

BIODIVERSITY MANAGEMENT PLAN

Wallerawang Quarry

FINAL

April 2019



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Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Walker Quarries Pty Ltd

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V0	Alex Irwin	22 February 2019	Alex Irwin	26 February 2019
V1	Alex Irwin	1 April 2019	Alex Irwin	3 April 2019
V1.1	Alex Irwin	4 April 2019	Alex Irwin	8 April 2019

Note * V0 represents the first version of this plan prepared by Umwelt Pty Ltd. This follows from Rev 4 produced by RW Corkery & Co. Pty Limited.

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Appendix 4	Final Biodiversity Offset Strategy
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1.0 Introduction

1.1 Purpose

This Biodiversity Management Plan (BDMP) for the Wallerawang Quarry (the Quarry) has been reviewed and updated by Umwelt (Australia) Pty Limited (Umwelt) on behalf of Walker Quarries Pty Ltd (Walker Quarries) in accordance with *Condition 26 of Schedule 3 (Condition 3(26))* of Development Consent DA 344-11-2001 (DA 344-11-2001).

The BDMP synthesises the recommendations made during the preparation of an *Environmental Impact Statement* (EIS) for development of the Quarry (Pacrim, 2001), an *Environmental Assessment* prepared to support an application for modification to DA 344-11-2001 (RWC, 2017) and the preparation of a Biodiversity Offset Strategy (BOS) as required by *Condition 3(24)* of DA 344-11-2001. It has been prepared to guide the management of biodiversity values on the Quarry Site. Additional information concerning rehabilitation is provided in a Rehabilitation Management Plan prepared in accordance with *Condition 3(31)* of DA 344-11-2001.

1.2 Quarry Operations

The Quarry is located approximately 8 kilometres (km) north-west of Lithgow (see **Figure 1.1**) and comprises a total disturbed area of approximately 15 hectares (ha) (see **Figure 1.2**). The Quarry is approved to produce 500 000 tonnes per year of quartzite and rock aggregate material.

Figure 1.2 displays the layout of the Quarry. Detailed information regarding approved activities is available in the following documents.

- Mining Operations Plan (incorporating Rehabilitation Management Plan), for the period 15 May 2018 to 15 December 2020 (RWC, 2018); and
- Report titled Environmental Assessment for the Modification to the Operations at the Wallerawang Quarry (DA 344-11-2001), dated May 2017 (RWC, 2017).

In general, the Quarry operations are undertaken as follows.

- Within the approved extraction area, vegetation is cleared and soil is stripped for use in rehabilitation activities.
 - Subject to the availability of areas to be rehabilitated, the cleared and stripped vegetation and soils will be selectively placed within areas being revegetated to take advantage of the existing seed bank.
 - If areas prepared for rehabilitation are not available, the vegetation and soil will be placed in stockpiles for future application to the final landform.
- Once exposed, the quartzite and other rock is extracted using conventional drill and blast, load and haul methods. Overburden (non-quartzite) material is temporarily stockpiled within the footprint of the open cut from where it is either used within the site for approved construction activities or sold for use as road base materials.
- The extracted rock is transferred to a crushing plant for size reduction. Aggregates of varying sizes are screened for sale or further processing.

- Smaller diameter aggregates and sand are transferred to a washing plant to produce sand and fine aggregate products.
- Quarry products are loaded to road registered trucks and despatched from the Quarry Site over a weighbridge and on to the Great Western Highway.
- Progressive rehabilitation of eastern slopes of the extraction area and rehabilitation of the remaining landform at Quarry closure in accordance with the approved Rehabilitation Management Plan (which has been prepared as part of the Quarry Mining Operations Plan [MOP]).

Potential impacts to flora and fauna within the Quarry Site relate principally to removal of native flora and fauna habitat, direct incidents caused by traffic within the Quarry Site and indirect impacts associated with artificial light, blasting, noise and dust impacts resulting from operations.

1.3 Format

The Plan has been prepared in nine sections to address the requirements of *Condition 3(26)* of DA 34-11-2001 and the suggested contents provided by the *Guidelines for the Preparation of Biodiversity Management Plans for Major Projects* produced by NSW OEH as a draft in August 2014 (OEH, 2014a).

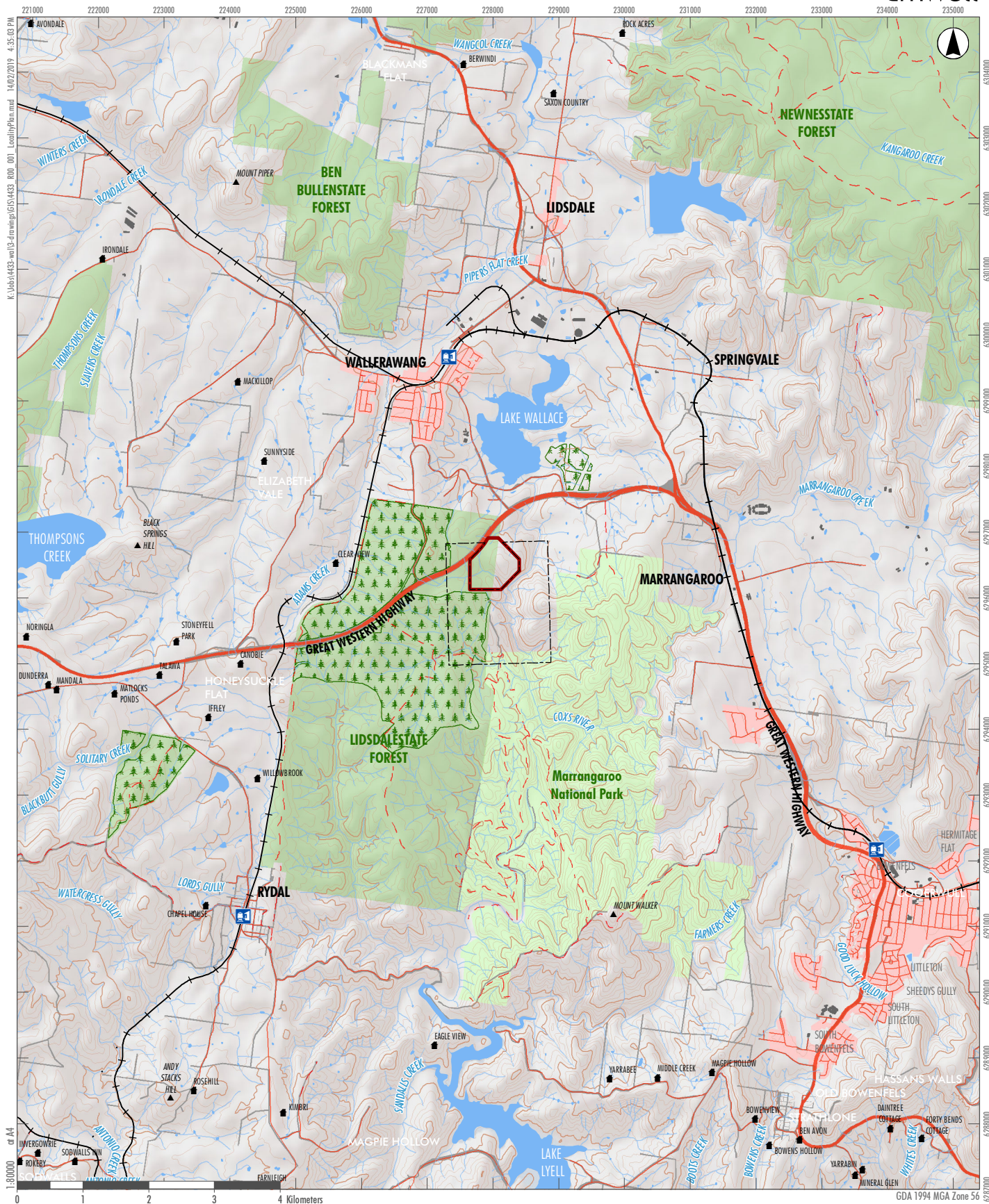
1.4 Document History

The previous version of this BDMP (identified as V1.1) was prepared by RW Corkery & Co Pty Ltd following modification to DA 34-11-2001 in August 2017 and replaced a Flora and Fauna Management Plan prepared for the Quarry in 2016 in accordance with previous conditions of development consent. This version of the BDMP (V0) was prepared following the approval of a second modification to DA 344 11 2001 on 7 December 2018 and is the first version of the BDMP prepared by Umwelt Pty Ltd.

Table 1.1 provides the complete history of BFMP review and approval.

Table 1.1 Document Status History

Rev No.	Prepared by		Purpose
	Name	Date	
0	P. Hensley	October 2014	Draft Flora and Fauna Management Plan submitted to department prior to commencement
1	RW Corkery & Co	September 2016	Updated and approved Flora and Fauna Management Plan following first IEA
2	RW Corkery & Co	November 2017	Updated as Biodiversity Management Plan following Modification 1 (issued August 2017)
3	RW Corkery & Co	September 2018	Updated Following 2 nd IEA
4	RW Corkery & Co	November 2018	Updated following 2018 Annual Review
V0	Alex Irwin	February 2019	Updated following Modification 2 (issued December 2018)
V1	Alex Irwin	April 2019	Updated following DPE Review (March 2019)



- Legend**
- Quarry Site - ML1633
 - EL 4473
 - State Forest
 - NPWS Estate

Note:
Image Source: Copyright: © 2014 Esri Data source:

FIGURE 1.1
Locality Plan



FIGURE 1.2
Approved Quarry Site Layout

1.5 Legal and Other Regulatory Requirements

1.5.1 Development Consent DA 344-11-2001

DA 344-11-2001 was modified on 7 December 2018 and requires the preparation of a *Biodiversity Management Plan (Condition 3(26))*. This effectively replaces the requirement for a Flora and Fauna Management Plan of DA 344-11-2001 as originally issued (Condition 2.38). DA 344-11-2001 includes several other conditions relevant to the management of biodiversity. **Table 1.2** identifies these conditions and identifies the section of this BDMP where each is addressed.

Table 1.2 Biodiversity Related Conditional Requirements of DA 344 – 11 – 2001

No	Condition	Section												
Biodiversity Offset Strategy														
3(24)	<p>By 28 February 2018, the Applicant must provide a Biodiversity Offset Strategy in accordance with the Framework for Biodiversity Assessment - NSW Biodiversity Offsets Policy for Major Projects, for the retirement of ecosystem and species credits as set out in Table 5, to the satisfaction of the Secretary and OEH.</p> <p><i>Table 5: Biodiversity credits to be retired</i></p> <table><tr><th>Credit type</th><th>Number of Credits</th></tr><tr><td colspan="2">Ecosystem Credits</td></tr><tr><td>PCT 732 – Broad-leaved Peppermint - Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion</td><td>120</td></tr><tr><td>PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion</td><td>34</td></tr><tr><td colspan="2">Species Credits</td></tr><tr><td>Purple Copper Butterfly</td><td>184</td></tr></table>	Credit type	Number of Credits	Ecosystem Credits		PCT 732 – Broad-leaved Peppermint - Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	120	PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	34	Species Credits		Purple Copper Butterfly	184	1.4.2
Credit type	Number of Credits													
Ecosystem Credits														
PCT 732 – Broad-leaved Peppermint - Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	120													
PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	34													
Species Credits														
Purple Copper Butterfly	184													
Security of Offsets														
3(25)	<p>By 31 December 2018, unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide appropriate long-term security for the Biodiversity Offset Strategy, to the satisfaction of the Secretary. Any mechanism must remain in force in perpetuity.</p> <p>Note: Mechanisms to provide appropriate long-term security to the land within the Biodiversity Offset Strategy in accordance with the NSW Biodiversity Offset Policy for Major Projects 2014.</p>	1.4.2												
Biodiversity Management Plan														
3(26)	<p>The Applicant must prepare a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none">a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;b) be prepared in consultation with OEH;c) be submitted to the Secretary within three months of providing a satisfactory Biodiversity Offset Strategy or by 31 March 2018, whichever is earlier;d) describe the short, medium, and long term measures to be undertaken to manage the remnant vegetation and fauna habitat on the site, including within any biodiversity offset areas;e) include a detailed description of the measures described in paragraph (d) to be implemented over the next 3 years (to be updated for each 3 year period following initial approval of the plan) including the procedures to be implemented for:	<p>App 1</p> <p>App 2</p> <p>1.6 & App 3</p> <p>4.0</p>												

No	Condition	Section
3(26)	<ul style="list-style-type: none"> maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of any biodiversity offset areas or site rehabilitation; 	4.5
	<ul style="list-style-type: none"> restoring and enhancing the quality of native vegetation and fauna habitat in any biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features; 	4.2, 4.4 - 4.6
	<ul style="list-style-type: none"> protecting vegetation and fauna habitat outside the approved disturbance area on-site; 	4.3 & 4.4
	<ul style="list-style-type: none"> minimising the impacts on native fauna, including undertaking pre-clearance surveys; 	4.4
	<ul style="list-style-type: none"> ensuring minimal environmental consequences for threatened species, populations and habitats, including the Purple Copper Butterfly; 	4.3, 4.4, 4.9
	<ul style="list-style-type: none"> collecting and propagating seed; 	4.6
	<ul style="list-style-type: none"> controlling weeds and feral pests; 	4.7
	<ul style="list-style-type: none"> controlling erosion; and 	4.8
	<ul style="list-style-type: none"> managing bushfire risk; 	4.10
	f) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;	5.0
	g) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate these risks; and	1.4.2, 6
	h) include details of who is responsible for monitoring, reviewing, and implementing the plan.	9.1
Management Plan Requirements		
5(3)	The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	
	(a) detailed baseline data;	2.0
	(b) a description of:	
	<ul style="list-style-type: none"> the relevant statutory requirements (including any relevant approval, licence or lease conditions); 	1.5
	<ul style="list-style-type: none"> any relevant limits or performance measures/criteria; and 	4.0
	<ul style="list-style-type: none"> the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; 	4.0
	(c) a description of the measures that to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	4.0
	(d) a program to monitor and report on the:	
	<ul style="list-style-type: none"> impacts and environmental performance of the development; and effectiveness of any management measures (see (c) above); 	5.0, 6.0
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	5.4
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	7.0
	(g) a protocol for managing and reporting any:	
	<ul style="list-style-type: none"> incidents; 	8.0

No	Condition	Section
	<ul style="list-style-type: none"> complaints; non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria; and a protocol for periodic review of the plan. 	
5(4)	The Applicant must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this consent, until the approval of a similar plan, strategy or program under this consent.	10.0
5(5)	<ul style="list-style-type: none"> Within 3 months of the submission of an: <ol style="list-style-type: none"> incident report under condition 9 below; Annual Review under condition 11 below; audit report under condition 12 below; and any modifications to this consent, <p>the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. The applicant must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.</p>	12.0, App 1

1.5.2 Biodiversity Offset Strategy

Condition 3(24) of the Notice of Modification for DA 344-11-2001 requires the development a BOS for the retirement of ecosystem and species credits generated by the disturbance to 2.4ha of native vegetation (which was the subject of the recently approved modification to DA 344-11-2001). As a result of delays in the determination of the biodiversity credits required to be retired, an Interim BOS was submitted on 27 February 2018 (as endorsed by the DPE – refer to **Appendix 3**). Following confirmation by OEH as to the biodiversity credits to be retired on 14 June 2018 (refer to **Appendix 2**), a Final BOS was submitted on 13 July 2018.

In accordance with the Final BOS, which is included in full as **Appendix 4**, Walker Quarries has retired the ecosystem and species credits identified in **Table 1.3** by payment into the Biodiversity Conservation Fund see **Appendix 5**).

Table 1.3 Biodiversity Offset Requirements

Credit type	Area of impact (ha)	No. credits	Cost/credit (ex GST) ¹	Total
Ecosystem credits				
PCT 732 – Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	1.90	65	\$2,515.29	\$168,493.83
PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	0.5	19	\$2,515.29	\$47,790.50
Species credits				
Purple Copper Butterfly	2.4	96	\$486.10	\$60,191.33

Note 1: Price based on the Biodiversity Offsets Payment Calculator Public Tool (BOPC) as of 31 October 2018

1.6 Objectives and Outcomes

Table 1.4 presents the objectives and key performance outcomes relating to flora and fauna management for the BDMP and the Quarry.

Table 1.4 Objectives and Key Performance Outcomes

Objectives	Key Performance Outcomes
To ensure compliance with all relevant Quarry approval conditions, statements of commitment and reasonable community expectations.	Compliance with all relevant criteria and reasonable community expectations, as determined in consultation with the relevant government agencies.
To minimise and measure impact to biodiversity.	Implementation of the biodiversity management and mitigation measures nominated in the Plan. Establishment of performance indicators and targets. Achievement of performance targets or implementation corrective actions. Actively manage threats to biodiversity through innovative land and natural resource management practices.
To avoid or minimise impacts on threatened flora or fauna, including but not limited to the Purple Copper Butterfly.	Threatened species, or their habitat identified and described. Measures implemented to minimise direct and/or indirect impacts. Appropriate offsets implemented
To appropriately manage sections of the Quarry Site with remaining vegetation to achieve the approved final landform and land use.	Operations managed in a manner that does not result in off-site impacts and ensures that the identified final landform and land use is established.
To implement appropriate corrective and preventative actions, if required.	Corrective and preventative actions implemented, if required.
To implement an appropriate incident reporting program, if required.	Incidents (if any) reported in an appropriate manner.

1.7 Consultation

NSW Office of Environment & Heritage (OEH)

On 20 October 2017, an email was sent to the OEH seeking feedback in relation to the content requirements of the Plan. OEH responded on 2 November 2017 and endorsed the requirements of *Condition 3(26)*. **Table 1.2** identifies where each of these requirements have been addressed in the BDMP.

OEH suggests the format of the BDMP should reference the *Draft Guidelines for the Preparation of Biodiversity Management Plans for Major Projects* (OEH, 2014a) as this provides an overview of the information OEH consider relevant to a BDMP.

OEH made specific reference to the following matters:

- delineation of the site into appropriate management zones (refer to **Section 2.4**);
- development of an appropriate monitoring program (refer to **Section 5.0**);

- creation of Key Performance Indicators (KPIs) that link into that monitoring plan (refer to **Section 4.0**); and
- development of a TARP to ensure that the KPIs are met (refer to **Section 6.0**).

OEH also requested that where a management zone requires “active” management, e.g. revegetation, the KPIs should consider relevant timeframes such that the expected ecological trajectory can be monitored and relevant response actions can be implemented.

Department of Planning & Environment (DPE)

Condition 3(26)(c) requires the BDMP to be submitted by 31 March 2018. However, as a result of the BOS not being able to be finalised until 13 July 2018 (as a result of a delay in the confirmation of biodiversity credits required to be offset – refer to **Appendix 2**), the DPE confirmed the BDMP was required to be submitted within 3 months of this date, i.e. 13 October 2018 (refer to **Appendix 3**).

2.0 Local Setting

2.1 Landscape Context

The Quarry Site is located on land dominated by remnant native vegetation which is bounded to the north and west by the Great Western Highway, to the south by Lidsdale State forest plantation timber and to the east by the Coxs River. The terrain is steeply sloping to the south and east towards the Coxs River. **Table 2.1** provides various regional and local landscape features of the Quarry Site.

Table 2.1 Landscape Context of the Quarry Site

Landscape feature	Occurrence
Interim Biogeographic Regionalisation for Australia (IBRA) region	South Eastern Highlands
IBRA sub region	Hill End (majority)
NSW (Mitchell) Landscape	Mount Horrible Plateau
Rivers, streams and estuaries	A 3 rd order stream flows east to west towards the Coxs River (located approximately 200 m southeast of the extraction area).
Wetlands	No local or important wetlands area present within the study area.
Habitat connectivity	The vegetation within the study area is connected to the south to Marrangaroo National Park.
Source: Ecoplanning Pty Ltd (2018)	

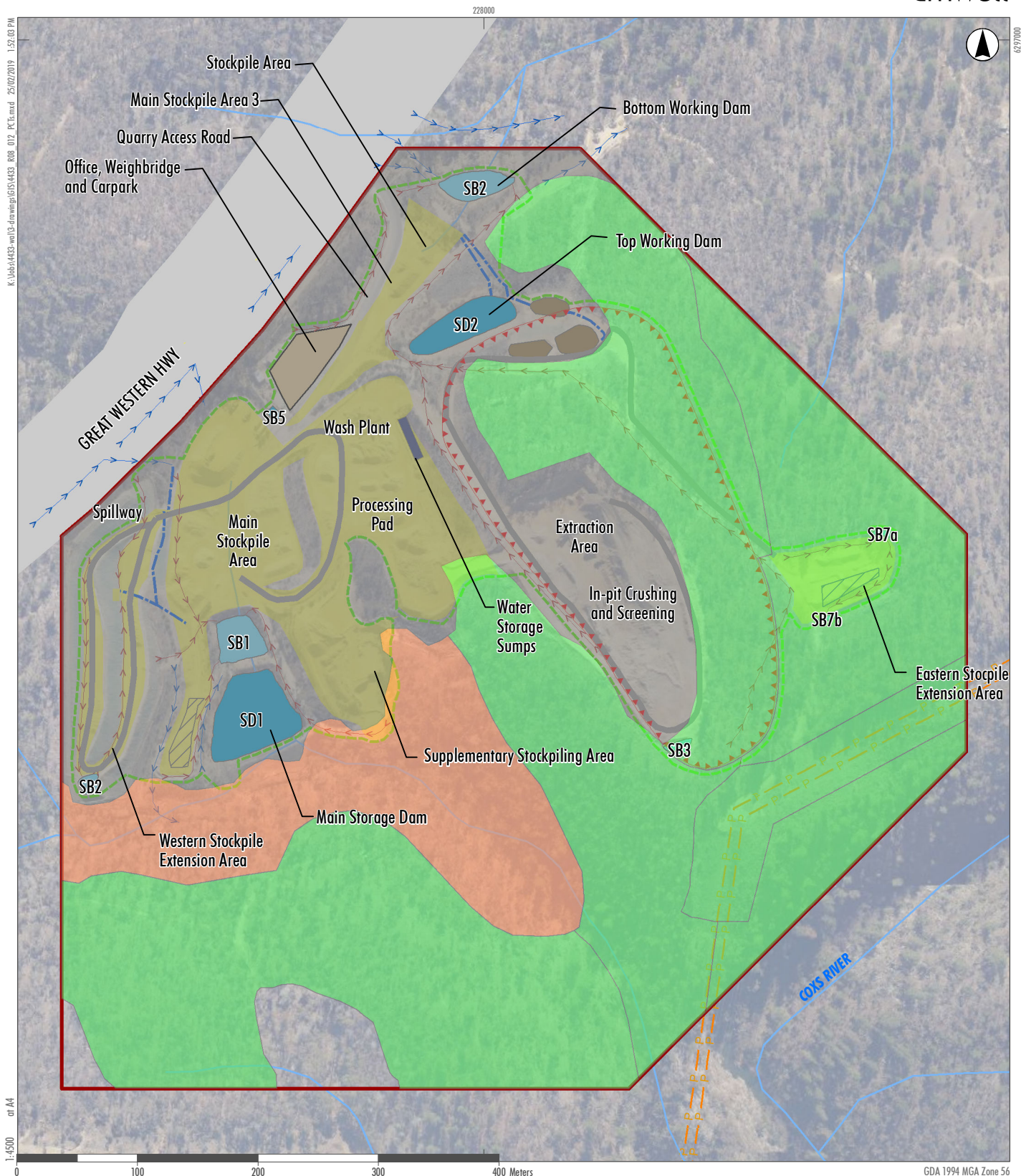
2.2 Remnant Vegetation

Figure 2.1 presents the mapped vegetation of the Quarry Site, updated from the vegetation mapping of the western Blue Mountains region conducted by DEC (2006) and field survey completed by Lesryk Environmental Pty Ltd in February 2017 (Lesryk, 2017a), Ecoplanning Pty Ltd in July 2018 (Ecoplanning, 2018) and November 2018 (Ecoplanning, 2019). The remnant vegetation is currently dominated by two Plant Community Types (PCTs).

- PCT 732 – Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion.
- PCT 1093 – Red Stringybark Brittle Gum –Inland Scribbly Gum dry open forest of the tablelands South Eastern Highlands Bioregion.

A third vegetation community, PCT 1100 - Ribbon Gum Snow Gum grassy forest on damp flats, was previously mapped within the Quarry Site. However, following review of recent advice of the OEH on the distribution of this vegetation community, the mapping has been modified to identify this as a form of PCT 1093.

PCT 732 is identified within the BioNet Vegetation Classification System as being equivalent to the *Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions Endangered Ecological Community* (as listed under the *Biodiversity Conservation Act 2016*).



Legend

- Quarry Site - ML1633
- ▬ Approved Extraction Area
- Approved Area of Disturbance
- Office, Weighbridge and Carpark
- Drying Cell
- Stockpile Area
- Sediment Basin
- Silt Cell
- Storage Dam
- Water Storage Sumps
- ▬ Clean Water Drain
- ▬ Dirty water drain
- ▬ Haul Road
- ▬ Water Pipeline
- ▬ Watercourses
- P Electricity Transmission Lines
- PCT
- 732 - Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion
- 1093 - Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands South Eastern Highlands Bioregion
- Other - cleared/disturbed vegetation

FIGURE 2.1

Plant Community Types
of the Quarry Site

2.3 Threatened Species

In accordance with the Biodiversity Assessment Methodology (BAM), the Quarry Site has been identified as providing suitable habitat for the following threatened species (Ecoplanning, 2018).

Flora

- Silky Swainson-pea (*Swainsona sericea*);
- *Veronica blakelyi*.

Fauna

- Gang-gang cockatoo (*Callocephalon fimbriatum*) (breeding);
- Eastern Pygmy-possum (*Cercartetus nanus*);
- Large-eared Pied Bat (*Chalinolobus dwyeri*);
- Square-tailed Kite (*Lophoictinia isura*) (breeding);
- Purple Copper Butterfly (*Paralucia spinifera*);
- Squirrel Glider (*Petaurus norfolcensis*);
- Brush-tailed Phascogale (*Phascogale tapoatafa*); and
- Koala (*Phascolarctos cinereus*) (breeding)¹.

Of these, only the Purple Copper Butterfly has been identified on the Quarry Site. The Purple Copper Butterfly's life cycle² relies on a 'mutualistic' relationship with the ant, *Anonychomyrma itinerans* (CSIRO, 2002; Dexter & Kitching, 1991a), which has also not been identified during the last three monitoring campaigns. Monitoring for the presence of Purple Copper Butterfly has been undertaken over the last three years (2016 – 2018) and despite the species being recorded at other locations within the locality, it has not been identified on the Quarry Site. As the Purple Copper Butterfly has a life-cycle with one generation completed annually, and neither the species nor attendant ant species has been detected within the Quarry during the last three years of monitoring, it has been concluded by Ecoplanning (2019) that the population(s) which once occurred within the Quarry, has become locally extinct.

Other threatened species which have been identified on or adjoining the Quarry Site.

- Scarlet Robin (*Petroica boodang*): identified by Lesryk (2017a).
- Varied Sittella (*Daphoenositta chrysoptera*): identified by Lesryk (2016).
- Yellow-bellied Sheath-tail Bat (*Saccolaimus flaviventris*): identified by Wildthing (1999).

In each case, the Quarry Site has been identified as comprising only a minor portion of the range of each species with significant areas of equivalent habitat available in the immediate surrounds. Quarry operations have been assessed as unlikely to impact on the life cycle of each species as long as the habitat and fauna management measures described in **Section 4.0** are adhered to.

¹ While Koala may occur locally due to the presence of the Ribbon Gum (*Eucalyptus viminalis*) which is a feed tree for the species, all field surveys have failed to identify a resident population of Koala or evidence of past habitation such as scats or scratches. In accordance with *State Environmental Planning Policy 44 – Koala Habitat Protection* the Quarry Site is therefore considered to be 'potential' Koala habitat but does not contain 'core' Koala habitat.

² Refer to <https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/purple-copper-butterfly> for further detail on Purple Copper Butterfly life cycles and mutualistic relationship with *Anonychomyrma itinerans*.

2.4 Biodiversity Management Areas

2.4.1 Introduction

The management of biodiversity within the Quarry Site has been divided into two Biodiversity Management Areas (BDMAs):

- Impact BDMA: comprising the area of the Quarry Site to directly impacted by Quarry operations; and
- Conservation BDMA: comprising the area of the Quarry Site (excluding the powerline easement through Lot 6 DP872230 and Lot 7322 DP1149335) to remain undisturbed by the Quarry.

Figure 2.2 identifies the relative areas of these two BDMA's.

2.4.2 Impact BDMA

2.4.2.1 Description

Based on the approved disturbance of the Quarry Site, this includes an area of PCT 1093 (Red Stringybark Brittle Gum Inland Scribbly Gum dry open forest of the tablelands South Eastern Highlands Bioregion). As discussed in **Section 2.2**, this is not identified as a Threatened Ecological Community.

2.4.2.2 Objectives

The objectives of biodiversity management within the Impact BMA are as follows.

- Restrict disturbance to the defined Impact BDMA.
- Manage weed and pest species, focusing on noxious species.
- Optimise use/recycling of the cleared vegetation and soils or vegetation requiring clearing or thinning.
- Rehabilitate the impacted areas to establish a safe and non-polluting landform and sustainable ecological communities.

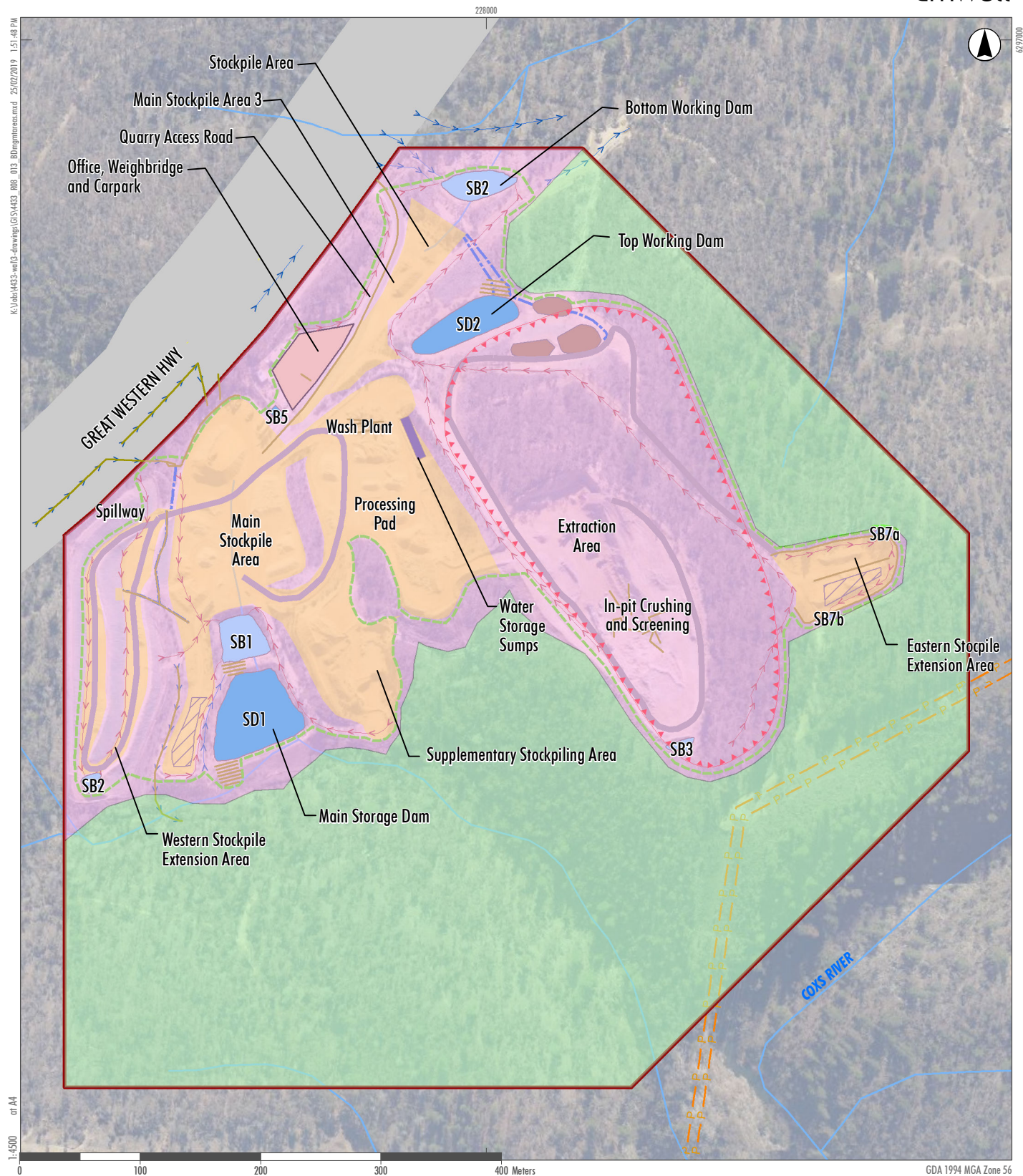
More detailed objectives for the rehabilitation of Impact BDMA are provided in the MOP³ and vary dependent on the planned final landform/land use (Secondary Domain). In general terms, the rehabilitation objectives are as follows

- **Water Management Structures:** incorporating vegetation and habitat consistent with small dams or ponds.
- **Woodland:** Vegetation (diversity, density and coverage) consistent with the White Box, Grey Box or Fuzzy Box Grassy Woodlands. Overview of Threats and Biodiversity Management.
- **Final Void:** restricted to those sections of the extraction area which cannot be profiled and rehabilitated as a woodland domain.

2.4.2.3 Threats

The threats to the biodiversity objectives of the Impact BDMA, which are discussed in **Section 3.1**, and associated biodiversity management measures to be implemented, which are discussed in **Section 4.0**, are identified in **Table 2.2**.

³ Refer to **Figure 3** for the inter-relationship between the Plan and MOP.



Legend

- Quarry Site - ML1633
- Approved Extraction Area
- Approved Area of Disturbance
- Office, Weighbridge and Carpark
- Drying Cell
- Stockpile Area
- Sediment Basin
- Silt Cell
- Storage Dam
- Water Storage Sumps
- Clean Water Drain
- Dirty water drain
- Haul Road
- Water Pipeline
- Watercourses
- P — Electricity Transmission Lines
- Biodiversity Management Areas (BMAs)**
- Conservation BMA
- Impact BMA

FIGURE 2.2

Biodiversity Management Areas

Table 2.2 Summary of Threats and Associated Management Measures for the Impact BDMA

Management Measures	Threats								
	Vegetation Clearing (Section 3.1.1)	Disturbance to Habitat (Section 3.1.2)	Weeds (Section 3.1.3)	Feral Pest Species (Section 3.1.4)	Erosion and Sedimentation (Section 3.1.5)	Changes to Local Drainage (Section 3.1.6)	Noise and Dust Emissions (Section 3.1.7)	Vehicle Trauma (Section 3.1.8)	Land Contamination (Section 3.1.9)
Rehabilitation (Section 4.2)	✓		✓	✓	✓				✓
Access Tracks (Section 4.3)	✓	✓						✓	
Vegetation Clearing (Section 4.4)	✓	✓			✓	✓			
Salvage, Storage and Reuse of Environmental Resources (Section 4.5)	✓		✓						
Collection and Propagation of Seed (Section 4.6)		✓	✓						
Weed and Feral Pest Management (Section 4.7)			✓	✓					
Erosion and Sediment Control (Section 4.8)					✓				
<i>Bursaria spinosa</i> (Potential Purple Copper Butterfly Habitat) Management (Section 4.9)	✓	✓							
Bushfire Management (Section 4.10)	✓								

2.4.3 Conservation BDMA

2.4.3.1 Description

The Conservation BDMA incorporates land dominated by remnant native woodland which is to remain undisturbed by the Quarry (see **Figure 2.2**).

As identified on **Figure 2.2**, the Conservation BDMA is dominated by PCT 1093, with smaller areas of PCT 732 located along local drainage lines. Dominant species including the Ribbon Gum, Snow Gum, Mountain Gum and Black Sallee. These canopy species are of varying ages with some containing hollows.

The understorey is sparse to non-existent and consists predominantly of younger specimens of the canopy species while the shrub layer consisted of Broom Heaths, Wattles, Finger Hakea, Narrow-leaved Geebung and Cherry Ballart. Groundcover is well established and included native grasses including Snow Grass, Three-awn Eargrass, Wallaby Grass, Forest Hedgehog Grass and Kangaroo Grass.

The area of land between the powerline easement and south-eastern boundary of the Quarry Site is excluded from the Conservation BDMA due to the restricted access created by the powerline easement and steep terrain.

2.4.3.2 Objectives

The objectives of biodiversity management within the Conservation BDMA are as follows.

- Prevent disturbance to native vegetation.
- Protect and enhance fauna habitat.
- Manage weed and feral pest species effectively.

2.4.3.3 Threats

The threats to the biodiversity objectives of the Impact BDMA, which are discussed in **Section 3.1**, and associated biodiversity management measures to be implemented, which are discussed in **Section 4.0**, are identified in **Table 2.3**.

Table 2.3 Summary of Threats and Associated Management Measures for the Conservation BDMA

Management Measures	Threats								
	Vegetation Clearing (Section 3.1.1)	Disturbance to Habitat (Section 3.1.2)	Weeds (Section 3.1.3)	Feral Pest Species (Section 3.1.4)	Erosion and Sedimentation (Section 3.1.5)	Changes to Local Drainage (Section 3.1.6)	Noise and Dust Emissions (Section 3.1.7)	Vehicle Trauma (Section 3.1.8)	Land Contamination (Section 3.1.9)
Access Tracks (Section 4.3)	✓	✓						✓	
Weed and Feral Pest Management (Section 4.7)			✓	✓					
Erosion and Sediment Control (Section 4.8)					✓	✓			✓
Potential Purple Copper Butterfly Habitat Management (Section 4.9)	✓	✓					✓		
Bushfire Management (Section 4.10)	✓								

3.0 Threats To Biodiversity

3.1 Threat Identification

3.1.1 Vegetation Clearing

As noted in **Section 2.4.2.1**, an area of PCT 1093 will be disturbed under the existing limits of DA 344-11-2001 (to extend the extraction area to its approved lateral dimension).

Progressive clearing and rehabilitation (in accordance with the MOP) will disturbance is undertaken in a planned manner and impacts to biodiversity values are progressively mitigated. Furthermore, tree clearing will be scheduled to minimise impact on breeding birds and other arboreal fauna (refer to **Section 4.4**).

The implementation of the Quarry BOS (see **Section 1.4.2** and **Appendix 3**) offsets those impacts of biodiversity incurred since the commencement of biodiversity offsetting requirements under the Framework for Biodiversity Assessment (FBA) in 2014 (OEH, 2014b), whilst rehabilitation is ongoing.

No significant impact will occur to any listed Threatened Ecological Community (TEC).

3.1.2 Disturbance to Habitat

Disturbance of habitat will be limited to the Impact BMA. While various ecological assessments of the Quarry Site (Wildthing, 1999, 2002, Lesryk, 2017c) have concluded that the Quarry operations and disturbance within the Impact BDMA will not place any species, population or community at risk of local extinction, disturbance has included vegetation identified as known or potential habitat for the threatened Purple Copper Butterfly⁴ and other species.

No additional tracks or roads are to be constructed within the Conservation BDMA and as such there will be no direct disturbance to habitat within the Conservation BDMA. Disturbance as a result of the following indirect impacts on the Quarry Site could occur and will be managed.

- Spread of weed and feral pest species (refer to **Sections 3.1.3** and **3.1.4**).
- Erosion of the landscape due to surface disturbance (refer to **Section 3.1.5**).
- General changes to local drainage (refer to **Section 3.1.6**).
- Noise and dust impacts associated with operations (refer to **Section 3.1.7**).
- Vehicle trauma to native fauna (refer to **Section 3.1.8**).

3.1.3 Weeds

One noxious weed species, Blackberry (*Rubus fruticosus* agg. spp.), has been identified on the Quarry Site and could occur within both BMAs. The control class for this species is 4, which states that, 'the growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed'.

Other weed species are expected to occur and have the potential to threaten the objectives of the BDMP (refer to **Table 1.4**) through competition with native species, in particular disturbance colonising species.

⁴ Formerly identified as the Bathurst Copper Butterfly and listed under both the NSW *Biodiversity Conservation Act 2016* and Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

3.1.4 Feral Pest Species

During the most recent flora and fauna surveys of the Quarry Site (Lesryk, 2016, 2017c & Ecoplaning 2019), no feral species were observed. It is likely, however, that introduced exotic species such as fox, cat, rabbit, European hare, starling and Indian minor will utilise the Quarry Site either on a permanent or temporary basis and could directly impact on endemic fauna and flora species through grazing, competition for resources or predation.

3.1.5 Erosion and Sedimentation

Removal of ground stratum from the Impact BDMA increases the potential for soil erosion by wind and water to shape and modify the local setting and downstream habitat. Under these conditions, valuable resources for rehabilitation and re-establishment of native biodiversity may be lost and the downstream ecology of watercourses (within the Conservation BDMA and beyond) adversely affected by discharge of turbid water with high sediment loads.

3.1.6 Changes to Local Drainage

Modified drainage within the Impact BDMA could influence the volume and quality of water discharged and flowing within the drainage lines of the Conservation BDMA. Modified flows have the potential to affect the type and density of vegetation, which in turn may impact on the habitat value of these watercourses for native fauna.

3.1.7 Noise and Dust Emissions

If overly noisy or dusty, native fauna may be discouraged from utilising the Conservation BDMA as breeding or foraging habitat.

3.1.8 Vehicle Trauma

While movements within the Conservation BDMA will be restricted, there remains the potential for collision with native fauna.

3.1.9 Land Contamination

With the operation of the Quarry comes the risk of contamination through spillage of hydrocarbons. These have the potential to contaminate land and affect the ability of Walker Quarries to achieve the nominated biodiversity objectives for the two BDMAs.

Silts washed from the sand products will be captured initially in silt dams before being transferred to the Eastern Stockpile Area for drying. Should these structures spill or leak, it is possible for runoff containing elevated concentration of suspended solids to discharge to local watercourses which could impact on the achievement of the nominated biodiversity objectives.

3.2 Risks to Achieving Outcomes

Table 3.1 summarises the risk(s) posed by each of the threats identified in **Section 3.1**, relevant performance objectives, the management strategies to be implemented and the overall risk associated with each threat. The management measures referenced, along with performance criteria, are further defined and described in **Section 4.0**.

Table 3.1 Threats to Biodiversity Outcomes

Threat	Performance Objectives	Management Strategies	Risk Level
Vegetation Clearing	Implement access track management strategy	Access tracks (refer to Section 4.3).	Low
	All clearing undertaken within approved impact footprint.	Rehabilitation (refer to Section 4.2). Vegetation clearing (refer to Section 4.4).	Low
Habitat disturbance	No avoidable impacts on fauna habitat.	Access tracks (refer to Section 4.3). Vegetation clearing (refer to Section 4.4).	Low
	All pre and post vegetation clearing administrative controls implemented	Vegetation clearing (refer to Section 4.4).	Low
	Maximise re-establishment of fauna habitat in final landform.	Salvage, storage and reuse of environmental resources (refer to Section 4.5). Collection and propagation of seed (refer to Section 4.6). Rehabilitation (refer to Section 4.2).	Low
	Avoid additional impacts on threatened species.	Vegetation clearing (refer to Section 4.4). Weed and feral pest management (refer to Section 4.7). Purple Copper Butterfly and <i>Bursaria spinosa</i> management (refer to Section 4.9).	Low
Weed and Feral Pest Species	Decrease in number and abundance of weed species.	Salvage, storage and reuse of environmental resources (refer to Section 4.5). Collection and propagation of seed (refer to Section 4.6). Rehabilitation (refer to Section 4.2). Weed and feral pest management (refer to Section 4.7).	Low
	Reduction in feral pest numbers.	Weed and feral pest management (refer to Section 4.7).	Low
Erosion and Sedimentation	Reduction in land area subject to active soil erosion and stream bed erosion.	Access tracks (refer to Section 4.3). Vegetation clearing (refer to Section 4.4). Erosion and sediment control management (ESCM) (refer to Section 4.8).	Low
Changes to Local Drainage	Avoid adverse effects on drainage line habitat.	Vegetation clearing (refer to Section 4.4). ESCM (refer to Section 4.8).	Low
Noise and Dust Emissions	Minimise reduction in local fauna.	Salvage, storage and reuse of environmental resources (refer to Section 4.5). Collection and propagation of seed (refer to Section 4.6). Rehabilitation (refer to Section 4.2). Weed and feral pest management (refer to Section 4.7).	Low
Vehicle Trauma	Minimise fauna mortality	Access tracks (refer to Section 4.3).	Low
Land Contamination	Prevent contamination of land and water.	Access tracks (refer to Section 4.3). ESCM (refer to Section 4.8).	Low

4.0 Biodiversity Management Measures

4.1 Introduction

The following sub-sections describe the measures to be implemented to achieve the objectives nominated in **Section 1.5** (for overall biodiversity management) and **Section 2.4** (for each BDMA individually) and manage the threats to biodiversity identified in **Section 3.0**.

Management measures are classified as occurring in either the short-, medium- or long-term⁵. Short-term management measures include targeted activities with an approximate duration of between 18 months and 2 years. Medium-term management measures include activities, which require longer-term duration but have a defined end point, such as managing cleared vegetation, typically have an approximate duration of between 2 and 5 years. Long-term management measures include ongoing or repeat activities over the life of the Quarry or beyond, such as weed and feral pest management and bushfire risk management.

Performance targets and completion criteria are provided for each of the management measures are described with **Table 6.1** (see **Section 6.0**) identifying the triggers and actions, in the form of individual Trigger Action Response Plans (TARPs), to be implemented in response to these targets or criteria not being achieved.

4.2 Rehabilitation

4.2.1 Goals and Objectives

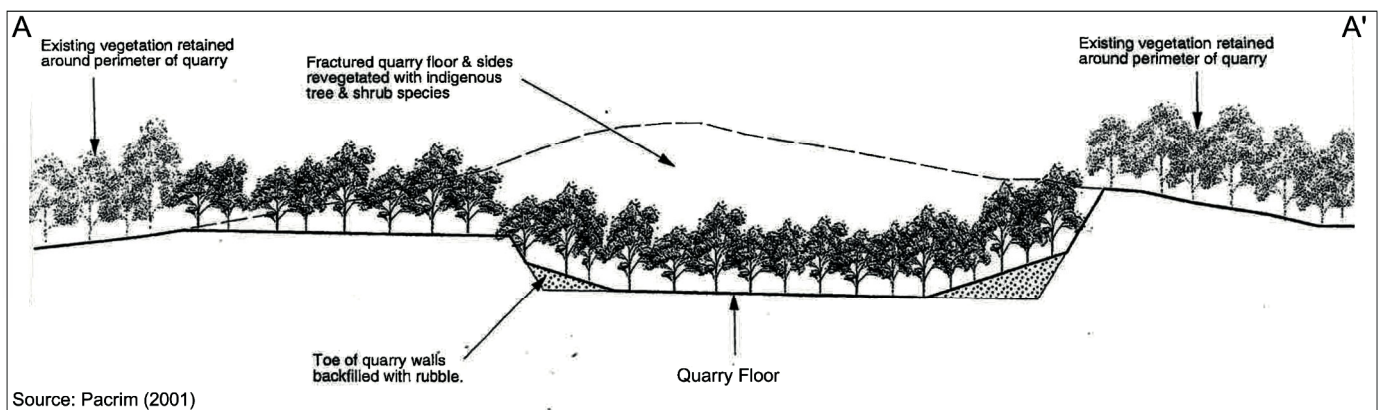
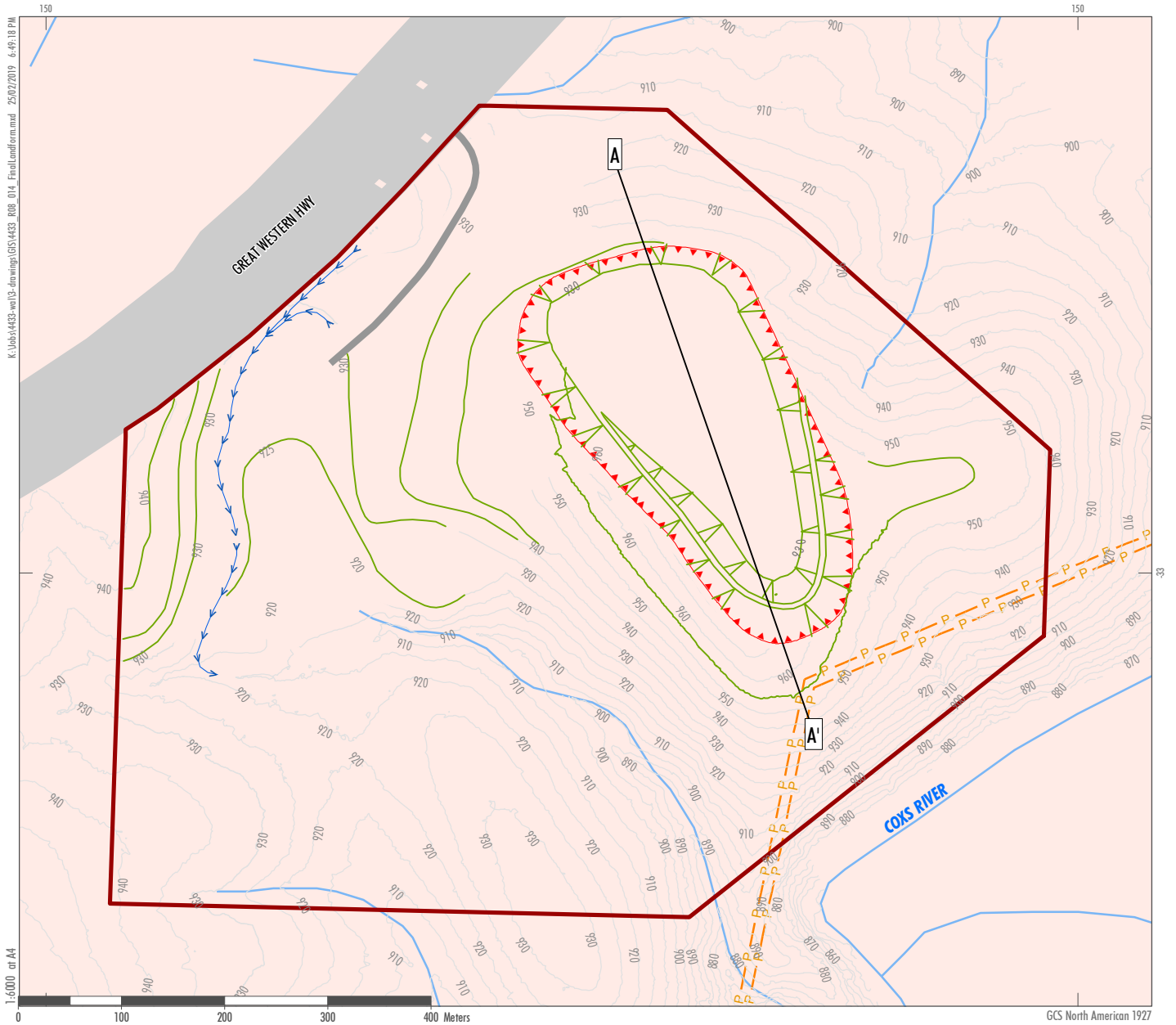
The post-mining land use goal for the Quarry Site is to establish a safe, stable and non-polluting landform and to re-establish native vegetation consistent with the surrounding remnant vegetation that is self-sustaining.

Figure 4.1 provides the nominated final landform and land use of the Quarry Site. In summary, rehabilitation aims to re-establish native woodland over the majority of the final landform, with selected areas retained as either:

- water storages;
- roads; or
- retained quarry faces.

The long term rehabilitation objective is to establish a landform that is consistent with the surrounding vegetation and which does not require management input greater than that required for the surrounding landscape, that is, that native vegetation is successfully regenerating. Specific rehabilitation objectives, based on the type of disturbance and proposed final landform and land use objectives for that component of the Quarry Site are presented in *Section 5.2* and *Table 15* of the Quarry MOP (which also provides the information required of a Rehabilitation Management Plan in accordance with *Condition 3(31)* of DA 344-11-2001).

⁵ The BMP assumes a continuation of Quarry operations beyond 15 July 2019, the current limit imposed by Condition 2(5) of DA 344-11-2001.



- Legend**
- Quarry Site - ML1633
 - ▴ Approved Extraction Area
 - Final landform contours
 - Quarry Access Road
 - Clean Water Drain
 - Dams
 - Watercourses
 - Electricity Transmission Lines

FIGURE 4.1

Indicative Final Landform

Progressive rehabilitation objectives for the Quarry Site are summarised as follows.

- Stabilisation of the land to minimise environmental impacts.
- Reshaping the processing pad and stockpile areas to resemble, as much as possible, the original landform.
- Modifying the final void to make it safe and stable.
- Establishing a native ecosystem over the entire site (excluding the access tracks to be retained and the water management features) to develop a landform that is self-sustaining, low maintenance, and closely resembling the ecosystem surrounding the Quarry Site.
- Removing all buildings and equipment.
- Retaining all water management features, including drains and dams that are included in the approved final landform.

4.2.2 Management Measures, Performance and Completion Criteria

Rehabilitation procedures, performance criteria and measurement, and approach to contingency and adaptive management (of the Impact BDMA) are addressed in the Quarry MOP, which can be viewed on Walker Quarries's website and are as follows.

- *Section 6* and *Table 17* present the performance indicators, measures and completion criteria for each phase of rehabilitation.
- *Section 7* and *Table 19* present the rehabilitation activities to be undertaken and status at the commencement and completion of the MOP period.
- *Section 8* describes the monitoring of rehabilitation to be undertaken.
- *Section 9*, *Table 20* and *Table 21* identify the risks to successful rehabilitation of the Quarry and present a Trigger Action Response Plan for each of the potential adverse outcomes associated with these.

4.3 Access Tracks

4.3.1 Management Measures

Existing tracks will be used in preference to new tracks wherever possible on the Quarry Site.

Where available, existing tracks will be used, however, if a new track is required, e.g. to enable activities such as weed and feral pest management, fire hazard reduction and monitoring, disturbance will be kept to a minimum. Approval for new access track construction will require approval by Walker Quarries Operations Manager (or equivalent), preparation and retention of a clearing plan, and implementation of all vegetation clearing protocols (refer to **Section 4.4.1**). Once no longer required, i.e. on completion of activities, the access track will be closed and rehabilitated.

4.3.2 Performance and Completion Criteria

Table 4.1 presents the performance and completion criteria relevant to access tracks within the Quarry Site.

Table 4.1 Performance and Completion Criteria – Access Tracks

Action	Performance Criteria	Completion Criteria
Access track mapping	Map all existing tracks. Identify and map tracks to be retained.	Up to date maps identifying all access tracks completed and maintained.
Avoid creation of new tracks	New tracks only created following review and authorisation by Operations Manager	Documentation completed and retained to confirm clearing plan and vegetation clearing protocol followed.
Access track management strategy	Complete redundant track rehabilitation (if required). Annual review of existing or new access tracks with redundant tracks rehabilitated.	Retained tracks restricted to those required by land owner for property management. Complete rehabilitation of all non-essential tracks.

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.1**.

4.4 Vegetation Clearing

4.4.1 Management Measures

Vegetation clearing within the Quarry Site will be undertaken as the extraction area is progressively developed to its full extent and the establishment of surface infrastructure.

Clearing will be limited to approved areas only, with areas to be minimised to avoid impacts to native vegetation. Progressive clearing will ensure that vegetation is retained for as long as possible and only removed immediately before an area is required for operations.

Vegetation clearing will be undertaken strictly in accordance with the Quarry MOP (which addresses the conditional requirement for a Rehabilitation Management Plan as required by *Condition 3(31)* of DA 344-11-2001). The following measures will be implemented to ensure that vegetation clearing is restricted to approved areas.

- All employees and contract staff will be inducted and trained on environmental requirements, including vegetation clearing restrictions and procedures.
- Only clear sufficient vegetation for the subsequent 12 months operation will be cleared.
- All clearing will be undertaken in accordance with the **Vegetation Clearing Protocol** (as follows).

*As all clearing is to be undertaken in accordance with a **Vegetation Clearing Protocol**, which provides for the inspection of vegetation for nesting or roosting fauna and subsequent management if identified, the previously imposed restriction on clearing during spring is not considered necessary to provide protection to breeding fauna species.*

Vegetation Clearing Protocol

Prior to and during clearing activities, the following protocol will be implemented.

Desktop Review

- The area is to be identified on a legible map, including an accurate calculation of the area to be cleared.
- The map and accompanying information are to be provided to the Operations Manager (or delegate) for confirmation and/or further instruction.

Site Preparation

- The area of clearing will be identified and entry/exit points and laydown areas for equipment nominated and marked.
- The Operations Manager (or delegate) will inspect and confirm the location as correct with respect to the approved maps.
- Erosion and sediment control features, e.g. diversion banks, sediment fencing, will be installed in accordance with the Quarry *Erosion and Sediment Control Plan*.

Pre-Clearance Inspections

- A qualified ecologist will be engaged to review the proposed area of clearing and determine whether threatened species or habitat trees are present.
- If threatened species are identified, and cannot be relocated, clearing will not commence until the animal can be relocated or relocates naturally.
- If habitat trees are identified, these will be inspected (unless impractical) for the presence of threatened arboreal species.
- Relocation will only be undertaken under the guidance of a qualified and licensed ecologist.

Clearing Operations

- Soil and groundcover will be directly transferred onto rehabilitation areas, where available for soil resspreading, to maximise the opportunity for retention of the natural seed stock, and thereby maximise the revegetation of the final landform with endemic species.
- Large trees and those in which species have previously been identified will be carefully felled as follows.
 - Check for the presence of nesting or roosting fauna before felling or pushing then start tree removal immediately after visual inspection.
 - Initially nudging the tree to induce any fauna to vacate. This process should progressively increase in force.
 - Wait a period of 5 minutes to allow the fauna to vacate the tree. Repeat this step if necessary.
 - Select the preferred direction of fall and push the tree from a high point along the trunk towards the preferred direction of fall.
 - If the tree is too strong to be pushed with all roots intact, some of the roots on the restraining side will be cut and/or excavated.
 - The speed of fall and ground impact will be reduced where possible.
- If native arboreal species are detected, a 10 m buffer will be established around the tree and it will be left overnight to allow to animal to vacate the tree.

Post-clearing Management

- A post clearing survey of the cleared vegetation will be undertaken to determine if further species need relocating.
 - Hollows should be checked at the end of the process for wildlife.
 - Avoid leaving trees on ground unmanaged for more than two weeks as these would quickly become habitat for hollow dependent species.

- Where fauna remains or is captured during vegetation clearing the animal will be released into nearby native vegetation where it is considered that doing so does not put the species at risk of injury.
- Should clearing activities result in injury to any native fauna species, the local WIRES organisation or a suitable alternative will be contacted immediately for assistance.

4.4.2 Performance and Completion Criteria

Table 4.2 presents the performance and completion criteria relevant to Vegetation Clearing within the Quarry Site.

Table 4.2 Performance and Completion Criteria – Vegetation Clearing

Action	Performance Criteria	Completion Criteria
Identify areas to be cleared and detail management required in these areas.	Area to be cleared identified in Quarry MOP Area to be cleared inspected prior to commencement (ongoing requirement).	All clearing undertaken within approved impact footprint. Documentation completed and retained to confirm clearing plan and vegetation clearing protocol followed.
Implement Vegetation Clearing Protocol	Complete and retain records of clearing, including identification of any fauna. Qualified ecologist engaged to manage and undertake fauna relocation (if required). Procedures governing handling, relocation and management of fauna (including injured fauna) followed.	No avoidable impacts on roosting or nesting native fauna. Details of specific fauna management completed during (or immediately following) clearing documented. All administrative controls followed and documented.
Staff awareness of clearing protocols.	Identify administrative controls re: clearing during induction.	All inductions and training completed and documented.

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.2**.

4.5 Salvage, Storage and Reuse of Environmental Resources

4.5.1 Management Measures

4.5.1.1 Trees and Vegetation

Cleared vegetation managed to maximise the opportunity for recycling and reuse in rehabilitation of the Quarry Site. Material in excess of that which can be effectively used in Quarry rehabilitation will be mulched and removed from the Quarry Site so as to avoid creating a fire hazard or haven for vermin and pest species.

Large landscape features such as major tree trunks, major tree limbs and, if possible, minor branches will be salvaged and where possible used directly in progressive rehabilitation activities. Tree hollows will be identified and used preferentially. This activity will create habitat with structural complexity and encourage many species into the rehabilitated areas.

Where possible, leafy materials will also be placed on rehabilitation areas or stockpiled in order to retain any existing seed bank. Placing seed-laden branches to enhance natural regeneration in highly disturbed landforms is a viable rehabilitation option during vegetation clearing.

If areas under rehabilitation are unavailable, vegetation would be stockpiled or mulched for future use. Mulching will be undertaken in preference to stockpiling where the material is to be retained in excess of 12 months (to reduce fire hazard and habitat for vermin and feral pests).

Tree Hollows

Tree-hollows are an important resource for many native fauna species, and are vital for some species. The retention and protection of hollow-bearing trees is an important element in the maintenance of biodiversity and in the execution of an environmentally sound development. The following specific protocols relating to hollow-bearing trees will be implemented.

- A controlled felling technique will be used for clearing of hollowing-bearing trees (as described in **Section 4.4.1**).
- Subject to identification of available areas, hollow-bearing trees that have been felled will be placed in rehabilitation areas or undisturbed areas of the Quarry Site.
- Tree felling will only be undertaken following the implementation of the Vegetation Clearing Protocol described in **Section 4.4.1**. This requires the trees of the area to be cleared to be inspected by a qualified ecologist prior to commencement.

4.5.1.2 Soil

While it is expected that soil within the Quarry Site will be shallow, the soil that can be salvaged will be stockpiled and retained for use in progressive or final rehabilitation activities.

Care will be taken during soil stripping to avoid loss of structure or compaction. The following management measures will be implemented.

- Vegetation clearing will avoid contamination of the topsoil with large quantities of green material as this promotes biological degradation (composting) of this material (which would otherwise be a source of regrowth when the topsoil is respread).
- Care will be taken to ensure that subsoil clays are not removed with the topsoil (as this material is dispersive and will reduce the quality of material available for rehabilitation activities).
- Soil is to be loaded into trucks and either transported directly to areas being rehabilitated or to the stockpile area.
- Care will be taken when forming stockpiles that the material is not overly compacted through the manual application process or by equipment driving over the stockpiles.
- All soil stockpiles will be no higher than 2 m with a side slope of 3:1 (H:V).
- Where the soil is not expected to be utilised for some time, the surface will be revegetated with a groundcover species to stabilise the surface and limit erosion from the stockpiles.
- Timber, logs, rocks and other vegetative matter which will interfere with resspreading applications or surface stability will be removed.

4.5.2 Performance and Completion Criteria

Table 4.3 presents the performance and completion criteria relevant to Salvage, Storage and Reuse of Environmental Resources within the Quarry Site.

Table 4.3 Performance and Completion Criteria – Salvage, Storage and Reuse of Environmental Resources

Action	Performance Criteria	Completion Criteria
Trees and Vegetation		
Salvage or recycle material removed.	Complete material salvage in accordance with nominated management measures.	Sufficient timber available for rehabilitation.
Retain cleared resources for future use in rehabilitation	Establish register/ inventory of cleared and stockpiled vegetation.	Environmental Resource Inventory maintained.
	Update inventory annually and report each year.	
Tree Hollows		
Complete hollow removal in accordance with vegetation clearing measures	Document tree hollow removal, including temporary or final placement location. Report on tree hollow removal and replacement annually.	Use of tree hollows maximised in rehabilitation.
Soil Resources		
Strip soil to maximise value as rehabilitation resource.	Prepare a map identifying areas of soil stripping (over MOP period). Complete soil stripping in accordance with nominated management measures. Update the map in response to annual review of rehabilitation/ revegetation progress against objectives (annual).	Sufficient soil available for rehabilitation.
Retain soil in stockpiles	Establish register/ inventory of stockpiled soil. Update the soil inventory annually and report each year.	Soil reused for rehabilitation purposes.
	Groundcover >70% established on stockpiles (within 10 weeks of construction)	

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.3**.

4.6 Collection and Propagation of Seed

4.6.1 Management Measures

Walker Quarries principal strategy in relation to the propagation of seed will be through the replacement of the environmental resources salvaged and reused in the rehabilitation of final landform (see **Section 4.5.1**). This method ensures only endemic species, able to withstand the harsh climate of the area, will succeed.

Weed and feral pest control (refer to **Section 4.7.1**) will be undertaken to promote the successful establishment of vegetation which germinates.

This unassisted revegetation strategy will be supplemented by assisted revegetation which will include:

- collection and propagation of seed material from the Quarry Site (Provenance Seed);
- purchase and propagation of seed (Commercial Seed); and
- application of hydromulch products.

Provenance Seed Collection, Propagation and Management

Seed has previously been collected and retained by Lithgow Community Nursery for future use in revegetation programs. The following management procedure for provenance seed management will be followed.

- Prior to clearing campaigns, Walker Quarries will review seed and tubestock held by the Lithgow Community Nursery.
- Where these stocks are diminished, Walker Quarries will engage the nursery, or alternative company or individual, to collect seed prior to clearing area. Seeds will be stored until sowing by being placed in labelled zip-lock bags and stored in a refrigerator until required (to reduce humidity or warmth that could cause seed to deteriorate or die from fungal disease or rotting). Most seed will remain viable in this way for many years.
- As required, the seed will be collected by revegetation contractor, incorporated into a site specific seed mix and sown over the final landform.

Commercial Seed Purchase

If provenance seed is not available, Walker Quarries will contact a local seed supplier to supply seed of the desired species for application to the final landform as part of rehabilitation activities, or propagation as tubestock for future planting.

Hydromulch Application

Landform features with steep slopes requiring stabilisation will have a hydromulch product (or equivalent stabilisation product) applied within 28 days of establishment.

4.6.2 Performance and Completion Criteria

Table 4.4 presents the performance and completion criteria relevant to Collection and Propagation of Seed within the Quarry Site.

Table 4.4 Performance and Completion Criteria – Salvage, Storage and Reuse of Environmental Resources

Action	Performance Criteria	Completion Criteria
Promote collection of provenance seed	Review seed stock retained by nursery prior to each clearing campaign.	Inventory of available seed resource retained.
Seed collection and application (if required)	Annual monitoring and review of species diversity of regenerating vegetation Seed mix reflects vegetation of target community. Collect and propagate seed (in response to relevant trigger(s)) ¹ (annual hereafter).	Provenance seed and propagated tube stock available for rehabilitation Species diversity and density of final vegetation community equivalent to analogue community site.
Hydromulch application	Apply within 2 weeks of soil application to steep slopes.	No drilling or erosion of steep batter slopes.
Note : ¹ Unless sufficient seed stock has previously been collected		

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.4**.

4.7 Weed and Feral Pest Management

4.7.1 Management Measures

4.7.1.1 Weeds

All noxious weeds will be managed and controlled in accordance with the requirements of the *Noxious Weeds Act 1993*.

Weed control within the Quarry Site will focus upon the removal of Weeds of National Significance (WoNS), noxious weeds and reducing the risk of further weed invasion. This will be achieved by deterring the growth of weeds in recently disturbed areas and preventing the transportation of weeds into the Quarry Site.

Measures to control the spread and establishment of weed species are as follows.

- Any mobile equipment to be operated on the Quarry Site will be required to be cleaned (to remove any residual soil and vegetative material) prior to importation to the Quarry Site.
- Disturbance will be limited to only that required for the ensuing 12 months development (to reduce areas of bare ground more readily colonised by weed species).
- The Quarry Manager (or delegate) will periodically inspect cleared areas, soil stockpiles and rehabilitation areas for signs of noxious weeds, WoNS or other environmental weeds. If present, the Quarry Manager will engage a weed spraying contractor to apply a herbicide to the weed affected areas.
- Any weed spraying campaigns will consider the weather conditions, soil conditions and time available for spraying. All herbicides will be handled and applied generally in accordance with the manufacturer's instructions.

A list of declared weed species, their classification and suitable management approach for each species that is relevant to the Quarry is maintained by the Department of Primary Industries – Agriculture for the Upper Macquarie County Council (this Local Control Authority area includes the local council areas of Bathurst Regional Council, Blayney Shire Council, Lithgow City Council and Oberon Council).

4.7.1.2 Feral Pests

As noted in **Section 3.1.4**, feral pest species are not an identified feature of the local setting. While no controls are currently required, Walker Quarries makes the following commitments with respect to feral pest management.

- Subject to provision of appropriate safe work procedures and licences, Walker Quarries will comply with any requests of the Council or DPI in relation to access to the Quarry Site to undertake feral pest control measures.
- This BDMP will be updated to include any additional feral pest control measures should these be identified as necessary.

4.7.2 Performance and Completion Criteria

Table 4.5 presents the performance and completion criteria relevant to Weed and Feral Pest Management within the Quarry Site.

Table 4.5 Performance and Completion Criteria – Weed and Feral Pest Management

Action	Performance Criteria	Completion Criteria
Implement weed control / management programs.	<p>Complete inventory of weed species and densities.</p> <p>Develop specific weed control plans for target species.</p> <p>Undertake weed control/management in accordance with target species weed management plans</p> <p>Implement TARP as required (refer to Table 6.1) (annual hereafter).</p>	<p>No increase in the area of occupancy for environmental weed species.</p> <p>Eradication of noxious weed species.</p>
Monitoring and Reporting.	Document any weed management activities.	Reports on weed control prepared and retained.

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.5**.

4.8 Erosion and Sediment Controls

Erosion and sediment controls for the Quarry Site are described in the *Soil and Water Management Plan*. In summary, water management within the Quarry Site involves implementation and maintenance of the following.

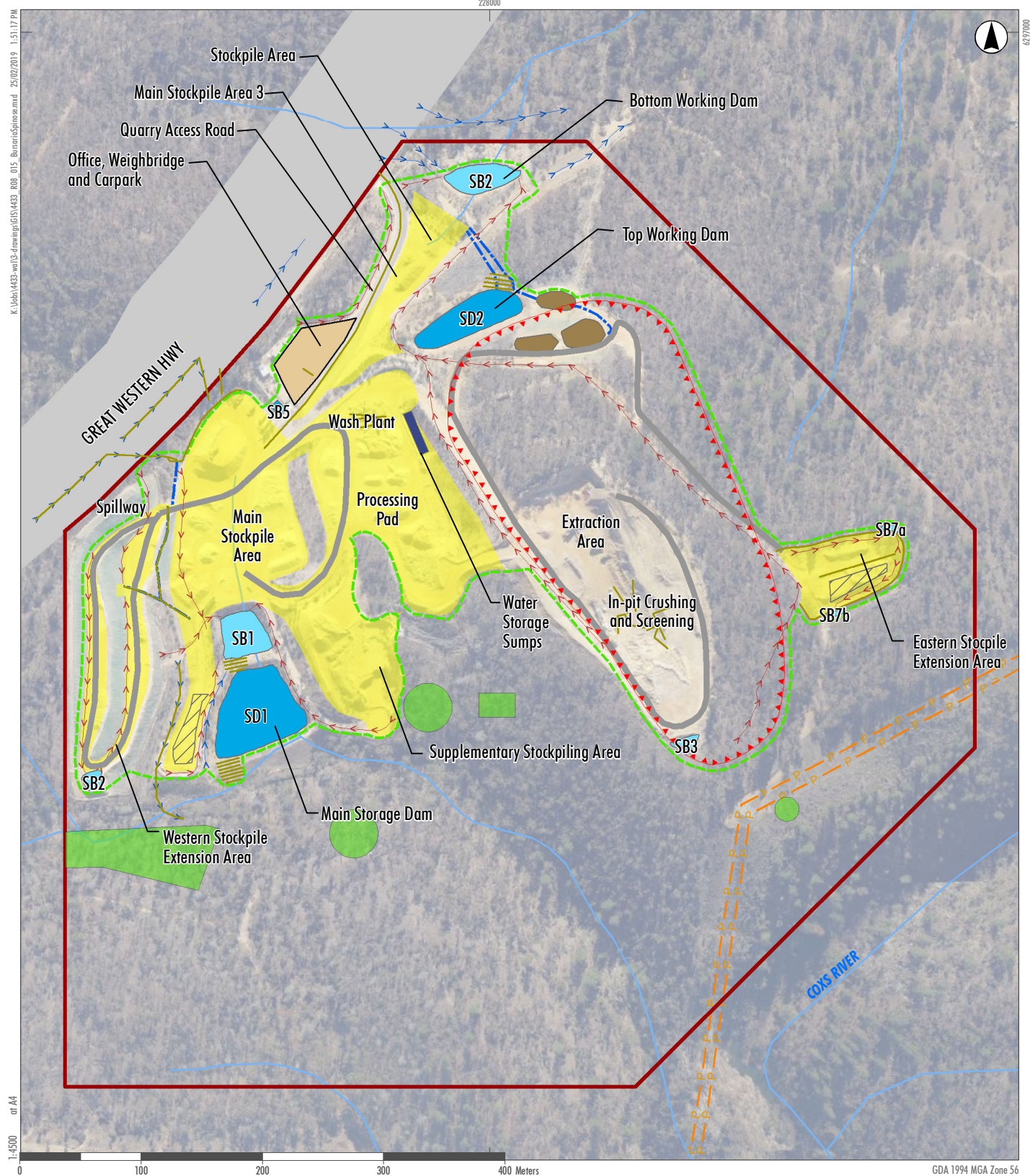
- Temporary and permanent water management infrastructure such as sediment basins, storage dams and water diversions or drains.
- A stormwater management program that includes water discharge protocols.
- Other erosion and sediment controls, to be implemented as required, such as sediment fencing, rock armouring and strategic groundcover establishment.

A copy of the *Soil and Water Management Plan* can be viewed on Walker Quarries website (http://walkerquarries.com.au/wp-content/uploads/2018/09/Soil-Water-Mgmt-Plan_Rev-2.4_September-2018.pdf)

4.9 Purple Copper Butterfly and *Bursaria spinosa* Management

4.9.1 Occurrence

While the population of Purple Copper Butterfly previously identified on the Quarry Site by Wildthing (1999, 2002) is considered to be locally extinct (Ecoplanning, 2019) (refer to **Section 2.3**), the native Blackthorn plant (*Bursaria spinosa ssp lasiophylla*) on which the Purple Copper Butterfly is known to be dependent as a food source remains on the Quarry Site (see **Figure 4.2**).



Legend

- Quarry Site - ML1633
- ▬▬▬ Approved Extraction Area
- Approved Area of Disturbance
- Office, Weighbridge and Carpark
- Drying Cell
- Stockpile Area
- Sediment Basin
- Silt Cell
- Storage Dam
- Water Storage Sumps
- ▬▬▬ Clean Water Drain
- ▬▬▬ Dirty water drain
- ▬▬▬ Haul Road
- ▬▬▬ Water Pipeline
- ▬▬▬ Watercourses
- ▬▬▬ Electricity Transmission Lines
- Remnant Patches of Bursaria spinosa

FIGURE 4.2

Identified Bursaria spinosa of the Quarry Site

4.9.2 Management Measures

Management of the species will be directed towards protection of the Blackthorn. The following measures will be implemented to protect, conserve and re-establish Blackthorn within the Quarry Site.

- The removal of Blackthorn will be prevented by restricting any further clearing within the Conservation BDMA and applying the management measures related to Access Tracks.
- Existing Blackthorn populations will be marked on available Quarry plans so the site personnel will be able easily identify the species and avoid contact or unnecessary removal.
- Natural vegetation screenings will be maintained for the existing Blackthorn populations within the Quarry Site to minimise dust impacts from operations.
- Targeted monitoring of the Blackthorn and Purple Copper Butterfly will be undertaken by a qualified ecologist on an annual basis. Monitoring is described in more detail in **Section 5.0**.
- Blackthorn populations will be included in revegetation activities associated with progressive rehabilitation of the Quarry Site. A suitably qualified person will be commissioned to provide advice on establishment of the Blackthorn to encourage development of suitable habitat for the Purple Copper Butterfly.

4.9.3 Performance and Completion Criteria

Table 4.6 presents the performance and completion criteria relevant to Purple Copper Butterfly Management within the Quarry Site.

Table 4.6 Performance and Completion Criteria – Purple Copper Butterfly Management

Action	Performance Criteria	Completion Criteria
Clearance of <i>Bursaria spinosa</i> avoided	Maintain a map of <i>Bursaria spinosa</i> and update if additional patches identified Update the mapping of Blackthorn following annual monitoring. Implement protective measures on identified patches.	Remnant <i>Bursaria spinosa</i> of the Conservation BDMA retained in situ.
Include <i>Bursaria spinosa</i> in rehabilitation	Include <i>Bursaria spinosa</i> in seed mix (when assisted revegetation undertaken)	<i>Bursaria spinosa</i> included in vegetation community of the final landform.
Complete annual monitoring	Complete monitoring in October each year.	Reporting completed each year.

Section 6.0 (and **Table 6.1**) provides the relevant TARPs associated with the management measures nominated in **Table 4.6**.

4.10 Bushfire Management

4.10.1 Management Measures

Bushfire management is described in the *Bushfire Management Plan* for the Quarry (refer to Walker Quarries's website). In summary the principle management measures include the following:

- Provision of fire extinguishers and other infrastructure.
- Management of hazardous and flammable material such that the potential for ignition is limited.
- Limiting smoking to specific areas within the Quarry Site.
- Ensuring a suitable supply of water is available for site and public use for firefighting purposes.

There are no recently recorded fire events within the Quarry Site. Any requirements for mosaic burning will be undertaken in accordance with directions from the NSW Rural Fire Service (RFS).

4.10.2 Performance and Completion Criteria

Table 4.7 presents the performance and completion criteria relevant to Fire Management within the Quarry Site.

Table 4.7 Performance and Completion Criteria – Fire Management

Action	Performance Criteria	Completion Criteria
Reduce risk of fire initiation.	Implement all nominated management measures	No fires initiated on the Quarry Site.
Engage RFS (if required) to provide advice and bush fire risk planning.	Consult with local RFS (as required).	Implement any RFS written advice.

5.0 Biodiversity Monitoring Program

5.1 Introduction

This section provides detail on the ecological and rehabilitation monitoring program for the Quarry. The monitoring is designed to assess the adequacy of the ecological management strategies to be undertaken as part of the BDMP.

5.2 Objectives of the Monitoring Program

The objectives of the monitoring program are to:

- evaluate the success of flora and fauna management strategies;
- facilitate continuous improvement in rehabilitation and revegetation practices;
- record and document changes in retained vegetation within the Quarry Site, and allow for comparison with previous records;
- record and document fauna population changes and identify any breeding and critical habitat; and
- ensure the ecological significance of the remnant vegetation or rehabilitated areas are maintained or improved as a result of ongoing management practices.

5.3 Monitoring Locations, Frequency and Procedures

5.3.1 Purple Copper Butterfly

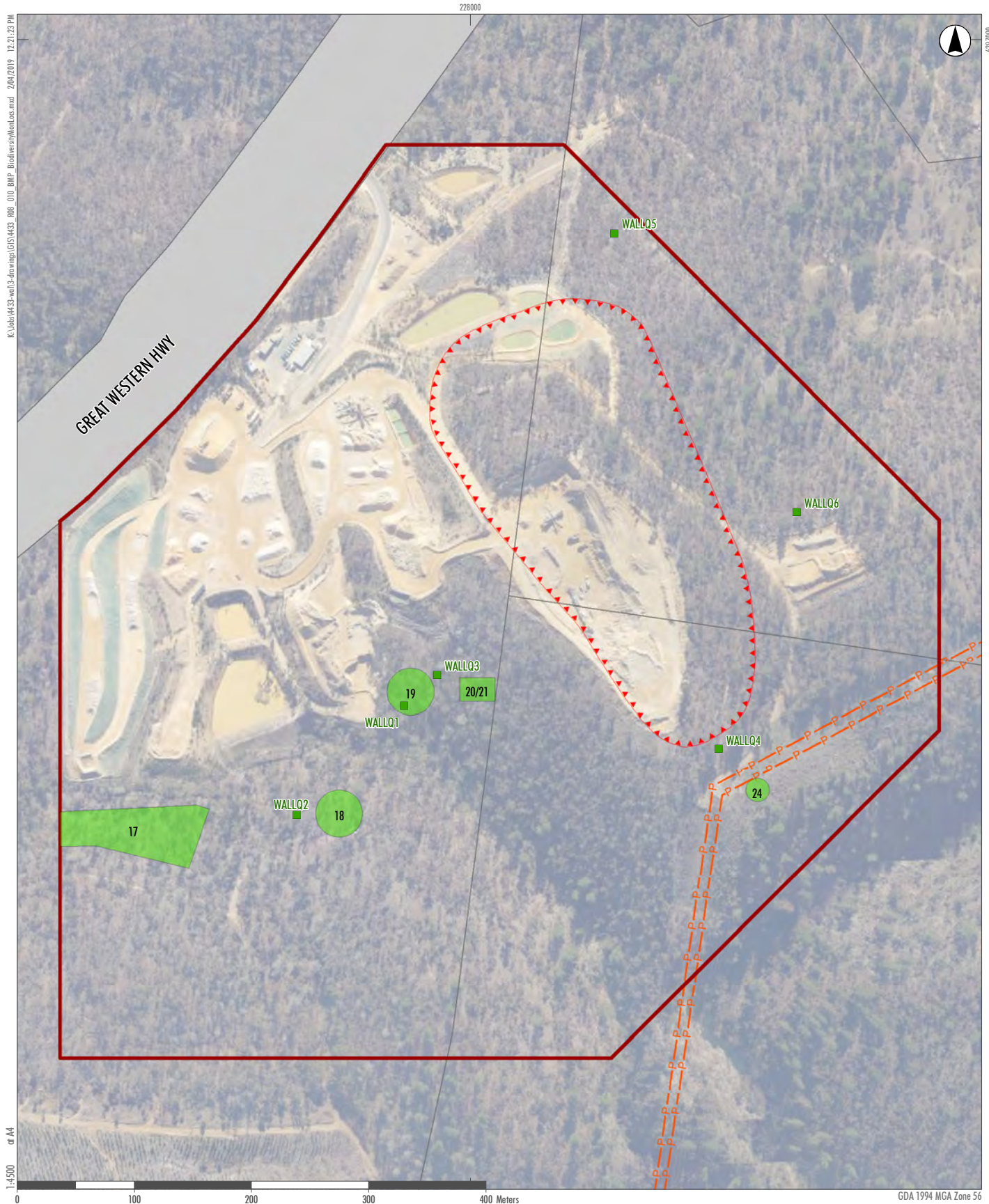
Remnant vegetation of the Quarry Site will be monitored annually by a qualified ecologist who will measure/monitor for evidence of Purple Copper Butterfly and the health and distribution of Blackthorn.

Five patches of Blackthorn (see **Figure 5.1**) will be monitored in October each year with the following objectives.

- Determine if any Purple Copper Butterfly is present on the Quarry Site.
- Determine if the ant species *Anonychomyrma itinerans* is present (this ant having a mutualistic relationship with the butterfly).
- Identify the general condition of each site and if any new Blackthorn seedlings have established.
- Determine any further recommendations that should be adopted to ensure each of the five sites remains as habitat for the Purple Copper Butterfly.

The field survey will be completed by a qualified ecologist, generally in accordance with the following.

- On the day of the field survey, weather conditions will be noted.



- Legend**
- Quarry Site - ML1633
 - - - Approved Extraction Area
 - Biodiversity Monitoring Locations
 - Remnant Patches of *Bursaria spinosa*
 - - - P - - - Power Line
 - Cadastral Boundary

FIGURE 5.1

Biodiversity Monitoring Locations

- Two control sites, being sites where the Purple Copper Butterfly is known to occur will be inspected to confirm the species as active. These sites are currently
 - Cox's Creek, Wallerawang – this site located around 6.5 km north of Walkers Quarry on the eastern side of the Castlereagh Highway
 - Eusdale Road, Yetholme – located approximately 23 km west of Walkers Quarry, this site present east and south of Eusdale Road.
- At each of the monitoring and control sites the following methods were employed:
 - The ecologist will position themselves to survey the site and conduct visual inspections to observe any butterfly activity for at least 10 minutes per site.
 - Random plants will be searched for butterfly caterpillars.
 - Random plants will be selected and searched for ants.
 - Select Blackthorn plants will be gently shaken to trigger a flight response from any butterflies if present.
 - The age of plants (large plants and seedlings present), health (any new shoots present) and evidence of grazing (chewed leaves) will be recorded.
- A net will be used to collect any butterflies observed. Any butterflies collected will be keyed out in accordance with the field guide, Butterflies of Australia (Braby, 2016).
- All animals collected were released at their point of capture.

Ecological surveys will be undertaken in October to coincide with the adult flying season of the Purple Copper Butterfly.

5.3.2 Local Flora and Fauna

Monitoring of local vegetation to assess the level of impact, if any, of the Quarry on the local ecological setting will be undertaken annually.

- The following 6 monitoring plots of 10 x 10 m will be surveyed (see **Figure 5.1**):
 - East of the Supplementary Stockpile Area (WALLQ1)
 - South of the main storage dam (SD1) (WALLQ2)
 - South of the extraction area (WALLQ3)
 - East of the extraction area (WALLQ4)
 - Northeast of the top working dam (WALLQ5)
 - Northeast of the extraction area (WALLQ6).

A star-picket is located at the north-western corner of each plot.

The monitoring will be undertaken as follows:

- A photo of each plot will be taken from the north-western corner.

- Within each plot survey completed at 10 locations along two transects established at 90° to the quadrat perimeter will be completed to identify:
 - the abundance of all vascular plant species (using the modified Braun-Blanquet scale);
 - the dominant species; and
 - foliage cover in each stratum (e.g. canopy, shrub, groundcover).
- The results will be compiled to report on:
 - number of native and weed species;
 - height, % cover and principal species of tree, shrub and ground layers; and
 - vegetation community structure.

As rehabilitation of the Quarry Site is completed, additional quadrats will be established to allow for comparison of the vegetation of rehabilitated landform to the surrounding landforms.

Observations of local fauna will be made through visual observation, call recognition and assessment of scat or signs of fauna.

5.4 Analysis of Results and Contingency Management

The results of the annual Purple Copper Butterfly and local flora and fauna monitoring will be reviewed by the ecologist to assess whether there are any observable or significant trends in the occurrence of specific species or quality/quantity of available habitat. Recommendations of the ecologist engaged to undertake the monitoring will be sought and these implemented, potentially in consultation with OEH, if deemed reasonable and feasible.

Should annual monitoring identify additional threatened species not previously identified, further advice from the ecologist and/or OEH will be sought. If additional monitoring or alternative management measures are developed in response to the identification of additional threatened species, the BMP will be updated to include these.

Should annual monitoring identify an incident involving material impacts, or the potential for material impacts on biodiversity which is not approved by DA 344-11-2001, Walker Quarries will immediately⁶ notify the DPE and OEH. Within 7 days of the date of the incident, the Applicant will provide the DPE and OEH with a detailed report on the incident, including the time and date of the incident, details of the incident, measures implemented to prevent re-occurrence. Additional reports will be prepared and provided to DPE and OEH as requested.

⁶ Within 1 business day of being notified of the incident.

6.0 Risks to Successful Implementation and Contingency Management

Condition 3(26)(g) of DA 344-11-2001 requires the BMP to:

“identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate these risks”.

As described in **Section 1.4.2**, the BOS provides for retirement of biodiversity credits through the Biodiversity Conservation Fund and hence risks to implementation are mitigated.

Table 6.1 identifies the key risks to successful achievement of the biodiversity performance objectives of the BMP (see **Table 3**) (based on the key threats described in Section 3.1) and outlines the approach to contingency management in the form of Trigger Action Response Plans (TARP). These TARPs address the requirement of

Table 6.1 Trigger Action Response Plans

Threat	Objective	Potential Adverse Outcome	Trigger	Action / Response
Vegetation Clearing	Implement access track management strategy.	Uncontrolled access on Quarry Site and disturbance to vegetation.	Evidence of uncontrolled access observed.	Implement additional training or instruction to workforce. Remediate any damage caused by uncontrolled Quarry-related vehicular access.
	All clearing undertaken within approved impact footprint.	Unauthorised impacts on native flora & fauna.	Clearing beyond approved impact footprint.	Notification of the DPE and OEH. Remediation and rehabilitation of cleared area in conjunction with other instruction provided by regulatory authorities. Review and update (as required) of vegetation clearing protocol.
Habitat Disturbance	No avoidable impacts on fauna habitat. All pre and post vegetation clearing administrative controls implemented	Unauthorised impacts on native flora & fauna.	Observed injury/death to native fauna.	Transfer of injured wildlife to wildlife rescue service. Notification of relevant regulatory authority. Review and update (as required) of vegetation clearing protocol.
	Maximise re-establishment of fauna habitat in final landform.	Final land use objectives not achieved	Rehabilitation not progressing in accordance with MOP criteria.	Undertake remedial habitat replacement over the final landform.

Threat	Objective	Potential Adverse Outcome	Trigger	Action / Response
	Avoid additional impacts on Purple Copper Butterfly and other threatened species.	Reduction in local biodiversity.	Disturbance to remnant <i>Bursaria spinosa</i> . Observations of Decline identified in annual monitoring.	Implement remedial measures in consultation with ecologist.
Weed and Feral Pest Species	Decrease in number and abundance of weed species.	Spread of weed species	Increase in weed species reported in annual monitoring.	Engage a contractor to undertake a weed inspection and control program.
	Reduction in feral pest numbers.	Feral pests observed in significant numbers.	Observation of increasing density.	Consult with local pest management authorities.
Erosion and Sedimentation	Reduction in land area subject to active soil erosion and stream bed erosion.	Reduction in habitat value of downstream drainage lines.	Observation of sedimentation below Quarry water storages.	Remove sediment and review on-site water management strategies as part of Water Management Plan review.
Changes to Local Drainage	Avoid adverse effects on drainage line habitat.			
Land Contamination	Prevent contamination of land and water.			
Vehicle Trauma	Minimise fauna mortality	Reduced biodiversity	Observed fauna mortality.	Report to relevant agency (ies), e.g. OEH.

Where notification to the DPE and OEH is nominated, this will be undertaken in accordance with *Conditions 5(9) and 5(10) of DA 344-11-2001*.

- Should the trigger represent an incident involving material impacts, or the potential for material impacts on biodiversity which is not approved by DA 344-11-2001, Walker Quarries will immediately⁷ notify the DPE and OEH.
- Within 7 days of the date of the incident, the Applicant will provide the DPE and OEH with a detailed report on the incident, including the time and date of the incident, details of the incident, measures implemented to prevent re-occurrence. Additional reports will be prepared and provided to DPE and OEH as requested.

Section 7.0 provides further information on incident identification, management, notification and reporting.

⁷ Within 1 business day of being notified of the incident.

7.0 Incident Management, Notification and Reporting

7.1 Incident Identification

In accordance with *Condition 5(9)*, Walker Quarries will immediately notify the DPE and OEH of an incident which results in, or has the potential to cause material harm to local biodiversity (in addition to that approved by DA 344-11-2001). The definition of 'material harm' has been modified after Section 147 of the *Protection of the Environment Operations Act 1997* (POEO Act), where harm to the environment is considered material if:

- *it involves actual or potential harm to ecosystems that is not trivial; or*
- *it results in actual or potential damage to biodiversity which requires remediation.*

7.2 Incident Management, Notification and Reporting

On identification of an incident as defined in **Section 7.1**, which may follow receipt of a complaint or notification by an external party, the Quarry Manager will be notified and an investigation commenced. The form of investigation will vary depending on the nature of the incident (or potential incident) but follow the general steps nominated below.

- The Quarry Manager (or delegate) will inspect the location where the incident has been identified.
- Where the incident involves clearing, the Quarry Manager will review any disturbance against plans included in the MOP and the management measures nominated in **Sections 4.4 to 4.9**.
- If the disturbance has been undertaken in compliance with the MOP and BDMP management measures, no further action will be taken and in the case of a complaint, the Quarry Manager will confirm with the complainant that the incident has been investigated.
- If the Quarry Manager is not satisfied the disturbance is compliant, Walker Quarries will immediately⁸ notify the DPE and OEH.
- Where the disturbance is determined by the Quarry Manager (or delegate) to be minor and will not impact on any threatened flora or fauna, a plan to remediate the area of disturbance will be prepared.
- Where the Quarry Manager is unable to confirm the disturbance as minor, or unlikely to impact on any threatened flora or fauna, Walker Quarries will commission a qualified ecologist to advise on appropriate mitigation.
- Within 7 days of the date of the incident, the Applicant will provide the DPE and OEH with a report on the incident, including the time and date of the incident, details of the incident, measures to be implemented to mitigate the impacts of the incident and measures to be implemented to prevent re-occurrence.
- Additional reports will be prepared and provided to DPE and OEH in accordance with commitments made in the initial incident report or as requested.

⁸ Within 1 business day of being notified of the incident.

Following implementation and review of the corrective measures, a short description of the incident, actions taken, and results of the corrective actions will be documented by the Quarry Manager.

Within 3 months of the submission of the initial incident report to the DPE and OEH, Walker Quarries will review this BDMP and any other relevant strategies, plans and programs required under DA 344-11-2001 and revise them as required. Walker Quarries will notify the DPE in writing that this review is being undertaken. If the review does lead to revision, Walker Quarries will submit the revised BDMP to the DPE within 3 months of the incident for approval.

A summary of all incidents, including dates of occurrence, corrective measures taken, and success of these measures will be compiled and reported in the Annual Review to DPE.

8.0 Data Management, Reporting and Documentation Requirements

8.1 Review and Recording of Monitoring Data

Walker Quarries will retain records of ecological monitoring for a minimum period of 4 years. Monitoring records will be made available to relevant government authorities following a written request.

8.2 Reporting and Publication of Monitoring Data

Information on biodiversity management, against the objectives and performance criteria of the BDMP, will be provided annually in the Annual Review prepared for the Quarry. Walker Quarries will include all ecological monitoring reports as appendices to the Annual Review.

The Annual Review is a requirement of DA 344-11-2001 and also satisfies the requirement for an Annual Environmental Management Report for Mining Leas 1633. The Annual review will be provided to the Compliance Divisions of the DPE and Resources Regulator. Other government agencies will also be provided with a copy of the Annual Review, including:

- Environment Protection Authority (EPA).
- Department of Industry – Crown Lands and Water.
- NSW Office of Environment and Heritage (OEH).
- Lithgow City Council.
- Any other agencies with a statutory interest in the site.

The Annual Review, once approved by the relevant government agencies, would be published on Walker Quarries website.

9.0 Plan Implementation

9.1 Roles and Responsibilities

Table 9.1 outlines the roles and responsibilities of personnel with reference to management of flora and fauna.

Table 9.1 Roles and Responsibilities of Personnel with Respect to Management of Biodiversity

Roles	Responsibility
Operations Manager / Compliance Manager	<ul style="list-style-type: none"> Accountable for the overall environmental performance of the Quarry, including the outcomes of the BDMP. Must ensure adequate resources are available to enable implementation of the Plan. Manage the implementation the biodiversity management measures nominated in Section 4.0. Ensure suitably trained personnel are available to implement the responsibilities of the Quarry Manager during any time of the Quarry Manager's absence from site. Approve implementation of contingency measures as required. Coordinate the review of the BDMP (see Section 8.3).
Quarry Manager / Supervisor	<ul style="list-style-type: none"> Ensure the implementation of the BDMP, including reporting of non-compliances with the trigger values, and subsequent implementation of the relevant action plan. Ensure monitoring is undertaken in accordance with the BDMP. Review and analyse all monitoring data. Review performance against performance criteria and initiate contingencies (in consultation with Operations Manager) as required. Ensure all internal and external reporting requirements are met. Initiate investigations of complaints as received from the public or government agency.
Employees and Contractors	<ul style="list-style-type: none"> Operate in a manner that minimises risks of incidents to themselves, fellow workers and biodiversity values of the Mine Site. Ensure operations are undertaken in accordance with instructions. Ensure appropriate notification and response in the event of an environmental incident. Show due care not to cause environmental harm. Follow direction provided by the Operations, Compliance or Quarry Manager. Show due care not to cause environmental harm. Notify Supervisor or Quarry management of any biodiversity-related or environmental incident.

9.2 Competence Training and Awareness

All personnel and contractors working at the Quarry undergo an induction. This induction includes information on the management of biodiversity while working on site.

After completing the induction, workers will sign a statement of attendance and records of this are kept in the administration office.

Toolbox meetings are held to discuss whole-of-site production, management, safety and environmental issues. This will include a review of information and obligations relating to the Purple Copper Butterfly and host Blackthorn plant in August (to coincide with the adult flying season) and October (following the completion of annual monitoring). Personnel will be made aware as to the location(s) of Blackthorn plants and/or observed butterfly and the need for their protection.

The Quarry Operations Manager shall be responsible for ensuring the appropriate protection of biodiversity across the site.

9.3 Plan Review and Continual Improvement Protocol

In accordance with the *Environmental Management Strategy*, and *Condition 5(5)* of DA 344-11-2001, this BDMP will be reviewed within three months of the submission of an:

- incident as defined by **Section 7.1**;
- Annual Review;
- an Independent Environmental Audit completed in accordance with Condition 13 of Schedule 5 of DA 344-11-2001; and
- any modifications to this consent.

Walker Quarries will notify the DPE in writing of any review being undertaken and if this review results in any revisions to the BDMP, submit a copy to the Secretary of the DPE for approval (within 6 weeks of the review). The reviews will ensure the adequacy of the BDMP and allow for opportunities of adaptive management and continual improvement. This will include a review of monitored noise levels and monitoring frequency and methods, as necessary. Each review will also evaluate the effectiveness of the overall noise monitoring program and whether it needs to be modified or scaled back.

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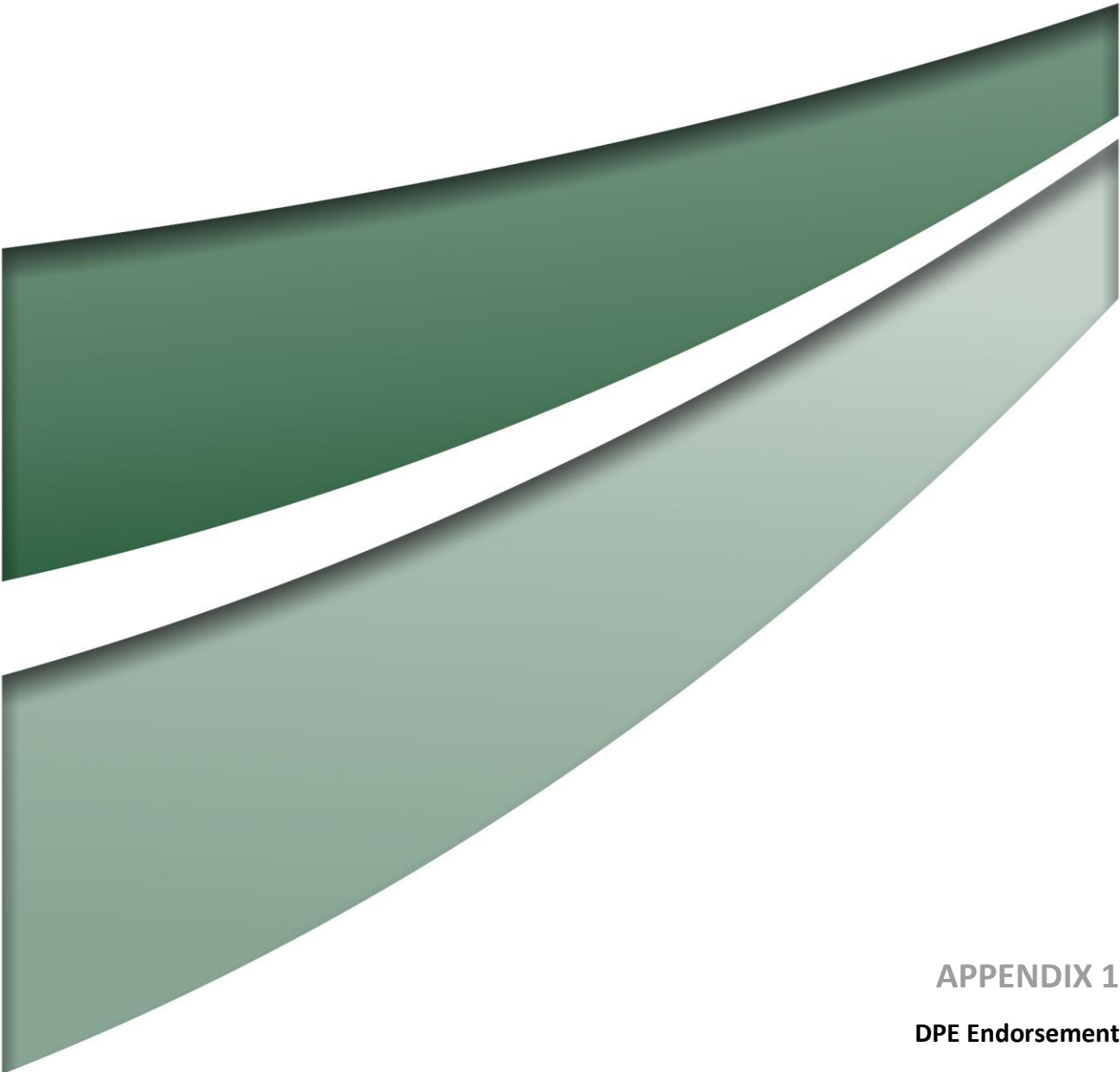
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Wildthing Environmental Consultants (Wildthing) (1999). Statement of Effect on Threatened Flora and Fauna over land proposed for development of a Hard Rock Quarry within EL 44473 near Wallerawang NSW.

Wildthing Environmental Consultants (Wildthing) (2002). *Paralucia spinifera* (Bathurst Copper Butterfly) Survey for the Proposed Wallerawang Quarry near Wallerawang NSW.



APPENDIX 1
DPE Endorsement

Appendix 1

Endorsement of Author as Suitably Qualified and Experienced



**Planning &
Environment**

**Planning Services
Resource Assessments**
Contact: Jack Murphy
Phone: 8217 2016
Email: jack.murphy@planning.nsw.gov.au

Mr Alex Irwin
Senior Environmental Scientist
RW Corkery & Co Pty Limited
PO Box 239
BROOKLYN NSW 2083

A handwritten signature in blue ink that reads 'Alex'.

Dear Mr Irwin,

**Wallerawang Quarry (DA 344-11-2001)
Biodiversity Management Plan**

I refer to your email dated 4 September 2018 requesting the Secretary's endorsement of a suitably qualified and experienced person to prepare the Biodiversity Management Plan for Wallerawang Quarry (DA 344-11-2001).

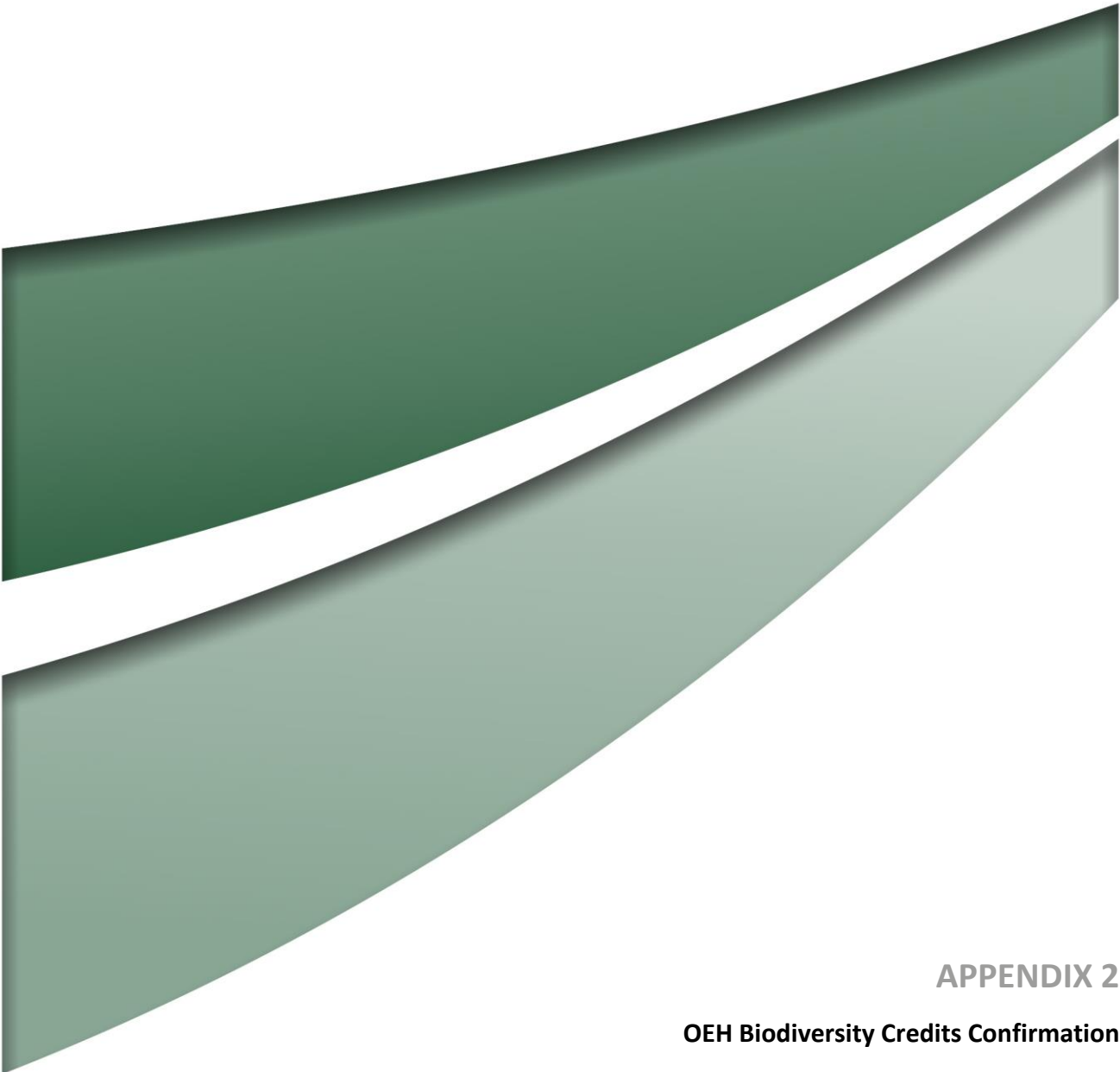
The Department has reviewed the credentials of Mr Alex Irwin of RW Corkery & Co Pty Limited and agrees that he is a suitably qualified person. In accordance with condition 3(26) of the above consent, the Secretary endorses Mr Alex Irwin to prepare the plan.

If you wish to discuss this matter further, please contact Jack Murphy at the details listed above.

Yours sincerely

A handwritten signature in blue ink that reads 'Howard Reed'.

Howard Reed *4.9.18*
Director Resource Assessments
as the Secretary's nominee



APPENDIX 2

OEH Biodiversity Credits Confirmation

Alex Irwin

From: Renee Shepherd <Renee.Shepherd@environment.nsw.gov.au>
Sent: 2 November 2017 12:16 PM
To: Alex Irwin
Cc: Gen Seed; Samantha Wynn
Subject: RE: 949 - Wallerawang Quarry - Requirement to Consult with OEH
Attachments: OEH NW Draft BMP Guidelines_August 2014.doc.PDF

Hi Alex,

As discussed on Tuesday please find attached some draft guidelines for the preparation of Biodiversity Management Plans. Please note that these guidelines are now 3 years old and the new legislation has superseded some of the advice, but in general it provides an understanding of the information that we look for in a BMP.

Of particular importance is the description of the site, delineation of the site into appropriate management zones, development of an appropriate monitoring program, creation of KPIs that link into that monitoring plan, and development of a TARP to ensure that the KPIs are met.

Where a management zone requires "active" management (eg. revegetation) ensure that KPIs are developed for relevant timeframes (eg. 2, 5, 10, 15 years etc) so that the expected ecological trajectory can be monitored and relevant response actions can be implemented where the KPIs aren't met.

Ensure that all of the components in Schedule 3 Condition 26 of the project approval are addressed in the BMP.

Relevant information from the existing Flora and Fauna Management Plan can be inserted into the BMP if/where it is appropriate.

If you have any other questions please do not hesitate to contact me.

Regards,
Renee.

Renee Shepherd
Senior Conservation Planning Officer
North West Branch
Regional Operations Division
Office of Environment and Heritage
48-52 Wingewarra Street (PO Box 2111) Dubbo NSW 2830
Ph: 02 6883 5355
W: www.environment.nsw.gov.au

Please note that I work Tuesday, Thursday, Friday

From: Alex Irwin [mailto:alex@rwcorkery.com]
Sent: Friday, 20 October 2017 3:50 PM
To: Renee Shepherd <Renee.Shepherd@environment.nsw.gov.au>
Subject: 949 - Wallerawang Quarry - Requirement to Consult with OEH

Good afternoon Renee,

Walker Quarries Pty Ltd received approval for a modification to the project approval for the Wallerawang Quarry (DA 344-11-2001) on 25 August 2017 (attached).

Conditions 3(5) and 3(18) of DA 344-11-2001 require Walker Quarries to consult with OEH in the preparation of a Biodiversity Management Plan and Rehabilitation Management Plan respectively.

With respect to the nominated conditions, and noting that Walker Quarries is currently operating under a Floral and Fauna Management Plan (also attached), can you provide any specific requirements of OEH for the preparation and/or update of these.

I note DA 344-11-2001 requires the RMP to be submitted to the Secretary for approval by 25 November 2017 (the Biodiversity MP is not required until 31 March 2018) and so we would appreciate any advice as soon as possible.

Regards,

Alex Irwin
Senior Environmental Consultant
(Mobile 0429 635 975)

RW Corkery & Co Pty Limited

Geological and Environmental Consultants



Brooklyn
Level 1, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Orange
62 Hill Street
ORANGE NSW 2800

Brisbane
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Pine Rivers Office Park
205 Leitchs Road
BRENDAL QLD 4500

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This message is intended for the addressee named and may contain confidential/privileged information. If you are not the intended recipient, please delete it and notify the sender. Any confidentiality or privilege between R. W. Corkery & Co. Pty Limited and Client is not waived or lost because this email has been sent to you by mistake. You should scan any included files for viruses.

This email is intended for the addressee(s) named and may contain confidential and/or privileged information. If you are not the intended recipient, please notify the sender and then delete it immediately. Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the NSW Office of Environment and Heritage.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL



Statement of assessment of reasonable equivalence of biodiversity credits

A delegate of the Chief Executive of the Office of Environment and Heritage has determined that the number of biodiversity credits required to be retired under the *Threatened Species Conservation Act 1995 (TSC Act)* as part of the development consent listed in Part 1, are reasonably equivalent to the number and class of biodiversity credits under the *Biodiversity Conservation Act 2016 (BC Act)* set out in Part 2.

This document outlines that determination, made in accordance with clause 22(3) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*.

Part 1 Existing statutory obligation to retire credits

Request made by:	Walker Quarries Pty Ltd (ACN 003 061 890)
Date received	23 rd April 2018
Development Consent number	DA 344-11-2001
Development name	Wallerawang Quarry, Lot 6, Great Western Highway, Wallerawang NSW

Existing statutory obligation reference	Biodiversity credit name (Plant Community Type name and ID, or threatened species name)	IBRA sub region	Number of credits
DA 344-11-2001	Broad-leaved Peppermint-Ribbon Gum Grassy open forest in the north east of the South Eastern Highlands Bioregion (PCT 732)	Oberon – Hawkesbury/Nepean	120
DA 344-11-2001	Red Stringybark -Brittle Gum-Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion (PCT 1093)	Oberon – Hawkesbury/Nepean	34
DA 344-11-2001	Purple Copper Butterfly	NA	184

Part 2 Determination of reasonable equivalence

The number and class of biodiversity credits that are reasonably equivalent under the BC Act are:

Ecosystem Credits

1. **Name of Plant Community Type** Broad-leaved Peppermint-Ribbon Gum Grassy open forest in the north east of the South Eastern Highlands Bioregion (PCT 732)

Number of ecosystem credits required	65
Offset trading group	Grassy Woodlands - percent cleared value greater than or equal to 50% and less than 70%
Vegetation class	Grassy Woodlands
Vegetation formation	Southern tableland Grassy Woodlands
IBRA¹ subregion	Oberon - Hawkesbury/Nepean

2. **Name of Plant Community Type** Red Stringybark -Brittle Gum-Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion (PCT 1093)

Number of ecosystem credits required	19
Offset trading group	Dry Sclerophyll forests (shrubby sub-formation) - percent cleared value greater than or equal to 50% and less than 70%
Vegetation class	Dry Sclerophyll forests (shrubby sub-formation)
Vegetation formation	Southern Tableland Dry Sclerophyll Forests
IBRA² subregion	Oberon - Hawkesbury/Nepean

¹ Interim Biogeographic Regionalisation for Australia

² Interim Biogeographic Regionalisation for Australia

Species Credits

1. Name of threatened species Purple Copper Butterfly *Paralucia spinifera*

Number of species credits required	96
IBRA region	N/A

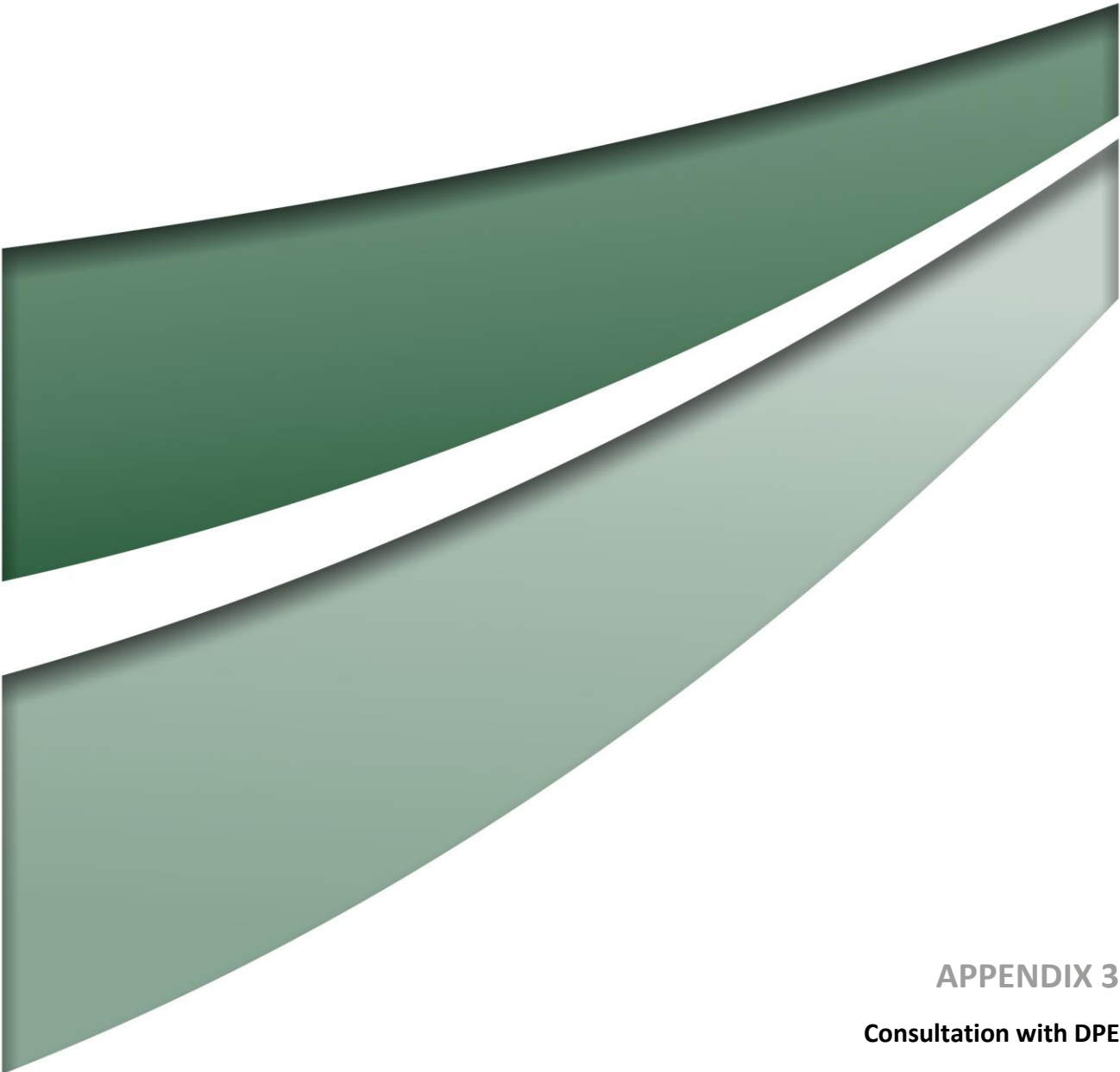
This statement was issued on 14 June 2018.

Authorised by:



Jane Gibbs
Director, Ecosystem
Assessment & Planning

Delegate of Chief Executive Officer
Office of Environment and Heritage



APPENDIX 3

Consultation with DPE



Planning &
Environment

Planning Services
Resource Assessments
Name: Genevieve Seed
Phone: 9274 6489
Email: genevieve.seed@planning.nsw.gov.au

Mr Alex Irwin
R.W Corkery & Co Pty Limited
PO Box 239
Brooklyn NSW 2083

Alex
Dear Mr Irwin

**Wallerawang Quarry (DA 344-11-2001)
Biodiversity Offset Strategy and Management Plan**

I refer to your email dated 27 February 2018 submitting an interim Biodiversity Offset Strategy (BOS) for the Wallerawang Quarry, in accordance with condition 24 of Schedule 3 of DA 344-11-2001. This BOS includes offset options to retire the Applicant's biodiversity credit requirements which were calculated in accordance with the *Framework for Biodiversity Assessment* under the *NSW Biodiversity Offsets Policy for Major Projects*.

However, the transitional provisions of the *Biodiversity Conservation Act 2016* require these credits to be retired in accordance with the new Biobanking Offsets Scheme. As you are aware, credits generated between the different methodologies are not equivalent and the Office of Environment and Heritage (OEH) is currently working on determining appropriate conversion procedures.

The Department accepts that the provision of a final BOS relies on establishing of these conversion procedures. As such, the Department considers that the interim BOS satisfies the requirements of condition 24 of Schedule 3 for the time being.

Following consultation with OEH, the Secretary requests that a final BOS is provided within two months of OEH's advice on appropriate conversion procedures. The Department expects this advice to be provided within approximately six weeks.

I also refer to your email of 22 February 2018, requesting an extension of the date to submit the Biodiversity Management Plan due to the delay in finalising the BOS. The Secretary agrees to submission of the Biodiversity Management Plan within three months of providing the final BOS.

If you have any enquiries about this matter, please contact Genevieve Seed at the details above.

Yours sincerely

Howard Reed 26.2.18
Director
Resource Assessments
as nominee of the Secretary



Planning &
Environment

Planning Services
Resource Assessments
Name: Genevieve Seed
Phone: 9274 6489
Email: genevieve.seed@planning.nsw.gov.au

Mr Alex Irwin
R.W Corkery & Co Pty Limited
PO Box 239
Brooklyn NSW 2083

Alex
Dear Mr Irwin

**Wallerawang Quarry (DA 344-11-2001)
Biodiversity Offset Strategy**

I refer to your email dated 4 June 2018, seeking an extension of date to submit the Biodiversity Offset Strategy (BOS) for the Wallerawang Quarry.

I understand that on 18 April 2018, the Applicant submitted an application to the Office of Environment and Heritage (OEH) for the assessment of equivalent credits under the *Biodiversity Conservation Act 2016*. I understand that OEH has not yet determined the equivalent credit calculation and that the deadline to submit the BOS (17 June 2018) is approaching.

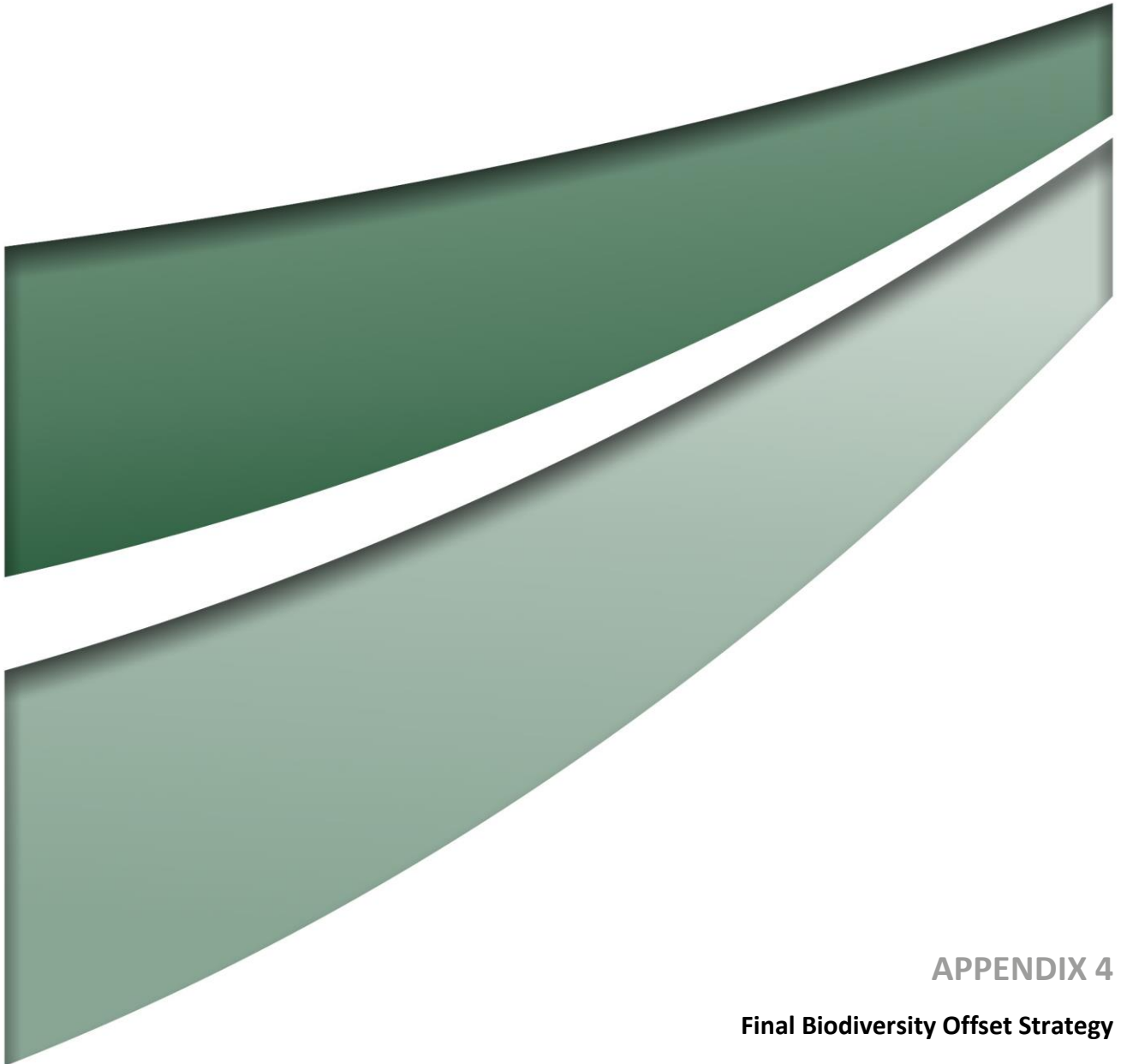
As the BOS is inherently reliant on the equivalent credit calculation from OEH, the Department considers the proposed extension to be warranted. Accordingly, the Secretary has agreed to the submission of the BOS to be within four weeks of the determination of the equivalent credit calculation.

Although the submission of the BOS has been delayed, the Department requests that the Applicant continue to work towards implementing the BOS by the existing deadline of 31 December 2018. However, if the Applicant encounters delays resulting from OEH actions in this process, then the Department may reconsider an extension at a later date.

If you have any enquiries about this matter, please contact Genevieve Seed at the details above.

Yours sincerely

Howard Reed
Howard Reed
Director
Resource Assessments
as nominee of the Secretary
7.6.18



APPENDIX 4

Final Biodiversity Offset Strategy



ecoplanning

ecology | planning | offsets

Biodiversity Offset Strategy



Wallerawang Quarry

Prepared for: Walker Quarries

13 July 2018

PROJECT NUMBER	2017-111	
PROJECT NAME	Wallerawang Quarry – Biodiversity Offset Strategy	
PROJECT ADDRESS	Lot 6 // DP 872230, 963 Great Western Highway, Marrangaroo NSW 2791	
PREPARED FOR	Walker Quarries	
AUTHOR/S	Brian Towle, Lucas McKinnon	
REVIEW	Lucas McKinnon	
VERSION	Version	Date to client
	1.0 – Draft	26 February 2018
	1.0 – Final	27 February 2018
	1.1 – Draft	13 July 2018
	1.1 – Final	13 July 2018

This report should be cited as: *Ecoplanning (2018). Wallerawang Quarry – Biodiversity Offset Strategy. Prepared for Walker Quarries.*

Disclaimer: This report has been prepared by Ecoplanning Pty Ltd for Walker Quarries and may only be used for the purpose agreed between these parties, as described in this report. The opinions, conclusions and recommendations set out in this report are limited to those set out in the scope of works and agreed between these parties. Ecoplanning P/L accepts no responsibility or obligation for any third party that may use this information or for conclusions drawn from this report not provided in the scope of works or following changes occurring subsequent to the date that the report was prepared.

ECOPANNING PTY LTD | 74 HUTTON AVE BULLI NSW 2516 | M: 0421 603 549

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Glossary and abbreviations

ACRONYM	DESCRIPTION
BAM	Biodiversity Assessment Methodology – Established under the BC Act
BBAM	BioBanking Assessment Methodology
BBCC	BioBanking Credit Calculator
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BSA	Biodiversity Stewardship Agreement
BOA	Biodiversity Offset Area
BOS	Biodiversity Offset Strategy
DA	Development Application
FBA	Framework for Biodiversity Assessment – Now replaced by the BAM
OEH	NSW Office of Environment and Heritage
TSC Act	NSW <i>Threatened Species Conservation Act 1995</i>

1. Introduction

Walker Quarries, a subsidiary of Sitegoal Pty Ltd, operates the Wallerawang Quarry under development consent DA 344-11-2001 issued on 19 October 2004. Wallerawang Quarry is located approximately 2.5 km south-east of the town of Wallerawang (Figure 1.1) and produces quartzite and rock aggregates, sands and other products.

DA 344-11-2001 was modified on 25 August 2017 to address and regularise non-compliant clearing (2.4 ha) on the Quarry Site (Figure 1.1). Condition 3(24) of the Notice of Modification for DA 344-11-2001 requires the development a Biodiversity Offset Strategy (BOS) for the retirement of ecosystem and species credits as set out in Table 1.1.

Table 1.1: Offset requirements outlined in the Notice of Modification.

Credit type	Area of impact (ha)	Number of credits
Ecosystem credits		
PCT 732 – Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	1.90	120
PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	0.5	34
Species credits		
Purple Copper Butterfly	2.4	184

The Notice of Modification (DPE 2017), specifies that the BOS must be prepared in accordance with the 'Framework for Biodiversity Assessment' (FBA; OEH 2014a) for retirement of the necessary biodiversity credits. The FBA underpins the 'Biodiversity Offsets Policy for Major Projects' (BOPMP; OEH 2014b). It contains the assessment methodology that is adopted by the policy to quantify and describe the impact assessment requirements and offset guidance that apply to Major Projects (OEH 2014b). It uses the BioBanking Assessment Methodology (BBAM; OEH 2014c) established under Part 7A of the NSW *Threatened Species Conservation Act 1995* (TSC Act), to generate biodiversity credits that can be traded to offset impacts of major projects.

On 25 August 2017 the NSW *Biodiversity Conservation Act 2016* (BC Act) came into force repealing the TSC Act and establishing a new offset scheme using the 'Biodiversity Assessment Methodology' (BAM). Section 22(2) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* (the 'transitional arrangements') states that:

If biodiversity credits that are required to be retired under any such obligation [conditions of a development consent] have not been retired on the commencement of the new Act, the obligation is to be construed as requiring the retirement of biodiversity credits under the new Act that remain to be retired.

Consequently, despite the specification within the Notice of Modification to prepare the BOS in accordance with the FBA, the transitional arrangements under the BC Act specify that the BAM must be used to calculate biodiversity credit generation. This position has been confirmed in correspondence with the NSW Office of Environment and Heritage (OEH).

Under the BC Act the generation of biodiversity credits is through the establishment of a Biodiversity Stewardship Agreement (BSA). The biodiversity credit obligations under the two methodologies (FBA and BAM) are not equal and section 22(3) of the transitional arrangements specify that: *the Environment Agency Head may determine the biodiversity credits under the new Act that are reasonably equivalent to the remaining biodiversity credits under the TSC Act.* A 'Statement of assessment of reasonable equivalence of biodiversity credits' was received from OEH, dated 14 June 2018 (DOC18/370808) (Table 1.2; see also Appendix A).

Table 1.2: Offset requirements outlined in the Notice of Modification.

Credit type	Area of impact (ha)	Number of credits
Ecosystem credits		
PCT 732 – Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	1.90	65
PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	0.5	19
Species credits		
Purple Copper Butterfly	2.4	96

Conditions 3(25), 3(27) and 3(28) of the Notice of Modification require the establishment and payment of a conservation bond associated with the BOS. The sum of the conservation bond is to be determined by:

- (a) calculating the full cost of implementing the Biodiversity Offset Strategy at third party rates (other than land acquisition costs); and
- (b) employing a suitably qualified, independent and experienced person to verify the calculated costs.

This BOS provides for payment into the Biodiversity Conservation Fund, established under the BC Act. Payment into the Biodiversity Conservation Fund for the number of reasonably equivalent credits (Table 1.2) would constitute the required conservation bond (in satisfaction of Conditions 3(27) and 3(28)) (see Section 2).



Figure 1.1: Location of Wallerawang Quarry and the proposed Biodiversity Offset Area.

2. Biodiversity Offset Strategy

Under the BOPMP (OEH 2014a), Principle 5 states that:

...biobanking agreements must be used to secure offsets if any of the following conditions are met:

- *there are appropriate credits available on the market for purchase (noting that 'reasonable steps' to locate offsets includes a requirement that an expression of interest be put on the biobanking credit register for a minimum of six months)*
- *the fund has been established, or*
- *a service agreement for establishment of biobanking agreements has been put in place by OEH.*

Prior to the BC Act coming into force, attempts were made by RW Corkery to purchase and retire the required credits using the Biobanking Public Register. That is to find, purchase and retire the required credits which have been generated from a BioBanking Agreement (RW Corkery 2017). No established BioBanking Agreements generating the credits required were identified.

Further, calculation of credit generation potential over residual land adjacent at the quarry (identified as the Biodiversity Offset Area on **Figure 1.1**) was investigated (Ecoplanning 2018). Following receipt of the reasonably equivalent credit requirement (OEH 2018b), it was determined that the credit generation of this initially proposed Biodiversity Offset Area would not meet the entire credit obligation. Consequently, the desired approach of Walker Quarries to meet the biodiversity credits obligations is payment into the Biodiversity Conservation Fund.

The costs for payment into the fund is outlined within the BAM Calculator and the 'Offsets Payment Calculator public tool' (OEH 2018b). The costs for payment into the Biodiversity Conservation Fund for the required credits are outlined in **Table 2.1**.

Table 2.1: Credit prices for payment into the BCF calculated using the 'Biodiversity Offsets Payment Calculator (OEH 2018b)'.

Credit type	Cost / credit (ex GST) ¹	Reasonably equivalent credit	Total
Ecosystem credits			
PCT 732 – Broad-leaved Peppermint Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	\$3,486.75	65	\$226,638.43
PCT 1093 – Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	\$3,486.175	19	\$66,248.16
Ecosystem credits sub-total (ex. GST)			\$292,886.59
Species credits			
Purple Copper Butterfly	\$316.96	96	\$36,377.81
Species credit sub-total (ex. GST)			\$36,377.81
Total (ex GST)			\$329,264.40
Grand Total (incl. GST)			\$362,190.84

¹ Price based on BOPC as 13 July 2018 (OEH 2018b)

The process of purchasing and retiring credits from the BCF is provided in **Figure 2.1**.

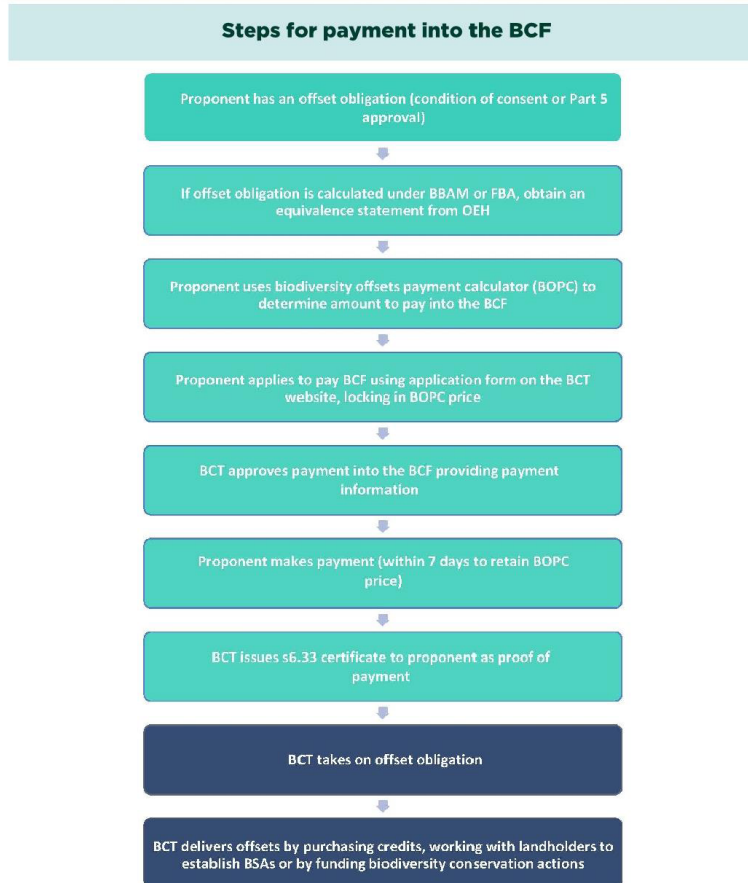


Figure 2.1: Steps for payment into the Biodiversity Conservation Fund (Source BCT 2018).

In accordance with Condition 3(25), payment will be made into the BCF by 31 December 2018. It is noted that the final value of payment required to retire the biodiversity credits will be subject to the following:

- Any fluctuation (change) in the credit costs for the credit types identified in **Table 2.1** (this may be up or down).
- Any reduction in final cost applicable (in accordance with the BC Act) for disturbance on land contained within Lidsdale State Forest (equivalent to payments already made to Forestry Corporation NSW for the disturbance of this vegetation).

Should equivalent credits (of the type and quantum nominated in **Table 1.2**) become available prior to 31 December 2018, or the price rises in the BOPC (OEH 2018b) so as make the establishment of a Biodiversity Stewardship site more cost effective, Walker Quarries reserve the right modify this BOS.

References

Ecoplanning (2018). Wallerawang Quarry – Interim Biodiversity Offset Strategy. Prepared for Walker Quarries (v 1.0).

NSW Biodiversity Conservation Trust (BCT) (2018). BCT Factsheet for Assessors: Biodiversity Conservation Fund.

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R.W. Corkery & CO. (2017) Response to Submissions for the Wallerawang Quarry. Unpublished report prepared for Walker Quarries, dated July 2017.

Appendix A: Statement of reasonable equivalence



DOC18/370808

Statement of assessment of reasonable equivalence of biodiversity credits

A delegate of the Chief Executive of the Office of Environment and Heritage has determined that the number of biodiversity credits required to be retired under the *Threatened Species Conservation Act 1995 (TSC Act)* as part of the development consent listed in Part 1, are reasonably equivalent to the number and class of biodiversity credits under the *Biodiversity Conservation Act 2016 (BC Act)* set out in Part 2.

This document outlines that determination, made in accordance with clause 22(3) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*.

Part 1 Existing statutory obligation to retire credits

Request made by:	Walker Quarries Pty Ltd (ACN 003 061 890)
Date received	23 rd April 2018
Development Consent number	DA 344-11-2001
Development name	Wallerawang Quarry, Lot 6, Great Western Highway, Wallerawang NSW

Existing statutory obligation reference	Biodiversity credit name (Plant Community Type name and ID, or threatened species name)	IBRA sub region	Number of credits
DA 344-11-2001	Broad-leaved Peppermint-Ribbon Gum Grassy open forest in the north east of the South Eastern Highlands Bioregion (PCT 732)	Oberon – Hawkesbury/Nepean	120
DA 344-11-2001	Red Stringybark -Brittle Gum-Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion (PCT 1093)	Oberon – Hawkesbury/Nepean	34
DA 344-11-2001	Purple Copper Butterfly	NA	184

Part 2 Determination of reasonable equivalence

The number and class of biodiversity credits that are reasonably equivalent under the BC Act are:

Ecosystem Credits

1. **Name of Plant Community Type** Broad-leaved Peppermint-Ribbon Gum Grassy open forest in the north east of the South Eastern Highlands Bioregion (PCT 732)

Number of ecosystem credits required	65
Offset trading group	Grassy Woodlands - percent cleared value greater than or equal to 50% and less than 70%
Vegetation class	Grassy Woodlands
Vegetation formation	Southern tableland Grassy Woodlands
IBRA ¹ subregion	Oberon - Hawkesbury/Nepean

2. **Name of Plant Community Type** Red Stringybark -Brittle Gum-Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion (PCT 1093)

Number of ecosystem credits required	19
Offset trading group	Dry Sclerophyll forests (shrubby sub-formation) - percent cleared value greater than or equal to 50% and less than 70%
Vegetation class	Dry Sclerophyll forests (shrubby sub-formation)
Vegetation formation	Southern Tableland Dry Sclerophyll Forests
IBRA ² subregion	Oberon - Hawkesbury/Nepean

¹ Interim Biogeographic Regionalisation for Australia

² Interim Biogeographic Regionalisation for Australia

3

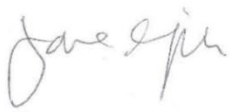
Species Credits

1. Name of threatened species Purple Copper Butterfly *Paralucia spinifera*

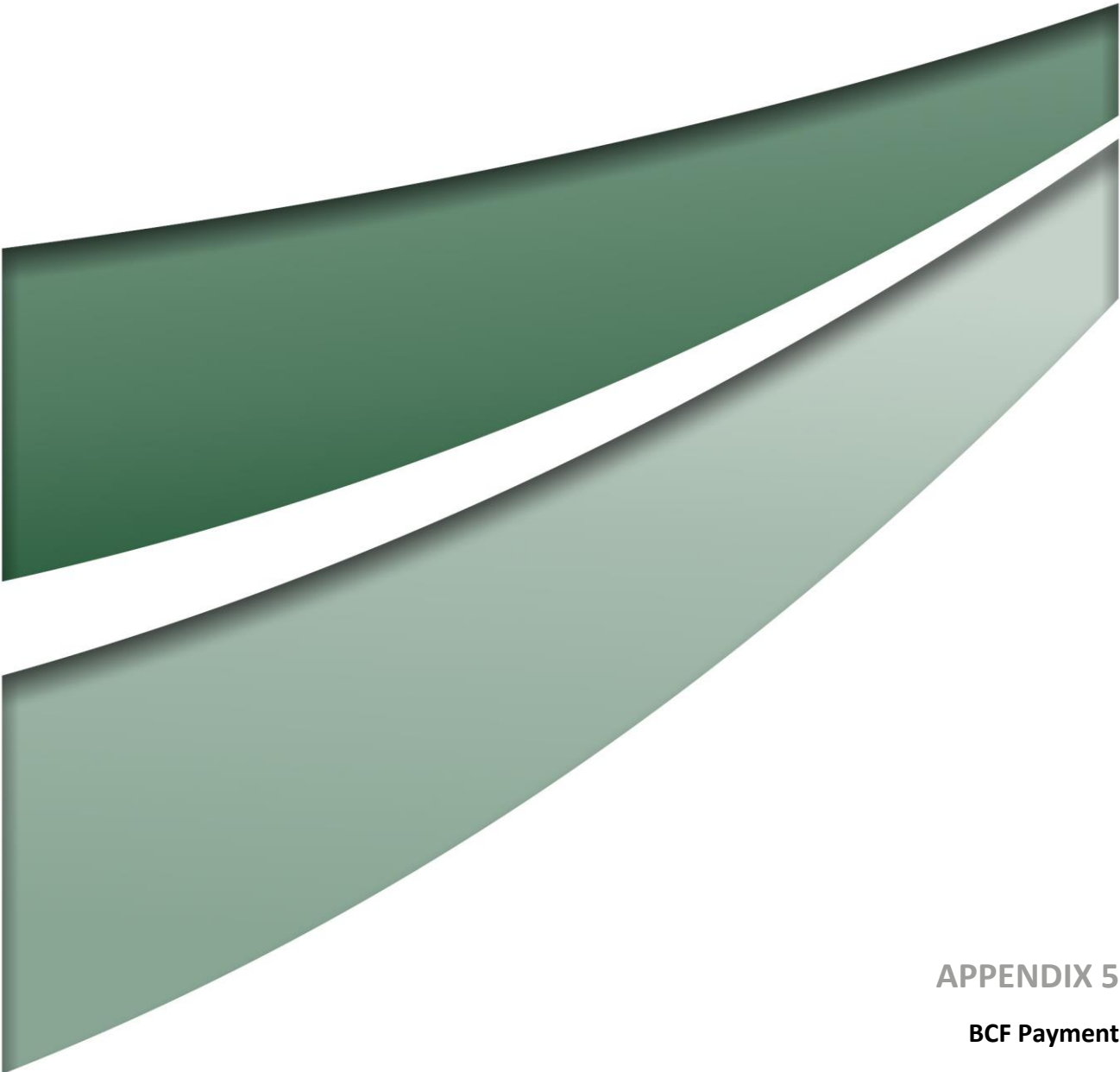
Number of species credits required	96
IBRA region	N/A

This statement was issued on 14 June 2018.

Authorised by:

 Jane Gibbs
Director, Ecosystem
Assessment & Planning

Delegate of Chief Executive Officer
Office of Environment and Heritage



APPENDIX 5

BCF Payment



Statement confirming payment into the Biodiversity Conservation Fund for an offset obligation

Pursuant to section 6.33 of the *Biodiversity Conservation Act 2016*, the NSW Biodiversity Conservation Trust confirms that the following payments have been made into the Biodiversity Conservation Fund under section 6.30(1) of the Act to satisfy an obligation to retire biodiversity credits.

Details:

Payment made by	Walker Quarries Pty Ltd
Date received	29 November 2018
Existing statutory obligation reference ¹	DA 344-11-2001
BCT Reference	BCF015

Biodiversity credit retirement obligations satisfied by payment to the Biodiversity Conservation Fund:

Biodiversity credit ID number	Biodiversity credit name	Number of credits	Cost per credit	Total payment per credit type
PCT 732	Broad-leaved peppermint- Ribbon Gum Grassy open forest in the north east of the South Eastern Highlands Bioregion	65	\$2,515.29	\$163,493.83
PCT 1093	Red Stringybark- Brittle Gum- Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	19	\$2,515.29	\$47,790.50
10586	Purple Copper Butterfly	96	626.99	\$60,191.33
Total (incl GST)				\$298,623.22 <i>GST of \$27,147.56 is included in this amount</i>

Paul Elton

Executive Director and Chief Executive

Date: 6.12.18

¹ This refers to either; a development application number for a development consent under Part 4 of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*, a State significant infrastructure approval under the previous Part 5.1 (now Part 5, Division 5.2) of the EP&A Act, a decision of a determining authority to carry out or approve the carrying out of an activity under Part 5 of the EP&A Act, or a biobank statement number or biodiversity certification number.

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