiocarpa</i>	Common Name	
Scientific Name	<i>A. littoralis</i>	Common Name	

Grass species richness:			
Total number of species		3	
Scientific Name	<i>Themeda triandra</i>	Common Name	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species		10	
Scientific Name	<i>Laxmannia compacta</i>	Common Name	<i>Geitonoplesium cymosum</i>
Scientific Name	<i>Lomandra multiflora</i>	Common Name	<i>Desmodium intortum</i>
Scientific Name	<i>Geodorum densiflorum</i>	Common Name	<i>Eustrephus sp.</i>
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	
Scientific Name	<i>Dianella caerulea</i>	Common Name	
Scientific Name	<i>Cheilanthes distans</i>	Common Name	
Scientific Name	<i>Bursaria spinosa</i>	Common Name	

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

Total percentage cover within plot		30.00%	
Scientific Name	<i>Lantana camara</i>	Common Name	
Scientific Name	<i>Bidens pilosa</i>	Common Name	
Scientific Name	<i>Passiflora suberosa</i>	Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters):		260.00	
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	

20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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

Native perennial grass cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
						24.00%

Organic Litter	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
						36.00%

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

Eucalypt Large tree DBH benchmark used :	45	Non- Eucalypt Large tree DBH benchmark used:	45
Number of large eucalypt trees:		Number of large non eucalypt trees:	8
Total Number Large Trees:	8		

Median Tree Canopy Height Measurements	Canopy:	22.00	Sub-canopy:	12.00	Emergent:	30.00
--	---------	-------	-------------	-------	-----------	-------

Number of ecologically dominant layer species regenerating:	57
---	----

Part I - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	71.00%	Sub-canopy:	12.00%	Emergent:	65.00%
Shrub canopy cover %				10.00%		

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

Part J - Site Context Score

ATTRIBUTE	Size of Patch	Connectedness	Context	Distance to Permanent Water	Ecological Corridors
DESCRIPTION	4 - 101-200ha	3 - 50%-75% connection	4 - >75% remnant	3 - 1-3km	3 - Within (whole or part).
SCORE	7	4	5	5	6

DOES THIS ASSESSMENT UNIT ALSO CONTAIN A SPECIES HABITAT REQUIREMENT.

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

NO PLEASE ATTACH LANDSCAPE PHOTOS BELOW AND SUBMIT AS DIRECTED

Part K - Species Habitat Attributes

Species Habitat Attributes

No	Species Name	CommonName	NCA Status	Attributes	Threats to species	Quality and availability of food and foraging habitat	Quality and availability of shelter	Species mobility capacity	Role of site location to overall population
1	Phascolarctos cinereus	koala	SL	Description	3 - Low threat level	3 - High	3 - High	3 - Moderately restricted (26 - 50% reduction)	2 - Likely to be critical to species' survival
				Score	15	10	10	7	4
2				Description					
				Score					
3				Description					
				Score					
4				Description					
				Score					
5				Description					
				Score					
6				Description					
				Score					
7				Description					
				Score					
8				Description					
				Score					
9				Description					
				Score					
10				Description					
				Score					
Maximum Score					15.00	10.00	10.00	7.00	4.00

Habitat Quality Final Summary Template

Case Reference	
Project Name	
Total Area	71.7

PART	Habitat Quality Attributes
	Assessment Unit Area (ha)
	Regional Ecosystems
	Bioregion

Requirement	Assessment Unit Number									
	1	2	3	4	5	6	7	8	9	10
Area (ha)	32.6	37.5	1.6	0	0	0	0	0	0	0
RE	12.11.3	12.11.5	12.11.10							
Bioregion	Southeast Queensland	Southeast Queensland	Southeast Queensland							

1	Site Condition Attributes	1. Recruitment of woody perennial species	Score	5	3	3							
		2. Native plant species richness	Score	5	5	5							
		- Trees	Score	5	5	5							
		- Shrubs	Score	5	5	5							
		- Grasses	Score	3	5	5							
		- Forbs	Score	3	5	3							
		3. Tree canopy height	Score	5	5	5							
		- Canopy layer	Score	5	5	5							
		- Sub-Canopy Layer	Score	5	5	5							
		- Emergent Layer	Score			5							
Average Score	Average Score	5	5	5									
4. Tree canopy cover	Score	5	5	5									
- Canopy layer	Score	3	5	5									
- Sub-Canopy Layer	Score			5									
- Emergent Layer	Average Score	4	5	5									
5. Shrub canopy cover	Score	3	5	5									
6. Native perennial grass cover	Score	5	1	5									
7. Organic litter	Score	5	5	5									
8. Large trees	Score	5	10	10									
9. Coarse woody debris	Score	2	5	5									
10. Weed cover	Score	5	5	5									

2	Site Context Attributes	11. Size of patch (fragmented)	Score	7	7	7						
		12. Connectedness (fragmented)	Score	4	4	4						
		13. Context (fragmented)	Score	5	5	5						
		14. Distance from water (intact)	Score	5	5	5						
		15. Ecological corridors	Score	6	6	6						

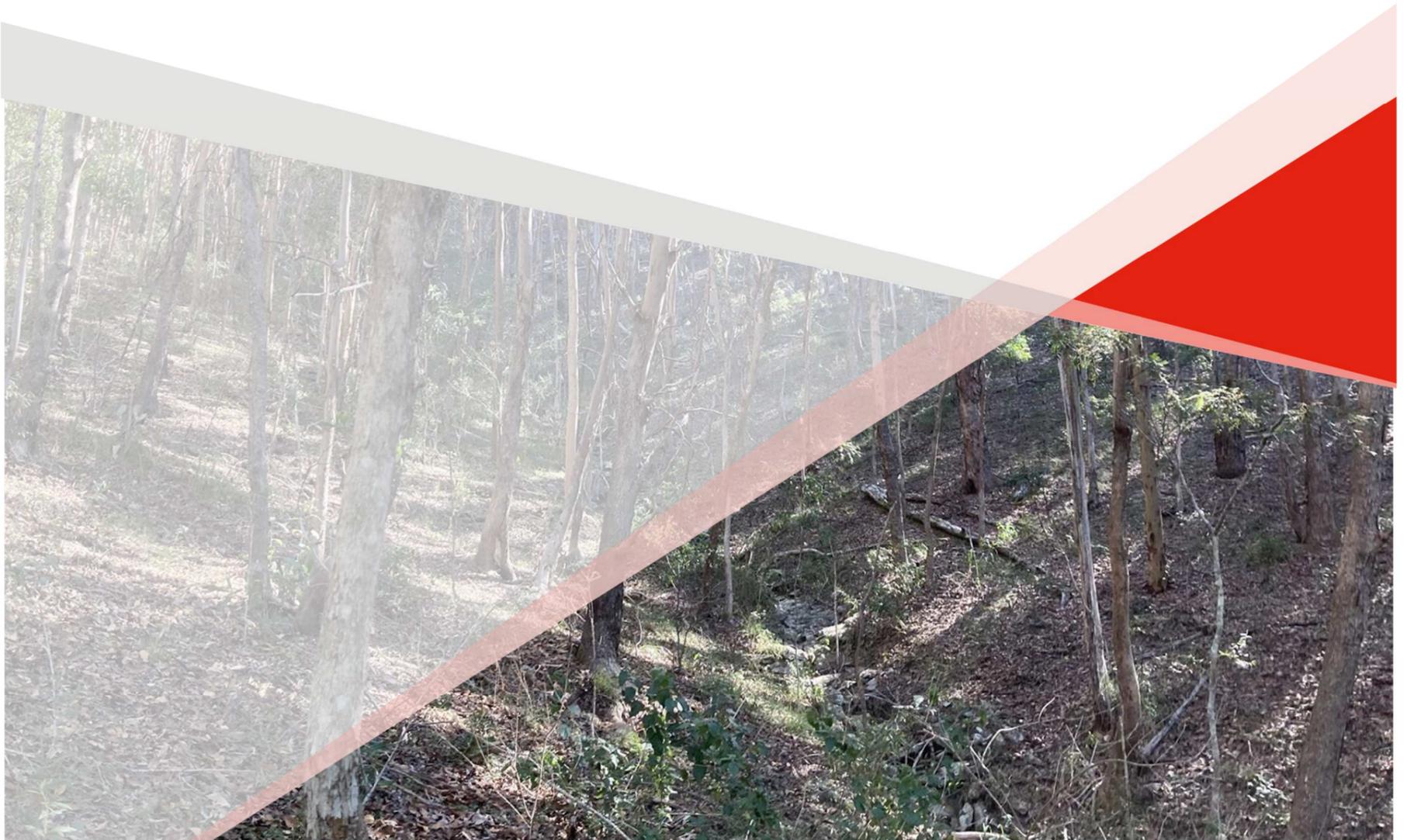
3	Species Habitat Index	16. Threats to species	Score	15	15	15						
		17. Quality and availability of food and foraging habitat	Score	10	10	10						
		18. Quality and availability of shelter	Score	10	10	10						
		19. Species mobility capacity	Score	7	10	7						
		20. Role of site location to overall population in the State.	Score	4	4	4						

Habitat Quality Score (measured)	176.00	140.00	139.00							
Habitat Quality Score (max)	176.00	176.00	176.00							
Assessment Unit Area (ha)	32.60	37.50	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Assessment Unit Habitat Quality Score	7.27	7.95	7.90							
Size weighting	0.45	0.52	0.02							
Weighted Assessment Unit Habitat Quality Score	3.31	4.16	0.18							
FINAL TOTAL HABITAT QUALITY SCORE	7.64									

Administrative Information	
Name of Assessment Officer	Date
Organisation/Company Name	
Project Name	
Phone Number	Email

Appendix E

Weed Management Plan



Weed Management Plan – On-ground Offset Site Management

Cliff Barrons Road, Ormeau Hills
Prepared for Boral Resources Pty Ltd
July 2021

Weed Management Plan – Offsets Site

Objectives and Management Measures

Completion criteria for the Offset site are as follows:

- WONS are treated until they are not observed on the Offset Site.

Management measures for the control of WONS, specifically Lantana will include:

- Baseline weed mapping for WONS will be conducted throughout the offset area and site-specific treatment techniques developed within six months of commencement of the action.
- All identified WONS will be treated within 12 months of the commencement of the action.
- WONS will be monitored and treated annually, until they are not observed on the property. Once WONS are not detected where they have previously been detected, every 2 years:
 - Comprehensive monitoring for WONS will be conducted;
 - WONS that are reported or detected by comprehensive monitoring will be treated.
- A suitably qualified bush regeneration contractor will be engaged to undertake the necessary weed control.
- Control of infestations will utilise techniques that avoid disturbance to surrounding areas.

Timeline of OMP processes

Timing	Event
Within 6-months post-commencement	Baseline monitoring completed
	Site-specific weed management techniques developed
Within 12-months post-commencement	All identified WONS will be treated within 12 months of the commencement of the action.
	Weed Management Plan finalised
Annually	WONS will continued to be monitored and treated annually until they are not observed on the property. Once the target has been achieved reviews will be carried out 2 yearly to ensure control measures are effective.
General	Control of infestations will utilise techniques that avoid disturbance to surrounding areas.
	A suitably qualified bush regeneration contractor will be engaged to undertake the necessary weed control.

Weed Management

The Offsets Management strategy (OMS) which underpinned the OMP, outlined a detailed approach to the management of weeds, specifically Weeds of National Significance (WONS) onsite, involving strategic division of habitat into management categories, to be devised during baseline surveys. The Offset site is divided into two management categories including (1) weed management and (2) weed management and infill planting. The areas that are identified as suitable for weed management are those that are mapped as remnant vegetation and tend to retain relatively intact vegetation with high potential to return to quality habitat with minimal intervention. The areas identified for weed management plus infill planting where necessary, are in their existing state, minimally degraded due to weed invasion or past land uses requiring additional intervention techniques.

Weed management areas across the offset site are shown in **Figure 1**. **Figure 2** presents the baseline weed mapping results for the offsets area, mapped in June 2021. This Plan provides recommendations for guiding weed management onsite in regard to the achieving the objectives set out in the Offsets Management Plan. Details on the roles and responsibilities, monitoring processes and risk management supporting weed management within the offsets area are provided for reference within this onsite management plan.

General Biosecurity Obligation (GBO)

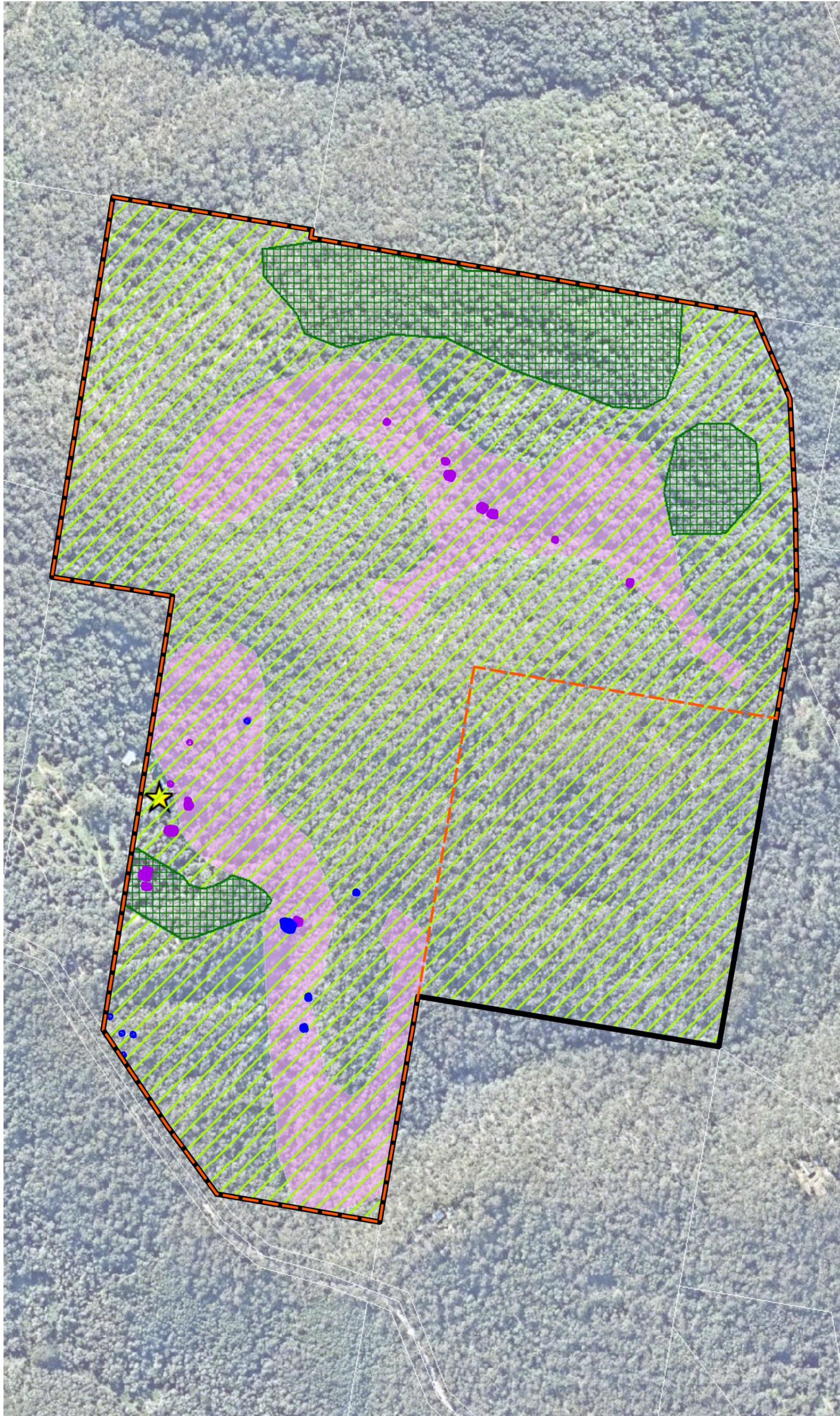
Under the Biosecurity Act 2014, landowners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control. These steps are known as the general biosecurity obligation.

The Biosecurity Act 2014 categorises restricted matter (restricted plants and animals) into the following:

- Category 1: must be reported to an inspector within 24 hours (includes Red Imported Fire Ants amongst others).
- Category 2: must be reported within 24 hours Biosecurity Queensland on 13 25 23.
- Category 3: must not be distributed either by sale or gift or released into the environment.
- Category 4: must not be moved.
- Category 5: must not be kept.
- Category 6: must not be fed (animals).
- Category 7: must be euthanised (animals).

Under this GBO, specific weeds must be managed according to the specifications under their listed category. This will be the responsibility of both the Environmental Coordinator (reporting and subsequent management directives) and the weed management contractor (detection and reporting of weeds).

1. Offset Staging



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.

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 *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

Legend

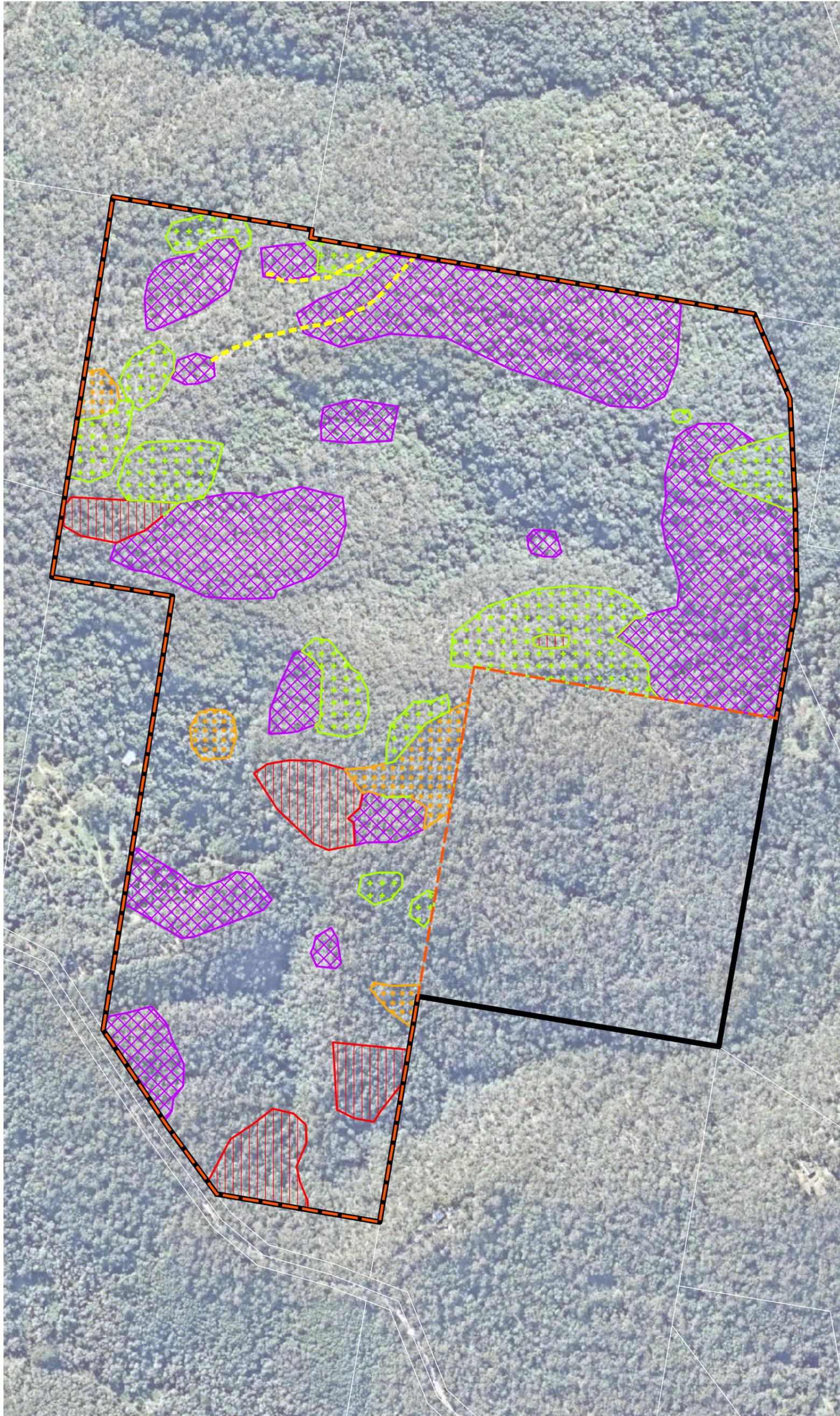
-  Qld DCDB
-  Site DCDB
-  Offset area
-  Rubbing dumping location
-  Weed management / infill planting
-  Weed management only
-  Macacamia individual / patch
-  Ormeau Bottle Tree individual / patch
-  Rainforest TEC

Issue	Date	Description	Drawn	Checked
A	29/07/2021	Preliminary	MC	KH



Transverse Mercator | GDA 1994 | Zone 56 | 1:5,000 @ A3

2. Baseline Weed Mapping



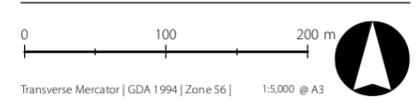
Notes:
 This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field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

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- Legend**
- Qld DCDB
 - Site DCDB
 - Offset area
 - Scattered thinning
 - Low to medium density
 - Medium density
 - Heavy density
 - Access track

Issue	Date	Description	Drawn	Checked
A	29/07/2021	Preliminary	MC	KH



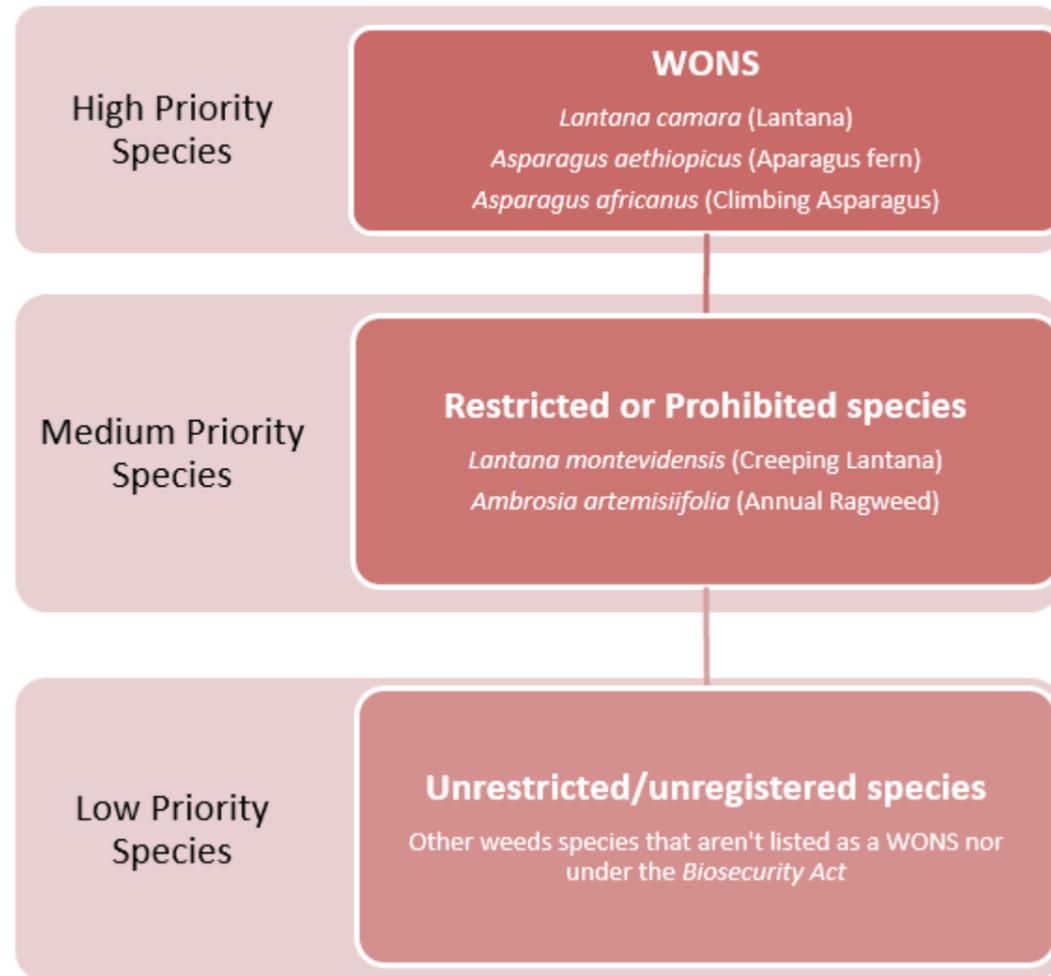
Transverse Mercator | GDA 1994 | Zone 56 | 1:5,000 @ A3



Cliff Barrons Road, Ormeau

Address: Cliff Barrons Road, Ormeau (Lot 2 on RP15912)
 29/07/2021 | 10233 E 02 Baseline Weed A

Hierarchy of weed management – Offsets Site



Control methods to be utilised within the offset site for treatment of *Lantana camara*

Infestation extent	Control Options		
	Physical	Mechanical	Chemical
Low infestation (individual plants, small area)	Hand removal	Not suitable	Spot spray or cut and paste small infestations
Moderate infestation (Multiple plants, moderate total area)	Not suitable	Slasher, brush cutter, hedger, stick-rake, etc. Increased disturbance from this method will likely result in significant germination of target weed species. Follow up treatment would be required. Not suitable for areas susceptible to erosion such as waterways or steep slopes.	More significant infestations may need to utilise high volume spraying devices to ensure suitable coverage and chemical uptake.
High infestation (Many plants, large area)	Not suitable		

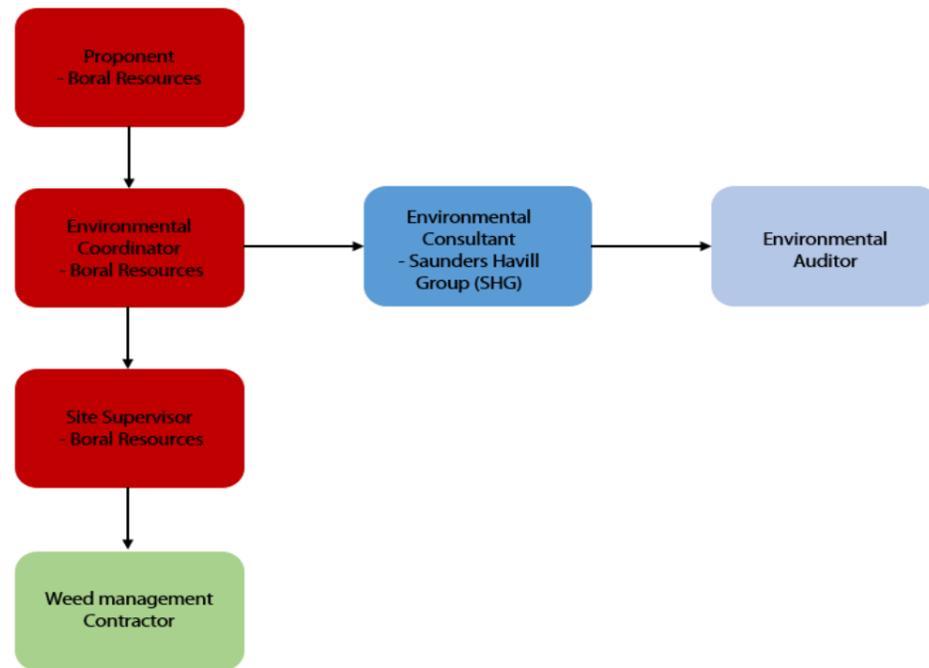
Control methods to be utilised within the offset for the treatment of *Asparagus sp.*

Infestation extent	Control Options		
	Physical	Mechanical	Chemical
Low infestation (individual plants, small area)	Hand removal	Not suitable	Permit held by DAF allows people to use some herbicide products. (APVMA Permit PER11463). Spot spray or cut and paint small infestations.
Moderate infestation (Multiple plants, moderate total area)	Not suitable	Not suitable	Spot spraying or basal bark spraying available in monocultures where no off-target damage to natives is possible.
High infestation (Many plants, large area)	Not suitable	Not suitable	

Control methods for weed management

Control method	Process	Use	Advantages	Disadvantages
Cut and paint	Technique involves cutting the stem at ground level and then paint the open cut with suitable herbicide. Herbicide needs to be applied within 15 seconds of the cut or risk the plant not absorbing the chemical.	Woody weeds (Lantana, Ochna, etc) and vines that are actively growing and not stressed.	Accurate application of herbicide to target species reducing the likelihood of impacting native species in proximity	Time consuming/labour intensive
Foliar spray (High volume and spot spray)	Herbicide is diluted and sprayed over the target species which is absorbed through the leaves	Used for grasses, herbs and shrubs (up to shoulder height) that are actively growing and not stressed	Utilises a high-volume spray (such as a quick spray) for use on large infestations or using handheld applicators for more targeted spraying (spot spray). Can be quickly applied to multiple weed species, grasses, shrubs, herbs, etc. allowing for larger areas to be treated	Off target damage can be high particularly if weather conditions are not optimal. Good coverage of herbicide on the target species can be difficult if the infestation is particularly dense or foliage is not at optimal growth stage
Cut and spray regrowth	Involves large infestations of lantana being slashed, either by machinery or hand help power tools (brush cutter, hedger, etc) and then left to regrow. Regrowth and new shoots are then foliar sprayed	Large infestations of woody weeds (e.g. lantana)	Minimises the area requiring spray treatment (allowing for more direct application) while simultaneously improving the rate of uptake by the plant and leading to more successful treatment	Timing of follow-up spray - If sprayed prematurely then uptake of herbicide will be insufficient to kill target weeds. If time between initial treatment and follow up is too long, then the infestation will return to its original form
Physical removal	Removal of entire crown, underground stem and roots of plant via digging beneath the root structure of each individual plant.	Individual asparagus trees or small, manageable infestations	Removes entire plant, no regrowth. Minimises number of repeat treatments (some repeat may be necessary to ensure plant was wholly removed and no seeding had occurred, allowing for juvenile plants to grow in place.	Time consuming/labour intensive

Chain of Responsibility



Identified Roles

Role	Nominated Person	Company	Contact ph./details
Proponent/ Project Coordinator	Kelli Adair	Boral	0416 846 220
Environmental Coordinator	Matthew Allan	Boral	0466 405 885
Administering Authority	DAWE Compliance Monitoring Branch	DAWE	EPBCMonitoring@awe.gov.au
Site Supervisor	Liam Elsworth	Boral	0401 894 236
Site Contractor	Phil Hosking	Bushcare Services	0416 272 003
Environmental Auditor	TBA	TBA	TBA

Roles and Responsibilities

Role	Responsibilities	Timeframe
Proponent/Project Coordinator	Liaise regularly with Environmental coordinator Ensure ACR is published to Boral website by 3rd May	As required, ongoing. Annually
Environmental Coordinator	Coordinate and liaise with Environmental Consultant Oversee onsite work and ensure sufficient data is available to achieve annual compliance Act on GBO when restricted weeds are detected Identify onsite non-compliance events for early intervention Provide data for annual compliance to environmental consultant Report non-compliance events within 2 business days of detection	As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing. As required
Site Supervisor	Coordinate weed management contractor Ensure periodic inspection of site works is completed Ensure sufficient data is collected to inform compliance reporting Liaise with Environmental Coordinator regularly Identify onsite non-compliance events for early intervention	Annually, ongoing. As required, ongoing. As required, ongoing. As required, ongoing.
Site Contractor	Complete weed management (specifically WONS) works as specified under the OMP and as directed by Site Supervisor and Environmental Coordinator Report WONS infestations and Restricted weeds when detected to Environmental Coordinator	Annually, ongoing. Restoration practices to be suitable documented and data and photographs provided to Site Supervisor
Environmental Consultant	Coordinate annual EPBC monitoring (weed presence and density, comparison with previous year's results) Prepare and coordinate EPBC annual compliance reporting	Annually until WONS presence not recorded, then every 2-years subsequently Published to Boral website by 3rd May each year
Environmental Auditor	Complete auditing of requirements conditioned under the EPBC approval	As required

Monitoring

Monitoring of weed infestations across the offset area will be conducted annually by suitably qualified ecologists to provide data for systematic analysis required to determine the ongoing success of the WMP under the OMP. Monitoring will be conducted in **June** each year to ensure that the timing remains consistent and aligns with the baseline assessment. This annual monitoring will be conducted until WONS are not observed on the property. Once WONS aren't detected where they have previously been detected, every 2 years the following will be completed:

- Comprehensive monitoring for WONS will be conducted;
- WONS that are reported or detected by comprehensive monitoring will be treated.

Periodic visual inspections of treated locations will take place following management onsite. Inspections will occur at the discretion of Boral, with the aim of minimising chance of regrowth following initial treatment. Details will be provided by onsite weed management contractors, to Boral's environmental coordinator who will initiate plans for supplementary weed control/management during suitable conditions, where necessary. The following measures will be utilised during monitoring events:

- GPS location of weeds either via a GPS waypoint or where a large weed infestation is present, create a GPS polyline and walk the extent of the infestation.
- On a field datasheet, detail the time of year of the monitoring event, list of observed WONS, photo location and direction and notes of any notable positive and/or negative changes in weed density and coverage.
- Carry the previous year's weed survey mapping, field datasheet and photos for noting changes in weed infestations and densities.
- Transfer GPS data to the necessary programs to generate weed survey mapping extent and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring purposes.

Corrective Actions

- Where unplanned fires or flooding occurs during the monitoring interval, any negative impacts to ecological score will be noted and compared to unaffected monitoring sites of previously the same quality and resulting potential weed infestations following disturbance will be managed to ensure the weed control completion criteria are achieved.

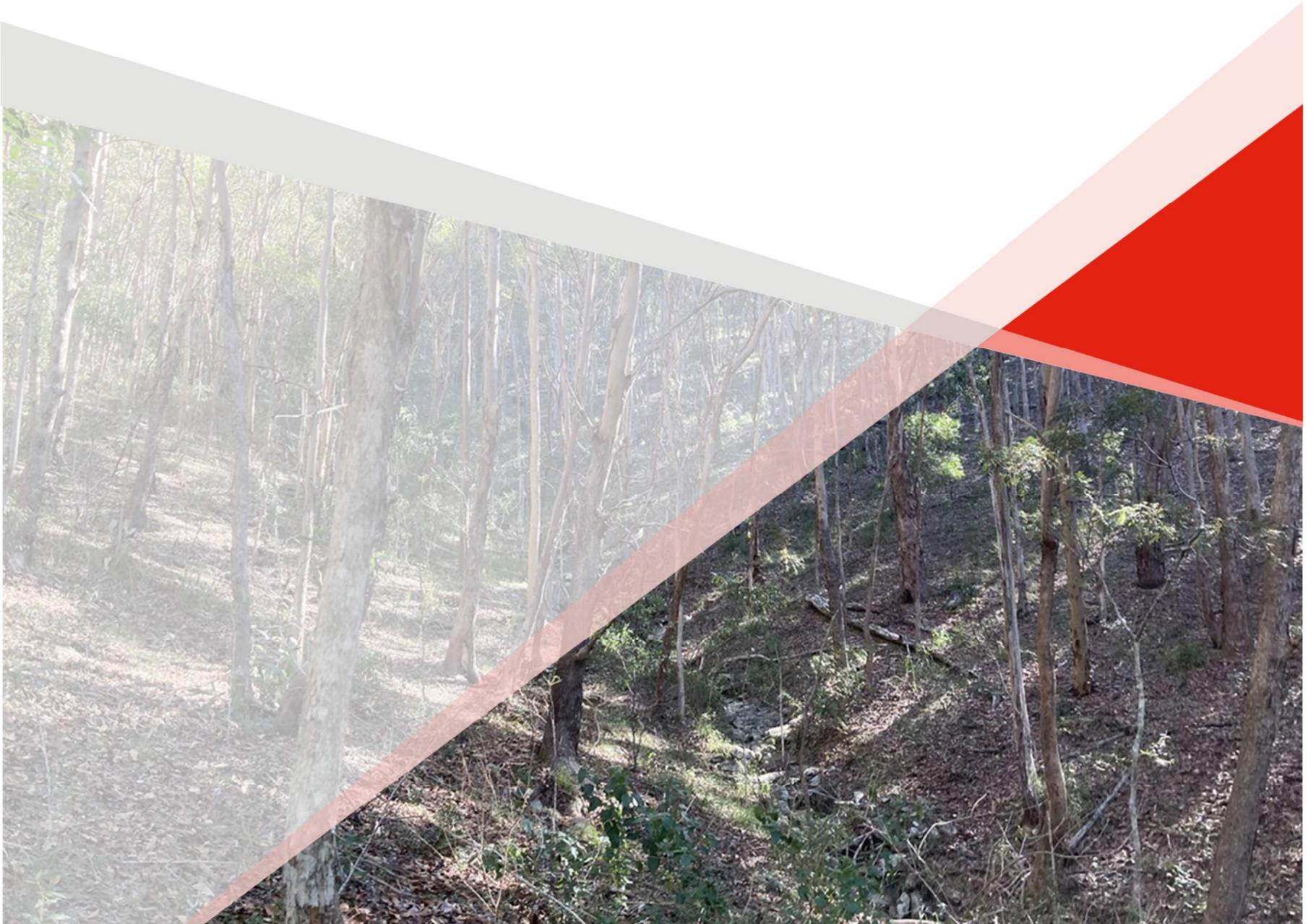
Risk Assessment

A risk assessment of the potential contraindicative events which may occur during implementation of the WMP are outlined in the Table below. These events detail issues which may arise, negatively affecting the improvement of habitat onsite, through the increase or encroachment of WONS.

Objective	Contraindicative event	Likelihood	Consequence	Risk level	Trigger	Contingency	Associated events
Remove WONS	Some Weeds of Nations Significance (WONS) not treated throughout the offset.	Possible	High	Moderate	Annual Compliance Monitoring (weed presence mapping) indicates an increase in weed density across the offset.	Audit and revision of weed management plan and consider increase in frequency of weed management. Revision of seasonal timing and frequency of weed treatment.	Annual weed monitoring
Remove WONS	Increase in WONS infestations, specifically inhibiting ecological function and habitat quality score.	Unlikely	Minor	Low	Annual Compliance Monitoring indicates a decrease or lack of increase in habitat score specifically due to WONS component.	Cause of WONS infestation identified (e.g. external infestation present with seed travelling along drainages). Remediation actions - mapping of new infestation, revision of current control methods, revision and reassessment of frequency of current monitoring actions	Annual weed monitoring
Remove WONS	Infrequent follow up to weed treatment leading to increase in density of WONS	Possible	High	Medium	Mismanagement of weed treatment timing	Audit and revision of weed management plan and consider increase in frequency of weed management. Revision of seasonal timing and frequency of weed treatment across the Offsets Site.	Monthly contractor updates; Annual compliance report; annual weed mapping
Remove WONS	High rainfall year causing site inaccessibility and leading to extended exclusion of weed treatment across site	Possible	Minor	Moderate	Exclusion from Offsets Site for greater than 2 months of the year	Revision of timeline of management across the year. Renew objective to achieve 80% WONS treatment across site by end of October each year.	Monthly contractor updates

Appendix F

Koala Habitat Management Plan



Koala Habitat Rehabilitation Management Plan

Offset Management Plan

Cliff Barrons Road, Ormeau Hills, Queensland, 4208

Prepared for Boral Resources Pty Ltd
October 2021

Job 10233 E

Koala Habitat Rehabilitation Plan – Offset Site

Overall Objectives

- Maintain koala habitat quality across the offset site which is measured as a condition value of 8 out of 10.
- Natural regeneration and minimal infill planting within remnant areas.
- Rehabilitation and revegetation of disturbed non-remnant areas within the offset area.

Specific objectives and completion criteria for the Offset site are as follows:

- All WONS identified on site to be treated within 12 months of the commencement of the action (see Weed Management Plan).
- WONS are **treated** and **monitored annually** until they are not observed on the Offset Site (see Weed Management Plan).
- Baseline mapping of rehabilitation areas completed for the offset site and a rehabilitation strategy developed within 12 months of the commencement of the action.
- Rehabilitation to commence within 12 months of weeds being treated in non-remnant and remnant areas
- Removal of barbed wire throughout koala habitat or potential dispersal habitat.
- Evidence of rehabilitation progress and survival rate of plantings will be monitored and reported in each ACR.
- Feral or unwanted dogs will be minimised through ongoing monitoring and management.
- Maintain Koala Habitat quality across the offset site which is measured as a condition value of 8 out 10.

Timeline of OMP processes

Timing	Event
Annually	Annual Compliance Report – all relevant data (due 3 rd May each year)
	Rehabilitation Strategy developed
12-months post-commencement	Restoration practices (natural regeneration, supplementary planting, infill planting) to have commenced
	Habitat Quality monitoring to have been completed - baseline values maintained
	Supplementary planting survival rate is 90% at 12-months post-planting
Annual for initial 3-years post-commencement	Complete habitat quality monitoring
3-years post-commencement	All rehabilitation practices to have commenced
3 rd Annual Compliance Report	Regeneration areas that require infill planting will be identified and regeneration actions outlined
5-years post-commencement	Habitat quality shows signs of improvement from baseline scores – planting success rate above 90%
Every 5-years from year 3 post-commencement	Complete habitat quality monitoring
General	Areas allowed to regenerate will display signs of native vegetation regrowth at rates expected for those species

Koala Habitat Rehabilitation

The offset site, as detailed in the OMP, is located entirely on Lot 2 on RP15912. Total area of the offset site is approximately 77 ha.

The Weed Management Plan (WMP) which has been completed with direction from the OMP, outlined a detailed approach to the management of onsite, involving the division of vegetation into two management areas. This includes areas for Weed Management and Infill planting as well as areas only requiring weed management. The areas that are identified as suitable for weed management and infill planting are those that are not mapped as remnant vegetation, but still retain relatively intact vegetation with high potential to return to quality habitat. These areas in their existing state are degraded due to weed invasion or past land uses requiring clearing of the ground layer.

Remnant vegetation management areas are those identified as remnant vegetation are those areas of existing vegetation mapped under the *Vegetation Management Act 1999* (VMA) as remnant. These areas were observed as having the potential to experience some disturbance from surrounding land uses, understorey clearing and/or weed invasion. Remnant vegetation management areas account for 71.7 ha of the total offset site. Page four of this Plan details recommendations for guiding the restoration process onsite in regard to the achieving the objectives set out in the Offsets Management Plan. Pages five, six and seven provide detail on the roles and responsibilities, monitoring processes and risk management.

Infill planting, where necessary, is to achieve the following densities, with species to be reflective of the appropriate Regional Ecosystem (RE) onsite (see Recommended target species, pg. 5 and Appendix A for location of RE's and long-term habitat monitoring sites). Infill planting is likely to be required specifically within areas identified as suitable for Habitat Rehabilitation (see Figure 1). Locations within areas undergoing Natural Regeneration which have not shown improvement within three years, will also undergo infill planting to the same specifications.

Planting densities for infill and supplementary planting

Vegetation Layer	Spacing
Canopy	1 per 10m ²
Shrub	3 per 10m ²
Groundcover	1 per 2m

Where infill planting occurs, these sites will be monitored annually for the ACR and to provide evidence that rehabilitation is suitably progressing. Following planting, the following steps will be taken:

- 1) Notify environmental consultant
- 2) GPS location taken and photo point monitoring commences
- 3) Photo point monitoring is to be undertaken annually at the same time of the year, post the rehabilitation works

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

- GPS co-ordinates of the photo point.
- Date, time and number of each photo.
- Direction in which the photo was taken (north, south, east and west).

After each photo monitoring event, a GPS waypoint of the location of the rehabilitation and a GPS polyline of the extent will be recorded. The following elements will be noted on a field datasheet:

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

2. Koala Habitat Management Area

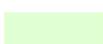


Notes:
 This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field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

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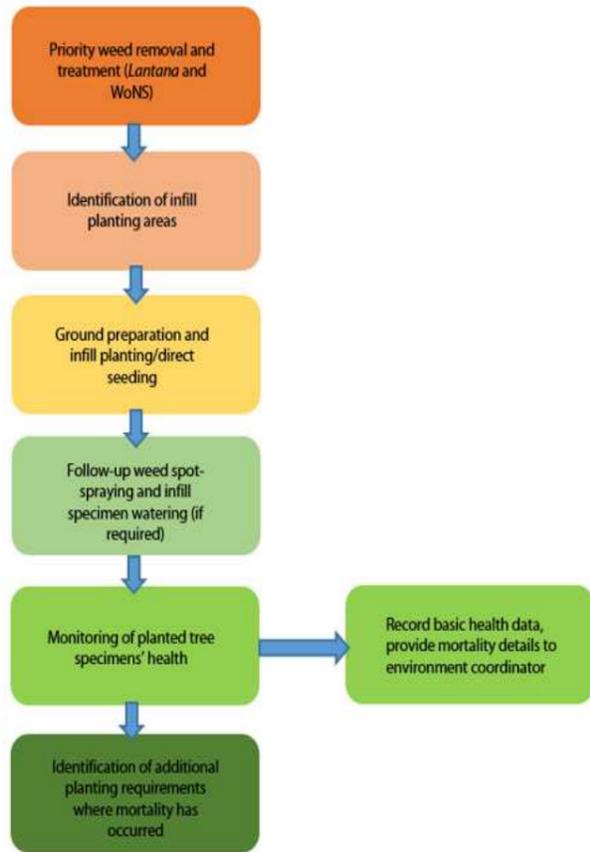
Legend

-  Qld DCDB
-  Site DCDB
-  Offset area
-  Habitat Rehabilitation Areas
-  Remnant Vegetation Management Areas

Issue	Date	Description	Drawn	Checked
A	24/09/2021	Preliminary	MP	KH



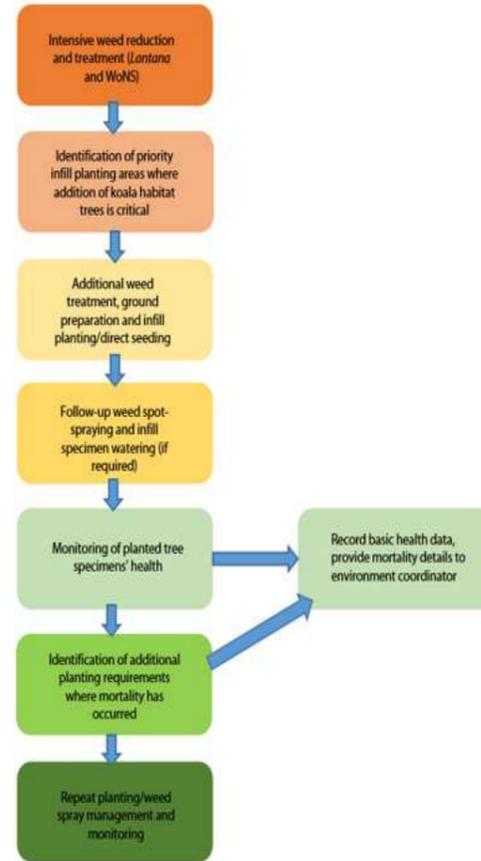
Recommended site restoration process – Offset Site



Remnant vegetation management process

Recommended target species for inclusion within restoration regime

Regional Ecosystem	Species	Strata	Koala habitat tree (Y/N)	Koala food tree (preferred)	Minimum spacing
12.11.5	<i>Corymbia citriodora</i>	Canopy	Y	Y	5m
12.11.5	<i>Eucalyptus acmenoides</i>	Canopy	Y		5m
12.11.3a/12.11.5	<i>Eucalyptus siderophloia</i>	Canopy	Y	Y	5m
12.11.5	<i>Eucalyptus crebra</i>	Canopy	Y	Y	5m
12.11.3a/12.11.5	<i>Eucalyptus propinqua</i>	Canopy	Y	Y	5m
12.11.3a	<i>Allocasuarina torulosa</i>	Subcanopy			5m
12.11.10	<i>Araucaria cunninghamii</i>	Canopy			5m
12.11.3a	<i>Lophostemon confertus</i>	Canopy/Subcanopy	Y		5m



Habitat Rehabilitation management process

Targeted Regional Ecosystems for onsite restoration

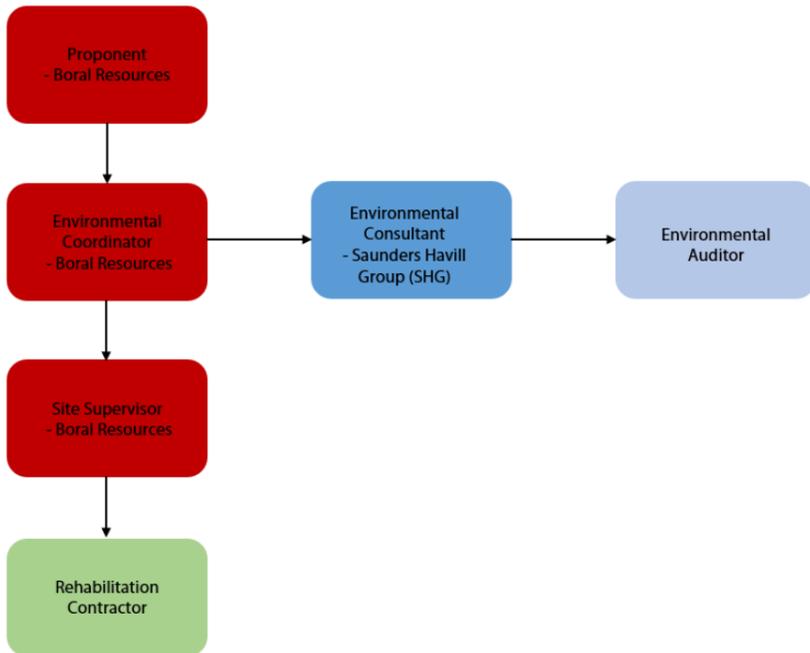
Regional Ecosystem	Structure category	Description
Least Concern RE12.11.3a	Mid-dense	<i>Lophostemon confertus</i> +/- <i>Eucalyptus microcorys</i> , <i>E. carnea</i> , <i>E. propinqua</i> , <i>E. major</i> , <i>E. siderophloia</i> woodland. Occurs in gullies and exposed ridges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 9a)
Least Concern RE 12.11.5	Mid-dense	<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest to woodland, usually including <i>Eucalyptus siderophloia</i> / <i>E. crebra</i> (sub coastal ranges), <i>E. propinqua</i> and <i>E. acmenoides</i> or <i>E. carnea</i> . Other species that may be present and abundant locally include <i>Corymbia intermedia</i> , <i>C. trachyphloia</i> subsp. <i>trachyphloia</i> , <i>Eucalyptus tereticornis</i> , <i>E. microcorys</i> , <i>E. portuensis</i> , <i>E. helidonica</i> , <i>E. major</i> , <i>E. longirostrata</i> , <i>E. biturbinata</i> , <i>E. moluccana</i> and <i>Angophora leiocarpa</i> . <i>Lophostemon confertus</i> often present in gullies and as a sub-canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 10b)
Least Concern RE 12.11.10	Dense	<i>Notophyll</i> and <i>notophyll/microphyll</i> vine forest +/- <i>Araucaria cunninghamii</i> . Characteristic species include <i>Argyrodendron trifoliolatum</i> , <i>Argyrodendron</i> sp. (Kin Kin W.D.Francis AQ81198), <i>Backhousia subargentea</i> , <i>Dissiliaria baloghioides</i> , <i>Brachychiton discolor</i> , <i>Beilschmiedia obtusifolia</i> , <i>Diospyros pentamera</i> , <i>Grevillea robusta</i> , <i>Gmelina leichhardtii</i> and <i>Ficus macrophylla</i> forma <i>macrophylla</i> . Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 2a)

Land Zone 11

The prevailing landform is Land Zone 11, described below:

Metamorphosed rocks, forming ranges, hills and lowlands. Primarily lower Permian and older sedimentary formations which are generally moderately to strongly deformed. Includes low- to high-grade and contact metamorphics such as phyllites, slates, gneisses of indeterminate origin and serpentinite, and interbedded volcanics. Soils are mainly shallow, gravelly Rudosols and Tenosols, with Sodosols and Chromosols on lower slopes and gently undulating areas. Soils are typically of low to moderate fertility.

Chain of Responsibility



Identified Roles

Role	Nominated Person	Company	Contact ph./details
Proponent/ Project Coordinator	Kelli Adair	Boral	0416 846 220
Environmental Coordinator	Matthew Allan	Boral	0466 405 885
Administering Authority	DAWE Compliance Monitoring Branch	DAWE	EPBCMonitoring@awe.gov.au
Site Supervisor	Liam Elsworth	Boral	0401 894 236
Site Contractor	Phil Hosking	Bushcare Services	0416 272 003
Environmental Auditor	TBA	TBA	TBA

Roles and Responsibilities

Role	Responsibilities	Timeframe
Proponent/Project Coordinator	Liaise regularly with Environmental coordinator Ensure ACR is published to Boral website by 3 rd May	As required, ongoing. Annually
Environmental Coordinator	Coordinate and liaise with Environmental Consultant Oversee onsite work and ensure sufficient data is available to achieve annual compliance Identify onsite non-compliance events for early intervention Provide data for annual compliance to environmental consultant Report non-compliance events within 2 business days of detection Coordinate rehabilitation contractor	As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing. As required Annually, ongoing.
Site Supervisor	Ensure periodic inspection of site works is completed Ensure sufficient data is collected to inform compliance reporting Liaise with Environmental Coordinator regularly Identify onsite non-compliance events for early intervention	As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing.
Site Contractor	Complete rehabilitation and restoration works as specified under the OMP and as directed by Site Supervisor and Environmental Coordinator	Annually, ongoing. Restoration practices to be suitable documented and data and photographs provided to Site Supervisor
Environmental Consultant	Coordinate annual EPBC monitoring (MHQA) Prepare and coordinate EPBC annual compliance reporting	Annually - 2021 to 2024 Five-yearly from 2025 Published to Boral website by 3rd May each year
Environmental Auditor	Complete auditing of requirements conditioned under the EPBC approval	As required

Monitoring

Monitoring of permanent transects established during baseline habitat quality score assessments within the Koala offset area will be conducted annually (for the first three years) by suitably qualified ecologists to provide data for systematic analysis required to determine the initial success of the KHMP. Monitoring will be conducted in June. This standardised monitoring will be conducted every five years following this initial three-year phase.

Visual inspections of planting sites will take place following direct seeding and planting onsite. Inspections will occur at a minimum, in accordance with those set out in the Table below. Inspection of new planting and seeding sites will include general health check of specimens, any weed encroachment or herbivory impacts and record any loss of individual plantings. Details will be provided to Boral's environmental coordinator who will initiate plans for supplementary plantings during suitable conditions.

Event	Timeframe	
	Initial	Long-term
Planted site	Regular visual inspection for mortality	quarterly (first year); annually thereafter
Direct seeded site	Regular visual inspection for mortality	quarterly (first year); annually thereafter
MHQT site	Annually (initial three years)	every 5 years

Corrective Actions

- If habitat quality scores are not showing improvement, at year 5, rehabilitation techniques will be reviewed by an independent, suitably qualified ecological consultant and alternate techniques recommended and implemented.
- Where koala habitat rehabilitation has a success rate below 90% at year 5, the active regeneration measures will be repeated once. If the success rate remains below 90% techniques will be reviewed by an independent, suitably qualified ecological consultant and alternate techniques recommended and implemented in consultation with DAWE.

Risk Assessment

A risk assessment of the potential contraindicative events which may occur during implementation of the KHMP are outlined in the Table below. These events detail issues which may arise, negatively affecting the increase in koala habitat quality (measured by the koala habitat quality score).

Objective	Contraindicative event	Likelihood	Consequence	Risk level	Trigger	Contingency	Associated events
Increase koala habitat quality score	Increase in introduced vertebrate pest species impacting on ecological function and habitat quality score improvement across Stage One.	Unlikely	Minor	Low	Annual Compliance Monitoring (evidence via remote-triggered cameras) indicates an increase in frequency of detection of non-native koala predator and pest vertebrate species across permanent monitoring stations onsite.	Audit and revision of vertebrate pest species management plan and consider increase in frequency of monitoring and/or trapping. Revision of seasonal timing and frequency of trapping across Stage One and entire Offset Area.	Annual vertebrate pest monitoring and trapping
	Increase in Weeds of National Significance (WoNS) infestation impacting on ecological function and habitat quality score improvement across Offset Site.	Unlikely	Minor	Low	Annual Compliance Monitoring indicates a decrease or lack of increase in habitat score specifically due to WONS component	Cause of WONS infestation identified (e.g. external infestation present with seed travelling along drainages). Remediation actions - mapping of new infestation, revision of current control methods, revision and reassessment of frequency of current monitoring actions	Annual weed monitoring
	Unmanaged burn escalation.	Possible	High	Medium	Uncontrolled prescribed fire outbreak	Burning onsite is to be strictly by prescription only. The Offsets site Fire Management Plan (FMP) outlines the suitable prescription for fire management in each vegetation type in conjunction with fuel load levels, seasonal timing and suitable weather conditions. Tailored firebreaks will be maintained as a component of this FMP, which aims to provide protection from external sources of fire in addition to contain fires within the Offsets Area. Where a fire event negatively impacts habitat within the Offsets Area, the FMP and associated practices will be audited and updated to identify critical changes in fire management practice. Reviews will be conducted at the discretion of Boral in conjunction with critical stakeholders and fire management consultants.	Annual monitoring for fuel loads and fire breaks.
	Wildfire affecting Offset site	Possible	Severe	Medium	Wildfire occurrence onsite	Burning onsite is to be strictly by prescription only. The Offsets site Fire Management Plan (FMP) outlines the suitable prescription for fire management in each vegetation type in conjunction with fuel load levels, seasonal timing and suitable weather conditions. Tailored firebreaks will be maintained as a component of the FMP, which aims to provide protection from external sources of fire in addition to contain fires within the Offsets Area. Where a fire event negatively impacts habitat within the Offsets Area, the FMP and associated practices will be audited and updated to identify critical changes in fire management practice. Reviews will be conducted at the discretion of Boral in conjunction with critical stakeholders and fire management consultants.	Annual monitoring for fuel loads and fire breaks. Annual fire management and prescription burn planning.

Objective	Contraindicative event	Likelihood	Consequence	Risk level	Trigger	Contingency	Associated events
Increase koala habitat quality score	Extended drought (greater than 2 years).	Possible	Medium	Low	Declared drought for a period exceeding two consecutive years.	Revision of current and planned fire breaks in consultation with suitable external contractor and removal of grazing reduces the potential impact of drought.	Annual fire monitoring Ongoing weather monitoring Soil and erosion monitoring on Quarry site (indicative of offsets site)
	Decrease in vegetation across the site due to incorrectly planned clearing for fire or access management.	Rare	Minor	Low	Unplanned vegetation clearing within Offset site	Accurate mapping and GIS enabled tools for contractors maintaining vegetation clear zones adjacent to offset areas. If additional vegetation clearing to what is specified in the respective management	Boral Quarry site access planning Annual fire monitoring Firebreak maintenance events
	Not achieving projected timeframe for koala habitat quality score improvement due to low planting survivorship	Possible	Medium	Medium	Planting rate mortality of greater than 10% in any one year	Detailed planting records kept; frequent monitoring of planted sites in initial pre-establishment phase; supplementary watering if required; spot spraying of weeds if required; ongoing regular inspections of planting and rehabilitation sites; identification of supplementary planting when required	Regular weed management Fire management and prescriptions burns Pest management and trapping

Appendix A – Regional Ecosystems and long-term habitat monitoring sites

Appendix G

Vertebrate Pest Management Plan



Vertebrate Pest Management Plan

Offset Management Plan

Cliff Barrons Road, Ormeau, Queensland, 4208

Prepared for Boral Resources Pty Ltd
October 2021

Job 10233 E

Vertebrate Pest Management Plan – Offset

Objectives and Management Measures

Management measures for the control of feral or unwanted domestic dogs across the offset area include:

- Baseline pest monitoring to be completed across the offsets site **within 12 months of commencement of the action.**
- including motion activated camera and scat analysis to identify evidence of feral or unwanted dogs (and other pest species) and development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed **within 12 months of commencement of the action.**
- Annual pest monitoring by a suitably qualified pest management contractor, with evidence of pest animals GPS recorded. Where there is evidence of pest animals, targeted trapping and baiting programs will be implemented by an independent, suitably qualified pest management contractor. Where annual monitoring does not identify any feral or pest species monitoring it will reduce to 2 yearly.
- Where practical and appropriate, participate cooperatively in pest management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective pest management in the locality.
- Install appropriate signage informing the area is under feral animal control.
- Numbers of feral dogs will be reduced through monitoring and management.
- The pest management strategy to be updated annually, where monitoring outcomes require it.

Annual pest monitoring and outcomes will be detailed in the ACR. The ACR will contain details on detected pests, control efforts, and total trapped/baited individuals during the given management period and identified trends of the population of pest animals within the offset area.

Completion Criteria

- Dogs or evidence of dog presence is not detected on the offset area for a period of three years.

Vertebrate Pest Management

The offset site is located on Lot 2 on RP15912, encompassing approximately 77ha of this lot. Pest monitoring and management will take place across the offsets site annually with suitable management techniques applied by a qualified pest management contractor. Methods for monitoring may include motion activated camera and/or scat analysis to identify evidence of feral or unwanted dogs (and other pest species) and development of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) to be utilised will be completed within 12-months of the commencement of the action. This management will be ongoing until completion criteria detailed within the OMP are met under the EPBC approval conditions, being that dogs or evidence of dog presence must not be detected on the offset area for a period of three years.

The control and prevention of invasive animal incursions is to be undertaken in accordance with the relevant legislation (such as the Commonwealth *Biosecurity (Consequential Amendments and Transitional Provisions) Act 2015* and the Queensland *Biosecurity Act 2014*) incorporating control of pest animals by suitably qualified pest management contractors using approved ethical methods. Applicable legislation is detailed within the full VPMP. Any required hazardous materials must be handled and stored in accordance with the material's safety data sheets and the Approved Code of Practice for the Storage and Handling of Dangerous Goods. Pest animal control is to be undertaken in a humane manner with details of all annual pest monitoring reported and included in the Annual Compliance Report (ACR).

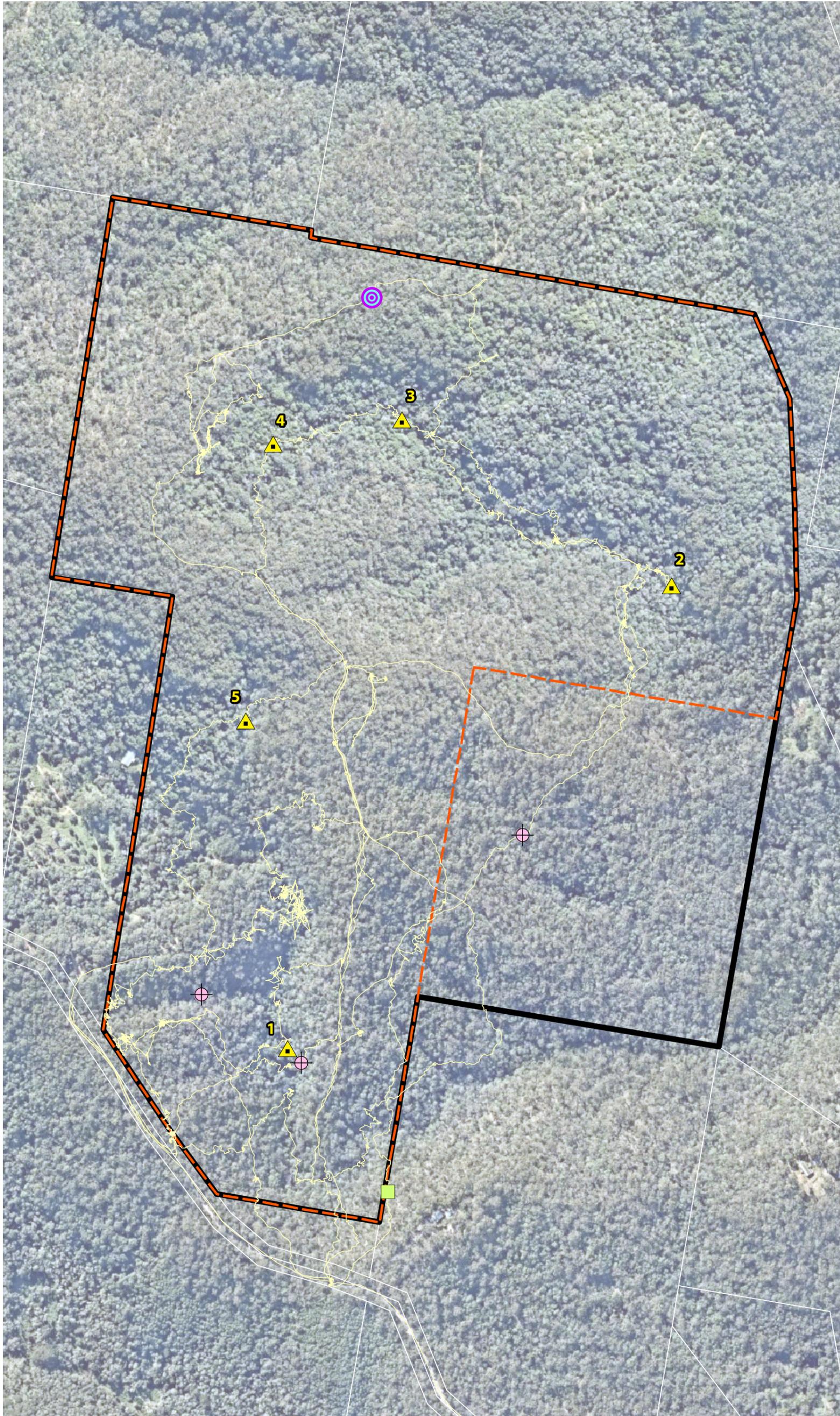
Baseline monitoring with remote-triggered cameras was undertaken in May and June 2021, with **Figure 1** detailing the locations of cameras. Despite cameras being placed within locations guided by peer-reviewed research, during Year one of camera monitoring, no evidence of dog presence was detected. In light of this, subsequent years will include two additional cameras (see **Figure 2** for proposed camera locations from Year 2 onwards).

This Plan provides recommendations for guiding vertebrate pest management onsite in regard to the achieving the objectives set out in the Offsets Management Plan. Details on the roles and responsibilities, monitoring processes and risk management supporting vertebrate pest management within the offsets area are also included within this onsite reference plan.

Timeline of OMP processes

Timing	Event
Within 12-months post-commencement	Baseline monitoring of entire offset site completed
	Management will be carried out over the entire offset area within 12 months of the commencement of the action.
	Development of a property wide feral animal management program specifying techniques (e.g., trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) to be utilised.
Annually	Vertebrate pests (specifically wild dogs and koala predators), will be monitored annually until they are not observed for three consecutive years.
General	Installation of appropriate signage informing the area is under feral control
	Where practical and appropriate, participate cooperatively in pest management planning and implementation with local land managers
	GPSs will be used to record the location of pest animals present during regular monitoring and incidental detection. Feral dogs, cats and foxes are of high concern due to their known impact on koala and potential presence via notable tracks or scats will be recorded
	Where pest animal presence is detected, targeted trapping and baiting programs will be implemented on completion of the monitoring program
	Field datasheet detailing the time of the monitoring event, observed pest animal scats or tracks, photo location and notes of any evidence of positive and/or negative changes in pest animal occurrence
	Comparison of current and previous year's data, with photographic changes in pest animal occurrences
	Transfer GPS data to spatial data programs to generate pest animal occurrences and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring and reporting purposes.

2. Camera Locations - Baseline Data



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.
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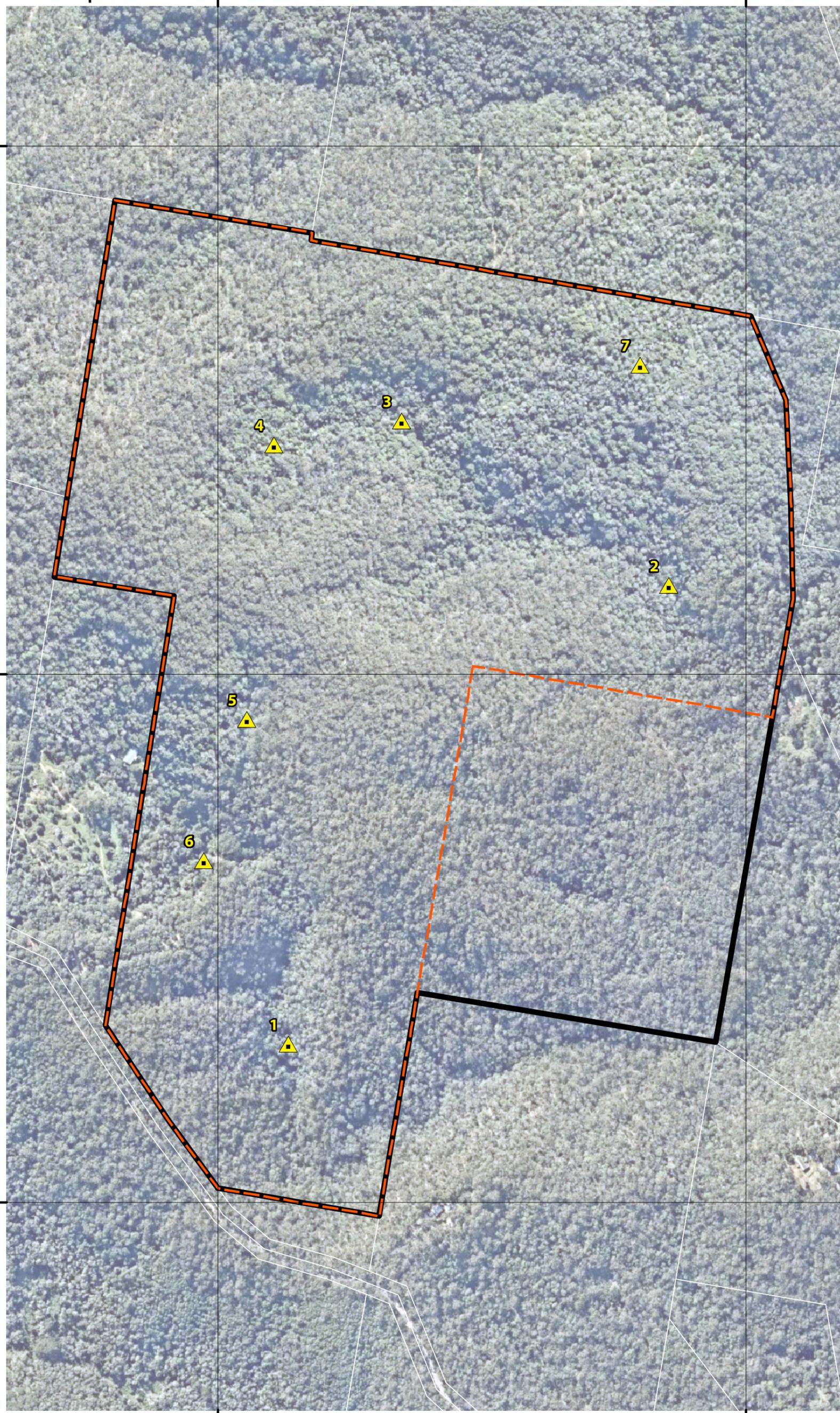
Legend

-  Qld DCDB
-  Site DCDB
-  Offset area
-  Camera
-  Potential den
-  Fauna track/trail
-  Fox print
-  GPS Tracklog

Issue	Date	Description	Drawn	Checked
B	8/12/2021	Preliminary	TC	MM



2. Proposed Camera Locations - 2022



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.

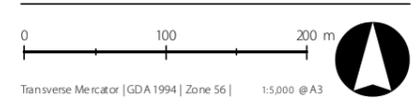
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Legend

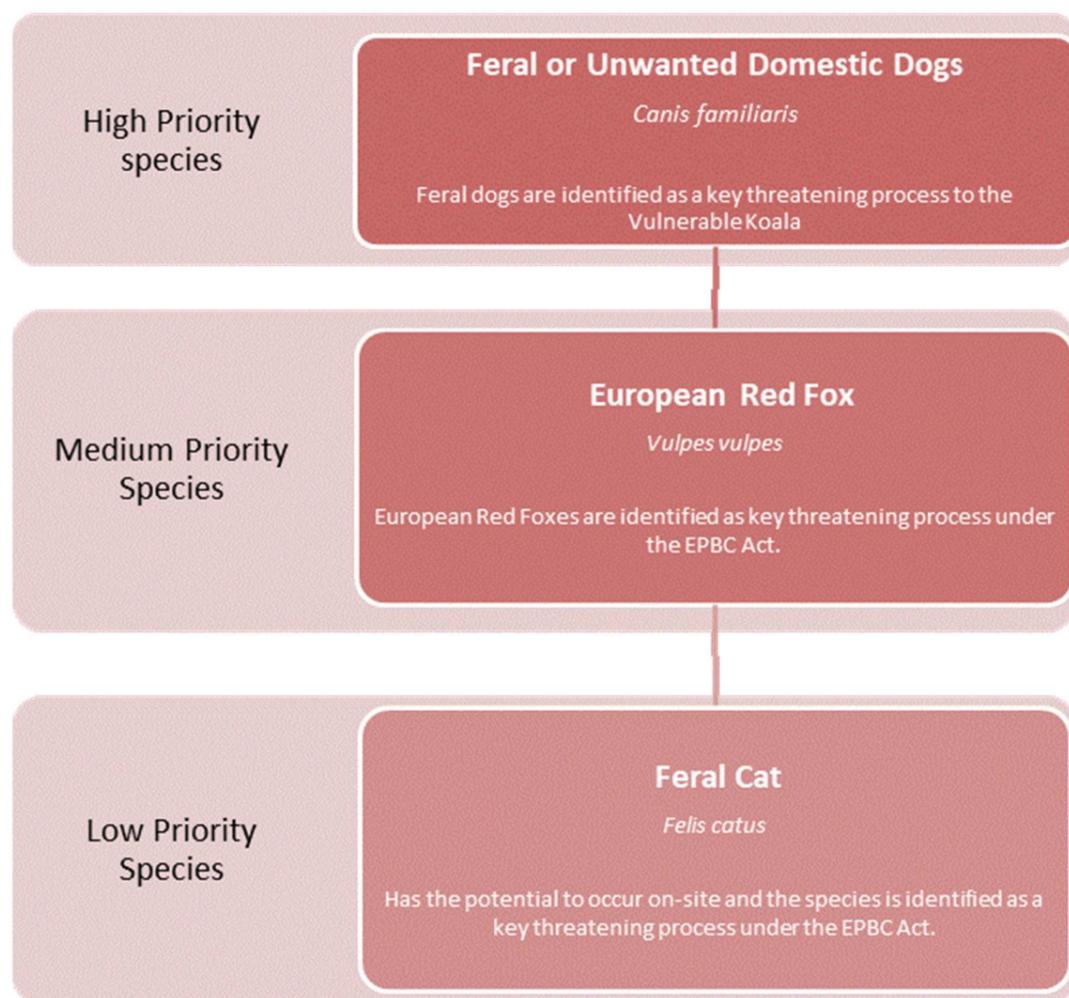
-  Qld DCDB
-  Site DCDB
-  Offset area
-  Monitoring location

Issue	Date	Description	Drawn	Checked
B	17/11/2021	Add new locations	TC	MM



Cliff Barrons Road, Ormeau

Hierarchy of vertebrate pest management



Recommended control methods for pest species

Scientific Name	Common Name	Baiting	Fencing	Shooting	Trapping
<i>Canis familiaris</i>	Feral Dog	Y	Y	Y	Y
<i>Cervus elaphus</i>	Red Deer	N	Y	Y	Y
<i>Felis catus</i>	Feral Cat	Y	Y	Y	Y
<i>Sus scrofa</i>	Feral Pig	Y	Y	Y	Y
<i>Vulpes vulpes</i>	Red Fox	Y	Y	Y	Y

*Y – Recommended, N- not recommended by the Queensland Government.

Feral species known and have potential to occur on-site

Scientific Name	Common Name	Biosecurity Act 2014 Category
<i>Canis familiaris</i>	Feral Dog	3, 4, 6
<i>Felis catus</i>	Feral Cat	3, 4, 6
<i>Vulpes vulpes</i>	Red Fox	3, 4, 5, 6

Vertebrate Pest Management Methods

Control method	Process	Advantages	Disadvantages
Baiting	It is important that when the baits are placed on-site that they reduce the likelihood of non-target species ingesting the bait. There are distance requirements and exclusions zones when using 1080 poison. Baits are not to be laid: - Within 5m of fenced boundary; - Within 20m of permanent or flowing water bodies; - Within 50m of the centreline of a declared road; - Within 150m of a dwelling.	Cost effective, effective in reducing dog numbers.	May affect non-target species, requires qualified, trained officer to deploy and manage program onsite, primary threat to spot-tailed quoll.
Fencing	Fencing of areas of habitat where target pest species can be excluded effectively from an area.	Highly effective where fully fenced areas can be installed and maintained.	Labour-intensive and costly.
Trapping	Specialised traps are set in the evening and checked after dawn the following morning, with any target pest species trapped, subsequently destroyed.	Species specific, with traps specialised to target different species and animal sizes. Non-target animals can be subsequently released unharmed.	Labour-intensive and costly.
Shooting	Vertebrate pests are typically trapped and shot onsite, or in large or remote locations, aerial shooting techniques may be utilised.	Can be effective when used in conjunction with other trapping methods.	Health and safety concerns, highly trained and licensed officer required to conduct shooting program.

Trapping

Trapping is considered an effective tool when managing smaller pest animal populations, however, is very labour intensive. Department of Agriculture and Fisheries (DAF) recommended two types of traps for the management of feral dogs, with leg-hold traps now considered inhumane and less selective. Traps should be strategically placed along known wild dog pads or activity areas, with potential lures having potential to increase the effectiveness of traps. Traps must be set late afternoon each day and checked the following morning. **This method is highly recommended for use on the Ormeau Offset site.**

Foot-hold traps:

Foot-hold traps are selected to match the foot size of the selected animal. The trap is designed to catch the animal across the tougher padded area of the foot. The objective of foot-hold traps is to hold the animal firmly at the foot but reduced the potential damage. Jaws of foot-holds can be rubber padded, offset, or laminated. These traps are considered effective in the control of feral dogs while reducing non-target animals captures and limiting animal welfare conditions.

Collarum™ neck restraint:

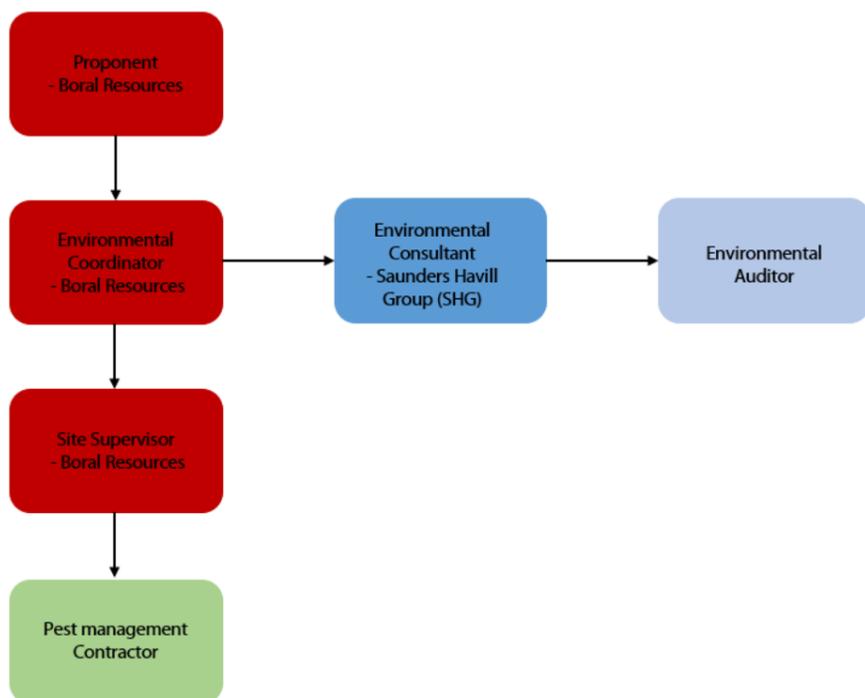
The Collarum™ neck restraint is also a recommended trap by DAF, however, requires a high level of training. While this type of trap is considered humane, the public may not be able to distinguish it from a snare, causing public concern.

The chosen contractor will implement a predator trapping program at the Boral Offset Site. The trapping schedule will incorporate the following:

- Deployment of camera traps onsite to determine optimal trap placement;
- Subsequent trap deployment and monitoring of traps;
- Provision of pest management data to Boral representatives (Environmental Coordinator).

Data collated during the trapping events will be for comparisons against previously recorded numbers of vertebrate pests (from annual monitoring and annual trapping) and reported within the Annual Compliance Report.

Chain of Responsibility



Identified Roles

Role	Nominated Person	Company	Contact ph./details
Proponent/ Project Coordinator	Kelli Adair	Boral	0416 846 220
Environmental Coordinator	Matthew Allan	Boral	0466 405 885
Administering Authority	DAWE Compliance Monitoring Branch	DAWE	EPBCMonitoring@awe.gov.au
Site Supervisor	Liam Elsworth	Boral	(07) 5546 6525
Site Contractor	TBA	TBA	TBA
Environmental Auditor	TBA	TBA	TBA

Roles and Responsibilities

Role	Responsibilities	Timeframe
Proponent/Project Coordinator	<ul style="list-style-type: none"> Liaise regularly with Environmental coordinator Ensure ACR is published to Boral website by 3rd May 	<ul style="list-style-type: none"> As required, ongoing. Annually
Environmental Coordinator	<ul style="list-style-type: none"> Coordinate and liaise with Environmental Consultant Oversee onsite work and ensure sufficient data is available to achieve annual compliance Identify onsite non-compliance events for early intervention Provide data for annual compliance to environmental consultant Report non-compliance events within 2 business days of detection Ensure appropriate signage informing the area is under feral control is installed 	<ul style="list-style-type: none"> As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing. As required As required, ongoing.
Site Supervisor	<ul style="list-style-type: none"> Coordinate pest management contractor Ensure periodic inspection of site works is completed Ensure sufficient data is collected to inform compliance reporting Liaise with Environmental Coordinator regularly Identify onsite non-compliance events for early intervention 	<ul style="list-style-type: none"> Annually, ongoing. As required, ongoing. As required, ongoing. As required, ongoing. As required, ongoing.
Site Contractor	<ul style="list-style-type: none"> Complete vertebrate pest management (specifically dogs, but in accordance with the hierarchy of pests) works as specified under the OMP and as directed by Site Supervisor and Environmental Coordinator. Ensure evidence of location of vertebrate pest species are recorded via GPS Install appropriate signage informing the area is under feral control 	<ul style="list-style-type: none"> Annually, ongoing. As detected, ongoing. Pest Management practices to be suitably documented and data, report and photographs provided to Site Supervisor.
Environmental Consultant	<ul style="list-style-type: none"> Coordinate annual EPBC monitoring (vertebrate pest presence, comparison with previous year’s results) Prepare and coordinate EPBC annual compliance reporting 	<ul style="list-style-type: none"> Annually until vertebrate pest presence not detected for three years. Published to Boral website by 3rd May each year
Environmental Auditor	<ul style="list-style-type: none"> Complete auditing of requirements conditioned under the EPBC approval 	<ul style="list-style-type: none"> As required

Monitoring

To achieve optimal results, camera trap locations should be used repeatedly in a systematic approach, installed at the same locations during annual monitoring events. During baseline assessments (2021), the camera traps were successful in identifying both native and introduced fauna species. Two of the cameras detected European foxes and no domestic or feral dogs were detected onsite.

To analyse the camera trap locations, a square grid was overlaid on the offset site (approximately 700 x 700m). This provides rough indication of mean home range of wild dogs, as home range for the species has been found to vary substantially with differing environmental factors.

During the baseline studies, five cameras were installed aligning with the grid-based approach however, in consideration of the lack of dogs detected and using the adaptive management framework, an additional two cameras will be installed across the offsets site in subsequent years. For locations for ongoing monitoring across the site refer to **Figure 2**.

The following pest animal monitoring methodology will be implemented:

- GPSs will be used to record the location of pest animals present during regular monitoring and incidental detection. Feral dogs, cats and foxes are of high concern due to their known impact on koala and potential presence via notable tracks or scats will be recorded in addition to evidence captured via camera traps.
- Field datasheet detailing the time of the monitoring event, observed pest animal scats or tracks, photo location and notes of any evidence of positive and/or negative changes in pest animal occurrence.
- Comparison of current and previous year's data, with photographic changes in pest animal occurrences, where available.
- Transfer GPS data to spatial data programs to generate pest animal occurrences and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring and reporting purposes.
- Where pest animal presence is detected, targeted trapping and baiting programs will be implemented on completion of the monitoring program.

Corrective Actions

If pest animals are detected, the control measures and the timing and frequency of management measures will be increased and maintained at a higher rate of control until the completion criteria have been attained.

Risk Assessment

A risk assessment of the potential contraindicative events which may occur during implementation of the VPMP are outlined in the Table below. These events detail issues which may arise, negatively affecting the improvement of habitat for koala onsite, through the increase of known vertebrate pests onsite, or the establishment of new pests.

Objective	Contraindicative event	Likelihood	Consequence	Risk level	Trigger	Contingency	Associated events
Control predation	Presence of foxes, feral and unwanted dog usage within the offset area.	Possible	Moderate	Moderate	Annual pest monitoring indicates the presence of feral or unwanted dogs.	Increase the level of targeted trapping and baiting by a suitably qualified pest management contractor. Review and audit the invasive animal control measures and revise the measures accordingly.	Annual pest monitoring and reporting.
Control predation	Predation of koalas by feral or unwanted dogs.	Unlikely	Moderate	Low	Evidence of predation on Koala by dog, or annual pest monitoring indicates the presence of feral or unwanted.	Increase the level of targeted trapping and baiting by a suitably qualified pest management contractor. Review and audit the invasive animal control measures to evaluate their effectiveness and revise the measures accordingly.	Annual pest monitoring and reporting.
Remove vertebrate pests (specifically koala predators – wild dogs and foxes) from offsets site	Annual pest management delayed due to weather or unpredicted event.	Possible	Minor	Moderate	Annual Compliance Monitoring (pest monitoring) indicates an increase in detection rates of vertebrate pests across the site.	Audit and revision of vertebrate pest management plan and consider change in timing of pest management. Revision of seasonal timing and frequency of pest monitoring and management events.	Annual vertebrate pest monitoring; onsite reports of vertebrate pests.
Decrease and remove vertebrate pests (specifically koala predators – wild dogs and foxes) from offsets site	Increase in detection rates of vertebrate pest species impacting on ecological function and habitat quality score improvement across the offset site.	Unlikely	Minor	Low	Annual Compliance Monitoring indicates an increase in detection rates of vertebrate pests across the offsets site.	Reassessment of frequency of current monitoring and pest management events	Annual vertebrate pest monitoring; onsite reports of vertebrate pests.
Remove vertebrate pests (specifically koala predators – wild dogs and foxes) from offsets site	Infrequent follow up to pest trapping event due to unpredicted weather event, leading to animals remaining in traps for more than one night.	Unlikely	High	Medium	Exclusion from one or more trap site locations for more than a single night, due to unpredicted weather event.	Revision of timeline of management across the year to exclude wet and/or storm season. Review protocol and process with pest management contractor.	Onsite weather updates; short- and long-term weather forecasts; pest contractor report.
Remove vertebrate pests (specifically koala predators – wild dogs and foxes) from offsets site	High rainfall year causing site inaccessibility and leading to extended exclusion of vertebrate pest management across site.	Possible	Minor	Medium	Exclusion from one or more offsets Stages for greater than 3 months of the year	Revision of timeline of management across the year. Renew objective to achieve pest monitoring and management outside of wet season October each year.	Onsite weather updates.

Appendix H

Bushfire Management Plan

Bushfire management plan

Ormeau Quarry | Queensland | Offset site
Prepared for Boral Resources (Queensland) Pty Limited | 12 November 2021

Bushfire management plan

Final

Report 21061 | Boral Resources (Queensland) Pty Limited | 12 November 2021

Approved by Robert Janssen

Position Managing principal

Signature



Date 12 November 2021

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Document control

Version	Date	Prepared by	Reviewed by
Draft	1 September 2021	C. Turner	R. Janssen
Draft V1	29 October 2021	C. Turner	R. Janssen
Final	12 November 2021	C. Turner	R. Janssen

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Table of contents

Contents

Table of contents	i
1 Introduction	1
1.1 Scope	1
1.2 Legislative requirements	2
1.3 Boral's requirements	2
1.4 Responsibility.....	2
1.5 Review	2
1.6 BMP outline	3
2 Koala habitat improvement.....	4
2.1 Weeds of national significance management plan.....	4
2.2 Rehabilitation and regeneration management plan	4
2.3 Koala habitat quality management plan.....	4
2.4 Considerations for the BMP.....	4
2.5 Risk assessment	5
3 Bushfire analysis	6
3.1 Vegetation	6
3.2 Fire weather.....	6
3.3 Landscape slope.....	6
3.4 Bushfire hazard areas	6
3.5 Fire history.....	7
3.6 Access for bushfire management	7
3.7 Water supply for bushfire management	7
4 Bushfire management strategy	11
4.1 Vehicle access	11
4.2 Walking/buggy access.....	11
4.3 Walking access only	11
4.4 Public road	11
4.5 Prescribed burning.....	11
4.5.1 Burn plan.....	16
4.5.2 Compliance with the FES Act.....	16
4.5.3 Appraisal.....	17

4.6	Monitoring.....	17
4.6.1	Fuel hazard monitoring.....	17
4.6.2	Fire history records.....	17
5	Works program.....	17
6	Review and evaluation.....	20

Figures

Figure 3.1	Vegetation.....	8
Figure 3.2	Recommended fire intervals.....	9
Figure 3.3	Queensland bushfire hazard area map.....	10
Figure 4.1	Bushfire management strategy.....	13

Tables

Table 4.1	Fire management units.....	14
Table 5.1	Works program.....	17

Appendix

- Appendix 1 Site aerial plan
- Appendix 2 Recommended fire regimes

1 Introduction

Land and Environment Consultants Pty Ltd (**LEC**) was engaged by Boral Resources (Queensland) Pty Limited (**Boral**) to prepare a bushfire management plan (**BMP**) for the Ormeau Quarry offset management area (**offset management area**), located at Cliff Barrons Road, Kingsholme.

The offset management area was established as a condition of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) approval for the Ormeau Quarry expansion project. The Ormeau Quarry expansion project was referred under the EPBC Act on 13 October 2016 and subsequently declared a 'controlled action' requiring assessment by 'preliminary documentation' pursuant to section 18 and 18A (listed threatened species and communities) (EPBC Act reference 2016/7797). The trigger for the controlled action was due to potential impacts on *Phascolarctos cinereus* (**koala**), which is listed as 'vulnerable' under the EPBC Act.

Condition 6 of the EPBC Act approval required the preparation of an offset management plan (**OMP**) for the offset management area (SHG 2018).

The OMP includes several management actions to improve koala habitat within the offset management area. Management action 6 of the OMP requires a BMP to be prepared for the offset management area 'for the purpose of protecting the offset area from high intensity fires as well as for conducting ecological burns with the aim to enhance biodiversity in line with the Queensland regional ecosystem (**RE**) description database fire management guidelines'.

1.1 Scope

The scope of this BMP is limited to the offset management area on the site aerial plan at Appendix 1. Notwithstanding, due to site access constraints the implementation of management actions in this BMP involve adjoining Boral properties.

The OMP requires the BMP to identify management measures for the control of bushfires across the offset management area such as:

- Installation of firebreaks and access tracks.
- Annual inspection and maintenance of firebreaks and access tracks.
- Prescribed burning undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade (**RFB**) and in compliance with the Queensland *Fire and Emergency Services Act 1990* (**FES Act**).
- Use of domestic livestock or other methods to reduce fuel loads in the event that a fire risk professional, eg representative of the RFB, and a suitably qualified person 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 reassessed by the forementioned professional following the grazing event.

In addition to the above requirements, the OMP requires the BMP to 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 RE description database guidelines and biodiversity outcomes sought for the offset management area.

1.2 Legislative requirements

Bushfire management operations by Boral and Boral's contractors are governed by the FES Act.

Section 62 of the FES Act requires Boral and/or Boral's contractors to apply to a fire warden (orally or in writing) for a permit to light a fire on any land.

Section 67 of the FES Act requires Boral and Boral's contractors to take all reasonable steps to extinguish or control unauthorised fire within the offset management area and as soon as practical, report the existence and location of the fire to a fire officer or a fire warden.

Bushfire management operations could be subject to other Commonwealth and Queensland legislation relating to environment, heritage and workplace health and safety, including:

- EPBC Act.
- *Commonwealth Aboriginal and Torres Strait Island Heritage Protection Act 1984.*
- *Queensland Mining and Quarrying Safety and Health Act 1999.*
- *Queensland Planning Act 2017.*
- *Queensland Nature Conservation Act 1992.*
- *Queensland Vegetation Management Act 1999.*
- *Queensland Heritage Act 1992.*

1.3 Boral's requirements

Bushfire management measures are to be performed in accordance with Boral's health, safety and environment policies, procedures and standards, including:

- Health Safety Environment and Quality Standard – Emergency Preparedness and Response.
- Site Emergency Response Plan.
- Site Induction.

1.4 Responsibility

Boral is responsible for the implementation of this BMP.

1.5 Review

To mitigate the risk of unplanned fire causing degradation of koala habitat quality within the offset management area, the OMP requires the management measures in this BMP to be reviewed in the event of an unplanned fire adversely impacting the offset management area.

'Adverse impacts' are not defined in the OMP but could mean, for example, management areas that are to be protected from fire are burnt and areas of active rehabilitation or revegetation are damaged.

1.6 BMP outline

This BMP includes the following sections:

- An introduction (this section).
- Management actions for koala habitat improvement
- Description of the bushfire characteristics of the offset management area.
- Bushfire management strategy.
- Works program.
- Review and evaluation.

2 Koala habitat improvement

This chapter summarises key management actions of the OMP which help to inform the bushfire management strategy in this BMP.

2.1 Weeds of national significance management plan

Lantana camara (**lantana**) has been identified as a key species to be controlled within the offset management area regarding koala habitat values. Lantana and other weeds of national significance (**WONS**) will be treated within 12 months of the commencement of the WONS management plan. They will be monitored and treated annually until they are not observed on the property. Once WONS are not detected where they have previously been detected, every 2 years, comprehensive monitoring will be conducted and if WONS are detected they will be treated.

2.2 Rehabilitation and regeneration management plan

Rehabilitation and regeneration has been identified as a key action that will improve existing koala habitat values within the offset management area. Rehabilitation will aim to reinstate existing degraded areas and areas exposed as a result of WONS removal with koala food and shelter trees consistent with the REs in those particular locations. In areas mapped as remnant vegetation, natural regeneration is favoured over the reconstruction of the vegetation community, ie importation of soil, dense planting etc. Where natural regeneration is unsuccessful, minor infill planting will be implemented to facilitate recovery. Baseline mapping to identify rehabilitation and regeneration areas and development of a rehabilitation and regeneration management plan specifying techniques and species to be utilised will be completed within 12 months of commencement of the rehabilitation and regeneration management plan. All rehabilitation will commence within 3 years of the commencement of the rehabilitation and regeneration management plan and regeneration areas that require infill planting will be identified and regeneration actions outlined in the third annual compliance report.

2.3 Koala habitat quality management plan

Koala habitat quality assessments will be conducted annually for the first 3 years of the koala habitat quality management plan and then once every 5 years to determine if the target quality score of 8 has been maintained for the offset management area over the EPBC Act period of approval. Assessments will be undertaken at 6 permanent transect locations established within the offset management area based on the RE and the size of RE patches within the offset management area.

2.4 Considerations for the BMP

Management measures in this BMP must support key actions of the OMP that will improve koala habitat values within the offset management area. Considerations for the BMP in relation to the key actions of the OMP include:

- Monitoring of lantana and other WONS within areas subject to prescribed burns and follow-up management if required.
- Management measures will seek to protect habitat rehabilitation areas from fire unless fire is being used as a tool to benefit rehabilitation.

- Management measures will be tailored to compliment investments into assisted regeneration such as the seeding or planting of endemic canopy tree species.
- Management measures will not result in the clearing of remnant vegetation, for example, new fire trails or fire breaks will not be established in remnant vegetation.

2.5 Risk assessment

The OMP includes a risk assessment which identifies that ‘unplanned fire causing degradation of habitat quality through the loss of native plant diversity and abundance within the offset area’ is a medium level risk to ‘maintaining or improving habitat quality’ within the offset management area.

3 Bushfire analysis

This chapter provides an analysis of the bushfire characteristics of the offset management area.

3.1 Vegetation

Appendix 2 provides a summary of recommended fire regimes (QG 2021) and potential fuel loads (QFES 2019) for the vegetation which occurs within the offset management area based on RE classifications.

REs which occur within the offset management area are shown on Figure 3.1 and recommended fire intervals for REs are shown on Figure 3.2.

3.2 Fire weather

The fire danger season at the offset management area starts in July, peaks in September and begins to fall in November, but will remain elevated until consistent summer rainfall occurs. Typically, the worst fire weather conditions will be experienced during the fire danger season when the wind direction is from the west.

Forest Fire Danger Index (**FFDI**) values represent the chance of a fire starting, its rate of spread, its intensity and the difficulty of suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long and short-term drought effects. The severe fire weather map in Catalyst (QFES 2021) indicates the 5% annual exceedance probability FFDI for Ormeau Quarry is 53.

Fire danger ratings (**FDR**) are based on the forecast weather conditions, ie FFDI, and other risk factors and give advice about the level of bushfire threat on a day. An FFDI of 53 correlates with a 'severe' FDR and will be associated with hot, dry and windy conditions. If a fire starts and takes hold under these conditions, it will be difficult to control.

3.3 Landscape slope

The landscape slope of the offset management area is varied and ranges from slight undulations to steep hills and deep gullies. In general, RE 12.11.5 is associated with the ridges of hills whereas RE 12.3.7, RE 12.11.3a and RE 12.11.10 are associated with the lower slopes of hills and the base of gullies.

Landscape slope has a significant effect on the rate of spread and intensity of a fire, whereby a fire burning on 10° of upslope will have double the rate of spread and intensity of a fire burning on flat land.

3.4 Bushfire hazard areas

In Queensland, bushfire hazard areas are identified on the basis of landscape slope, vegetation type (as a surrogate for fuel load) and fire weather severity (Leonard et al., 2014). Spatial data for each of these attributes is used to calculate potential fire-line intensity, which is the basis for delineating bushfire hazard areas as follows:

- Very high potential fire line intensity > 40,000 kilowatts/m (**kW/m**).
- High potential fire line intensity 20,000-40,000 kW/m.

- Medium potential fire line intensity 4,000-20,000 kW/m.
- Non bushfire hazard areas < 4,000kW/m.

The bushfire prone area map for the offset management area is presented in Figure 3.3 and indicates that the offset management area contains medium, high, and very high potential bushfire intensity areas. The exception is the area mapped RE 12.11.10 which is not normally flammable (QG 2021) and is a non-bushfire prone hazard class (QFES 2019).

3.5 Fire history

The fire history map in Catalyst (QFES 2021) indicates that there have been no fires within the offset management area during the past 10 years. Therefore, koala habitat values of the offset management area are potentially at risk due to inappropriate fire regimes, ie too long since the last fire.

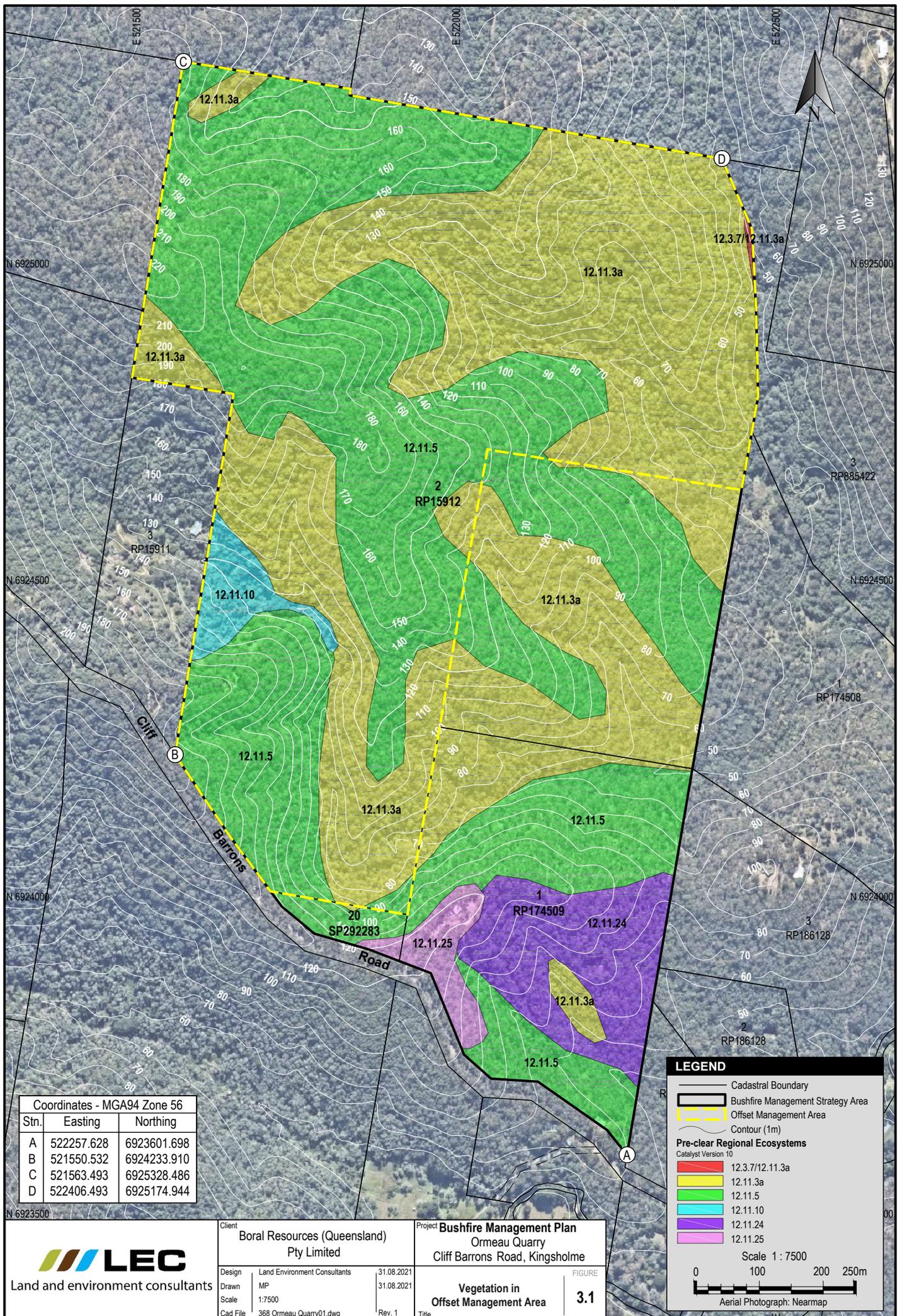
3.6 Access for bushfire management

Vehicle access tracks within the offset management area are degraded and require works to make them easily trafficable by 4wd vehicles and of use for bushfire management.

There are numerous informal tracks through the offset management area. With work, these tracks could provide walking/buggy access for bushfire management.

3.7 Water supply for bushfire management

The offset management area does not contain water supply points which could be used for bushfire management.



Coordinates - MGA94 Zone 56		
Stn.	Easting	Northing
A	522257.628	6923601.698
B	521550.532	6924233.910
C	521563.493	6925328.486
D	522406.493	6925174.944

LEC
Land and environment consultants

Client	Boral Resources (Queensland) Pty Limited	
Project	Bushfire Management Plan Ormeau Quarry Cliff Barrons Road, Kingsholme	
Design	Land Environment Consultants	31.08.2021
Drawn	MP	31.08.2021
Scale	1:7500	
Cad File	368 Ormeau Quarry01.dwg	Rev. 1

Vegetation in Offset Management Area

FIGURE **3.1**

LEGEND

- Cadastral Boundary
- Bushfire Management Strategy Area
- Offset Management Area
- Contour (1m)

Pre-clear Regional Ecosystems
Catalyst Version 10

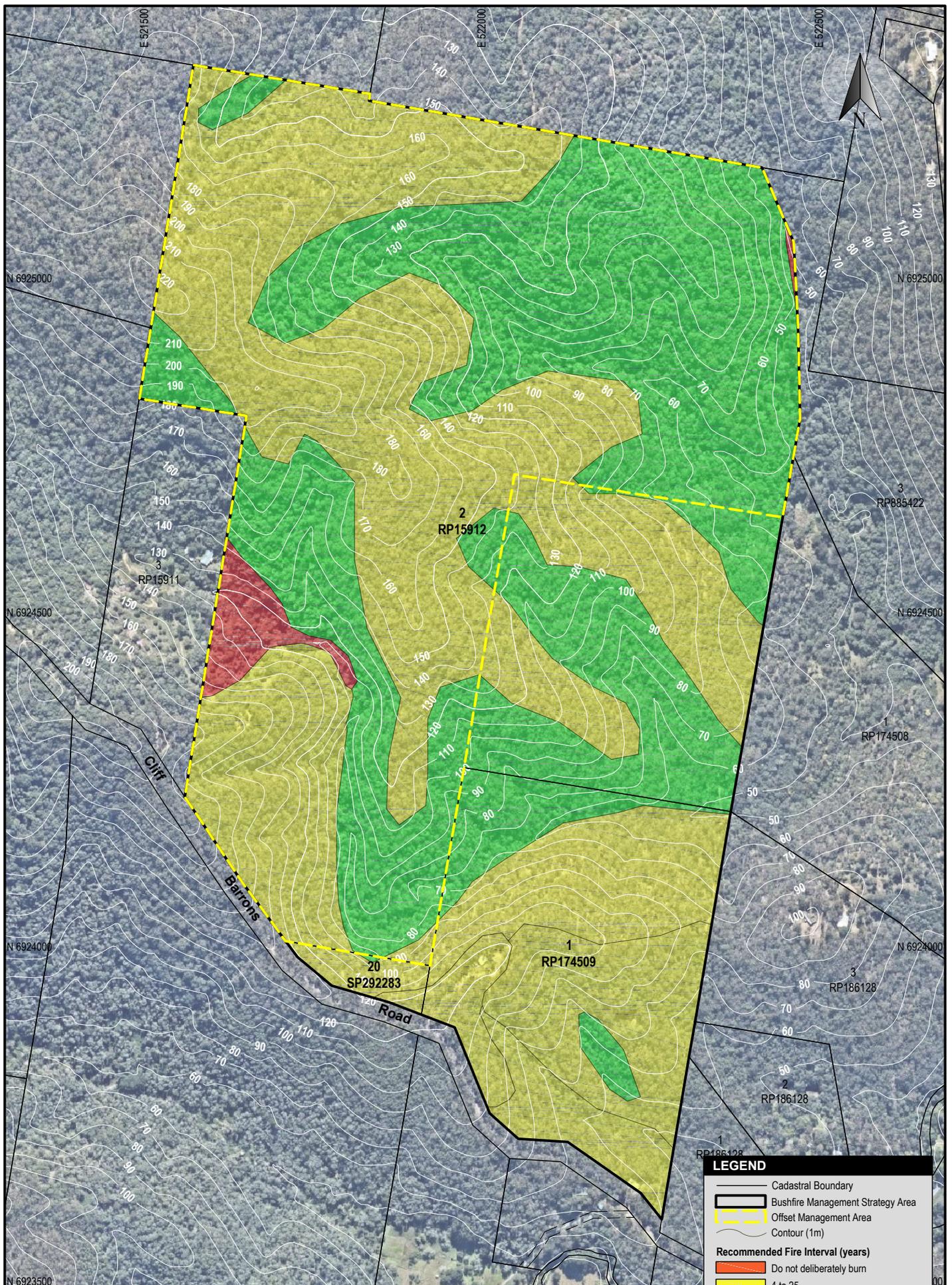
- 12.3.7/12.11.3a
- 12.11.3a
- 12.11.5
- 12.11.10
- 12.11.24
- 12.11.25

Scale 1 : 7500

0 100 200 250m

Aerial Photograph: Nearmap

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LEGEND

- Cadastral Boundary
- Bushfire Management Strategy Area
- Offset Management Area
- Contour (1m)

Recommended Fire Interval (years)

- Do not deliberately burn
- 4 to 25
- 4 to 20

Scale 1 : 7500

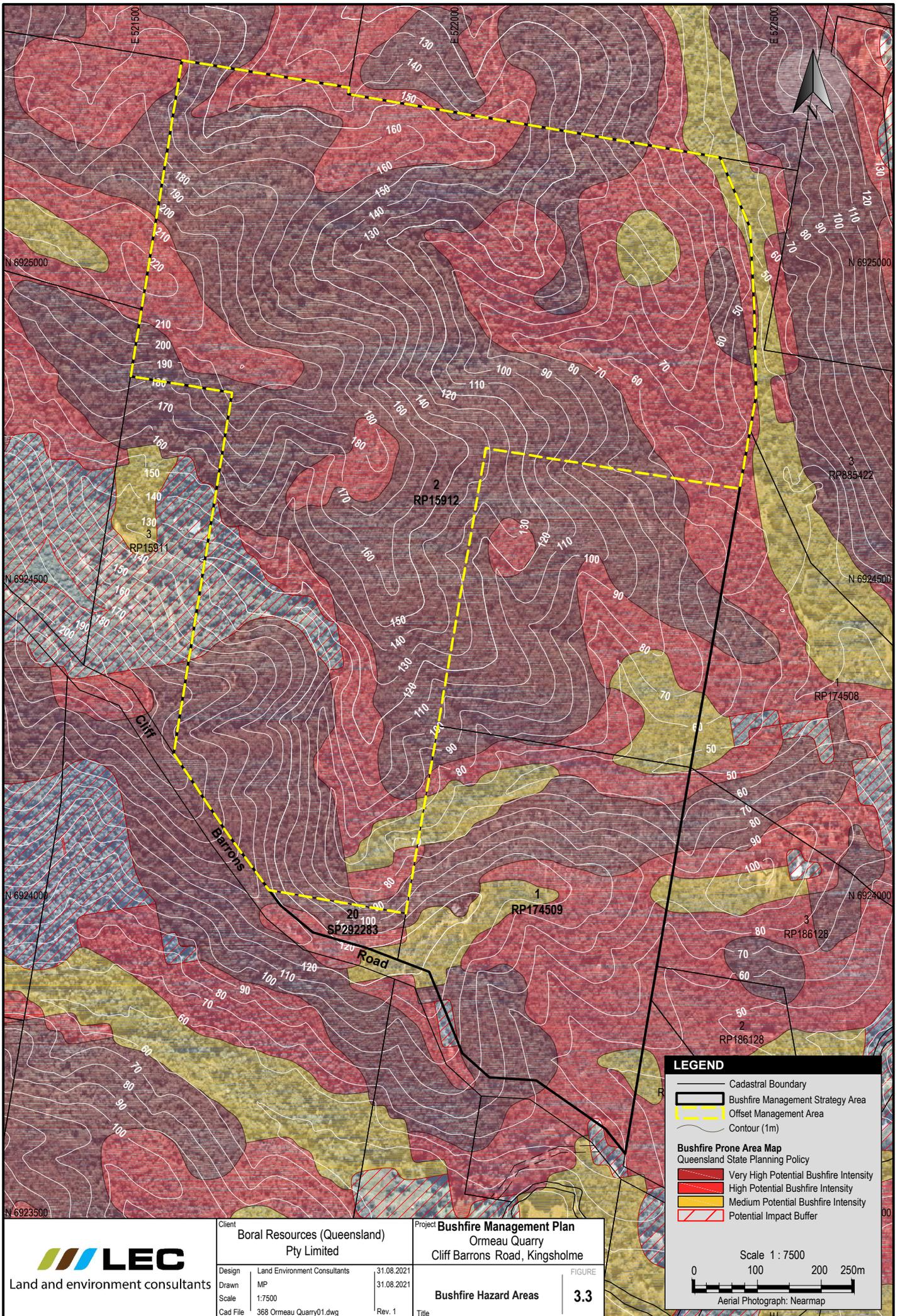
0 100 200 250m

Aerial Photograph: Nearmap

LEC
Land and environment consultants

Client	Boral Resources (Queensland) Pty Limited		Project	Bushfire Management Plan Ormeau Quarry Cliff Barrons Road, Kingsholme	
Design	Land Environment Consultants	31.08.2021	FIGURE	3.2	
Drawn	MP	31.08.2021	Recommended Fire Intervals		
Scale	1:7500				
Cad File	368 Ormeau Quarry01.dwg	Rev. 1	Title		

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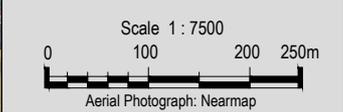


LEGEND

- Cadastral Boundary
- Bushfire Management Strategy Area
- Offset Management Area
- Contour (1m)

Bushfire Prone Area Map
Queensland State Planning Policy

- Very High Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Medium Potential Bushfire Intensity
- Potential Impact Buffer



LEC
Land and environment consultants

Client	Boral Resources (Queensland) Pty Limited		Project	Bushfire Management Plan Ormeau Quarry Cliff Barrons Road, Kingsholme	
Design	Land Environment Consultants	31.08.2021	FIGURE	Bushfire Hazard Areas 3.3	
Drawn	MP	31.08.2021			
Scale	1:7500				
Cad File	368 Ormeau Quarry01.dwg	Rev. 1			
			Title		

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4 Bushfire management strategy

This chapter provides the bushfire management strategy for the offset management area.

4.1 Vehicle access

Vehicle access tracks shown in Figure 4.1 must be restored and subsequently inspected and maintained annually in May/June or as otherwise required to implement bushfire management operations. Restoration and on-going maintenance must seek to ensure that vehicle access tracks are easily trafficable by 4wd vehicles and safe to perform bushfire management operations.

The *NSW Rural Fire Service Fire Trail Design, Construction and Maintenance Manual* (SCS NSW 2017) provides guidelines for the restoration and maintenance of category 9 vehicle (small 4wd) access tracks and could be used as a guide for restoration and maintenance works.

If restoration and maintenance of vehicle access tracks involves ground disturbance and vegetation clearing, this may trigger additional approvals at a local, state and/or federal level. Therefore, any ground disturbance and vegetation clearing works must be undertaken in accordance with Boral's *Form 01 Ground disturbance and vegetation clearing procedure* (HSEQ-8-08-F01 Vegetation_Clearing_Ground_Disturbance).

4.2 Walking/buggy access

Walking/buggy access tracks shown in Figure 4.1 will be upgraded as needed to serve as access/containment lines for burning operations and will not require maintenance after the burn is completed. Upgrade works will involve the pruning of vegetation to create a clear pathway, minor reprofiling of the surface and the removal of leaf litter and fine branches from the surface.

4.3 Walking access only

Walking access only tracks shown on Figure 4.1 will be established as needed to serve as containment lines during burning operations and will not require maintenance after the burn is completed. They will be established as a mineral earth break by removing low shrubs and groundcovers, leaf litter and fine branches and will provide a clear pathway for a person to walk through.

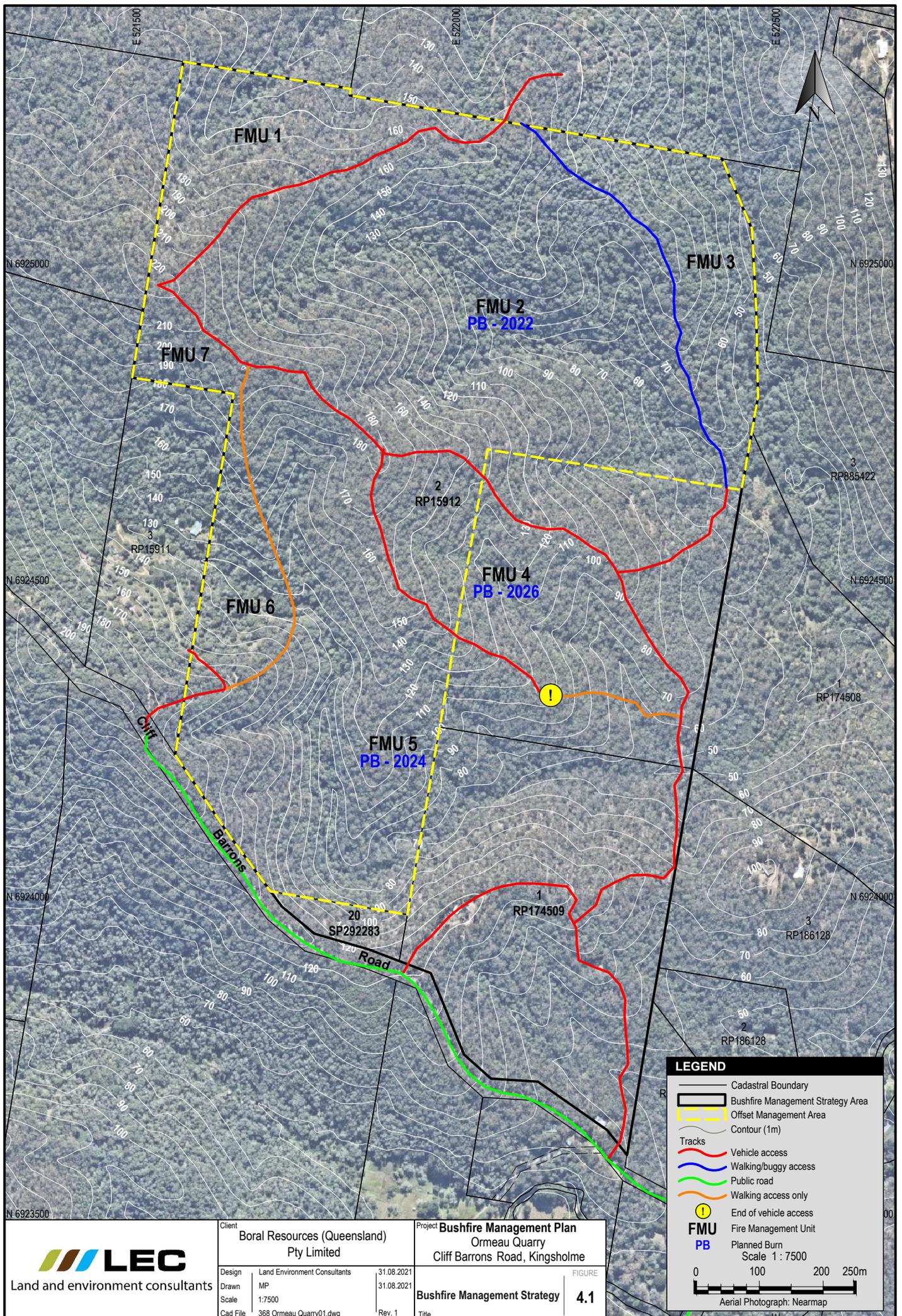
4.4 Public road

Cliff Barrons Road will serve as a containment line during burning operations. Appropriate approvals and traffic control will need to be attained prior to burning operations.

4.5 Prescribed burning

To assist with assigning bushfire management actions, the offset management area has been divided into fire management units (**FMUs**) which are shown in Figure 4.1 and described in Table 4.1. Where possible, the boundaries of FMUs have been aligned with vehicle access tracks which will provide containment lines for performing prescribed burns. There is no vehicle access track around the perimeter of the offset management area. Therefore, some of the FMUs within the offset management area are not surrounded by containment lines, ie FMU 1, FMU 3, FMU 6 and FMU 7. Prescribed burns are not proposed within these uncontained FMUs. However, the BMP recommends that they are allowed to burn with the adjoining landscape if neighbours wish to undertake a prescribed burn.

Prescribed burning will be undertaken to achieve fuel hazard reduction, ecological outcomes and to assist with rehabilitation or restoration works. Prescribed burning must be planned to support key actions of the OMP which are outlined in Chapter 2 and based on the recommended fire regimes for REs which are provided in Appendix 2.



Client	Boral Resources (Queensland) Pty Limited		Project	Bushfire Management Plan Ormeau Quarry Cliff Barrons Road, Kingsholme	
Design	Land Environment Consultants	31.08.2021	FIGURE	4.1	
Drawn	MP	31.08.2021	Bushfire Management Strategy		
Scale	1:7500				
Cad File	368 Ormeau Quarry01.dwg	Rev. 1	Title		

LEGEND

- Cadastral Boundary
- Bushfire Management Strategy Area
- Offset Management Area
- Contour (1m)
- Tracks
 - Vehicle access
 - Walking/buggy access
 - Public road
 - Walking access only
- End of vehicle access
- FMU Fire Management Unit
- PB Planned Burn
- Scale 1 : 7500
- 0 100 200 250m
- Aerial Photograph: Nearmap

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Table 4.1 Fire management units

FMU	Regional ecosystems	Notes
FMU 1	RE 12.11.3a and RE 12.11.5	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p> <p>Habitat rehabilitation works within FMU 1 must be protected from fire.</p> <p>Fires must not be lit within and near the base of gullies.</p> <p>There are no access tracks which could be used to contain a fire within Boral's land. Therefore, it is recommended that FMU 1 is allowed to burn with the adjoining landscape if neighbours in this area wish to undertake a prescribed burn.</p> <p>The recommended fire interval for RE 12.11.5 is 4-25 years. The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey.</p>
FMU 2	RE 12.11.3a and RE 12.11.5	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p> <p>Habitat rehabilitation works within FMU 2 must be protected from fire.</p> <p>Fires must not be lit within and near the base of gullies.</p> <p>RE 12.11.3a is the dominant RE within FMU 2. The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey. The recommended fire interval for RE 12.11.5 is 4-25 years.</p>
FMU 3	RE 12.11.3a and RE 12.3.7/12.11.3a	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p> <p>Habitat rehabilitation works within FMU 3 must be protected from fire.</p> <p>Fires must not be lit within and near the base of gullies. Do not deliberately burn vegetation within the gully along the eastern boundary of the offset management area within FMU 3 which is mapped as RE 12.3.7/12.11.3a.</p> <p>There are no access tracks which could be used to contain a fire within Boral's land. Therefore, it is recommended that FMU 3 is allowed to burn with the adjoining landscape if neighbours in this area wish to undertake a prescribed burn.</p> <p>The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey. Do not deliberately burn RE 12.3.7/12.11.3a.</p>
FMU 4	RE 12.11.3a and RE 12.11.5	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p>

Habitat rehabilitation works within FMU 4 must be protected from fire.

Fires must not be lit within and near the base of gullies.

Although within Boral's land, part of FMU 4 is not within the offset management area.

RE 12.11.3a is the dominant RE within FMU 4. The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey. The recommended fire interval for RE 12.11.5 is 4-25 years.

FMU	Regional ecosystems	Notes
FMU 5	RE 12.11.3a, RE 12.11.5, RE 12.11.10 and RE 12.11.25	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p> <p>Habitat rehabilitation works within FMU 5 must be protected from fire.</p> <p>Fires must not be lit within and near the base of gullies. Do not deliberately burn vegetation within the gully along the western boundary of FMU 5 which is mapped as RE 12.11.10.</p> <p>Although within Boral's land, part of FMU 5 is not within the offset management area.</p> <p>RE 12.11.5 is the dominant RE within FMU 5. The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey. The recommended fire interval for RE 12.11.5 and RE 12.11.25 is 4-25 years.</p> <p>A small part of FMU 5 is not owned by Boral, ie lot 20/SP292283. Permission from the owner is required before burning this lot. If permission is not provided by the owner, the lot should be isolated from FMU 5 by a hand constructed containment line along the boundary of the offset management area.</p> <p>Cliff Barrons Road will serve as a containment line during burning operations. Appropriate approvals and traffic control will need to be attained prior to burning operations.</p>
FMU 6	RE 12.11.3a and RE 12.11.10	<p>The dominant RE within FMU 6 is RE 12.11.10. This RE should not be burn deliberately.</p> <p>Prescribed burning is not permitted within FMU 6.</p>
FMU 7	RE 12.11.3a and RE 12.11.5	<p>Prescribed burning is permissible for ecological outcomes and to assist with the treatment of WONS and regeneration works.</p> <p>Habitat rehabilitation works within FMU 7 must be protected from fire.</p> <p>Fires must not be lit within and near the base of gullies.</p>

There are no access tracks which could be used to contain a fire within Boral's land. Therefore, it is recommended that FMU 7 is allowed to burn with the adjoining landscape if neighbours in this area wish to undertake a prescribed burn.

The recommended fire intervals for RE 12.11.3a range from 4-8 years to maintain a healthy grassy system and 8-20 years to maintain shrubby elements of understorey. The recommended fire interval for RE 12.11.5 is 4-25 years.

The OMP requires 'prescribed burning to be undertaken in consultation with, and under the guidance of the RFB and in compliance with the FES Act'. The RFB is a voluntary organisation and there is no guarantee that RFB volunteers will be available for consultation or to provide guidance and resources for the implementation of prescribed burns. Therefore, reliance on the RFB is considered a risk to the implementation of this BMP and the improvement of koala habitat values within the offset management area.

To mitigate the abovementioned risk, Boral will engage a contractor (**burn contractor**) to plan and implement the prescribed burns and hazard reduction burns recommended in this BMP. To comply with the OMP requirements, the burn contractor will be responsible for liaising with the RFB regarding the planning and implementation of prescribed burns and for inviting the RFB to participate in prescribed burn operations.

If Boral is unable to engage a suitable burn contractor, they should seek the assistance of the RFB to plan and implement the prescribed burns and hazard reduction burns recommended in this BMP.

4.5.1 Burn plan

The burn contractor (or the RFB and Boral) will prepare a burn plan for each prescribed burn or hazard reduction burn. The burn plan will be reviewed and approved by Boral prior to its implementation. A burn plan should contain the following elements (as a minimum):

- A statement of burn objectives.
- An operations map of the area.
- Prescriptions or limits for fuel and weather conditions.
- Ignition patterns and techniques.
- Identification of assets and values within the burn area that require protection and measures for their protection.
- Resourcing requirements.
- Health and safety issues (for burn personal, quarry staff and the public).
- Notifications.
- Guidance on implementation.

4.5.2 Compliance with the FES Act

The burn contractor (or Boral) will also be responsible for obtaining a permit to light a fire from a fire warden and for taking all reasonable steps to contain a prescribed burn or hazard reduction burn within containment lines (as detailed in the burn plan).

The information in the burn plan will be required by the fire warden to issue a permit to light a fire.

4.5.3 Appraisal

The burn contractor will prepare a brief appraisal report for each prescribed burn or hazard reduction burn which includes a map of the burn area and evaluates the outcomes of the burn against the planned objectives, lessons learnt and continuous improvement.

If the burn is done by the RFB then Boral must retain the details of the burn, eg location, date, objectives, burn intensity, weather conditions, etc.

4.6 Monitoring

4.6.1 Fuel hazard monitoring

Fuel hazard monitoring is not required for the purpose of identifying areas requiring prescribed burns. Prescribed burning within FMUs will be based on the recommended fire regimes for the vegetation communities which occur within them and fire history data. Notwithstanding, the burn contractor will undertake fuel hazard monitoring within these FMUs when preparing a burn plan.

4.6.2 Fire history records

Boral will maintain records of prescribed burns (including burn contractor appraisals) and unplanned fires within the offset management area and adjoining Boral land. This information can then be consolidated for review and preparation of the next BMP in 5 years.

Information required includes:

- Spatial data of the fireground including areas within containment lines which did not burn.
- Type of fire, ie prescribed burn, unplanned fire, etc.
- Year of fire.
- Season.
- Intensity, ie low, medium, high, etc.
- Strategy, ie aim of burn, ignition strategy.
- Issues.

5 Works program

The works program for the implementation of this BMP is provided in Table 5.1 and will be updated after 5 years, ie 2026.

Table 5.1 Works program

Action	Responsibility	Timing/frequency	Notes
Administration			
Engage a burn contractor or the RFB to implement prescribed burns and hazard reduction burns scheduled in this works program.	Boral	February 2022	The successful burn contractor should have demonstrated experience implementing prescribed burning programs, eg prescribed burning programs within Department of Defence training areas.

Action	Responsibility	Timing/frequency	Notes
Review works program	Boral	In the event of an unplanned fire adversely impacting the offset management area or 2026.	Refer to Chapter 6.
<i>Access tracks</i>			
Re-instate existing vehicle access tracks	Boral	January 2022	Refer to Section 4.1 for vehicle access track guidelines which could be helpful. Boral is not in control of this timing which could be affected by the requirement for ground disturbance and vegetation clearing permits and the relevant assessment authority's timeframes.
Inspect and maintain vehicle access tracks	Boral	Annually in May/June or as otherwise required to implement bushfire management operations.	Refer to Section 4.1 for vehicle access track standards.
Establish containment lines along walking/buggy access tracks and walking access only tracks	Boral	As required to implement bushfire management operations.	Refer to Section 4.2 for walking/buggy access track standards and Section 4.3 for walking access only track standards.
<i>Prescribed burns</i>			
Prescribed burn FMU 2	Burn contractor	2022	Prescription for prescribed burn should be in accordance with recommended fire regimes for RE 12.11.3a in Appendix 2.
Prescribed burn FMU 5	Burn contractor	2024	Prescription for prescribed burn should be in accordance with recommended fire regimes for RE 12.11.5 in Appendix 2.
Prescribed burn FMU 4	Burn contractor	2026	Prescription for prescribed burn should be in accordance with recommended fire regimes for RE 12.11.3a in Appendix 2.
Delivery of burn plan to Boral for review and approval (unless the burn is to be done by the RFB).	Burn contractor	Biannually, December	Refer to Section 4.5.1 for burn plan specifications
Consultation with local RFB regarding implementation of burn plan.	Burn contractor	Biannually, January.	-
Obtain permit to light a fire.	Burn contractor	Biannually, prior to prescribed burn.	A copy of the approved burn plan is to be provided to the fire warden.

Action	Responsibility	Timing/frequency	Notes
Deliver appraisal report and prescribed burn data.	Burn contractor	Biannually, within 8 weeks of the prescribed burn.	Refer to Section 4.5.3 for requirements.
<i>Monitoring</i>			
Monitor for lantana and other WONS	Boral/vegetation management contractor	Biannually, at 1 month, 3 months and 6 months post-burn.	If lantana or other WONS are detected, they must be removed/treated. Refer to Section 2.1 for a summary of the WONS management plan.
Maintain fire history records	Boral	From January, 2022	Refer to Section 4.6.2 for fire history database specifications

6 Review and evaluation

Review and evaluation of this BMP will be undertaken in the event of an unplanned fire adversely impacting the offset management area or after 5 years, ie 2026.

The review and evaluation will consider the appraisal of prescribed burns, analysis of fire history data and annual compliance reports for the offset management area which will detail the outcomes and recommendations of weed management, feral and pest fauna species management and koala habitat monitoring within the offset management area.

References

Leonard J, Newnham G, Opie K, and Blanche R (2014). *A new methodology for state-wide mapping of bushfire prone areas in Queensland*, CSIRO, Australia, 2014

Department of Industry, Soil Conservation Service New South Wales (SCS NSW) 2017, *NSW Rural Fire Service Fire Trail Design, Construction and Maintenance Manual*, developed for the NSW Rural Fire Service, 2017

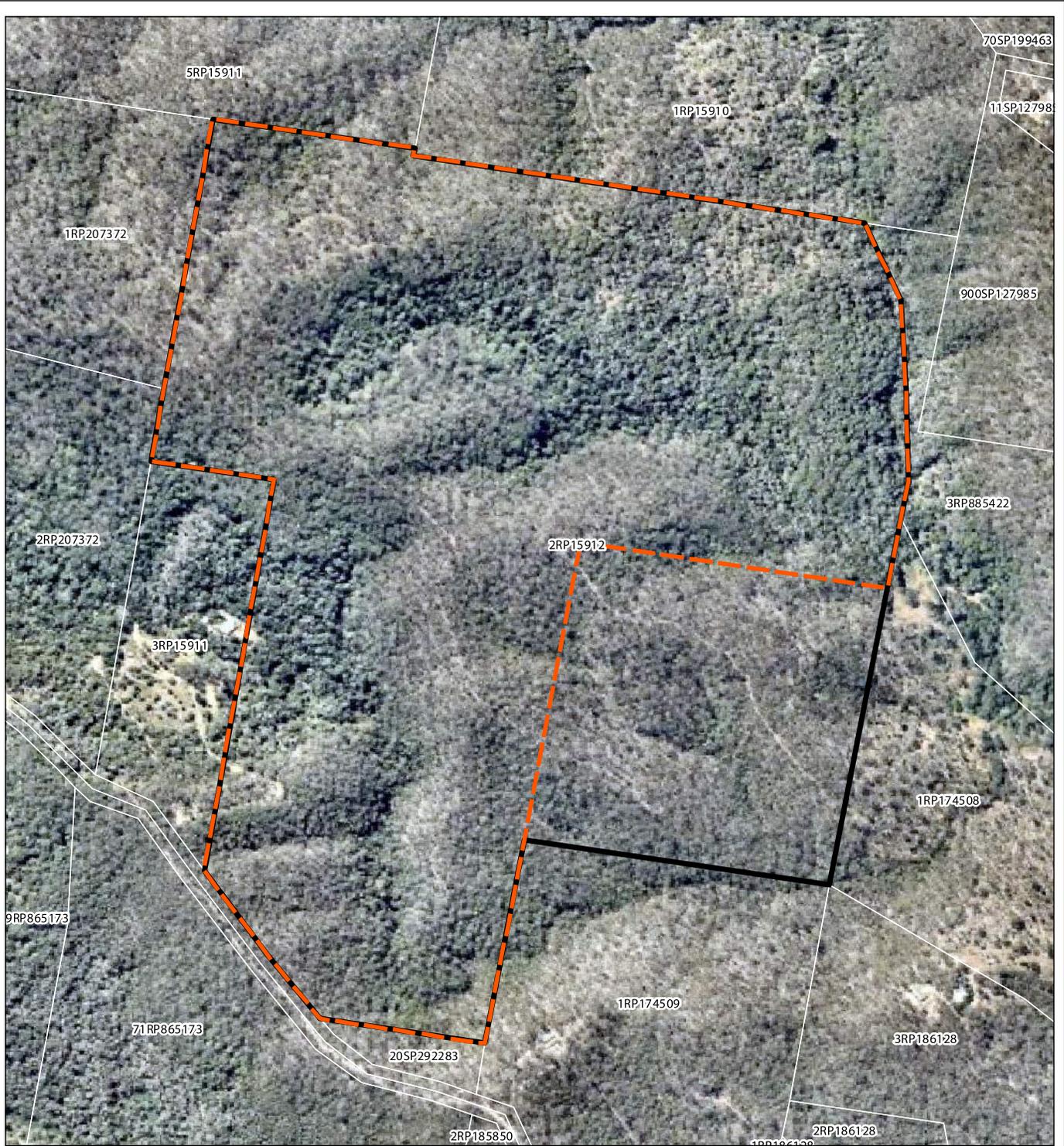
Queensland Fire and Emergency Services (QFES) 2019, *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'*, 2019

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Queensland Government 2021, *Regional ecosystem descriptions*, accessed online at <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions>, 12 May 2021

Saunders Havill Group (SHG) 2018, *Offset Management Plan – Omerau Quarry Expansion*, EPBC 2016/7797, job number 8354, prepared for Boral Resources (QLD) Pty Limited, 6 December 2018

Appendix 1 Site aerial plan



Legend

-  Offset site
-  Offset area
-  Qld DCDB

Figure 2
Site Aerial

File ref. 8354 E Figure 2 Site Aerial B
Date 26/10/2018
Project Ormeau Quarry (EPBC No. 2016/7797)

0 50 100 200 300 m

Scale (A4): 1:8,000 [GDA 1994 MGA Z56]



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Appendix 2 Recommended fire regimes

Vegetation	Recommended fire regime ^{1,2}	Potential fuel load (t/ha) ³	Notes
RE 12.3.7 <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> +/- <i>Melaleuca</i> spp. fringing woodland (RE 12.3.7)	<p>STRATEGY: Avoid intentionally burning this fringe vegetation. Burn surrounding ecosystems in conditions that would minimise fire incursion.</p> <p>ISSUES: Protection relies on broad-scale management of surrounding country. However, fire exclusion is not necessary. <i>Casuarina cunninghamiana</i> is sensitive to fire and germination after fire is typically low. Triggers unrelated to fire appear to maintain a healthy ecosystem. Issues with lantana and other weeds may result from fire and other disturbance.</p>	11.6	Occurs dominant in combination with in RE 12.11.3a, ie 60/40
<p>RE 12.11.3a <i>Lophostemon confertus</i> +/- <i>Eucalyptus microcorys</i>, <i>E. carnea</i>, <i>E. propinqua</i>, <i>E. major</i>, <i>E. siderophloia</i> woodland (RE 12.11.3a)</p> <p>Occurs in gullies and exposed ridges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics</p>	<p>SEASON: Summer to winter</p> <p>INTENSITY: Plan for low to moderate. Unplanned occasional high intensity wildfire will occur.</p> <p>INTERVAL: 4-8 years maintains a healthy grassy system. 8-20 years for shrubby elements of understorey.</p> <p>STRATEGY: Aim for 40-60% mosaic burn. Needs disturbance to maintain RE structure (eucalypt overstorey with open understorey of predominantly non-rainforest species). Any moist sclerophyll that is relatively open with a mixture of grasses and shrubs should be a priority for fire management to retain RE structure.</p> <p>ISSUES: Frequent fire is needed to maintain understorey integrity, keeping more mesic species low in the profile of the understorey so that other species can compete. A grassy system is especially important for species such as the eastern bristlebird and its habitat. It is essential that wildfires are not the sole source of fire in this ecosystem. High intensity fires occur periodically through time, however frequent low to moderate</p>	17.2	Occurs on its own and sub-dominant in combination with RE 12.3.7, ie 60/40

Vegetation	Recommended fire regime ^{1,2}	Potential fuel load (t/ha) ³	Notes
	intensity fires will create the disturbance required to keep the understorey diverse. A follow-up burn soon after a high intensity wildfire can be considered to reduce germinating mesic species. This 'of concern' RE may contain a high number of rare and threatened plant species, eg <i>Acomis acoma</i> , <i>Corchorus cunninghamii</i> , <i>Marsdenia coronata</i> and <i>Sophora fraseri</i> , which require appropriate fire management.		
RE 12.11.5 <i>Corymbia citriodora</i> subsp. <i>variegata</i> woodland to open forest +/- <i>Eucalyptus siderophloia</i> / <i>E. crebra</i> , <i>E. carnea</i> , <i>E. acmenoides</i> , <i>E. propinqua</i> on metamorphics +/- interbedded volcanics (RE 12.11.5)	SEASON: Summer to winter INTENSITY: Low to moderate. INTERVAL: 4-25 years. STRATEGY: Aim for 40-60% mosaic burn. Burn with soil moisture and with a spot ignition strategy so that a patchwork of burnt/unburnt country is achieved. ISSUES: The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture. Burning should aim to produce fine scale mosaics of unburnt areas. Variability in season and fire intensity is important, as well as spot ignition in cooler or moister periods to encourage mosaics.	20.8	Does not occur in combination with other REs
RE 12.11.10 Notophyll vine forest +/- <i>Araucaria cunninghamii</i> on metamorphics +/- interbedded volcanics (RE 12.11.10)	STRATEGY: Do not burn deliberately. Protection relies on broad-scale management of surrounding country. May need active protection from wildfire in extreme conditions or after prolonged drought. Planned burns should not create a running fire into vine forest. Ensuring conditions of good soil moisture and moisture of litter in surrounding communities will limit fire behaviour/intensity.	3.5	Does not occur in combination with other REs

Vegetation	Recommended fire regime ^{1,2}	Potential fuel load (t/ha) ³	Notes
	ISSUES: Fire sensitive and not normally flammable. Some preliminary work suggests rainforest seedling germination from planned burning activities will assist the establishment of seedlings in newly burnt areas, especially due to smoke. There may be issues with lantana and other weeds from fire and other disturbance. Remnants may be limited by frequent fire at the margins; this requires further research.		
RE 12.11.24 <i>Eucalyptus carnea</i> or <i>E. tindaliae</i> , <i>Corymbia intermedia</i> +/- <i>E. siderophloia</i> or <i>E. crebra</i> woodland on metamorphics +/- interbedded volcanics (RE 12.11.24)	Same as RE 12.11.5	17.2	Does not occur in combination with other REs. Does not occur within the offset management area but occurs in Borals land adjoining the offset management area.
RE 12.12.25 <i>Corymbia henryi</i> and/or <i>Eucalyptus fibrosa</i> subsp. <i>fibrosa</i> +/- <i>E. crebra</i> , <i>E. carnea</i> , <i>E. tindaliae</i> woodland on metamorphics +/- interbedded volcanics (RE 12.11.25)	Same as RE 12.11.5	18	Does not occur in combination with other REs. Does not occur within the offset management area but occurs in lot 20/SP292283 which adjoins the offset management area and is included within FMU 5. It also occurs in Borals land adjoining the offset management area.

Notes 1 Queensland Government regional ecosystem descriptions accessed online at <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions>, 12 May 2021

2 When planning fuel hazard reduction burns (as opposed to ecological burns) use the minimum fire 'interval' for remnant and non-remnant REs

3 *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'* (QFES 2019)