



Environmental Management Plan

Ormeau Quarry Expansion
Prepared for Boral Resources (QLD) Pty Ltd

5 November 2018

EPBC 2016/7797
Job 8354 E



Declaration of Accuracy

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:

Russell Wilson

Organisation:

Boral Resources (Old) Ltd Pty

Date:

30/10/2018

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 *Environmental 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.

Condition 7 of the approval requires 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 40 km/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 project is a 38 hectare (ha) expansion of the existing Ormeau Quarry, including approximately 38 ha of vegetation clearing. This [Environmental Management Plan](#) has the purpose of providing guidance to ensure the protection of EPBC Act listed species on the project site. The primary management mechanisms include:

- Implementation of the Gold Coast City Council approved [Vegetation Clearing and Fauna Management Plan \(VCFMP\)](#), including the requirement for detailed vegetation surveys prior to clearing and the use of a fauna spotter during clearing.
- Active searches for protected plants using methodologies outlined in the *Flora Survey Guidelines – Protected Plants*. These surveys are mandatory under the *Nature Conservation Act 1992* as the site is located within a flora survey trigger area.
- The dedication of an offset site of 77 hectares of vegetation constituting Koala habitat (refer to the [Offset Management Plan](#) prepared for the site), which will also benefit the Grey-headed Flying-fox.
- Monitoring and reporting to ensure that the project meets the environmental management performance criteria.
- Adaptive management applied as necessary to mitigate unforeseen risks and incorporate new information as it becomes available.

The successful implementation of this [Environmental Management Plan](#) will assist to ensure the protection of EPBC Act listed species on site.

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1. Introduction

The *Environmental Management Division* of **Saunders Havill Group** was engaged by **Boral Resources (QLD) Pty Ltd** to prepare an Environmental Management Plan (EMP) for the Ormeau Quarry Expansion, located at Kingsholme. 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 1999* (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, the person undertaking the action is required to prepare and submit an EMP to ensure the protection of EPBC Act listed species on the project site.

The project was approved under the EPBC Act subject to conditions on 16 February 2018 with effect until 8 November 2057. Condition 7 of the approval requires that the approval holder must submit an Environmental Management Plan for the Minister's written approval. The EMP must be prepared in accordance with the **DoEE's** Environmental Management Plan Guidelines and 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 action must not commence the action unless the Minister has approved the Environmental Management Plan in writing.

1.1. Purpose of the Report

The purpose of this EMP is to provide the details of the mitigation and management measures that will be implemented on the quarry expansion Project Site, and the details of the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing.

This report has been structured and prepared in accordance with the requirements of Condition 7 of the EPBC approval, and DoEE's "Environmental Management Plan Guidelines" (the Guideline) under the EPBC Act.

1.2. Conditions of Approval

The condition (Condition 7) of the EPBC approval relevant to this EMP is presented in **Table 1**. This condition is associated with the requirement to develop an EMP to ensure the protection of EPBC Act listed species on the project site. Details on the proposed activities to meet the requirements of Condition 7 are detailed in **Table 1**, as well as a cross reference to their location in this report.

Table 1: Conditions of Approval

Ref.	Cond.	Condition Requirement	Plan Reference	Demonstration of how the plan addresses condition requirements
1	7a	Details of the mitigation and management measures that will be implemented on the Project Site including, but not limited to:	Section 4	Table 5 outlines a number of management actions for protecting MNES.
2	7a i	All vehicles within the Project Site be restricted to travel at 40km/hr or less except in an emergency	Sections 4.6.1, 4.6.2	Included as a management action in Table 5.
3	7a ii	Signage alerting drivers to the risk of collisions with koalas	Sections 4.6.1, 4.6.2	Included as a management action in Table 5.
4	7a iii	Measures to avoid or minimise impacts to the Ormeau Bottle Tree (<i>Brachychiton sp. Ormeau</i> [L.H.Bird AQ435851]) during clearing or operations	Sections 4.6.1, 4.6.2	Table 5 outlines a number of management actions for protecting MNES. Table 7 includes specific management actions for the Ormeau Bottle Tree.
5	7a iv	Measures to avoid or minimise impacts to the Grey-Headed Flying Fox (<i>Pteropus poliocephalus</i>) during clearing or operations	Sections 4.6.1, 4.6.2, 4.6.3	Table 5 outlines a number of management actions for protecting MNES. Table 8 includes specific management actions for the Grey-Headed Flying Fox.
6	7b	Details of the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing.	Section 4.1, 4.8, Table 5 - 8	Overarching environmental objectives are identified in section 4.1 and criteria in section 4.8. Table 5 outlines a number of management actions for protecting MNES including monitoring and corrective actions prior to, during and post clearing works as well during operations. Table 6 – 8 specify management measures, timing, criteria, corrective actions and reporting for MNES species.

Ref.	Cond.	Condition Requirement	Plan Reference	Demonstration of how the plan addresses condition requirements
7	(7)	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.	N/A	Action is yet to commence.

2. Project Description

2.1. Site Context

The quarry expansion area covers approximately 38 hectares (ha) and is located approximately 12 kilometres (km) north-west of Oxenford, on the Gold Coast, Queensland. The surrounding landscape is a mosaic of remnant bushland, rural land, rural roads, and cleared residential lots, with Upper Ormeau Road running along the east of the site. The site is dominated by remnant vegetation with an existing quarry located adjacent, which has been operational since 1979. The site is subject of a number of historical and current State and Local Council Development Approvals for an expansion to the adjacent quarry. The site context is displayed in **Figure 1** and site aerial in **Figure 2**.

2.2. General Environmental Values

The proposed quarry expansion footprint occurs on an area dominated by remnant vegetation, adjacent to the existing quarry. As such, the site already contains evidence of disturbance in some areas which has diminished the ecological values of the surrounding vegetation. **Boral** has minimised impacts outside of the existing quarry footprint and expansion area by providing buffers along the northern, southern, and western boundaries, and carrying out significant rehabilitation along Pimpama Creek to the east of the existing quarry.

A number of ecological surveys have been carried out within, and around, the expansion footprint with the key outcomes summarised as:

- Some sections of the proposed expansion area show evidence of disturbance due to the adjacent quarry site and agricultural uses that have historically been carried out in the region. However, the majority of the site contains remnant vegetation typical of open forest and woodland structures.
- Regulated Vegetation as mapped under the *Vegetation Management Act 1999* (VMA) was confirmed on-site, with Least Concern Regional Ecosystems (REs) occurring over the majority of the proposed expansion area, and a polygon of Of Concern RE immediately adjacent on the western side.
- One threatened flora species listed under the *Nature Conservation Act 1992* (NCA) and EPBC Act was observed within the site boundary being the Ormeau Bottle Tree. All specimens observed are located outside of the expansion footprint and will not be directly impacted by the proposal.
- No threatened fauna species under the NCA or EPBC Act were recorded during field studies, however evidence of Koala usage (in the form of scats) was seen in various locations throughout the site.
- Vegetation communities considered to be 'critical habitat' as defined by the EPBC Act Referral Guidelines for the Vulnerable Koala were observed on-site. As a result, the proposed action will result in the clearing of habitat critical to the survival of the Koala as defined by the EPBC Act Referral Guidelines and an offset will be required for impacts to this habitat. A separate Koala OMP has been prepared for the project.
- The site contains some potential foraging habitat for the Grey-headed Flying-fox, however it does not contain any special or unique values for this species and would provide food resources similar to that which is provided in much of the surrounding landscape and remnant areas throughout South East Queensland. Additionally, no individuals were observed on-site and no roost camps were seen on or

near the site. The proposed action is unlikely to have a significant impact on the Grey-headed Flying-fox.

2.3. Proposal Description (Action)

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 operational 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 and Local Government land use approvals and Environmental Authorities.

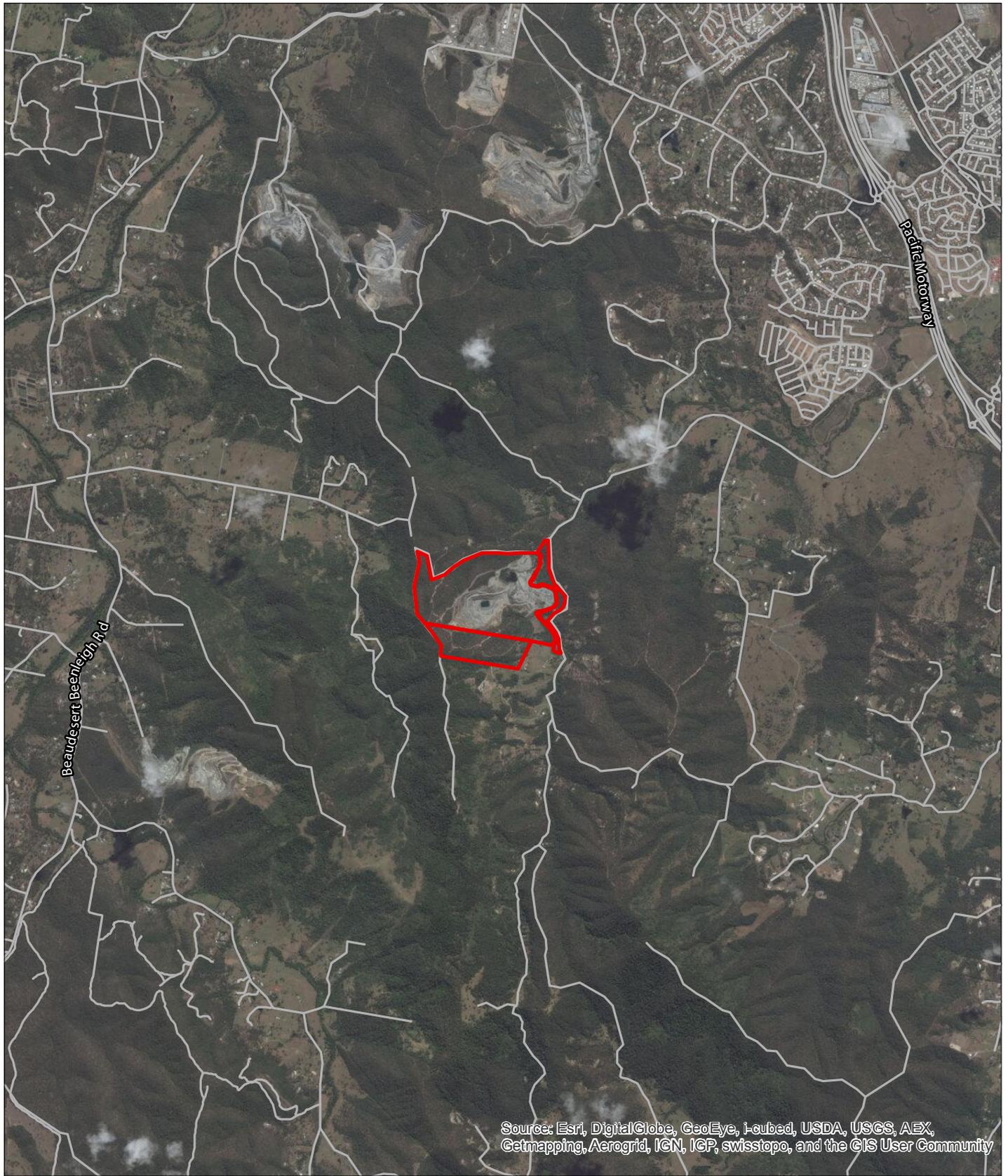
The expansion area is located within a Key Resource Area (KRA) identified by the Queensland Government's State Planning Policy. The proposed quarry development will occur in stages, with rehabilitation of cleared areas occurring progressively throughout the life of the quarry. The smaller, progressive clearing and ongoing rehabilitation activities will reduce ecological impacts resulting from the action. The increased extraction was approved in 2012 with future operations to be carried out under the following approvals:

- Material Change of Use (MCU) for Extractive Industry including Treatment, Storage, Loading, Cartage and Sale of Extracted Materials; Increase in the Rate or Intensity of the Extraction Process; and Access and Cartage issued in November 2012 by the Queensland Planning and Environment Court; and
- Environmentally Relevant Activities (ERA):
 - ERA 8(3)(a) – Storing 10m³ to 500m³ of class C1 or C2 combustible liquids under AS1940 or dangerous goods class 3,
 - ERA 16(2)(d) – Extracting, other than by dredging, in a year, more than 1,000,000 tonnes of material,
 - ERA 16(3)(c) – Screening, in a year, more than 1,000,000 tonnes of material; and
 - ERA 21 – Motor Vehicle Workshop

Operations are ongoing at the quarry with works to upgrade plant and infrastructure within the existing quarry area carried out in the first quarter of 2017. The recent development approvals facilitate a staged quarry expansion, to allow for ongoing operations for over 40 years. The current operations have been implemented under an approval predating the EPBC Act by more than 20 years and are not considered in this referral.

The expansion of the Ormeau Quarry will result in a number of associated activities, including:

- Vegetation clearing;
- Blasting and excavation;
- Crushing and screening of material;
- Stockpiling of material;
- Transportation of material from the site using haulage trucks;
- Chemical and fuel tank storage; and
- Wastewater storage.



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

 Site DCDB

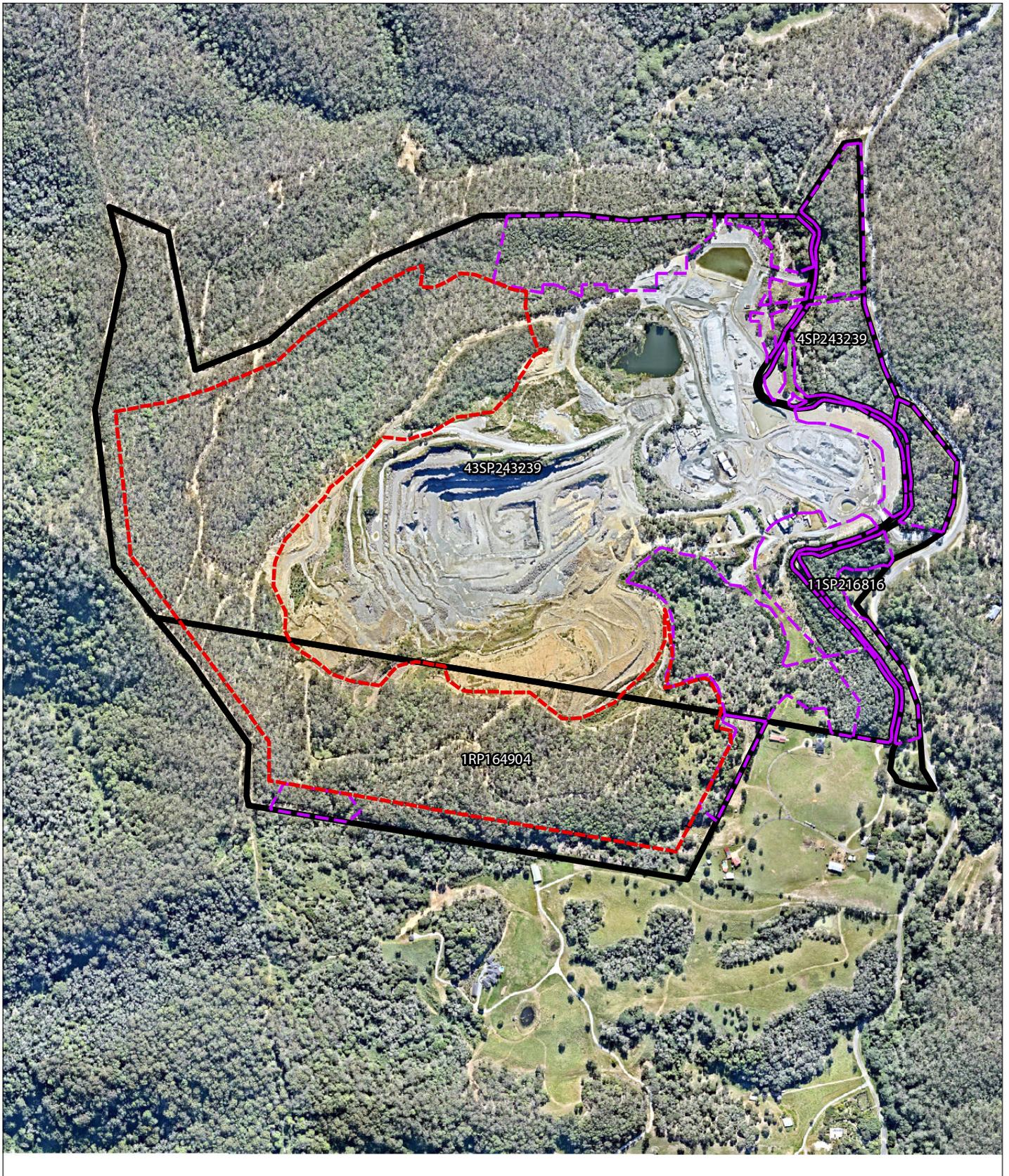
Figure 1 Site Context

File ref. 8354 E Figure 1 Context A
Date 31/08/2016
Project Ormeau Quarry (EPBC No 2016/7797)

0 0.5 1 2 Kilometers
 Scale (A4): 1:50,000 [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 DRAWING BY ANY THIRD PARTY.



Legend

- Site DCDB
- Referral Area / Project Site
- Covenant areas

Figure 2 Site Aerial

File ref. 8354 E Figure 2 Aerial A
Date 31/08/2016
Project Ormeau Quarry (EPBC No. 2016/7797)

0 50 100 200 300 400 m
 Scale (A4): 1:8,765 [GDA 1994 MGA Z56]



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3. Potential Environmental Impacts and Risks

3.1. Threats and Potential Impacts to Matters Protected under the EPBC Act

This EMP summarises all the identified threats to matters protected under Part 3 of the EPBC Act in the management plan. The Controlled Action decision was based on the project potentially resulting in a Significant Impact on the following MNES:

Listed Threatened Species & Communities (Sections 18 & 18A) – more specifically defined in the request for additional information as:

- Koala (*Phascolarctos cinereus*) (combined populations of Queensland, New South Wales and the Australian Capital Territory) – Vulnerable
- Ormeau Bottle Tree (*Brachychiton sp. Ormeau*) – Critically endangered
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable

The Referral Submission and Preliminary Documentation have provided detailed information on the anticipated impacts to these species as a result of the project. This information is summarised in the sections below.

Following the submission of the Preliminary Documentation, the project was given approval, with conditions. This approval reflects the low potential for Significant Impact on MNES.

3.2. Koala (*Phascolarctos cinereus*)

The Koala (*Phascolarctos cinereus*) is listed as Vulnerable under the EPBC Act. Koalas inhabit a wide range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalypt species. Under the Draft Guidelines, Koala habitat is defined as ‘any forest or woodland containing species that are known Koala food trees or shrubland with emergent food trees. This can include remnant or non-remnant vegetation in natural, agricultural and urban environments’. Koalas are endemic to Australia and have a known distribution from north-eastern Queensland to south-east South Australia. They are widespread within coastal and inland areas; however, densities of Koalas are higher within coastal areas with higher average annual rainfalls. South-East Queensland is known to support Queensland’s highest density of Koalas.

The three main threats to Koalas have been identified within the SPRAT profile as habitat loss and fragmentation; vehicle strike; and predation by domestic or feral dogs. In addition, the prevalence of disease such as the *Chlamydia* virus in many Koala populations has led to symptoms such as infections of the eyes, urinary tract, respiratory tract and reproductive tract, with the later having the potential to lead to infertility in females. More recently, Koala Retrovirus (KoRV) has had an increasing impact on most Queensland Koala

populations. While most Koalas carry the disease, environmental stresses such as poor nutrition and overcrowding lead to conditions caused by KoRV such as leukaemia and immunodeficiency syndrome.

Field Survey Results

The site is located within the modelled distribution of the Koala, within the “coastal context”. Terrestrial fauna surveys were carried out at the site by **Biodiversity Assessment and Management** (BAAM) from 3 – 7 April 2006 to identify the occurrence of any threatened species listed under the EPBC Act and the *Nature Conservation Act 1992* (Qld) (NCA), as well as any significant vertebrate faunal habitats. While the Koala was not listed under the EPBC Act at the time of assessment, BAAM’s surveys identified evidence of koala usage in some areas in the form of scratch marks and scats. Further Koala habitat and usage surveys were carried out by SHG on 9 September 2015 and from 18 – 22 August 2016. The objective of these surveys was to augment data from previous surveys and carry out assessment methods specified in the *Koala Referral Guideline*, specifically the Spot Assessment Technique (SAT) and Koala Habitat assessment transects.

The majority of the expansion footprint contains established Koala food trees including a variety of Eucalyptus, Corymbia, Angophora and Lophostemon species. Severe infestations of *Lantana camara* (Lantana) were noted towards the South west corner of the site and large patches of *Melinis minutiflora* (Molasses Grass) dominated the ground layer along patches of the ridgeline. While the prevalence of weed species in these areas would reduce the habitat values of the site for the Koala however it would still meet the definition of Koala habitat as outlined in the referral guidelines.

The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a koala or scats or known to be food trees or otherwise important for Koalas and recording any evidence of koala usage of that tree including any koalas, identifiable scratches, or scats. The SAT surveys showed a range of usage by the Koala from ‘No Use’ to ‘High Use’. The majority of the expansion footprint contains established Koala food trees including a variety of Eucalyptus, Corymbia, Angophora and Lophostemon species. Some evidence of Koala use was established with greater use identified towards the sites southern boundary.

Summary

The proposed action will result in the clearing of habitat critical to the survival of a species as defined by the EPBC Referral Guidelines, therefore has the potential to have a significant impact on the Koala. Condition 6 of the EPBC approval for the project requires the preparation and submission of an Offset Management Plan for the Minister's approval, to offset the loss of Koala habitat. The Offset Management Plan has been developed as a separate document to this EMP, and meets all the requirements and obligations related to the Koala, for this project.

Further, the approved vegetation clearing and fauna management plan (VCFMP) for the project requires detailed VCFMPs (including vegetation surveys) to be provided to Gold Coast City Council for approval prior to each stage of clearing. These staged vegetation surveys and the presence of a fauna spotter will assist in avoiding and/or minimising impacts to the Koala.

3.3. Ormeau Bottle Tree (*Brachychiton sp. Ormeau*)

The Ormeau Bottle Tree (*Brachychiton sp. Ormeau*) is listed as Critically Endangered under the EPBC Act and as Endangered under the *Nature Conservation Act 1992* (NCA). The Ormeau Bottle Tree is a distinctive canopy tree that grows in riparian rainforest (EPBC Conservation Advice). It occurs near small streams in rocky gorges comprised of metasedimentary rocks among microphyll vine forest, and on quaternary alluvium near larger streams in notophyll vine forest communities. It appears to favour undisturbed rainforest, with few weeds, for reproduction. It is a long-lived perennial that reaches sexual maturity at approximately 20 years and 20–30 cm diameter at breast height (DBH) in the wild.

The species has a restricted geographic distribution, with an estimated extent of occurrence of 6.5 km², and an estimated area of occupancy is less than 1 km² (EPBC Conservation Advice). The Ormeau Bottle Tree occurs only in the northern Darlington Range of south-east Queensland, with the total population highly localised in the Upper Pimpama and Albert River Catchments, and numbers only 161 individuals. Six subpopulations are known from the Kingsholme/Upper Ormeau area and Pimpama River valley; and a single wild plant occurs at Shaw's Pocket Rd in the Gold Coast Local Government Area. The distribution of this species is associated with the 'Lowland Rainforest of Subtropical Australia' EPBC Act-listed threatened ecological community.

Field Survey Results

As part of the ecological investigations carried out for the EPBC referral surveys were carried out at the site by two ecologists over two days in September and October 2015 and again from 15 to 19 August 2016. These surveys included general observations throughout each of the major habitat types, including the different regional ecosystem polygons, and timed meander surveys specifically targeting protected flora species. No Ormeau Bottle Trees were observed within the expansion area during any of these surveys. Previously flora surveys carried out by Cardno Chenoweth on 23 April 2013 identified several specimens of *Brachychiton sp. Ormeau*, three of which were regarded as naturally occurring specimens. Two young specimens were located immediately to the east of the current site entry. No specimens were identified on or near the referral area.

Further surveys were carried out on 27 February 2017 in response to **DoEE** information request. The preferred habitat for the species, riparian rainforest, is not present within the referral area therefore surveys targeted sections of the referral area that most resembled the preferred habitat of the Ormeau Bottle Tree. This included a number of drainage lines and ephemeral streams within and adjacent to the site. Wandering transects were run parallel to both banks of stream beds that could be accessed. Where the cliff face was too steep to gain access to the stream the bottom of the incline was traversed and observations made along the slopes. No Ormeau Bottle Trees were identified by the additional surveys.

Summary

Several surveys have been carried out within and around the referral area since 2013 with three separate surveys carried out since September 2015. These surveys were either carried out specifically to identify the Ormeau Bottle Tree or included general and targeted flora and fauna searches which would have identified the species if it was present. Therefore, it can be stated with high confidence that the proposed Quarry Expansion project will not impact on any specimens of this species. While specimens are known to occur in lower lying, wetter areas east of the quarry that contain characteristics of remnant rainforest, preferred habitat

for the species is not present within the referral area and no specimens were found in areas that most resembled preferred habitat (i.e. riparian vegetation). As a result, there will be no residual impact to this species therefore, no offsets are required. Nevertheless, the proposed offset site for the project (refer to the separate OMP) and the retention of the rest of the allotments to the east of the quarry will provide for opportunity to retain and protect specimens of Ormeau Bottle Tree, as well as suitable habitat for the species.

Queensland legislation requires targeted surveys to be carried out for species protected by the *Nature Conservation Act 1992* (NCA) prior to any clearing at the site. Even if no protected plants are identified a report must still be provided to the Department of Environment and Science, DES (formerly the Department of Environment and Heritage Protection, DEHP) detailing the methods and results of the survey and written approval is provided by DES allowing the clearing to be undertaken.

As mentioned above, detailed vegetation surveys also need to be provided to Gold Coast City Council for approval prior to each stage of clearing. While it is considered highly unlikely that any Ormeau Bottle Trees would be identified on-site these processes will ensure if any specimens are present they will be identified prior to clearing occurring.

3.4. Grey-headed Flying-fox (*Pteropus poliocephalus*)

The Grey-headed Flying-fox (*Pteropus poliocephalus*) is listed as Vulnerable under the EPBC Act. There is currently no Conservation Advice or Recovery Plan for this species. The Listing Advice for the Grey-headed Flying-fox (GHFF) states that the range of the species extends from Bundaberg (Queensland) to Melbourne (Victoria), and from the coast inland to the western slopes of New South Wales, with recent reports of *P. poliocephalus* in South Australia. The northern geographic range of GHFF appears to have contracted since the late 1800s and early 1900s, with known sites experiencing a northern contraction of about 300 km. The southern range has expanded, evidenced by the permanent colonies in Melbourne and recent detection in South Australia.

The Listing Advice also notes that GHFF are highly mobile and appear to be a highly adaptable species in response to changes in their habitat and surrounding environment. A number of 'urban' roost sites that are occupied year-round (Sydney suburbs, Botanic Gardens in Sydney and Melbourne) have become established due to consistently available food resources and suitable roosting habitat. At other 'non-permanent' roost sites, GHFF have shown themselves to be able to respond rapidly to the presence/absence of food availability.

The GHFF is a canopy-feeding frugivore and nectarivore which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps, Banksia woodlands, and also urban and agricultural areas where food trees have been cultivated. This species exhibits complex migration traits and roost sites are typically located near water, such as lakes, rivers of the coast. Population numbers of GHFF are relatively large in SEQ and suitable habitat is available throughout the landscape. They are a highly mobile species and can access wide ranging food sources. They require foraging resources and roosting sites to persist. The species is highly adaptive with its diverse native diet, which it can supplement with introduced species and is known to forage within a variety of habitats and locations as each resource does not consistently produce food throughout the entire year.

A Draft EPBC Act Policy Statement – camp management guidelines for the Grey-headed and Spectacled Flying-fox (Draft Guidelines) is available and summarises the decision process in considering the likelihood of a significant impact on the GHFF or Spectacled Flying-fox schematically. The Draft Guidelines are specifically for the assessment of impacts on Flying-fox camps. The Draft Guidelines state that:

- *Maintaining a network of flying-fox camps and foraging habitat across both species' national range is important for their recovery.*
- *Actions that will impact on the foraging habitat of EPBC Act listed flying-foxes may also result in a significant impact. This is beyond the scope of this policy.*

Site Relevance

The Australian Government Species Profile and Threats Database states that the *Grey-headed Flying-fox occupies most areas in their distribution in highly irregular patterns, and, therefore, surveys based on animal sightings are unlikely to be reliable. A more effective survey method is to search appropriate databases and other sources for the locations of camps, and to conduct vegetation surveys to identify feeding habitat.*

The GHFF requires foraging resources and roosting sites, and generally roosts in camps in trees adjacent to larger permanent watercourses. Active daytime searches were carried out and no camps were observed throughout the assessment area. Desktop searches of the data available through the National Flying-fox Monitoring Programme by the DoEE show that the closest flying-fox camps (not exclusively GHFF) recorded are at Carob Court, Ormeau and Mirambeena Drive, Pimpama. Both are located in urban areas and are more than 5 km from the site. GHFF were last recorded at the Mirambeena Drive camp in November 2015, with only Black Flying-foxes recorded subsequently. The camp at Carob Court has not had any flying-fox activity (i.e. no GHFF or any other flying-fox species) recorded since November 2012.

The primary food source for the GHFF is flowering Eucalypts and related genera. Food resources occur on-site, therefore the species has some potential to occur when the Eucalypts are in flower, however, it is considered unlikely that individuals would be exclusively reliant on the resources supported by the subject site. Remnant vegetation mapped across portions of the referral area includes Least Concern RE 12.11.5e, Least Concern RE 12.11.5a, Least Concern RE 12.11.10, and Of Concern RE 12.11.9. These remnant vegetation communities were confirmed on-site and all contain species that may provide foraging habitat for the GHFF. A number of these species provide recognised winter foraging resources for the GHFF.

Summary

The 38 ha proposed to be cleared by the quarry expansion would represent less than 0.1% of foraging habitat available to the species in the broader landscape. It is considered unlikely that GHFF individuals would be exclusively reliant on the resources supported by the subject site, for the following reasons:

- The GHFF is expected to utilise the site for feeding trees as part of a much larger range;
- An abundance of optimal food trees and remnant vegetation occurs in close proximity to the site;
- No habitat critical to the survival of the species was located onsite; and

- There are no known camps on or adjacent to the site (the closest are more than 5 km from the site), therefore no direct impacts on breeding locations will occur as a result of the proposed quarry expansion.

Further, an assessment against the Significant Impact Guidelines for the GHFF that was conducted in the Referral, concluded that the proposed quarry expansion would not result in a significant impact upon this species.

Even though significant impacts are not expected, GHFF feeding habitat is similar to preferred habitat for the Koala therefore the proposed offset for Koala habitat (refer to Section 3.2 and the separate OMP) will also have a benefit for the GHFF. Additionally, the approved VCFMP) for the project requires detailed vegetation surveys to be provided to Gold Coast City Council for approval prior to each stage of clearing, and fauna spotter catchers, which will assist in avoiding and/or minimising impacts to the GHFF.

3.5. Risk Assessment

Each of the identified potential impacts relevant to this EMP were analysed in the context of the proposed action and impacts to the Koala, Ormeau Bottle Tree, and Grey-headed Flying-fox within the Risk Assessment Tables to identify where avoidance and mitigation measures will be implemented to protect the EPBC Act listed species on the project site. These measures are presented in Tables 2-4 for the Koala, Ormeau Bottle Tree, and Grey-headed Flying-fox, respectively. Note, these likelihood and consequence ratings are based on conducting development activities without implementation of any management measures.

Table 2: Risk assessment for potential impacts to Koala

Impact	Likelihood	Consequence	Risk Rating
Construction Phase			
Removal of site vegetation	Highly Likely	Minor	Medium
Loss of habitat features, opportunities, and movement areas for the Koala	Highly Likely	Minor	Medium
Injury and mortality to the Koala due to vegetation clearing	Possible	Major	High
Potential risks to the Koala through erosion and sedimentation	Possible	Minor	Low
Operational Phase			
Threats associated with open cuts, such as fauna entrapment, etc.	Possible	Major	Medium
Weed introduction	Possible	Moderate	Medium

Impact	Likelihood	Consequence	Risk Rating
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low
Barriers to fauna movement for the Koala	Highly Likely	Moderate	High
Vehicle movement and trespass impacts on Koala	Possible	Major	High

Table 3: Risk assessment for potential impacts to Ormeau Bottle Tree

Impact	Likelihood	Consequence	Risk Rating
Construction Phase			
Direct clearing of a Ormeau Bottle Tree	Unlikely	Major	Medium
Fragmentation of site environmental features	Highly Likely	Minor	Medium
Potential risks to the Ormeau Bottle Tree through erosion and sedimentation	Possible	Minor	Low
Operational Phase			
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low
Weed introduction	Possible	Moderate	Medium

Table 4: Risk assessment for potential impacts to Grey-headed Flying-fox

Impact	Likelihood	Consequence	Risk Rating
Construction Phase			
Removal of site vegetation	Highly Likely	Minor	Medium
Loss of habitat features, opportunities, and movement areas for the Grey-headed Flying-fox	Possible	Minor	Low
Injury and mortality to the Grey-headed Flying-fox due to vegetation clearing	Possible	Major	High
Potential risks to the Grey-headed Flying-fox through erosion and sedimentation	Possible	Minor	Low

Impact	Likelihood	Consequence	Risk Rating
Operational Phase			
Threats associated with open cuts, such as fauna entrapment, etc.	Possible	Moderate	Medium
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low
Barriers to fauna movement for the Grey-headed Flying-fox	Unlikely	Minor	Low
Vehicle movement and trespass impacts on Grey-headed Flying-fox	Possible	Major	High

Management measures will focus on activities identified as having a high or medium potential to impact on the listed threatened species. Using the risk assessment outlined in Tables 2 through 4 these activities include:

- Risk of injury and mortality to fauna caused by:
 - Vegetation clearing
 - Open cuts, fauna entrapment
 - Vehicle movement and trespass;
- Removal of vegetation / habitat including potential for direct clearing of an Ormeau Bottle Tree;
- Fragmentation of site environmental features and the creation of barrier to fauna movement; and
- Weed introduction.

The following sections provide information on the management measures to be incorporated into the development which will mitigate and reduce impacts described above.

4. Environmental Management Plan

4.1. Objectives

The key objective of this EMP is to ensure the protection of EPBC Act listed species on the project site. In order to meet these objectives, the EMP aims to:

- 1) Comply with the VCFMP for the site, which will control the sequential removal of site vegetation in accordance with approvals and best practice protocols. The VCFMP also outlines fauna management measures including specific measures for koalas;
- 2) Contain any clearing on-site to areas designated as being cleared, whilst identifying any vegetation to be retained for ongoing flora and fauna habitat and connectivity.
- 3) Have minimal impact upon native fauna that may be present on-site.
- 4) Comply with all conditions imposed within approvals.
- 5) Outline management activities, timing, responsibility, measurable targets, reporting, and corrective actions.
- 6) Achieve environmental management expectations of the community, government, and the proponent.

These objectives and measures will be achieved through the implementation of a number of actions at each stage of construction and operation.

4.2. Environmental Management Roles and Responsibilities

The EPBC approval holder (**Boral Resources (Qld) Pty Ltd**) is responsible for complying with the conditions of approval, including the commitments made in this EMP. The successful implementation of this EMP requires a number of key personnel to complete various roles. These personnel will have the power to stop and direct works so that they can manage emergencies effectively. During site induction, the communications process for reporting any issues will be explained to all site contractors and sub-contractors, and will be made available within the site construction office.

4.3. Reporting

Reporting will address the requirements of the **EPBC Act** approval including assessment against relevant approval conditions, recording environmental incidents, stakeholder updates, and review and update of the EMP, for the life of the approval.

Condition 9 of the EPBC Approval pertains to the maintenance of accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the EMP required by this approval, and make them available upon request to the Department.

As per Condition 10 of the EPBC approval, within three months of every 12 month anniversary of commencement of the action, **Boral Resources** will publish a report on their website addressing compliance

with each of the conditions of this approval including implementation of the EMP. At this time, documentary evidence providing proof of the date of publication and any non-compliances will also be provided to **DoEE**.

The compliance report will include at least the following information:

- Details of any EPBC listed species encountered during normal operations including species, location, health and nature of interaction (i.e. crossing the road, within buffer areas, etc);
- Detail of any complaints received including date and time of complaint, details of the complaint and actions taken to resolve the issue;
- Details of any clearing works that have occurred at the site over the previous 12 month period;
- Any fauna encountered during the clearing including actions taken in response to the encounter (fauna spotter reports); and
- Non-compliances with this EMP including details of the non-compliance and rectification actions taken.

4.4. Environmental Training

The approved version of this EMP will be issued to all site staff, as well as site contractors and sub-contractors, and will be made available within the site construction office. Further, all people involved with the project will receive training to ensure they understand their responsibilities when implementing the EMP. Training on the EMP will be part of the broader environmental management and workplace health and safety procedures for the site.

The training will include the following actions:

- 1) Providing a copy of the EMP to all site staff, site contractors and sub-contractors;
- 2) Requirements of the EMP will be discussed at site inductions, including:
 - a. explaining the requirements of the EMP and different individuals' roles under the EMP
 - b. appropriate procedures for reporting environmental incident/emergencies
 - c. site environmental controls that will be implemented (such as areas to be cleared, method of vegetation clearing, installation of exclusion fencing, etc.)
 - d. discussion on potential consequences of not meeting environmental responsibilities
- 3) Making available the final copy of the EMP within the site construction office;
- 4) Requirements of the EMP to be incorporated into workplace checklists, work method statement, and toolbox talks; and
- 5) Monthly review and report on compliance with the EMP as part of the Ste Manager's role.

The records of all training conducted, including that relevant to this EMP will be maintained and will include:

- 1) Name and role of person receiving the training;
- 2) Date of training;
- 3) Name of the person conducting the training; and
- 4) Summary of the training and content.

4.5. Emergency Contacts and Procedures

In the event of an environmental emergency (i.e. injury or orphaning of a listed threatened species) the site manager should be contacted immediately and all works that have potential to cause further issues ceased. Once any threats have been nullified the Department of Environment and Science (1300 130 372) or RSPCA (1300 264 625) should be contacted to obtain further advice.

4.6. Complaints Register

An environmental complaints register will be maintained on site and a contact number for people to call if they have a complaint clearly marked on the site entrance sign. All community Complaints will be entered into Boral's Safety Incident management System (SIMs) for recording and action.

4.7. Environmental Management Measures

This EMP indicates how site activities will be managed in order to meet requirements and ensure the protection of EPBC Act listed species (specifically, Koala, Ormeau Bottle Tree, and Grey-headed Flying-fox) through the mitigation of potential impacts to vegetation, habitat, and fauna on-site.

4.7.1 Construction Management

Action 1: Vegetation and Fauna Management Protocols for each stage of clearing

The council approved VCFMP requires clearing to be carried out in stages with specific VMPs created for each stage of clearing. The approved VCFMP is included as **Appendix A** however it is noted that stage boundaries may be modified to reflect on ground requirements and market conditions. These changes will require approval by Gold Coast City Council.

The VCFMP outlines a process for carrying out staged clearing which includes the following steps:

Step 1: Pre clearance surveys – Carry out detailed surveys including identification of habitat trees and protected plants meander transects. Produce a stage specific VCFMP and protected plants report for approval by Gold Coast City Council and DES respectively.

The stage specific VCFMPs must include the following information:

- Location and particulars of differing vegetation types (remnant, regrowth, differing Regional Ecosystems, etc.) within and adjacent to the clearing stage.
- The location (to be accurately mapped) and particulars of any vegetation on and adjacent to the clearing stage that is:
 - A species listed as a local (citywide), state or national matter of environmental significance;
 - A known or potential habitat tree; and
 - Nominated for retention.
- The following information in relation to proposed vegetation management:
 - Particulars of how the vegetation is proposed to be damaged;

- Details of location, size, species and timing of any replacement vegetation proposed to compensate for the loss any vegetation which is a species listed as a local (citywide), state or national matter of environmental significance;
- Details of the works the vegetation clearing is being undertaken for;
- Details of strategies and methods to be implemented to protect vegetation to be retained, relocated or pruned from damage, and how site works will be managed to ensure the same (i.e. lop and stump grind trees in close proximity to those to be retained);
- Methods for the reuse of felled vegetation from the subject site; and
- Disposal methods for remaining debris after the above methods have been employed.
- Location and description of fauna habitat features to be cleared and retained including but not limited to hollow logs, waterbodies, known and potential habitat trees (containing hollows, fissures, nests, drays, arboreal termitaria used as nests, significant scratches on trunk or scats at base etc.).
- Methods for demarking areas that are of high habitat value on site which will be cleared or have works occurring within close proximity (e.g. within the tree protection zones of habitat trees).
- Important considerations for fauna species known and likely to occur within the clearing stage which are listed as a matter of local (citywide), state or national environmental significance.
- Considerations relating to time periods for when fauna is to be removed/flushed prior to clearing.
- Methods for moving denning or nesting animals and/or capture or flushing of ground dwelling animals.
- Identification of general locations that wildlife will be relocated/translocated to if required (based on habitat requirements).
- Methods to euthanise injured animals as well as contact details (including telephone number) and location of the closest vets (and others close by).
- Details on how the clearing will be carried out including direction of clearing.

Step 2: Pre clearance notification – Council will be notified at least 30 business days prior to the commencement of clearing activities.

Step 3: Tree protection – Tree protection fencing will be installed prior to the commencement of any clearing works on the site.

Step 4: Council pre-start meeting – A pre-start meeting will be carried out prior to clearing commencing so all tree protection measures can be inspected by council officers.

Step 5: Fauna inspection and management – Undertake fauna management requirements prior to clearing including installation of exclusionary and fauna friendly fencing where required, training of contractors on procedures for protecting native fauna and inspection by a qualified fauna spotter. The VCFMP includes a requirement for a koala spotter to be present on site prior to and during all clearing. It is the responsibility of the koala spotter to be present at the site of felling operations to identify any tree at the site within which a koala is present, as well as any tree that has a crown that is intermeshed or overlapping with that tree.

Step 6: Undertake clearing – The direction of clearing is to be carried out as per the instructions of the registered fauna spotter to allow fauna to move unimpeded to adjacent vegetated areas.

Step 7: Post clearing actions - After tree clearing works on site, follow up maintenance works will be carried out on all retained vegetation. An analysis of the vegetation's health and growth will determine specific maintenance needs if required.

Action 2: Speed Limits and Traffic Signage

Signage will be installed on-site which notifies all vehicles and driver that speeds on-site are limited to 40km/hr or less except in an emergency. Speed limits will be strictly enforced on-site, during construction and operation. Signage will also be included on-site, alerting drivers to the risk of collisions with Koalas. These items will also be included in all site inductions and site environmental training.

Action 3: Post-Works Reporting

During the course of all site works, including the pre-clearance surveys, the Fauna Spotter/Catcher is to keep an accurate record of all animals encountered, captured, incidents and disposals for each stage of the project. The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government.

Rehabilitation plans for the preceding clearance area will be submitted with or prior to the notifications for each sequential stage of clearing. For example, a rehabilitation plan will be developed prior to the second stage of clearing and lodged with council as part of the notification for stage 2 clearing. Rehabilitation of the preceding area must have been substantially commenced prior to works occurring for the next stage of clearing.

4.7.2 Operational Management

The Ormeau Quarry Expansion will incorporate a number of operational management procedures and features which will continue to protect site flora and fauna, including EPBC Act listed species. The operational measures will include:

- Signage will be installed on-site which notifies all vehicles and driver that speeds on-site are limited to 40km/hr or less except in an emergency.
- Implement the council approved erosion and sediment control plan and Bushfire management plan (**Appendix B** and **C** respectively).
- Ensure all site personnel are trained in fauna awareness and fauna management measures are discussed at Toolbox meetings.

4.7.3 Offsets

The Offset Management Plan (OMP) relates to the vegetation clearing of 38 hectares for the Quarry expansion, which requires an offset for the impacts to MNES that is the loss of 38 hectares of habitat critical to the survival of the Koala. The OMP has been developed as a separate document, and in response to Condition 6 of the EPBC approval.

The OMP 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 habitat status of the designated offset area.
- Monitoring and reporting to ensure that the offset area meets the performance and completion criteria.
- Adaptive management applied as necessary 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 successful implementation of these offset mechanisms will create a self-sustaining, continuous conservation area of high quality Koala habitat. The habitat preferred by the Koala (and that re-instated and protected through the offset plan), is the same habitat that is preferred by the Grey-headed Flying-fox, therefore the offsets proposed to offset the loss of Koala habitat will benefit and provide habitat for the Grey-headed Flying-fox.

The OMP provides further detail on the offset site, offset measures, and how these will meet the requirements of the EPBC approval condition.

4.8. Environmental Management Activities, Controls and Performance Targets

The following sections provide management actions, monitoring and corrective actions and those responsible for the actions to minimise the Project's impacts on MNES.

The following performance criteria are to be achieved when managing risk to threatened flora and fauna:

- Minimise loss of habitat by protecting vegetation not being cleared as part of the action, rehabilitating preceding stages of clearing and maintaining connectivity between suitable habitat for threatened species, such as the Koala;
- Minimise injury or mortality of threatened fauna species by managing habitat clearing, supervising clearing activities, and providing suitable connectivity for fauna movement during clearing;
- Avoid clearing protected flora species; and
- Minimise habitat degradation by maintaining hydrology and protecting against bushfire risk.

General environmental mitigation strategies for impacts on threatened flora and fauna species are provided in **Table 5**, with **Table 6** through to

Table 8 presenting species-specific management strategies and corrective actions for the Koala, Ormeau Bottle Tree, and Grey-headed Flying-fox.

Day to day operations at the site are also managed through various plans and conditions required by state and local approvals and legislation. These include:

- Vegetation Clearing and Fauna Management Plan;
- Bushfire Management Plan;
- Erosion and Sediment Control Plan;
- Environmentally Authority; and
- Site Based Management Plan.

These plans have been referred to in the environmental management actions where appropriate.

While general environmental compliance is the responsibility of all site personnel, specific roles and responsibilities for environmental performance and compliance will be allocated to specific positions. Key roles and responsibilities associated with environmental management at the site include:

- Boral Planning Manager - The Boral Planning Manager is responsible for overall compliance with the EMP and the contractor's and consultants responsibility for environmental performance and compliance for the Project. The Planning Manager is also responsible for compliance with Commonwealth approval conditions.
- Boral Site Manager - The Site Manager is responsible for environmental performance and compliance for the Project. Specific responsibilities include management of site works, ensuring employees and contractors are competent on the basis of training, education, and experience; ensure processes and resourcing are in place to implement the EMP; and report any non-compliances to the Planning Manager.
- Ecological Consultant – The ecological consultant is responsible for obtaining approval for each stage of clearing and ongoing annual compliance reporting.
- Fauna Spotter / Arborist – The Fauna Spotter / Arborist may be a single person or multiple people fulfilling the roles. They are responsible for on ground management of flora and fauna and ensuring clearing works are carried out in accordance with the approved EMP and VCFMP.
- Clearing contractor - The Clearing Contractor will be responsible for ensuring that works on site are in accordance with the EMP. Specific responsibilities include ensuring all personnel carrying out the works are competent on the basis of training, education, and experience; Implementation of work practices that reduce the risk of environmental impact; and, advising the Site Manager whenever works are programmed, identification of the type of works and report any compliance actions, as required.

While they have no specific responsibilities under this EMP Gold Coast City Council (GCCC) and the Department of Environment and Science (DES) are referred to in management actions where they are required to approve reports or plans or are otherwise involved in the environmental management process.

Table 5: General Environmental Management Actions

Management Action	Monitoring and Corrective Actions	Responsibility
PRE CLEARING		
Pre clearance vegetation surveys	Carry out detailed vegetation surveys prior to staged clearing within the expansion area including descriptions of habitat types, identification of habitat trees and identification of protected plants. Stage specific VCFMPs are approved GCCC prior to works commencing on site. NCA protected plants reports are approved by DES prior to works commencing on site.	Ecological consultant and Boral Planning Manager
Notify GCCC of clearing works	Notification provided at least 30 b.d. prior to works commencing.	Boral Planning and Site Manager
Install tree protection and fauna exclusionary fencing	Fencing to be installed prior to the pre start meeting as per the approved VCFMP. All fencing should be inspected by the fauna spotter / arborist prior to the pre start meeting. If fencing does not comply with the VCFMP it should be moved or the VCFMP updated if the fauna spotter / arborist advises movement is necessary.	Clearing contractor and fauna spotter / arborist
Staff and contractor training	The clearing contractor and any staff involved in the clearing works are to be trained on the VCFMP and requirements prior to works commencing and during weekly tool box meetings. Records of training are to be kept at the site office.	Boral site manager
GCCC pre start meeting	Pre start meeting to be carried out prior to works commencing. Meeting minutes to be kept at the site office.	Boral Planning and Site Manager
Regulate speed limits at the site	Koala awareness and 40 km/hr speed limit signage installed on-site. No vehicles are to exceed the 40km/hr speed limit within the site. Any non-compliances are recorded and kept at the site office.	Boral site manager
DURING CLEARING		
Fauna monitoring	A qualified fauna spotter will be present on site prior to and during all clearing. All trees are to be inspected prior to clearing. If any fauna is identified the clearing contractor is to be contacted immediately and the fauna allowed to move on before clearing near that tree re-commences. In the event of injury or mortality DES (1300 130 372) or RSPCA (1300 264 625) should be contacted to obtain further advice.	Clearing contractor and fauna spotter / arborist
Clearing direction	Direction of clearing is to be carried out as per the instructions of the registered fauna spotter to allow fauna to move unimpeded to adjacent vegetated areas.	Clearing contractor and fauna spotter / arborist
Tree retention	Tree protection fencing is to be inspected daily. If works have encroached on any fencing it is to be reinstated and trees being protected are to be assessed for signs of stress.	Fauna spotter / arborist

Management Action	Monitoring and Corrective Actions	Responsibility
POST CLEARING		
Tree health inspection	After tree clearing works on site, follow up maintenance works will be carried out on all retained vegetation. An analysis of the vegetation's health and growth will determine specific maintenance needs if required.	Fauna spotter / arborist
Reporting	Wildlife Management Report to be completed by the fauna spotter and submitted to the State Government within 1 month of works being completed. The report is to contain information on all animals encountered, captured, incidents and disposals.	Fauna spotter / arborist
OPERATIONS		
Erosion and Sediment Control	Implement the GCCC approved Erosion and Sediment Control Plan. Any amendments to this plan must be approved by GCCC prior to implementation. Any changes will outlined in the annual compliance report.	Boral site manager
Bushfire Management	Implement the GCCC approved Bushfire Management Plan. Any amendments to this plan must be approved by GCCC prior to implementation. Any changes will outlined in the annual compliance report.	Boral site manager
Regulate speed limits at the site	Koala awareness and 40 km/hr speed limit signage installed on-site. No vehicles are to exceed the 40km/hr speed limit within the site. Any non-compliances are recorded and kept at the site office.	Boral site manager
Fauna monitoring	If any fauna is observed during operations works with potential to interfere or cause harm to that animal will be stopped or altered to avoid interference. In the event of injury or mortality DES (1300 130 372) or RSPCA (1300 264 625) should be contacted to obtain further advice.	Boral site manager
Staff and contractor training	All site personnel are trained in fauna awareness. Fauna management measures are discussed weekly at Toolbox meetings. Records of meetings and training are kept at the site office.	Boral site manager
Rehabilitation	Rehabilitation plans for the preceding clearance area will be submitted to council with or prior to the notifications for each sequential stage of clearing. Rehabilitation of the preceding area must have been substantially commenced prior to works occurring for the next stage of clearing.	Ecological consultant and Boral Planning Manager

Table 6: Environmental Management Actions – Koala

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
Pre-clearing	Install tree protection and fauna exclusion fencing as per the VCFMP.	All fencing and flora and fauna protection devices installed correctly.	If fencing does not comply with the VCFMP it will be moved or the VCFMP updated if the fauna spotter / arborist advises movement is necessary.	Inspected by fauna spotter / arborist prior to the pre start meeting with council and results included in their reports, which will be included in annual EPBC Act compliance reporting
Pre and during clearing	Staff and contractor training on VCFMP prior to clearing commencing and during weekly tool box talks	All site staff and contractors on site during clearing are aware of the VCFMP requirements.	Review management actions, and conduct more training where identified as necessary.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.
Pre and during clearing	A qualified koala spotter will be present on site prior to and during all clearing. The clearing contractor is to be contacted immediately on identification of a koala and works modified to ensure no impacts to the animal.	All trees are to be inspected for koalas prior to clearing.	In the event of injury or mortality DES or RSPCA should be contacted to obtain further advice and site management protocols will be reviewed including potential need for additional fauna spotters.	Any non-compliances are recorded and kept at the site office.
During Clearing	Direction of clearing carried out as per the instructions of the registered fauna spotter.	Direction of clearing carried out as per instructions.	Review management actions, and amend if necessary, take advice from fauna spotter.	The records will be included in annual EPBC Act compliance reporting.
During clearing	Daily tree protection and fauna exclusion fencing inspections	Tree protection fencing intact.	If works have encroached on any fencing it is to be reinstated and trees being protected are to be assessed for signs of stress.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
Operations	Fauna monitoring requirements addressed during weekly tool box talks and site induction	All site staff and contractors onsite are aware of their obligations.	Review management actions, and conduct more training where identified as necessary.	Records of training are to be kept at the site office.
Operations	If a koala is observed during operations works with potential to interfere or cause harm will be stopped or altered to avoid interference.	No koalas are injured or killed as a result of normal operations.	In the event of injury or mortality DES or RSPCA should be contacted to obtain further advice and site management protocols will be reviewed including potential need for additional fauna spotters	Any non-compliances are recorded and kept at the site office. The records will be included in annual EPBC Act compliance reporting.
Operations	Bushfire Management	Implement the GCCC approved Bushfire Management Plan.	Any amendments to the plan must be approved by GCCC prior to implementation.	Any changes will outlined in the annual EPBC Act compliance report.
Operations	Submission of rehabilitation plans	Rehabilitation of the preceding area must have been substantially commenced prior to works occurring for the next stage of clearing.	Review management actions.	Outcomes of rehabilitation work to be included in annual EPBC Act compliance reporting.
At all times	Koala awareness and 40 km/hr speed limit signage installed on-site. No vehicles are to exceed the 40km/hr speed limit.	No vehicles are to exceed the 40km/hr speed limit within the site.	Any non-compliances are recorded and kept at the site office. Review management actions, and amend if necessary.	Records are to be kept at the site office.

Table 7: Environmental Management Actions – Ormeau Bottle Tree

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
Pre-clearing	Pre clearance vegetation surveys carried out in accordance with the NCA Flora Survey Guidelines – Protected Plants prior to each stage of clearing.	NCA protected plants reports are provided to and approved by DES and clearing exemption notification received prior to works commencing on site. No Ormeau Bottle Tree individuals are located on site.	If Ormeau Bottle Tree identified on site an Impact Management Plan will be developed and lodged with DES including measures to avoid or minimise impacts and, where required, offsets.	Summary of reports and approvals will be included in annual EPBC Act compliance reporting.
Pre-clearing	If Ormeau Bottle Tree located on site management actions will be implemented through the stage specific VCFMP including installation of protection fencing.	All fencing and flora protection devices installed correctly.	If fencing does not comply with the VCFMP it will be moved or the VCFMP updated if the arborist advises movement is necessary.	Inspected by arborist prior to the pre start meeting with council and results included in their report, which will be included in annual EPBC Act compliance reporting
Pre and during clearing	Staff and contractor training on VCFMP prior to clearing commencing and during weekly tool box talks	All site staff and contractors on site during clearing are aware of the VCFMP requirements.	Review management actions, and conduct more training where identified as necessary.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.
During clearing	Daily tree protection fencing inspections	Tree protection fencing intact.	If works have encroached on any fencing it is to be reinstated and trees being protected are to be assessed for signs of stress.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.
During Operations	Implementation of the approved Erosion and Sediment Control	Erosion and sediment control plans submitted to GCCC for approval prior to works commencing and works carried out in accordance with the approved plans.	Any amendments to this plan must be approved by GCCC prior to implementation.	Summary of reports and approvals will be included in annual EPBC Act compliance reporting

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
Operations	Bushfire Management	Implement the GCCC approved Bushfire Management Plan.	Any amendments to the plan must be approved by GCCC prior to implementation.	Any changes will outlined in the annual EPBC Act compliance report.

Table 8: Environmental Management Actions – Grey-headed Flying-fox

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
Pre-clearing	Install tree protection and fauna exclusion fencing as per the VCFMP.	All fencing and flora and fauna protection devices installed correctly.	If fencing does not comply with the VCFMP it will be moved or the VCFMP updated if the fauna spotter / arborist advises movement is necessary.	Inspected by fauna spotter / arborist prior to the pre start meeting with council and results included in their reports, which will be included in annual EPBC Act compliance reporting
Pre and during clearing	Staff and contractor training on VCFMP prior to clearing commencing and during weekly tool box talks	All site staff and contractors on site during clearing are aware of the VCFMP requirements.	Review management actions, and conduct more training where identified as necessary.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.
Pre and during clearing	A qualified fauna spotter will be present on site prior to and during all clearing. The clearing contractor is to be contacted immediately on identification of a GHFF and works modified to ensure no impacts to the animal.	All trees are to be inspected for GHFF prior to clearing.	In the event of injury or mortality DES or RSPCA should be contacted to obtain further advice and site management protocols will be reviewed including potential need for additional fauna spotters.	Any non-compliances are recorded and kept at the site office.
During Clearing	Direction of clearing carried out as per the instructions of the registered fauna spotter.	Direction of clearing carried out as per instructions.	Review management actions, and amend if necessary, take advice from fauna spotter.	The records will be included in annual EPBC Act compliance reporting.

Timing	Management/ Monitoring Action	Criteria	Corrective Actions	Reporting
During clearing	Daily tree protection and fauna exclusion fencing inspections	Tree protection fencing intact.	If works have encroached on any fencing it is to be reinstated and trees being protected are to be assessed for signs of stress.	The records will form part of the Wildlife Management Report to be issued under licence requirements to the State Government and will be included in annual EPBC Act compliance reporting.
Operations	Fauna monitoring requirements addressed during weekly tool box talks and site induction	All site staff and contractors onsite are aware of their obligations.	Review management actions, and conduct more training where identified as necessary.	Records of training are to be kept at the site office.
Operations	If a GHFF is observed during operations works with potential to interfere or cause harm will be stopped or altered to avoid interference.	No GHFF are injured or killed as a result of normal operations.	In the event of injury or mortality DES or RSPCA should be contacted to obtain further advice and site management protocols will be reviewed including potential need for additional fauna spotters	Any non-compliances are recorded and kept at the site office. The records will be included in annual EPBC Act compliance reporting.
Operations	Bushfire Management	Implement the GCCC approved Bushfire Management Plan.	Any amendments to the plan must be approved by GCCC prior to implementation.	Any changes will outlined in the annual EPBC Act compliance report.
Operations	Submission of rehabilitation plans	Rehabilitation of the preceding area must have been substantially commenced prior to works occurring for the next stage of clearing.	Review management actions.	Outcomes of rehabilitation work to be included in annual EPBC Act compliance reporting.

4.9. Revised Risk Assessment

Risk Assessment Tables (**Tables 2, 3, and 4**) were presented in **Section 3.5** to identify where avoidance and mitigation measures will be implemented. After consideration of the proposed mitigation and management measures described in **Section 4.6, Tables 6, 7, and 8** present the revised Risk Assessment and associated ratings for the Koala, Ormeau Bottle Tree, and Grey-headed Flying-fox, respectively.

These measures are focused around the implementation of the VMPs, implementation of traffic controls and signage, and the development of an offset site. By implementing the council approved VMP, clearing will occur in appropriate sequencing, allowing for fauna to seek shelter if present, and impacts to habitat and fauna on-site will be minimised. Other vegetation management and mitigation measures include the installation of fauna exclusion fencing and the presence of fauna spotter-catcher during all clearing.

In addition to these measures, a number of standard construction and operational management and mitigation measures will be employed for the development, such as erosion and sediment measures, appropriate training and weekly toolbox meetings for site personnel, traffic management, stormwater and sewerage management, run-off management, air, noise and dust management.

Table 9: Revised risk assessment for potential impacts to Koala

Impact	Pre-mitigation Measure Risk Rating			Revised Risk Rating		
	Likelihood	Consequence	Risk Rating	Likelihood	Consequence	Risk Rating
Construction Phase						
Removal of site vegetation	Highly Likely	Minor	Medium	Highly Likely	Minor	Medium
Loss of habitat features, opportunities, and movement areas for the Koala	Highly Likely	Minor	Medium	Unlikely	Minor	Low
Injury and mortality to the Koala due to vegetation clearing	Possible	Major	High	Rare	Major	Low
Potential risks to the Koala through erosion and sedimentation	Possible	Minor	Low	Unlikely	Minor	Low
Threats associated with open cuts, such as fauna entrapment, etc.	Highly Likely	Minor	Medium	Unlikely	Major	Medium
Operational Phase						

Impact	Pre-mitigation Measure Risk Rating			Revised Risk Rating		
	Likelihood	Consequence	Risk Rating	Likelihood	Consequence	Risk Rating
Threats associated with open cuts, such as fauna entrapment, etc.	Possible	Major	Medium	Possible	Moderate	Medium
Weed introduction	Possible	Moderate	Medium	Unlikely	Moderate	Low
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low	Unlikely	Minor	Low
Barriers to fauna movement for the Koala	Highly Likely	Moderate	High	Unlikely	Moderate	Low
Vehicle movement and trespass impacts on Koala	Possible	Major	High	Unlikely	Major	Medium

Table 10: Revised risk assessment for potential impacts to Ormeau Bottle Tree

Impact	Pre-mitigation Measure Risk Rating			Revised Risk Rating		
	Likelihood	Consequence	Risk Rating	Likelihood	Consequence	Risk Rating
Construction Phase						
Direct clearing of a Ormeau Bottle Tree	Unlikely	Major	Medium	Rare	Major	Low
Fragmentation of site environmental features	Highly Likely	Minor	Medium	Unlikely	Minor	Low
Potential risks to the Ormeau Bottle Tree through erosion and sedimentation	Possible	Minor	Low	Unlikely	Minor	Low
Operational Phase						
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low	Unlikely	Minor	Low
Weed introduction	Possible	Moderate	Medium	Unlikely	Moderate	Low

Table 11: Revised Risk Assessment for impacts to Grey-headed Flying-fox

Impact	Pre-mitigation Measure Risk Rating			Revised Risk Rating		
	Likelihood	Consequence	Risk Rating	Likelihood	Consequence	Risk Rating
Construction Phase						
Removal of site vegetation	Highly Likely	Minor	Medium	Highly Likely	Minor	Medium
Loss of habitat features, opportunities, and movement areas for the Grey-headed Flying-fox	Highly Likely	Minor	Medium	Unlikely	Minor	Low
Injury and mortality to the Grey-headed Flying-fox due to vegetation clearing	Possible	Major	High	Rare	Major	Low
Potential risks to the Grey-headed Flying-fox through erosion and sedimentation	Possible	Minor	Low	Unlikely	Minor	Low
Operational Phase						
Threats associated with open cuts, fauna entrapment, etc.	Possible	Moderate	Medium	Unlikely	Moderate	Low
Increased hydrology due to increased hardstand and altered run-off	Possible	Minor	Low	Unlikely	Minor	Low
Barriers to fauna movement for the Grey-headed Flying-fox	Unlikely	Minor	Low	Rare	Minor	Low
Vehicle movement and trespass impacts on the Grey-headed Flying-fox	Possible	Major	High	Unlikely	Major	Medium

5. EMP Audit and Review

5.1. Environmental Auditing

The management actions contained within the approved EMP will be audited in accordance with timeframes specified or, as a minimum, annually, for the life of the approval. Specific EMP criteria will form a subset of the broader EPBC Permit annual compliance reporting. Reviews of the EMP will review the effectiveness of the plan, and whether the plan is achieving its objectives and the requirements of approval conditions (refer to **Section 1.2** and **Table 1** for all conditions relevant to the EMP EPBC approval).

As per EPBC Approval Condition 11, upon 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.

5.2. Environmental Management Plan Review

The EMP will be reviewed annually as part of the auditing process. Where management actions are not achieving the criteria outlined in the EMP require amendment, the EMP shall be reviewed by Boral. Where an amendment to the EMP is required, the revised EMP must be submitted to DoEE for approval along with a statement of reasons explaining why the review has been carried out and the changes are required.

If a revised EMP is approved by DoEE it will be used for future clearing stages and annual compliance requirements.

6. Appendices

Appendix A - Vegetation Clearing and Fauna Management Plan

Appendix A

Vegetation Clearing and Fauna
Management Plan

Vegetation Clearing & Fauna Management Plan

City of Gold Coast

Expansion of Quarry Pit - Operational Works

580-582 Upper Ormeau Road, Kingsholme
Lot 43 on SP243239 & Lot 1 on RP164904

by Boral Resources (Qld) Pty Limited

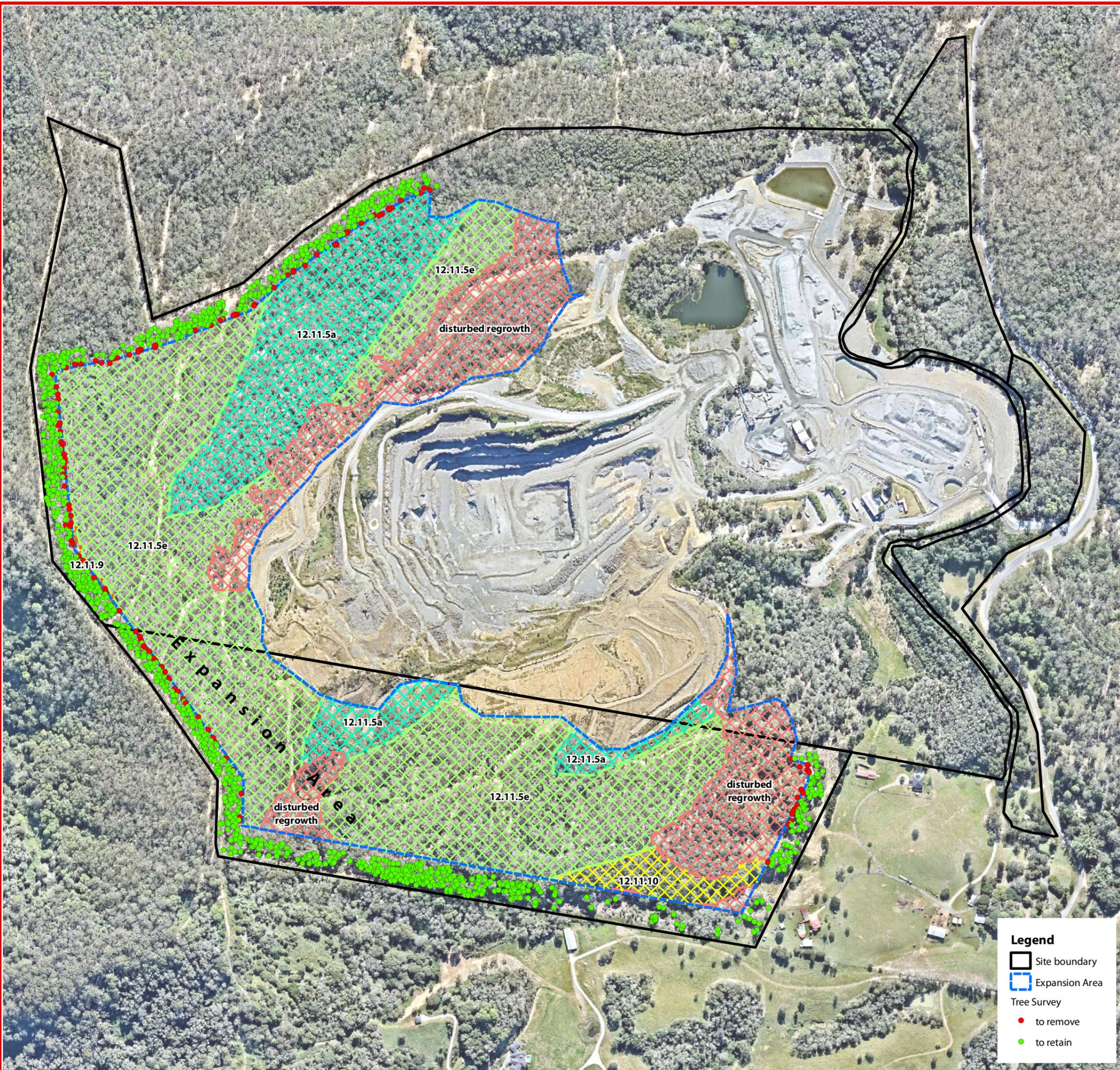
CONTENTS

8354 E 02 VCFMP Pit A -- Vegetation Clearing Notes
8354 E 03 VCFMP Pit A -- Fauna Management Notes
Appendix A -- Tree Schedule

**GOLD COAST CITY COUNCIL
OPW TREE WORKS SITE PLAN**
SUBJECT TO AMENDMENTS MARKED IN
RED TO CORRESPOND WITH LETTER
OPW... 201602326
Dated: 15 March 2017

Key Site Contacts

Saunders Havill Group
Mr Sam Maynard
Phone: (07) 3251 9444
Email: sammaynard@saundershavill.com



Legend

- Site boundary
- Expansion Area
- Tree Survey**
- to remove
- to retain

INTRODUCTION

The Environmental Management Division of the Saunders Havill Group was engaged by Boral Resources (Qld) Pty Limited to prepare a Vegetation Clearing & Fauna Management Plan (VCFMP) to support an Operational Works application for vegetation clearing for the proposed pit expansion of the Ormeau Quarry. The expansion area will include approximately 38 ha of clearing, from Lot 43 on SP243239 and Lot 1 on RP164904. The clearing of this vegetation will allow for the expansion and continued extraction of hard rock resource.

The purpose of this VCFMP is to provide vegetation and fauna management details in regards to the vegetation removal process over the proposed clearing area. The vegetation clearing process will follow the general principle for vegetation documented on this sheet and Sheet 03.

This VCFMP has been produced by overlaying existing tree locations with the proposed works area to determine impacts and disturbance. Vegetation identified includes:

1. Surveyed tree plot of native tree specimens (greater than or equal to 100mm DBH on the edge of the clearing area)
2. Classification of vegetation within the pit expansion footprint in accordance with Gold Coast Planning Scheme Policy 8: Guidelines for Ecological Assessment

The proposed works area extends from the existing quarry and composed largely of remnant vegetation with areas of disturbed non-remnant areas. The vegetation remaining is composed of Least Concern Regional Ecosystems (RE) 12.11.5e, 12.11.5a, and 12.11.10, and a small area of Of Concern RE 12.11.9. See below for full descriptions of vegetation communities.

VEGETATION COMMUNITIES

RE 12.11.5e

The majority of the expansion area is mapped as Least Concern RE12.11.5e described as *Corymbia citriodora subsp. Variegata woodland usually including Eucalyptus siderophloia or Eucalyptus crebra (sub coastal ranges), Eucalyptus propinqua and Eucalyptus acmenoides or Eucalyptus carnea. Occurs on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.*

Of the species observed within this portion of the investigation area, the canopy was dominated by *Corymbia citriodora* (Spotted Gum) with *Eucalyptus crebra* (Narrow Leaf Ironbark) occurring at regular intervals. Other associate species recorded included *Eucalyptus major* (Grey Gum), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus tereticornis* (Forest Red Gum) and *Lophostemon confertus* (Brush Box).

Based on average height of 20m with a crown cover of 75% the vegetation structural formation would be considered as an "Open Forest". DBH range of large trees was between 300mm - 460mm with a mean DBH of 360mm. Ground is covered on average by 36% leaf litter with native grass covering approximately 59% of the area. Previous disturbance history indicates low-level logging and fire damage with weed incursion within the area at approximately 5%.

RE 12.11.5a

The steep gully lines within the remnant polygons are mapped as containing Least Concern RE12.11.5a, described as *Eucalyptus tindaliae, Eucalyptus carnea, Corymbia intermedia woodland +/- Eucalyptus crebra, Corymbia citriodora, Eucalyptus major, Eucalyptus helidonica, Corymbia henryi, Angophora woodsiana, Corymbia trachyphloia (away from the coast) or Eucalyptus siderophloia, Eucalyptus microcorys, Eucalyptus racemose, Eucalyptus propinqua (closer to the coast). Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.*

Flora species observed within these mapped polygons are consistent with the regional ecosystem mapping however also contained elements of the 12.11.5e with *Lophostemon confertus* (Brush Box) dominating the canopy in some areas.

Based on average height of 22m with a crown cover of 67.1% the vegetation structural formation would be considered as an "Open Forest". DBH range of large trees between 250mm - 500mm with a mean DBH of 340mm. Ground is covered on average by 36% leaf litter with native grass covering approximately 60% of the area. Previous disturbance history indicates low-level logging and fire damage with weed incursion within the area at approximately 10%.

RE 12.11.10

A remnant polygon mapped along the sites southern boundary includes Least Concern RE12.11.10, described as *Notophyll vine forest +/- Araucaria cunninghamii on metamorphics +/- interbedded volcanics. Typically, there is a relatively low abundance of species from the genera Eucalyptus, Melaleuca and Casuarina and flora species with buttresses are common as is an abundance and diversity of vines.*

The area mapped as Least Concern RE12.11.10 contains canopy trees more typical of Least Concern RE12.11.5e. The dominant tree identified is *Lophostemon confertus* (Brush Box),

however other species identified included *Eucalyptus major* (Grey Gum), *Eucalyptus micorcorys* (Tallowwood), and *Corymbia intermedia* (Pink Bloodwood). A very small patch of trees within the drainage line contained a number of understory species including *Flindersia schottiana* (Bumpy Ash), *Cordyline stricta* (Narrow-leaved Palm Lily) and *Smilax australis* (Sarsaparilla), which would typically be found in a Vine forest community however this area is too small an area to map. No canopy trees typical of RE12.11.10 were identified throughout the remnant polygon.

The vegetation in the area was more consistent with RE12.11.5e which adjoins the mapped polygon on the northern side. The canopy layer was approximately 24m in height and cover indicates that the structural vegetation class for this vegetation would be consistent with an open-forest complex. The understorey within this area was dominated by exotic/introduced weed species and some signs of historical logging were observed.

RE 12.11.9

A small area (approximately 0.08ha) of Of Concern Regional Ecosystem community 12.11.9 is mapped along the sites western property boundary. The expansion area includes the edge of this polygon which is described as *Eucalyptus tereticornis open forest on metamorphics +/- interbedded volcanics. Usually higher altitudes. Species recorded within this polygon are consistent with the current regional ecosystem community with Eucalyptus tereticornis (Forest Red Gum) and Eucalyptus siderophloia (Grey Ironbark) dominating the canopy. Other species recorded within this polygon were identified as Corymbia intermedia (Pink Bloodwood), Eucalyptus moluccana (Gum Topped Box) and Angophora subvelutina (Rough Barked Apple).*

The vegetation in this polygon was a heterogenous mix of RE12.11.5e and RE12.11.9 with gullies more consistent with RE12.11.9 and higher areas containing RE12.11.5e. The canopy layer was approximately 24m in height and cover indicates that the structural vegetation class for this vegetation would be consistent with an open-forest complex. The understorey within this area was dominated by exotic/introduced weed species and some signs of historical logging were observed.

CLEARING PHASES AND PROCESS

Clearing within the pit expansion area will be staged in accordance with the relevant approval documents and plans. Prior to each stage of clearing the following steps will be undertaken:

STEP 1 – Pre Clearance Notification

Council will be notified at least 30 business days prior to the commencement of clearing activities. Notification will include at a minimum a plan identifying the area to be cleared, direction of clearing, the rehabilitation plan for the preceding stage of clearing (for stage 2 onwards) and the proposed start date for works.

STEP 2 - Tree Protection Fencing

Tree Protection Fencing will be installed prior to the commencement of any clearing works on the site. Fencing is to be located at or beyond 12 x diameter at breast height (DBH) around the vegetation marked to be retained. Adjustments can occur only under the direction of a qualified Arborist.

STEP 3 - Council Pre-start Meeting (if required)

A pre-start meeting will be organised prior to any vegetation clearing. Fencing shall be in place at the time for inspection and sign off by Council Officers. The area to be cleared will also be delineated prior to this time using stakes.

STEP 4 - Fauna Inspections and Management

Undertake necessary fauna management requirements prior to clearing works – this should include the specifications listed on Sheet 03 of this VCFMP and acknowledge specific Gold Coast City Council approval requirements.

STEP 5 - Undertake Bulk Clearing

Wholesale removal of vegetation can occur once approved for removal by a qualified fauna spotter in the direction identified by the pre-clearance notification. The direction of clearing will be managed by the appointed fauna spotter to allow all fauna unimpeded movement towards the vegetated areas adjacent to the clearing.

A stockpiling location is to be designated in an easily accessible area. The location will be easily accessible by internal site roads to allow for material to be easily delivered and stored. Where possible, cleared native vegetation that is free of weeds will be chipped and stored for re-use on other parts of the site (e.g. rehabilitation/ embankment stabilisation).

After tree clearing works on site, follow up maintenance works should be carried out on all retained vegetation. An analysis of the vegetation's health and growth should be undertaken to determine specific maintenance needs if required.

REHABILITATION PLANS

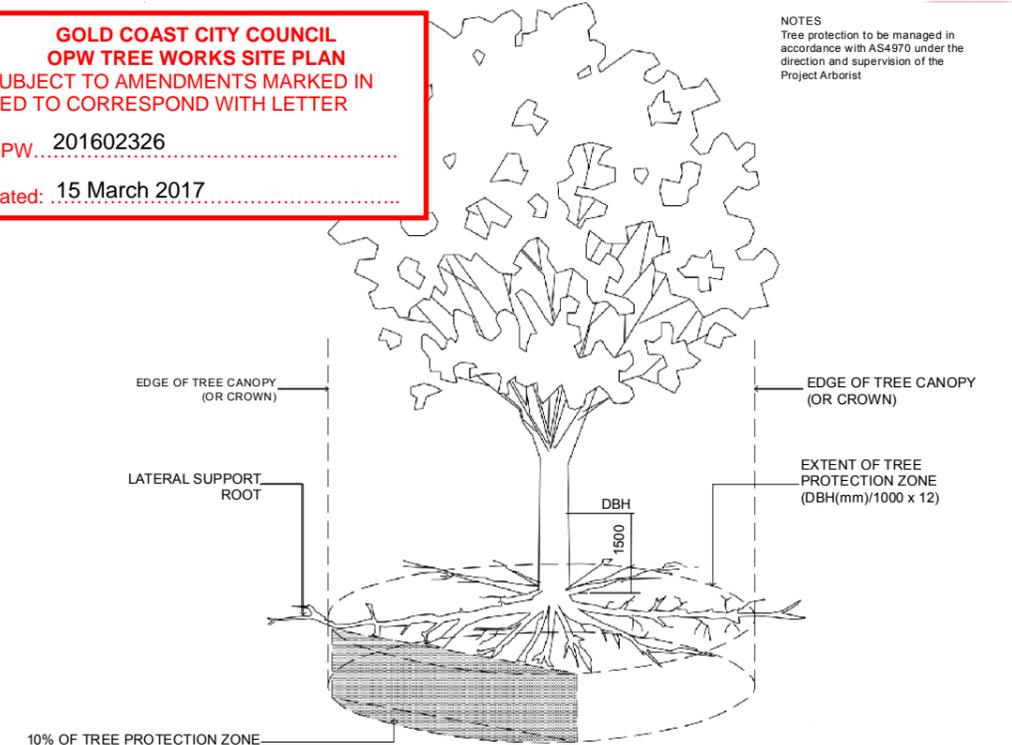
Rehabilitation plans for the preceding clearance area will be submitted with or prior to the notifications for each sequential stage of clearing. For example, a rehabilitation plan will be developed prior to the second stage of clearing and lodged with council as part of the notification for stage 2 clearing. Rehabilitation of the preceding area must have been substantially commenced (i.e. 80% planted with a 2-month establishment period) prior to works occurring for the next stage of clearing. The required bond for rehabilitation of the preceding clearance area will be submitted prior to the commencement of rehabilitation for each stage.

A copy of this VCFMP must be present with the clearing contractor onsite at all times.

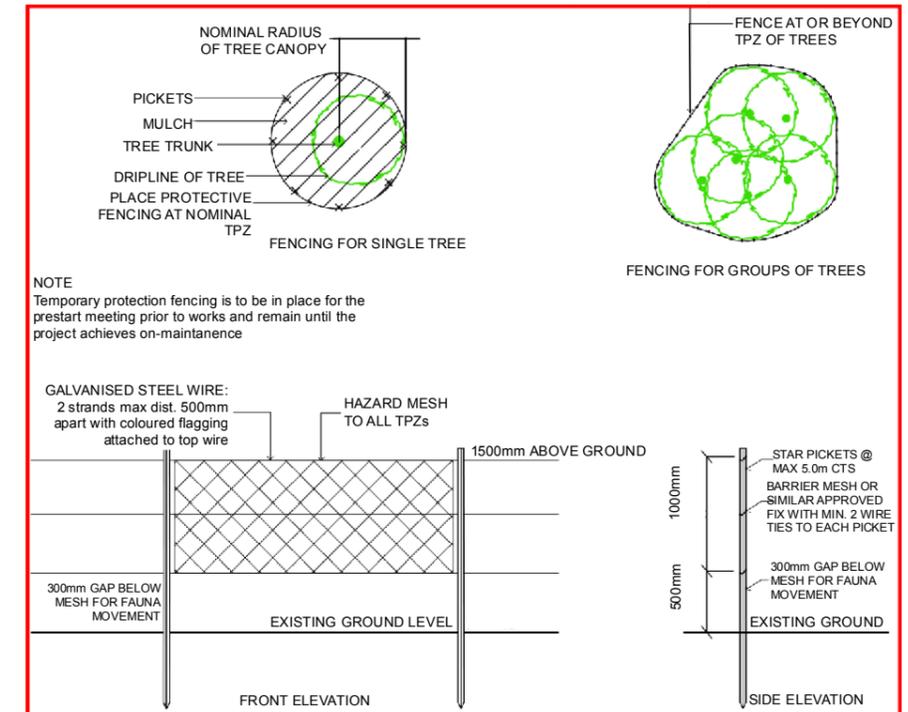
**GOLD COAST CITY COUNCIL
OPW TREE WORKS SITE PLAN
SUBJECT TO AMENDMENTS MARKED IN
RED TO CORRESPOND WITH LETTER**

OPW.....201602326

Dated: 15 March 2017



Tree Protection & Fauna-Friendly Fencing Detail



NOTES
Tree protection to be managed in accordance with AS4970 under the direction and supervision of the Project Arborist



DISCLAIMER:
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.
CONFIRM ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION AND DO NOT SCALE FROM THE DRAWINGS. ALL DIMENSIONS ARE IN MILLIMETRES. ANY DISCREPANCIES SHOULD BE CLARIFIED IN WRITING WITH SAUNDERS HAVILL GROUP PRIOR TO THE COMMENCEMENT OF WORKS.
IN ORDER TO AVOID DELAY, LOCATION OR CONSTRUCTION ON SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR FURTHER UNDERGROUND SERVICES AND DETAIL TO CAPTAINS OF ALL SERVICES.

REFERENCES:

AMENDMENTS:

Issue	Date	Description	Checked
A	11/10/2016	Client Draft	SM

CLIENT:

Boral Resource Qld Pty Ltd

PROJECT:

Ormeau Quarry
Upper Ormeau Rd, Kingsholme

environmental management

PLAN OF:

Vegetation Clearing & Fauna Management Plan

DATE: 11/10/2016	CHECKED: SM
CLIENT REF: 8354	DRAWN: AL
DRAWING No: 8354 E 02 VCFMP B	

Vegetation Clearing and Fauna Management Plan

Fauna Management Plan

GOLD COAST CITY COUNCIL
OPW TREE WORKS SITE PLAN
SUBJECT TO AMENDMENTS MARKED IN
RED TO CORRESPOND WITH LETTER

OPW: 201602326

Dated: 15 March 2017

INTRODUCTION

The Fauna Management specification on this VCFMP is designed to protect native animals and control and manage impacts during clearing activities during all stages. The fauna management specifications and principles incorporated in this VCFMP Series applies generically to all native animals and focus ses on avoiding conflicts and incorporating measures to minimize disturbance. Compliance with this section of the VCFMP plan is compulsory and incorporates the use of expert consultants including a Fauna Spotter (holding a valid Wildlife Rehabilitation Permit issued by the Department of Environment and Heritage Protection).

FAUNA IMPACTS

Clearing of vegetation provides an obvious source of impact to existing habitat and animal safety. More specifically the existing vegetation provides habitat, movement and protection opportunities for some fauna through both regrowth and canopy trees. These opportunities are to be altered during and post site clearing works.

CLEARING IMPACTS

- Direct removal of site vegetation
- Loss of habitat
- Noise, vibration and dust
- Erosion and sedimentation
- Threats associated with open cuts etc. and fauna entrapment

Fauna Management Schedule

1.0 PRE CLEARING				
Ref:	Management Item	Responsibility	Timing	Reporting
1.1	TEMPORARY FENCING Prior to the commencement of works and to be inspected by Council or the site Environmental Coordinator AS 9470 Temporary Protection Fencing shall be installed around the 'Tree Protection Zone' designated for retention (as per Sheets 04-07). <ul style="list-style-type: none"> ▪ Fencing shall be fauna friendly ▪ No clearing, stockpiling, site access, earthworks, storage, etc. is to occur within the temporary protection fencing. ▪ Only approved weed management works to occur within the temporary protection fencing ▪ Fencing to be reinstated immediately if damaged or knocked down, any damage to retained trees to be immediately reported to Project Arborist. ▪ Fencing to remain until the completion of all site bulk earthworks. 	SITE SUPERVISOR	Prior to the commencement of construction	Inspected by Council or the Environmental Site Coordinator
1.2	CONTRACTOR EDUCATION & AWARENESS All site contractors and subcontractors will be made aware of their responsibilities to protect native fauna. The Fauna Management notes on this VCFMP is provided as a working document to assist on-site management and protection of native animals. This generally will form part of education and training on a broader work place health and safety but as a minimum will include: <ul style="list-style-type: none"> ▪ Copy of VCFMP kept on-site (Site Office). ▪ General education and awareness notification of contractors and sub-contractors involved in activities potentially impacting native animals as part of site induction – contractors must know the location of the VCFMP, key phone numbers and who to report to if they breach the VCFMP. ▪ A list of relevant contact phone numbers as listed on these drawings is kept in a visible and accessible location in the site office 	SITE SUPERVISOR / THE PROPONENT	Prior to the commencement of construction and as part of the site induction for new staff and sub-contractors	SITE SUPERVISOR
2.0 VEGETATION CLEARING				
2.1	SPOTTER / RELOCATOR Immediately prior to the commencement of clearing of native vegetation a daily visual inspection of the area must be carried out by the fauna spotter-catcher. Furthermore, the fauna spotter-catcher is to be present on site during all clearing operations to supervise and direct clearing works, and to respond to any situations that may arise in relation to fauna. In the event of an animal being located, an area of 5m radius should be established around the tree excluding machinery from the area until the animal has relocated (usually overnight). If an animal requires relocating this must be undertaken by a suitable qualified fauna expert recognized by the Department of Environment & Heritage. For some fauna a permit will be required. If vegetation is left stockpiled overnight, the Fauna Spotter-Catcher must inspect the vegetation prior to chipping or removal from site. Any native fauna orphaned or injured by the development process must be reported to the Department of Environment & Heritage (1300 130 372) or RSPCA (1300 264 625). The Site Supervisor is responsible for the safe management of site fauna and implementation of these specific fauna requirements SPECIFIC KOALA MANAGEMENT NOTES A Koala Spotter is a person who holds a tertiary qualification in Biology or Zoology, or who is demonstrably experienced in the identification and location of Koalas in their natural habitat. For example, a koala keeper employed by a licensed Wildlife exhibitor (i.e. a zoo) may be capable of demonstrating competence in locating Koala's. Prior to the commencement and during felling operations, it is the responsibility of the Koala spotter to be present at the site of felling operations identify any tree at the site within which a Koala is present, as well as any tree that has a crown which is intermeshed or overlapping with such a tree; and advise the person who is authorised to conduct the felling operation, or that person's representative, of the precise location of each such tree Management Item. CLEARING PATTERN / FAUNA FLUSHING Clearing within each individual area is to occur as per the direction indicated on sheet 06 ensuring native animals are flushed north or south towards the safe haven of the remnant areas. Principles of the clearing plan include: <ul style="list-style-type: none"> • Clearing occurs once fauna spotter-catcher gives sign off the site is clear of significant native species. • Clearing is sequenced in accordance with Sheet 08 and the Spotter Catcher and ensure adequate timing for fauna to relocate towards retention areas. • The direction of clearing as proposed on Sheet 08 may alter if specified on-site by Spotter-Catcher. At the completion of operational works, the Fauna Spotter-Catcher must provide certification to Council's Ecologist that all works were undertaken in accordance with these fauna management requirements.	SITE SUPERVISOR	Prior to the commencement of construction	Inspected by Council or the Environmental Site Coordinator



DISCLAIMER:

REFERENCES:

AMENDMENTS:			
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CLIENT:
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Ormeau Quarry
Upper Ormeau Road, Kingsholme

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DATE: 11/10/2016 CHECKED: SM

CLIENT REF: 8354 DRAWN: AL

DRAWING No: 7264 E 03 VCFMP B