INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

DOLWENDEE QUARRY

Biodiversity and Rehabilitation Management Plan

Prepared for:
Upper Hunter Holdings
Brunkerville, NSW
2323

May 2021

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DOCUMENT CONTROL

Reference	Date	Prepared	Authorised
V0.6	May 2021	Chris Jones (IEMA) and Trevor Allen (Pitt and Sherry)	Chris Jones
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1 INTRODUCTION

1.1 Background

Upper Hunter Holdings Pty Ltd (UHH) have approval to commence works on the Dolwendee Quarry (the Quarry), a sandstone and conglomerate quarry located just north of the Golden Highway, approximately seven kilometres (km) north-west of Denman and 20 km south-west of Muswellbrook (refer to **Figure 1**). The Quarry is located in Lot 2 DP 1160936 with the haul road from the Golden Highway located in Lot 1 DP 1178562 and Lots 3 and 4 DP 1160936 (refer to **Figure 2**). The Quarry is located within the Muswellbrook Shire Council local government area where Lots 2, 3 and 4 DP 11650936 are zoned Ru1 Primary Production under the Muswellbrook Local Environmental Plan 2009 (LEP) that permits without development consent extensive agriculture on this land. The quarry and access road footprint on this land are not subject to the terrestrial biodiversity or environmental sensitive land provisions of the LEP. The Quarry will supply its materials for use in construction of local rural and regional roads.

The Quarry will operate in accordance with Development Consent (DA SSD 6519) issued by the NSW Minister for Planning on 25 November 2016 under Section 89E of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Development Consent permits the extraction and processing of up to 250,000 tonnes per annum (tpa) for a period of 21 years from the date of commencement. In addition, no more than 30 trucks can be dispatched from the site on any day.

1.2 Document History

Umwelt Australia Pty Limited (Umwelt) prepared the initial version of the Dolwendee Quarry Biodiversity and Rehabilitation Management Plan (BRMP). This document was submitted to the Department of Planning Industry and Environment (DPIE) in January 2019, with comments provided by DPIE on 20 June 2019.

SLR Consulting Australia Pty Ltd was engaged by UHH to revise and update the BRMP with this being noted as the April, July and September 2020 versions. The following sections were updated or added:

- Document History (New Section);
- Stakeholder Consultation (New Section);
- Vegetation Screening (New Section);
- Final Landform (New Section);
- Summary of Biodiversity and Rehabilitation Bonds (New Section);
- Integration between Rehabilitation and Biodiversity (New Section); and
- Preliminary Performance and Criteria (updated to include biodiversity management); and
- Updates to Reporting and Compliance Management.

There were other small updates in sections, with a track changes comment provided to DPIE for review. The update completed by IEMA has been noted as the December 2020 version. Note, there were some changes to the table of contents in the December 2020 version to allow for a better document flow.

1.3 Purpose and Scope

Schedule 3 Condition 31 of the Development Consent outlines the requirement of a Biodiversity and Rehabilitation Management Plan for the Quarry. The purpose of this Biodiversity and Rehabilitation Management Plan (BRMP) is to describe the biodiversity management strategies, procedures, controls and monitoring programs to be implemented for the management of approved biodiversity and rehabilitation impacts from the operation of the Quarry. The Quarry is going to be completed in phases, with this report covering the Phase 1 – Quarry Establishment and Road Works and Phase 2 – Quarry Operations. This initial construction phase does not include excavation or operation of the Quarry except for minor extraction for the works described below.

To be clear, this version of the BRMP is focussed on the first 3 years following commencement of development as required under Condition 31(g) of the consent.

Phase 1 includes the following works:

- Project establishment including delineation of disturbance areas and compound/laydown area construction (including car park, offices, amenities etc);
- Construction of a 2.5 kilometre long, 20 metre wide haul road traversing Lot 1 DP1178562, then Lot 3, Lot 4 and Lot 2 in DP 1160936, including associated culverts and drains;
- Golden Highway / haul road intersection construction; and
- Extraction of gravel material for construction of the haul road, intersection and compound areas.

The Stages of Phases 1 and 2 are detailed in **Table 1**, noting that this construction program is indicative only and the order in which the various stages are undertaken may change.

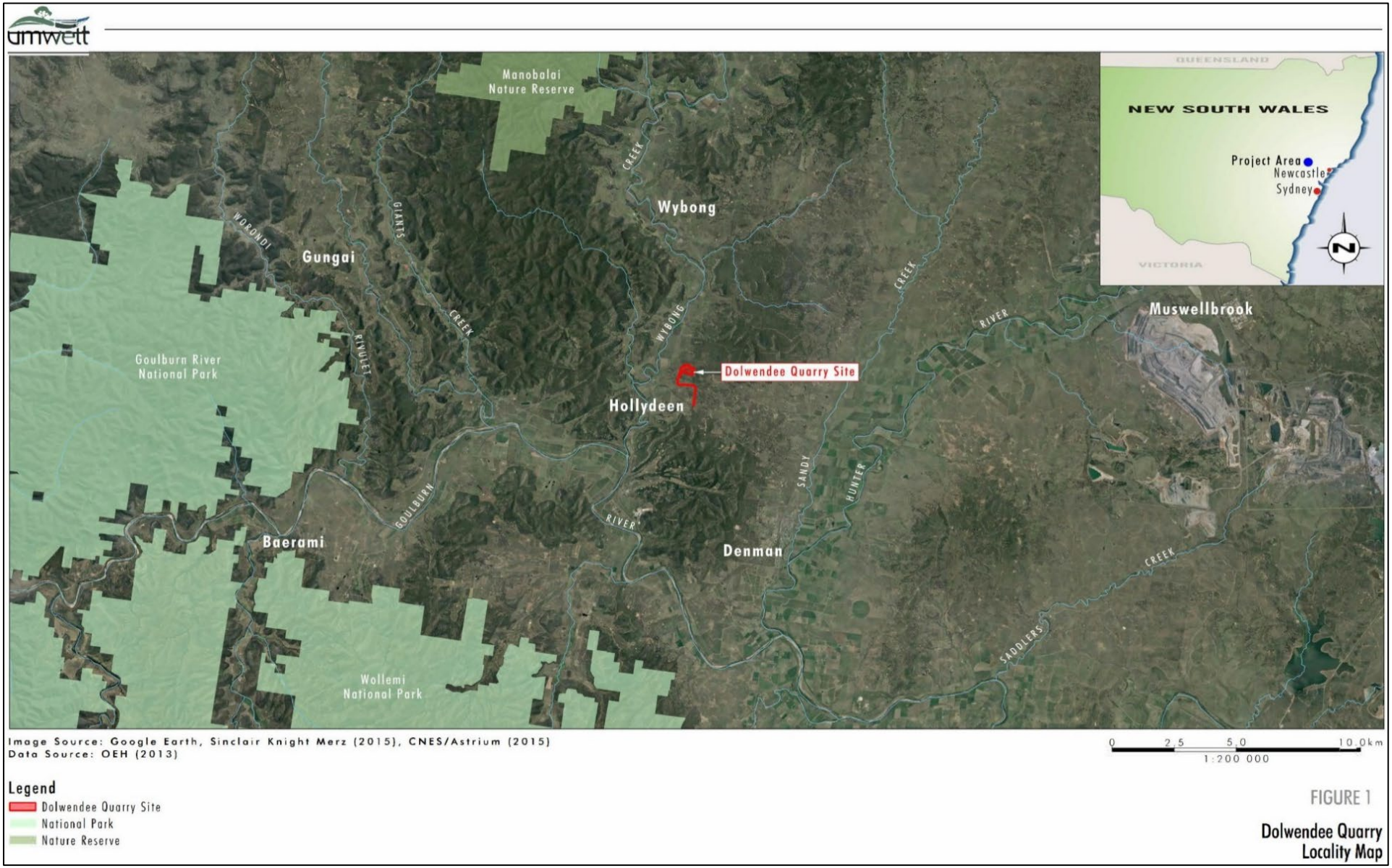


Figure 1 Site Locality

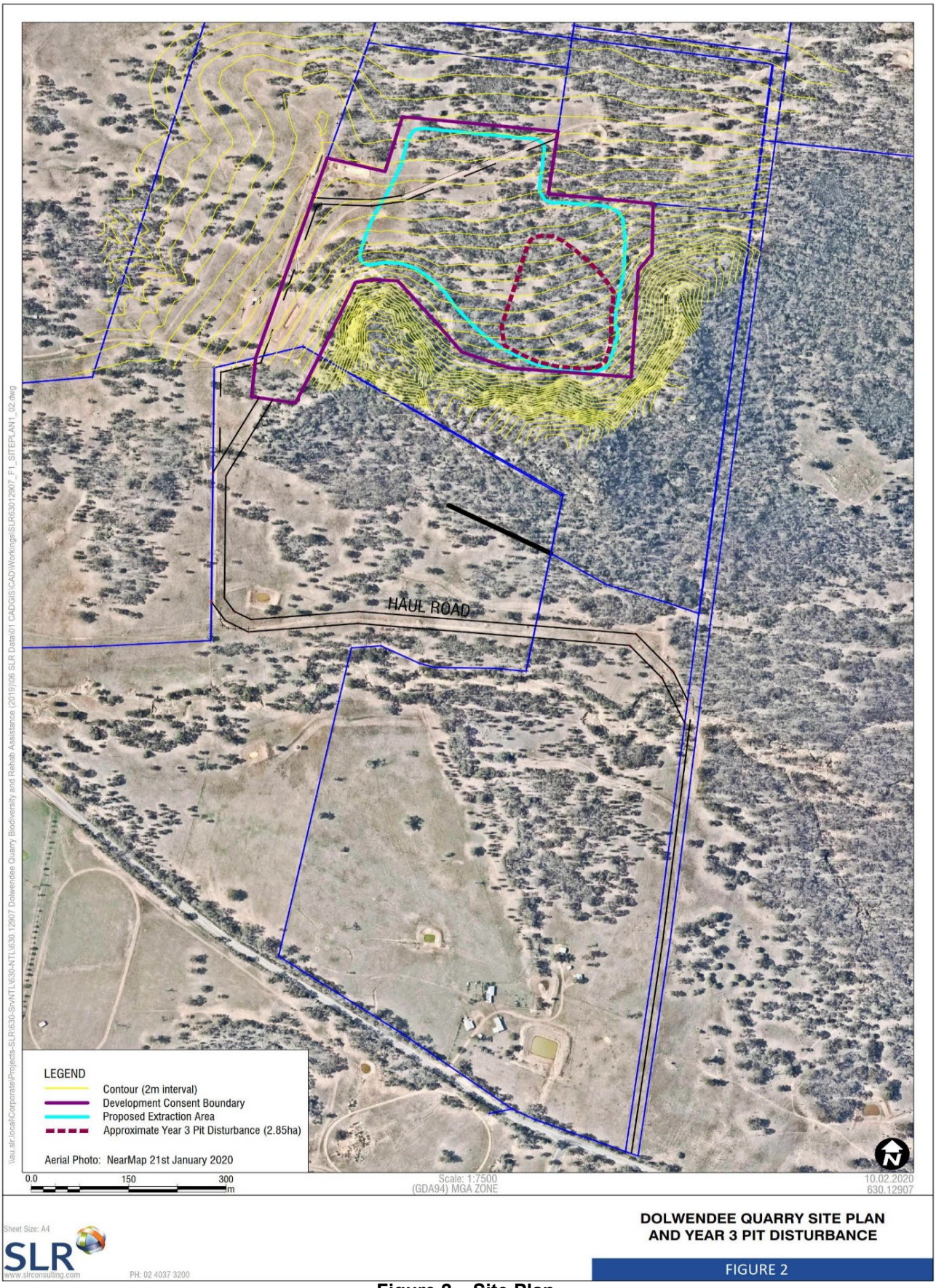


Figure 2 Site Plan

Table 1 Phase 1 and 2 Summary

Activity	Description	Construction/Operational Activities
PHASE 1 – CONSTRUCTION (PRE QUARRYING OPERATIONS)		
Stage 1		
Project area delineation and work area establishment	A car park and office adjacent to the haul/access road will be established for construction and operation. The car park and office will be located approximately 100 m south east of the quarry extraction area in Lot 2 DP 1160936 Compacted laydown and stockpiling areas will also be established. • Mark no-go zones along the haul road prior to construction works • Erect Project signage • Establish erosion and sediment controls • Topsoil stripping: - Site compound area - Initial extraction area (source gravels for haul road establishment) - Haul road (ch. 730 to ch. 1950) between Lynches Creek culvert and main quarry processing area.	• Erect signage • Define boundary of disturbance area • Installation of erosion and sediment control structures • Tree removal • Clearing of groundcover vegetation • Site grading and levelling works • Soil stripping in stages • Stockpiling
Stage 2		
Intersection Upgrades	• Mark no-go zones at the intersection of the haul road and the Golden Highway including first 40 m of the haul road • Erection of Project signage including traffic and pedestrian signage on Golden Highway, the intersection and the haul road. • Storm water management infrastructure • Traffic/Pedestrian controls	• Installation of erosion and sediment control structures • Define boundary of disturbance area • Clearing of groundcover vegetation • Soil Stripping • Site levelling works • Grading • Stockpiling • Paving of the haul road for first 40m
Stage 3		

Activity	Description	Construction/Operational Activities
Major drains and sedimentation basins	Construct table drains along haul road and major ERSED controls including sediment basin/traps	• Installation of erosion and sediment control structures • Grading • Excavation • Filing • Levelling • Compaction • Revegetation/stabilisation
Stage 4		
Culvert works to Lynches Gully and haul road	• Crossing over the mapped waterway at Lynches Gully - Foundation Pad - Base slab - Scour protection • Haul road pipe culverts	• Define boundary of disturbance area • Installation of erosion and sediment control structures • Grading • Excavation • Rip rap • Revegetation • Stockpiling • Revegetation
Stage 5		
Haul road construction (ch. 730 and ch. 1950)	• Haul road construction between ch. 730 and ch. 1950 (from Lynches Gully to the main quarry processing area) • Culvert works.	• Define boundary of disturbance area • Subgrade preparation of haul road • Fill and compact sub-base and base materials for haul road • Install table drains and culverts • Culvert headwalls • Backfilling • Paving • Revegetation
Stage 6		
Topsoil stripping of haul road between ch. 70 and ch. 730	• Topsoil stripping • Haul road (70 and ch. 730) between Lynches Gully to the intersection with the Golden Highway	• Define boundary of disturbance area • Clearing of groundcover vegetation • Site levelling • Soil stripping • Grading • Stockpiling
Stage 7		

Activity	Description	Construction/Operational Activities
Haul road construction (Lynches Gully to the intersection with the Golden Highway)	• Haul road construction between ch. 70 and ch. 730 (from Lynches Gully to the intersection of the haul road with the Golden Highway) • Culvert works.	• Subgrade preparation of haul road • Fill and compact sub-base and base materials for haul road • Install table drains and culverts • Culvert headwalls • Backfilling • Paving • Revegetation
Stage 8		
Finalise haul road and intersection	• Haul road construction between ch. 70 and ch. 730 (from Lynches Gully to the intersection of the haul road with the Golden Highway) • Culvert works.	• Subgrade preparation of haul road • Fill and compact sub-base and base materials for haul road • Install table drains and culverts • Culvert headwalls • Backfilling • Paving • Rehabilitation
Stage 9 (Source: VGT 2015)		
Site Office and Infrastructure	• A site office and three small vehicle car spaces will be provided in the south western corner of the site; • There is no provision for a weighbridge at this stage as the trucks will be loaded by a loader with scales. A wheel wash is also not required as a portion of the haul road will be sealed; • Crushers will be portable	• Construction of buildings
PHASE 2 – QUARRYING OPERATIONS		
Stage 10 (Source: VGT 2015)		

Activity	Description	Construction/Operational Activities
Pre Strip and Quarry Commencement (Yr1 0-5)	The pre-strip activities will be under-taken using a D9 dozer or equivalent. The softer weathered zone has been identified by RCA to be on average 2.5 metres below the surface. This interval will be battered back to 2 horizontal: 1 vertical as specified by RCA. It is envisaged that the dozer will rip and push down to this level. Once the dig becomes too hard the dozer will prepare drill pads and the blast hole rig will drill and prepare the site for blasting. The first blast will be a box cut blast. As part of the development of the cut, a ramp will be constructed so that haul trucks can access the quarry floor. A 30 tonne excavator (or similar) will load the 25 tonne haul trucks (or similar) which will cart raw material to the processing area. The high wall batters will be a maximum of 15 metres based upon the blast design parameters, and the geotechnical consultants will review this height. The batter slope is proposed to be 0.5 horizontal: 1 vertical as specified by RCA.	• Operation of the quarry. • Quarrying, crushing and transport of material
Stage 11 (Source: VGT 2015)		
Continuation of Quarrying (Yr 5-15)	• This stage will occur approximately 5 years from commencement, but the length of time will be dependent upon weather, and sales demand. • During this period it is proposed to turn the active face 90 degrees and align it north – south and the blast will throw material toward the east. The active blast bench will have an approximate slope of 12 horizontal: 1 vertical, toward the north approximately paralleling the existing topography. • The blast face will progress in a westerly direction • As the extraction progresses deeper the rock will become harder, blast design and high wall stability will be required to be re-examined to ensure the faces are stable and the fragmentation is appropriate for the products being developed.	• Operation of the quarry • Quarrying, crushing and transport of material

Activity	Description	Construction/Operational Activities
Stage 12 (Source: VGT 2015)		
Continuation of Quarrying (Yr 15 onwards)	During this period it is proposed to continue the quarry path in a westerly direction.	• Operation of the quarry • Quarrying, crushing and transport of material

Phase 3 will include the post operational activities. Further information regarding this stage will be completed in subsequent reviews.

1.3.1 Objectives of BRMP

The primary objective of this BRMP is to direct the short to long term management and enhancement of the biodiversity values of the Quarry and its offset, as well as provide a detailed description of the measures to be implemented to achieve this over the next 3 year period (starting from the development commencement date .

The other objectives of the BRMP are to:

- Identify and describe the areas of land that will be required to be managed in accordance with this BRMP;
- Identify the phases of development and the ongoing updating of this BRMP to reflect each phase or phases;
- Provide clear and concise instructions for the management measures to be implemented in accordance with the Development Consent Conditions to achieve the conservation management objectives and minimise the impacts of key threats;
- Provide a working schedule for the implementation of activities required from the BRMP; and
- Describe monitoring, performance evaluation and reporting procedures that are informative, practical and achievable.

Schedule 3 Condition 29 of the Development Consent identifies the Rehabilitation Objectives for the development. An update on how the site is tracking against these objectives will be provided in future Annual Reviews which is a requirement of Schedule 5 Condition 9.

2 REGULATORY REQUIREMENTS

2.1 Development Consent

Table 2 outlines the relevant conditions under SSD 6519 and where they have been addressed within the BRMP. It is noted that major site rehabilitation works are unlikely to occur during Phase 1, with rehabilitation to commence in Phase 2. Rehabilitation works within this period would be mainly limited to rehabilitation of areas disturbed temporarily during construction of the haul road.

Major rehabilitation works would occur as part of quarry closure, some 20 years or more into the future. As such many of the requirements of the approval conditions are not currently applicable and will be addressed in future updated versions of this BRMP.

Table 2 Biodiversity and Rehabilitation Related Development Consent Conditions

<table>
<tr><th>Condition</th><th>Description</th><th>Section/s Addressed</th></tr>
<tr><td colspan="3">Biodiversity Offset Strategy</td></tr>
<tr><td>27</td><td>The Applicant must implement the Biodiversity Offset Strategy, described in the EIS and shown conceptually in Appendix 5, to the satisfaction of the Secretary.</td><td>Section 3</td></tr>
<tr><td>28</td><td>Within 12 months of the date of commencement of development under this consent, 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.

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, include a Biobanking Agreement, Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.</td><td>Section 3</td></tr>
<tr><td colspan="3">Rehabilitation Objectives</td></tr>
<tr><td>29</td><td>The Applicant must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and the conceptual rehabilitation plan in Appendix 5 and must comply with the objectives in Table 4.

Table 4: Rehabilitation Objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Site (as a whole)</td><td>• Safe, stable and non-polluting
• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land</td></tr>
<tr><td>Surface Infrastructure</td><td>• Decommissioned and removed, unless otherwise agreed by the Secretary; and
• Landscaped and revegetated using native flora species</td></tr>
<tr><td>Quarry benches and pit floor</td><td>Landscaped and revegetated using native flora species</td></tr>
<tr><td>Final Void</td><td>• Minimise the size, depth and slope of the batters of the final void
• Minimise the drainage catchment of the final void</td></tr>
</table></td><td>Rehabilitation actions over the next 3 years in Section 5.2 will contribute to the objectives of the condition.</td></tr>
<tr><td colspan="3">Progressive Rehabilitation</td></tr>
</table>

Condition	Description	Section/s Addressed
30	The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation. ***Note: it is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.***	Section 5.2
Biodiversity and Rehabilitation Management Plan		
31	The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:	This BRMP
	(a) be prepared in consultation with Council and OEH;	a) Section 2.3
	(b) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless otherwise agreed;	b) Section 2.3
	(c) provide details of the conceptual final landform and associated land uses for the site;	c) Section 5.8
	(d) describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site;	d) Section 5.10
	(e) include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site, including triggers for any necessary remedial action;	e) Section 6
	(f) describe the short, medium- and long-term measures that would be implemented to:	f) Section 5
	• manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and	f - 1 Section 5.1.1
	• ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;	f) – 2 Section 1.3.1 and Section 6
	(g) include a detailed description of the measures that would 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:	g) Section 5

Condition	Description	Section/s Addressed
	1. 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 the offset area or site rehabilitation;	
	2. restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;	1. Section 5.1
	3. protecting native vegetation and fauna habitat outside the approved disturbance area onsite;	2. Section 5.1 and 5.2
	4. minimising the impacts on native fauna, including undertaking pre- clearance surveys for the quarry site, haul road and the supplementary water supply pipeline;	3. Section 5.1 (disturbance limits)
	5. establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers	4. Section 5.1
	6. ensuring minimal environmental consequences for threatened species, populations and habitats, including for the quarry site, haul road and supplementary water supply pipeline;	5. Section 5.7
	7. avoiding and minimising the spread of Myrtle Rust, Phytophthora cinnamomi (Phytophthora) and Chytrid fungus;	6. Section 5.1 (Land Disturbance Controls)
	8. collecting and propagating seed;	7. Section 5.5
	9. controlling weeds and feral pests;	
	10. controlling erosion;	8. Section 5.1.3
	11. managing bushfire risk;	
	(h) include a program to monitor and report on the effectiveness of these measures and progress against the performance and completion criteria;	9. Section 5.4 and 5.5
		10. Section 5.6
	(i) 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;	11. Section 5.11
	(j) include details of who would be responsible for monitoring, reviewing and implementing the plan.	h) Section 7 and 8 i) Controls for risks covered in Section 6.
	The Applicant must implement the approved Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.	j) - Section 8 and 9
Biodiversity and Rehabilitation Bond		

Condition	Description	Section/s Addressed
32	Within 6 months of the approval the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan (Figure 9 in Appendix 6) and relevant conditions of this consent. The sum of the bond must be determined by: (a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years; (b) calculating the cost of rehabilitating all disturbed areas of the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and (c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary. *Notes:* • *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgment of a bond in respect of the remaining expenditure.* • *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond and arrange for the completion of the relevant works.*	Bond calculations are attached in Appendix A and B. Also see Section 5.9.
33	Within 3 months of each Independent Environmental Audit (see condition 10 of Schedule 5), the Applicant must review, and if necessary, revise, the sum of the Rehabilitation and/or Conservation Bonds to the satisfaction of the Secretary. This review must consider the: (a) effects of inflation; (b) likely cost of implementing the Biodiversity Offset Strategy and rehabilitating the site (taking into account the likely surface disturbance over the next 3 years of the development); and (c) performance of the implementation of the Biodiversity Offset Strategy and rehabilitation of the site to date.	Section 5.9

Condition	Description	Section/s Addressed
	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; (b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; and • 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; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of any management measures (see (c) above); (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; (f) a program to investigate and implement ways to improve the environmental performance of the development over time; (g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan.	a) Section 4 of the management plan. Section 6.2 of EIS. Ecology Assessment for the EIS. b) Section 2 c) This documentation d) Section 5 (covers general biodiversity and rehabilitation measures) e) Section 6 and 8.5 f) Section 8 g) Section 8 h) Section 8.6

2.2 Rehabilitation and Biodiversity Related EIS Management Commitments

In accordance with Schedule 2 Condition 2 of the Consent, the Quarry must be developed and operated generally in accordance with the environmental impact assessment prepared for the development.

Table 3 summarises the safeguards and management controls relating to biodiversity and rehabilitation management that have been identified in the Environmental Assessment reports prepared for SSD 6519.

Table 3 Relevant EIS Biodiversity Commitments

Reference	Description	Section/s Addressed
Ecological Assessment Dolwendee Quarry (Umwelt 2015) – Section 6.1.1	A range of general management strategies will be used to limit impacts on native flora and fauna in the Project Area. The strategies will include: • feral animal and weed control • management of erosion and sedimentation to ensure that adjoining vegetation communities and aquatic systems are not adversely impacted	Section 5.4 and 5.5 Section 5.6
	• adaptive management, as required, if a previously unrecorded or assessed threatened species is identified in the Project Area during operations	Section 8.5
	• a robust tree felling procedure will be implemented to minimise the potential for impacts on native fauna species (including threatened species) as a result of the clearing of hollow-bearing trees.	Section 5.1
	• all personnel who will capture/handle/house and/or transport native fauna species (injured or uninjured) will be appropriately licensed under the requirements of the NSW Animal Ethics Committee.	Section 5.1
	• site personnel (particularly vehicle operators) will be briefed on fauna awareness issues and will be required to report incidents involving injury to native wildlife. Assistance from a wildlife carer or veterinarian will be sought if injured native wildlife are encountered.	Section 5.1

2.3 Stakeholder Consultation

This BRMP was prepared in consultation with the Office of Environment and Heritage – now the Biodiversity Conservation Division (BCD) and Muswellbrook Shire Council (**Table 4**). The correspondence from council and BCD on the BRMP are provided in **Appendix C** and **D** respectively.

Table 4 Original Stakeholder Summary

Department	Date Sent out by Proponent	Comments Received
BCD	11 April 2019	Email received on 4th February 2019 stating BCD will await until plan is submitted to DPIE and they then request BCD review. Comments were also received by BCD in October 2020
Muswellbrook Shire Council	11 April 2019	Comments received on 18 March 2019. See **Table 6.**
DPIE	5 April 2019	Comments received on 20 June 2019 and responses are provided below in **Table 5.** Comments received on 27 July 2020 and 9 October 2020 with the responses outlined in the tables below.

Tables 5-9 summarise the queries from DPIE, the BCD and Council and where they have been addressed by this management plan review. The most recent comments are in the earlier tables. Note, the table of consent has changes, hence please refer to the 'MP Section Reference' column.

Table 5 DPIE Feedback and Response to 15 January 2021 Comments

DPIE comments on 15th January 2021		
Comment	**Response**	**Section Covered**
• Condition 29, Schedule 3 – the response is to this condition remains inadequate. The condition states that the Applicant must rehabilitate the site to the satisfaction of the Secretary, and that this rehabilitation must be generally consistent with the EIS:	UHH disagree with this query. The Draft BRMP has been prepared under Condition 31 for the first 3 year period following commencement of operations. *Condition 29 Rehabilitation Objectives* concerns **final** rehabilitation of site. There is no question of rehabilitating the site with UHH committed to this. It should also be noted that there is Rehabilitation Bond under Condition 32. Final rehabilitation will be completed at site. It is just unlikely to occur in the first 3 years due to quarry planning as well as the benches still being required for access. The benches will likely not be fully formed at Year 3.	Table 2 amended. *Rehabilitation actions over the next 3 years in Section 5.2 will contribute to the objectives of the condition.*
O The wording "There are two areas where progressive rehabilitation could be possible" does not address the requirements of the condition. Rehabilitation must be possible and must be carried out.	UHH Agree. See amended wording that hydromulching will be undertaken in areas. It should be noted that benches will not be left unrehabilitated at closure.	Table 6: DPIE R1 amended. DPIE R3 amended. Section 5.2 amended.
O The statement that "once a bench is not required for operations the site will complete a risk assessment to assess whether rehabilitation of benches can be completed" also does not satisfy the condition and is not an acceptable approach. The Applicant must rehabilitate the site. The quarry should be designed with final rehabilitation in mind, and therefore, the aim should be to create benches that are safe to rehabilitate.	UHH Agree. *Rehabilitation* is defined by the consent "*The restoration of land disturbed by the development to a good condition and for the purpose of establishing a* ***safe, stable*** *and non-polluting environment".* Wording now states: *Once a bench is no longer required for extraction or operations, it is to be made safe*	Section 5.2 amended.

DPIE comments on 15th January 2021		
Comment	**Response**	**Section Covered**
• Condition 30, Schedule 3 states that the Applicant must rehabilitate the site progressively. Stating that there are "two areas where progressive rehabilitation could be possible" and then stating that "the site will complete a risk assessment to assess whether rehabilitation of benches can be completed" does not satisfy this condition. It is understood that final rehabilitation will not occur in the near future, however, this condition does not refer to final rehabilitation. It instead refers to ongoing, progressive rehabilitation aimed at minimising the total area exposed and therefore minimising the potential for dust generation during operation (throughout the life of the quarry, not just at closure). Hydromulching exposed areas and benches and/or establishing/maintaining vegetative cover is an example of acceptable temporary, progressive rehabilitation that will aid in minimising dust emissions from the site. This condition also notes that it is accepted that "parts of the site that are progressively rehabilitated may be subject to further disturbance in future." The progressive rehabilitation, and final rehabilitation should be consistent with Appendix 6 of the development consent.	Partly agree. Condition 30 **also** contains the terms *reasonably practicable* and *reasonable and feasible.* *Reasonable* is defined in the consent. *"Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements."* Final rehabilitation is not yet considered in detail as BRMP is for next 3 years. Final rehabilitation will be completed at site. It is just unlikely to occur in the first 3 yrs due to quarry planning as well as the benches still being required for access.	Section 5.2 amended.
• Suggest removal of phrases throughout the document including "where practical' and "could be possible" and replace with phrases such as "will be carried out".	Agree. There is however one line that remains under Section 5.2.2. *Where practical, topsoil will be direct-returned to disturbed areas available for revegetation during the construction of Phase 1 and 2 of the Quarry.*	Edits made throughout under track changes.
• Suggest changing Section 5.7. The condition requires the following: *Condition 31, Schedule 3 – The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:* *g. include a **detailed description of the measures that would 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:* *• **establishing vegetation screening** to minimise the visual impacts of the site on surrounding receivers;*	UHH believe that activities proposed for the next three years are covered are Section 5	Section 5
The key words for the condition are in bold above. The condition requires inclusion of a detailed description of measures/ procedures to be implemented over the next 3 years for establishing a vegetation	**Vegetation Screening** UHH Disagree.	Section 5.7

DPIE comments on 15th January 2021		
Comment	**Response**	**Section Covered**
screen. To state that there is no vegetation screening proposed at all for the project under any circumstance, and that the project is "justifiably non-compliant" is not an appropriate response. This condition could be satisfied simply by stating that there are no plans to establish vegetation screening during the first 3 years of the project as there is no operation to screen at this stage. However, should the need to screen the operation arise in the future (as a result of impacts to sensitive visual receivers), detailed procedures would be developed and implemented.	"*to the satisfaction of the Secretary*" indicates facts, reason and judgement would be applied to establish if the condition has been or can be satisfied. This generic condition cannot be implemented as there is simply no guidance from the EIS where visual impacts need to be mitigated. i.e there were no sensitive visual receivers identified. If there are no sensitive visual receivers then there is no purpose for visual screening. It will not achieve any screening. UHH believe the suggested approach is not practical. There is a disconnect between EIS and Condition 31(g) and under the consent, the Secretary has the capacity to be satisfied accordingly.	
• *Regarding the integration of Rehabilitation and the Biodiversity Offset, Condition 31 (d), Schedule 3 requests that the applicant 'describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site'. Section 5.10 of the BRMP notes that "There is bushland between the Project Application Area and the proposed biodiversity offset area, with this assisting with the movement of fauna between the two areas". More information is required regarding the management practices that will be utilised to ensure that this corridor is maintained, enhanced and protected to enable integration between rehabilitated areas and the biodiversity offset.*	UHH Disagree. Condition 31(d) can be interpreted spatially, temporally or like for like (eg management). BRMP takes the former. Section 5.10 now states: *Key learnings from inspections and monitoring of offset areas will assist informing future rehabilitation practices with the objective that the final rehabilitation areas have or are beginning to have, floristic characteristics similar to Plant Community 905 in the offset area.*	Section 5.10
• *Section 8.3 states that 'There are no specific development consent conditions relating to the reporting of non-compliances'. This is incorrect. Condition 2(g), Schedule 5 requires that:*	Agreed. Section amended.	Section 8.3
'The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines and include:	Noted.	
(g) a protocol for managing and reporting any:		
non-compliances with statutory requirements'		
The Annual Review must also report on details of non-compliances as outlined in condition 9 (c), Schedule 5.	Noted.	

DPIE comments on 15th January 2021		
Comment	**Response**	**Section Covered**
• In response to BCD – R9, it is indicated that an ecological baseline survey will be completed in the offset prior to quarry commencement and then monitoring will be completed every 5 years. This has also been added to Section 7, however Section 8 suggests that biodiversity monitoring results will be provided in the Annual Review document. Section 5.4 also suggests that pest species will be monitored and reported annually as part of general biodiversity monitoring. A 5 yearly monitoring regime is inadequate and too infrequent for this stage of the project. Biodiversity monitoring should be conducted annually and across all seasons.	Monitoring is now proposed every two years. Section 7.1 states: *Following the completion of the ecological baseline survey, UHH will undertake formal ecological monitoring every two years. In the intervening years, the site manager will qualitatively monitor the progress, area and status of temporary and permanent rehabilitation areas in the annual report under Schedule 5 Condition 9.*	Section 7.1
• Ensure all recommendations from BCD's review have been adequately addressed. For example, the response to BCD – R3 still does not demonstrate integration of rehabilitation and the Biodiversity Offset (see comments regarding condition 31(d), Schedule 3), and the figures referred to in BCD – R13 are still grainy and difficult to read even though they have been reinserted as JPEG files.	Disagree – refer to response to Condition 31(d). Disagree - BCD comments may be true but DPIE did not raise this issue prior. Consent doesn't require final BRMP to be submitted to BCD. Regardless, clear figure attached.	Figure 4 reinserted.

Table 6 DPIE Feedback and Response to 9 October 2020 Comments

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
DPIE – R1	**Condition 29 of Schedule 3** – Provide information regarding conceptual rehabilitation plans and rehabilitation milestones. The providing of information regarding temporary stabilisation and potential bench rehabilitation is not an adequate response.	There are two areas where progressive rehabilitation is proposed with these being: <u>Temporary stabilisation</u> (within first three years) – hydromulching will be used in areas that were disturbed as part of the initial clearing that remain as infrastructure. These will include areas such as bunds and would be completed within one month of disturbance occurring. UHH will liaise with a specialist regarding the hydromulching seed mix, with the goal to be using native grass seed.	Section 5.2

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
		Benches (After the first three years) – Once a bench is no longer required for extraction or operations, it is to be made safe (a consideration during creation of the bench and adjacent faces and subject to a risk assessment) then rehabilitation would be completed during the operational phase as per Section 5. There is no final rehabilitation of benches planned in the first three years (ie. final shaping, topsoil and seeding)., therefore hydromulching will be used for benches during these thirst three years. All benches at closure will need to be rehabilitated using a seed mix consistent with PCT 905.	
DPIE – R2	**Condition 30 of Schedule 3** – Provide information regarding progressive rehabilitation. Stating that rehabilitation may be done if it is deemed safe, following a risk assessment, is not an adequate response. Quarry design should allow for a safe and stable landform that can readily be rehabilitated in a progressive manner throughout the life of the operation.	See DPIE – R1 response regarding benches.	Section 5.2
DPIE – R3	**Condition 31(d) of Schedule 3** – Provide information regarding how implementation of the Biodiversity Offset Strategy would be integrated with the overall site rehabilitation. Stating that there will be no rehabilitation until close to quarry closure and referring to weed and pest management is not an adequate response.	There will be not be significant final rehabilitation of the quarry until close to quarry closure. There will be some co-ordinated weed and pest management in the quarry and the offset areas during the life of the operation with this outlined in Section 5.4 and 5.5. Following the completion of the ecological baseline survey, UHH will undertake formal ecological monitoring to be completed every two years. In the intervening years, the site manager will qualitatively monitor the progress, area and status of temporary and permanent rehabilitation areas in the annual report under Schedule 5 Condition 9. Annual and seasonal ecological monitoring and reporting as recommended by DPIE would not be reasonable or feasible in terms detecting change sufficient to meaningfully informing	Section 5.10

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
		modifying management practices. A combined annual qualitative and two year quantitative monitoring program is a more reasonable and feasible monitoring program.	
DPIE – R4	**Condition 31(e) of Schedule 3** – Update tables and sections as per the requests made in the Review conducted by Sarah Clibborn dated 16 July 2020. Provide quantitative measures regarding water quality criteria for rehabilitated areas.	Reference to the criteria within the Soil and Water MP have been added to Table 11 (Section 6).	Section 6
DPIE – R5	**Condition 31(f) of Schedule 3** – Provide information addressing the comments in the Review conducted by Sarah Clibborn dated 16 July 2020. The information provided thus far does not adequately address the requirements of this condition.	No change required. Discussions were had about the fencing and signage and this is adequate. Progressive rehabilitation commitments will cover this.	Section 5.2 – Progressive Rehabilitation
DPIE – R6	**Condition 31(g) of Schedule 3** – Information was requested regarding vegetation screening. Your response indicates that this has been addressed in previous comments to the Department. Please provide evidence of this correspondence as an Appendix to the BRMP and refer to it in the relevant section/s.	Additional information has been provided, including details of discussions between DPIE and environmental consultants from Pitt and Sherry.	Section 5.7
DPIE – R7	**Condition 31(i) of Schedule 3** – Provide further information in Table 10. Information provided to date refers to completion criteria for the Offset Area and does not sufficiently address or satisfy the condition. This condition requires identification of the potential risks and contingency measures for the successful implementation of the Biodiversity Offset Strategy.	No change required. Its covered already. See wording in Section 6: *A risk that is not covered under Table 11 and 12 relates to funding to complete biodiversity and rehabilitation management. Funding will be provided for the Project to satisfy the implementation of the offset bond and rehabilitation bond.*	Section 6
DPIE – R8	**Condition 32(c) of Schedule 3** – This condition requires the employment of suitably qualified experts to verify of cost calculations to the satisfaction of the Secretary. Providing	This will be provided following the submission of this report. Noting this is not required until *"Within 6 months of the date of approval of the Biodiversity and Rehabilitation Management Plan"*	Section 5.9

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	consultants' names and stating that they have past experience does not satisfy this condition. Please provide evidence that the Secretary is satisfied with, and approved, these consultants.		
DPIE – R9	**Condition 32(g) of Schedule 3** – The response to the request made in the Review conducted by Sarah Clibborn dated 16 July 2020 does not address the requirement of the condition. Please provide more information in Section 8 as previously requested.	This is a typo from DPIE. This condition actually refers to Schedule 5 Condition 2 g) – minor change required. It has been changed to incident/non – compliance response.	Section 8.3.

Table 7 BCD Feedback and Response to 16 October 2020 Comments

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
BCD – R1	**More details are required of how the proponent will secure the biodiversity offset** Section 3.1 of the Biodiversity and Rehabilitation Management Plan (BRMP) prepared by SLR Consulting Australia Pty Ltd (dated 2 September 2020) has the commitment from the proponent to provide a suitable arrangement for securing the biodiversity offset on Lot 1 in Deposited Plan 1160936. Schedule 3, Condition 28 of the consent provides 12 months from the commencement of development for the offset to be secured. The Biodiversity Conservation Trust is the lead agency for securing biodiversity offsets, and the process may take more than 12 months to be completed. **Recommendation 1** BCD recommends that BRMP includes details of how the proponent will secure the biodiversity offset on Lot 1 DP 1160936 within 12 months of commencement.	UHH will be engaging an ecologist to assist with implementing the 'Security of Offsets' under Schedule 3 Condition 28 of the Development Consent . The condition requires the proponent will secure the biodiversity offset on Lot 1 DP 1160936 within 12 months of commencement. See link to the offset guidelines. https://www.bct.nsw.gov.au/biodiversity-offsets-program	Section 3.1
BCD – R2	**On-going rehabilitation is required in order to meet consent conditions** Sections 2.1 and 5.10 of the BRMP state that major rehabilitation works would not occur until 20 years or more into the future, associated with quarry closure; but this not in agreement with Schedule 3, Condition 30 of the consent. **Recommendation 2** BCD recommends that the final version of the BRMP includes details of the early and progressive implementation of rehabilitation.	Section numbers of changed now. Section 5.2 outlines the progressive and final rehabilitation. This provides further details about temporary stabilisation, rehabilitation of benches and remaining areas over the next three years and beyond.	Section 5.2
BCD – R3	The integration between rehabilitation and biodiversity needs to be explained Section 5.10 'Integration between Rehabilitation	Weed and pest management will continue in both areas over the next three years.	Section 5.10

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	and Biodiversity' does not describe how these two aspects of the project are linked. For example, how will rehabilitation of the site be done to favour particular local threatened species? What is the planned use of the site following cessation of quarrying activities? How does rehabilitation of the quarry site relate to the Biodiversity Offset land to the north east? **Recommendation 3** BCD recommends that the BRMP includes details that link rehabilitation actions and objectives to the Biodiversity Offset Strategy.	Future ecological monitoring will be completed in both offset and rehabilitation areas. Key learnings from inspections and monitoring of offset areas will assist informing future rehabilitation practices. The final rehabilitation seed mix will be consistent with some of the species from *PCT HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter.* For the next three years hydromulching of the benches will be completed. For final rehabilitation refer to Figure 4 in this management plan. It illustrates the rehabilitation of the different components of the site at final rehabilitation. Progressive final rehabilitation will contribute to rehabilitation outcomes in Figure 4.	
BCD – R4	**Topsoil stockpiles should be managed to preserve local biodiversity values** Section 5.2.3 of the BRMP summarises topsoil management planned for the site and identifies the stages of development likely to require soil stockpiling in Table 1 'Phase 1 and 2 Summary'. No details have been provided of the 'suitable cover crop' that would be used for soil stockpiles more than three months old. There is the risk that cover crops of species such as Rhodes Grass (*Chrloris gayana*), Couch (*Cynodon dactylon*) or African Lovegrass (*Eragrostis curvula*) could act as weeds that inhibit regeneration when the topsoil is respread. **Recommendation 4** BCD recommends that topsoil piles more than three months old are sown with a cover crop of native groundcover species found	Note, Section 6.6.11 of the EIS states that pasture seed mix could be used for grassland. *Stockpiles should be trimmed, scarified and immediately sown with permanent pasture species to reduce erosion and minimise weed establishment* We have however updated Section 5.2.3 to state: *Stockpiles to be kept longer than 3 months (i.e. approximately how long it will take to establish a stable vegetative cover) will be sown with a suitable cover crop of native grass seeds to minimise soil erosion and invasion of weed species. This will assist with natural regeneration of native seeds in the soil stockpiles.*	Section 5.2.3

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	in the Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter.		
BCD – R5	**More details are required on the plant species mix to be used in Landform Shaping** Section 5.2.2 'Landform Shaping' states that disturbed areas outside of the quarry that are not planned to be retained in the final landform will be ripped and revegetated with either native species or pasture species as per the 'Blue Book'. BCD recommends that the native species chosen are species found in Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter. The 'Blue Book' (Managing Urban Stormwater: Soils and Construction by Landcom (2004)) is written primarily for urban areas where the use of a largely exotic pasture mix to stabilise landforms is more appropriate. However, the Dolwendee Quarry Site is within a large remnant of primarily native vegetation, so care is needed when adding exotic plants to the site, where they may become weeds. **Recommendation 5** BCD recommends that the native species used in Landform Shaping are species from Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter. If any pasture species are also used, then BCD recommends that they are species that have no chance on spreading to adjacent areas.	A PCT HU905 seed mix will be used at site for longterm rehabilitation at site. Section 5.2.2 has been removed as this information is covered in other sections, including Section 5.8 – Final Landform.	See Section 5.1.3 for seed mix and Section 5.8 for Final Landform.
BCD – R6	**Seed and propagule collection from local plants should follow Florabank guidelines** Section 5.2.4 'Direct Seeding and Planting' states that seeds and plant materials to augment rehabilitation will be sourced locally, but few details of how this will be done are provided. BCD recommends that Florabank guidelines are followed to	Guidelines have been referenced. Section 5.2.3 has been added in have: *Seed will be collected and propagated for rehabilitation. This would be completed in accordance with the advice of an ecologist/bush regenerator. Details of collection and propagation*	Section 5.2.3

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	ensure that current best-practice seed and propagule collection is applied. The Florabank guidelines are available at https://www.greeningaustralia.org.au/publications/ **Recommendation 6** BCD recommends that the native species propagule collection for the project follows Florabank guidelines.	*would be included in the Annual Review. In October 2020, BCD recommended that seed collection and propagation is completed as per the Florabank guidelines.* https://www.greeningaustralia.org.au/publications/ *UHH will inform the ecologist/bush regenerator that these guidelines are to be used.*	
BCD – R7	Preliminary Performance and Completion Criteria require measurements for vegetation composition, function and structure Table 9 'Preliminary Performance and Completion Criteria for Rehabilitation Areas' and Table 10 'Completion Criteria for Offset Area' do not include measurements of vegetation composition, function or structure. BCD recommends that those aspects are added to Tables 9 and 10. That would enable those features to be tracked over time. This would best ensure that the rehabilitation and the management of remnant native vegetation achieves the required outcomes in a timely and cost-effective way. **Recommendation 7** BCD recommends that Table 9 and Table 10 include vegetation composition, function and structure measurable performance and completion criteria.	Note, Section 7.1 now states: *"Analogue sites will be selected as part of the ecological monitoring program, with these to be developed based on the advice of the ecologist".* Table 11 (Rehabilitation Criteria) in Section 6 has been updated, with the Performance Criteria being: *Key BAM rehabilitation criteria for vegetation, composition and structure are generally consistent with analogue monitoring sites based on the ecological monitoring program.* Table 12 (Offset Criteria) in Section 6 has been updated, with the Performance Criteria being: *Key BAM offset criteria for vegetation, composition and structure are generally consistent with analogue monitoring sites based on the ecological monitoring program.* There are then triggers and actions.	Section 7.1 and 6

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
BCD – R8	**Management of rehabilitation areas should follow best-practice guidelines** Table 9 covers only four aspects of rehabilitation (weeds and pests, soil, landform and water) which therefore miss other aspects that influence the success of rehabilitation. Current best practise for ecological rehabilitation is defined in the 'National standards for the practice of ecological restoration in Australia' [https://www.seraustralasia.com/standards/National%20Restoration%20Standards%202nd%20Edition.pdf], and describes ecological rehabilitation through six ecosystem goals (species composition, structural diversity, ecosystem function, external exchanges, absence of threats, and physical conditions), each with three sub-attributes. **Recommendation 8** BCD recommends that the management and monitoring of ecological rehabilitation follows the 'National standards for the practice of ecological restoration in Australia'.	The Development Consent does not refer or require this requirement. This guideline has not been referenced. The management plan has specifically been prepared to cover the next three years of biodiversity and rehabilitation management and then provide conceptual information following that three year period. Rehabilitation and offset monitoring will be completed as per the BAM, with this outlined in Section 7.1.	See Section 7 for monitoring.
BCD – R9	**Preliminary Performance and Completion Criteria for rehabilitation areas and the biodiversity offset require tangible trigger points set at appropriate levels** Table 9 'Preliminary Performance and Completion Criteria for Rehabilitation Areas' and Table 10 'Completion Criteria for Offset Area' include poorly defined targets and trigger points, such as the use of undefined terms like 'increased', 'decline', and 'significant'. These relatively defined thresholds and goals are difficult to implement and interpret. BCD recommends that quantitative criteria are set, that follow the 'SMART' principles (i.e. specific, measurable, attainable, relevant and time-bound), so that trigger points, rehabilitation milestones, and completion criteria are clearly measurable, and allow for the quick use of adaptive management, if needed.	It's too early have detailed smart criteria. Additional ecological monitoring is required at both the offset area and the main site to determine SMART criteria. SMART criteria can be developed for the next iteration of the BRMP. There has however been new criteria added vegetation, composition and structure (see BCD – R7). If SMART criteria at the moment were to be developed they would not be site specific or based on science.	Table 11 and 12 (Section 6) Section 7 for monitoring.

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	Recommendation 9 BCD recommends that the performance measures, trigger points for adaptive management, and completion criteria in Table 9 and Table 10 follow 'SMART' principles.	Section 7.1 of the BRMP outlines that - *An ecological baseline survey will be completed in the offset area prior to quarry commencement and then monitoring is to be completed every two years.*	
BCD – R10	**Ecological monitoring requires consideration of vegetation composition, function and structure** Chapter 7 'Ecological Monitoring' does not include details of vegetation monitoring. BCD acknowledges that such details are planned to be included in a latter version of the BRMP. However, the means of measuring and monitoring vegetation is available now, through the implementation of the Biodiversity Assessment Method [https://www.environment.nsw.gov.au/topics/animals-and plants/biodiversity/biodiversityassessment- method]. **Recommendation 10** BCD recommends that the monitoring of flora and fauna on site follows the Biodiversity Assessment Method.	BAM will be used for the baseline ecological monitoring and at this point future ecological monitoring. An ecologist will engaged to develop this program.	Section 7
BCD – R11	**Weed and pest monitoring requires collection of data on reproductive state and numbers of individuals to determine population trends** Chapter 7 'Ecological Monitoring' provides a checklist of some of the data to be monitored about weeds and pests on the project site. BCD notes that this is not an exhaustive list, but recommends that the following details are also recorded: □ Reproductive state (e.g. juvenile, mature, in flower, in fruit / with young) □ Numbers of individuals □ Numbers of individuals in each reproductive state. **Recommendation 11**	Noted. New sentence added Section 7. *The BCD has recommended (see Section 2.3) that additional information is included about recording of weeds as part of ecological monitoring. This will include:* • *Reproductive state (e.g. juvenile, mature, in flower, in fruit / with young);* • *Numbers of individuals; and* • *Numbers of individuals in each reproductive state.*	Section 7

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
	BCD recommends that the weed and pest species monitoring gathers data to help determine if local populations are reproducing, and trends in their population.		
BCD – R12	**Background data behind monitoring provides more meaning to monitoring results** Chapter 8 'Reporting and Compliance Management' describes that a summary of biodiversity monitoring results will be provided in the Annual Review for the project, and that the Annual Reviews and regular reports of environmental performance will be posted on the project's website. The presentation of the background data behind the monitoring, such as the flora species found and their cover and abundance scores, enables monitoring results to be better understood, particularly by seeing which species are having the biggest influence of site variables, and whether any large changes are likely if short-lived species (such as some species of Acacia) are present. This in turn helps identify if rehabilitation issues may be present, and whether rehabilitation outcomes are likely to be met. **Recommendation 12** BCD recommends that all field data collected in the rehabilitation areas is provided in the Annual Review.	Agreed. Section 7.1 now states: *A summary of the latest biodiversity monitoring results will be provided in the Quarry Annual Review, with any ecological/rehabilitation monitoring reports attached. Information about inspections will also be included.*	Section 7.1
BCD – R13	**All details in Figure 4 needs to be clear and easily read** Figure 4 'Conceptual Rehabilitation Plan/Final Landform' in the Draft Biodiversity and Rehabilitation Management Plan has text that is small, grainy and often hard to read. It does not have a legend to explain the colours applied in the map. BCD recommends that this map has text that is easy to read, clear symbols, and a legend. **Recommendation 13** BCD recommends that Figure 4 is redrawn so that all text is clear and legible and that it has a legend that explains the meaning behind the colours used.	Figure to stay in the document. It is now clearer as it has been put in as a JPEG. Information about colours has been added.	Section 5.8

Aspect Number	Comment from Government Department	Comment from UHH	MP Section Reference
BCD – R14	**References to OEH as a current agency need to be changed to BCD** The BRMP includes 13 references to the Office of Environment and Heritage (OEH). References to the current agency, where it pertains to feedback on the BRMP in Table 5, should be changed to Biodiversity and Conservation Division (BCD). **Recommendation 14** BCD recommends that refences to 'OEH' are updated to the current agency titles.	OK. Change has been made.	Throughout

Table 8 DPIE Feedback and Response to July 2020 Comments

Biodiversity and Rehabilitation Management Plan – Schedule 3, Condition 31	Satisfactory (Yes/No/Partial)	Comment	Action Requested from DPIE	UHH Response/Section Reference
The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:	-	N/A	N/A	Nil
(a) be prepared in consultation with Council and OEH;	Partial	Partial The BRMP was referred to Council and BCD for comment. Please confirm whether any further comments were provided by Council, following email correspondence dated 11 April 2019.	Finalise consultation with Council and document the outcomes in the BRMP.	Section 2.3
(b) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless otherwise agreed;	Satisfied	N/A	N/A	Nil
(c) provide details of the conceptual final landform and associated land uses for the site;	No	Section 2.0 indicates that the final landform will be addressed in future iterations of the BRMP. The Department considers that this is a foundational component of the BRMP and should be included in the Stage 1 document.	Update the plan to include details of the conceptual final landform and consult further with Council as required.	Section 5.8 has been added.
(d) describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site;	No	Section 2.0 indicates that this requirement will be addressed in future iterations of the BRMP. The Department considers that this should be addressed in the Stage 1 document, noting that the integration of the offset and	Note the comments and amend the plan accordingly	Section 5.8 has been prepared. Separate Rehabilitation and Conversation Bonds have been prepared to cover Schedule 3 Condition 32 and is attached as Appendix A and B. Also see

Biodiversity and Rehabilitation Management Plan – Schedule 3, Condition 31	Satisfactory (Yes/No/Partial)	Comment	Action Requested from DPIE	UHH Response/Section Reference
		rehabilitation strategies can be further developed in future iterations of the BRMP. Section 3.2 states that the implementation of the Biodiversity Offset Strategy will occur following the commencement of initial quarrying activities. This appears to conflict with Section 3.1 and condition 28 of Schedule 3.		Section 5.9.
(e) include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site, including triggers for any necessary remedial action;	Partial	Partially satisfied – see Section 6. However: • no performance or completion criteria are provided in relation to the biodiversity offset area; • the 'soil' and 'landform' criteria lack context as there is no discussion regarding rehabilitation works and no supporting figures are provided; and • the 'water' trigger needs to be more specific (ie what is 'poor quality runoff'?)	Note the comments and amend the plan accordingly	Section 6 has been updated for criteria. Section 5.8 provide context for Landform Shaping. Section 5.2.2 provide context for topsoil management. Water quality criteria has been updated.
(f) describe the short, medium and long-term measures that would be implemented to: • manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and • ensure compliance with the	Partial	• Not satisfied – to be included in the Stage 1 document. • Not satisfied – to be included in the Stage 1 document.	Note the comments and amend the plan accordingly	Further information regarding remnant areas added - Section 4. and 5.1. Further information on objectives provided in Section 1.3.1.

Biodiversity and Rehabilitation Management Plan – Schedule 3, Condition 31	Satisfactory (Yes/No/Partial)	Comment	Action Requested from DPIE	UHH Response/Section Reference
rehabilitation objectives and progressive rehabilitation obligations in this consent;				
(g) include a detailed description of the measures that would 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: • 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 the offset area or site rehabilitation;	Partial	The Department also notes that the Biodiversity and Rehabilitation Management Bond (condition 32 of Schedule 3) is triggered by the approval of the BRMP (even if it only relates to initial construction works). The BRMP, in its current form, does not provide sufficient detail to enable these costs to be calculated. • Satisfied – see Section 5.1	Note the comments and amend the plan accordingly	Progressive rehabilitation over the next three years is outlined in Section 5.2. Separate Rehabilitation and Conversation Bonds have been prepared to cover Schedule 3 Condition 32 and are attached as Appendix A and B. Also see Section 5.9.
• restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features; • protecting native vegetation and fauna habitat outside the approved disturbance area onsite;	Partial	• Not satisfied – to be included in the Stage 1 document. • Satisfied – see Section 5.1.1		Section 5 covers the biodiversity and rehabilitation management process over the next three years.

Biodiversity and Rehabilitation Management Plan – Schedule 3, Condition 31	Satisfactory (Yes/No/Partial)	Comment	Action Requested from DPIE	UHH Response/Section Reference
• minimising the impacts on native fauna, including undertaking pre-clearance surveys for the quarry site, haul road and the supplementary water supply pipeline; • establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers; • ensuring minimal environmental consequences for threatened species, populations and habitats, including for the quarry site, haul road and supplementary water supply pipeline; • avoiding and minimising the spread of Myrtle Rust, *Phytophthora Cinnamomi* (Phytophthora) and Chytrid fungus; • collecting and propagating seed; • controlling weeds and feral pests; • controlling erosion; • managing bushfire risk;		• Satisfied – see Section 5.1.1 • Not satisfied – the BRMP should consider the need for vegetation screening during the first 3 years of the project, including initial construction works. • Satisfied – see Section 5.1.1 • Not satisfied – to be included in the Stage 1 document. • Satisfied – see Section 5.2 • Satisfied – see Sections 5.3 and 5.4 • Satisfied - Section 5.5 • Not satisfied – to be included in the Stage 1 document.		Section 5.7 covers vegetation screening. Section 5.5 covers plant disease management. Section 5.11 covers bushfire risk.
(h) include a program to monitor and report on the effectiveness of these measures and progress against the performance and completion criteria;	Yes	Satisfied – see Section 7. However, there appears to be a conflict between Sections 5.2.1, 5.3 and Table 6.1 regarding the frequency of weed inspections (ie monthly or	Note the comments and amend the plan accordingly	Nil

Biodiversity and Rehabilitation Management Plan – Schedule 3, Condition 31	Satisfactory (Yes/No/Partial)	Comment	Action Requested from DPIE	UHH Response/Section Reference
		bi-monthly).		
(i) 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;	No	Not satisfied – to be included in the Stage 1 document.	Note the comments and amend the plan accordingly	Covered under Section 6 Performance Criteria. Criteria added for biodiversity management.
(j) include details of who would be responsible for monitoring, reviewing and implementing the plan.	Yes	Satisfied – see Section 7	N/A	Nil
• Please ensure that the description of the project stages is consistent throughout the various management plans. For example, Section 1.2 of the BRMP indicates that the plan applies to "Phase 1" of the project, which includes the construction of the highway intersection construction. This appears to conflict with Pitt & Sherry's letter dated 4 April 2019 which explains the staging of the plans. Please clarify. • Please correct the typographical error in Section 5.4: "Pest management will be undertaken the entire site". • In Section 1.2.1, please revise the 3-year timeframe to begin in 2019.				• Covers Phase 1 and 2 • Typo fixed (now Section 4.7) • Timeframe updated 'starting from the date of the approval of management plans.

The Council provided feedback on the B&RMP on 18 March 2019.

Table 9 Feedback from Council – March 2019

Item	Feedback	Proponent Response
1	Soils and Land Degradation – Council understands that there are erosion issues in the area, low soil fertility, high salinity and structural issues. Detailed assessment of the soils and geology of the site, and areas that will receive stormwater flows from the site, will need to be included in the soil and water management plan. Weed and erosion monitoring, as part of the B&RMP, should note if salinity is becoming an issue for maintenance of ground cover or encouraging the growth of weeds. Detailed rehabilitation plans should also account for this salinity issue.	Soil testing should be completed prior to respreading, with ameliorants used to improve soil if required.
2	Rehabilitation of all surface infrastructure in Stage 1 should be contemplated in current documents – Council has a keen interest in ensuring that the rehabilitation of quarry sites is completed to high standards, in line with industry best practice and to support post quarry land uses. The B&RMP should include information on the decommissioning, removal and intended rehabilitation of surface infrastructure, as required by condition 29 of the approval. If no further stages of the proposal proceed beyond Stage 1, this rehabilitation work should occur no later than 21 years from the commencement of Stage 1 works. Condition 29 provides the proponent with an opportunity to seek an alternative to rehabilitation from the Secretary. It is expected that this would be contemplated closer to cessation of quarry operations, if a land use is anticipated that requires the surface infrastructure to remain.	Noted. See Section 5 outlines biodiversity and rehabilitation activities in the first three years.
3	Rehabilitation of Quarry after extraction for haul road - The B&RMP should include information on rehabilitation of the quarry if no further stages of the proposal proceed beyond Stage 1. This rehabilitation work should occur no later than 21 years from the commencement of Stage 1 works. Consideration should be given to the employment of micro-relief to the site, in line with the principles of Geofluv design, to ensure long-term site stability and erosion control, and to create a more natural looking landscape post development.	Section 5.8 outlines landform shaping.
4	Biodiversity and Rehabilitation Bond – Works in Stage 1 will result in removal of some vegetation and other site disturbances. The B&RMP should calculate the Bond required to cover rehabilitation of the Stage 1 works, as required by condition 32 & identified in condition 29.	Covers rehabilitation and biodiversity costs at end of Year 3 as required by the condition. See Appendix A and B.
5	Advice on *Acacia saligna* and Rhodes grass – These two plant species have been used in the past as part of rehabilitation of mine sites. Both these species have been shown to behave as weed species in the upper Hunter and their use should be avoided.	Noted. These will not be in the seed mix.

3 BIODIVERSITY OFFSET STRATEGY

Schedule 3 Condition 27 of Development Consent SSD 6519 requires the implementation of a Biodiversity Offset Strategy (BOS) as described in the Environmental Impact Statement (EIS) and the final landform design as shown in Appendix 5 of the Development Consent.

The Quarry will result in the loss of approximately 22.2 ha of native vegetation comprising 7.4 ha of Central Hunter Grey Box – Ironbark Woodland Endangered Ecological Community (EEC) listed under the *Biodiversity Conservation Act 2016* (BC Act) and 14.8 ha of non-threatened derived native grassland community. The Quarry will result in the removal of seven pine donkey orchids (*Diuris tricolor*), listed as vulnerable under the BC Act, 7.4 ha of woodland habitat and 14.8 ha of derived native grassland (DNG) habitat. This also includes known habitat for the speckled warbler (*Chthonicola sagittata*), which is listed as vulnerable under the BC Act.

Many of these species are synonymous with the Central Hunter Grey Box – Ironbark Woodland EEC and represent the loss of habitat for the woodland-dependent birds and micro-bats. Accordingly, the BOS has been developed to compensate for residual impacts of the Project on these species, habitats or features. The key features to be addressed in the BOS are outlined in **Table 10.**

Table 10 Significant Ecological Features Addressed in the Biodiversity Offset Strategy

Ecological Feature	Area of Impact/Number of Individuals
Central Hunter Grey Box - Ironbark Woodland EEC	7.4 hectares
Pine donkey orchid (*Diuris tricolor*)	7 individuals
Woodland habitat	7.4 hectares
Speckled warbler (*Chthonicola sagittata)*	5 individuals

3.1 Security of Biodiversity Offset Strategy

Schedule 3 Condition 28 of the Development Consent requires UHH to make suitable arrangements to provide long-term security of the BOS within 12 months from the date of commencement of development. UHH currently own and manage the land that the Biodiversity Offset Area is located on, Lot 1, DP1160936. UHH commit to making suitable arrangements to provide for in perpetuity security of the BOS area within 12 months of the date of commencement of development.

UHH will be engaging an ecologist to assist with implementing the 'Security of Offsets' under Schedule 3 Condition 28 of the Development Consent. The condition requires the proponent will secure the biodiversity offset on Lot 1 DP 1160936 within 12 months of the development commencing.

3.2 Implementation

Biodiversity management, maintenance and monitoring activities within the offset site will be implemented by UHH in accordance with the Development Consent conditions. The implementation of the BOS will occur following the commencement of initial quarrying activities. Further details regarding the implementation will be addressed in future versions of this BRMP that is currently focussed on the first 3 years following commencement of development.

However key activities include:

- Installation and management of livestock exclusion fencing;
- Ecological baseline monitoring;
- Weed control;
- Revegetation planting if required; and
- Vertebrate pest management.

4 EXISTING BIODIVERSITY VALUES

The key biodiversity values that will be managed under this BRMP are described in **Section 4.1 -4.3.** Further detail regarding the biodiversity features and values of the Quarry and associated offset site can be found in Section 4.0 and Section 7.2 of the Ecological Assessment (Umwelt, 2015), respectively and the Dolwendee Quarry Project EIS (KMH Environmental 2015).

4.1 Quarry Site

The Quarry is located within the Sydney Basin Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and the Kerrabee IBRA subregion. The Quarry contains two biometric vegetation communities in the as identified by Umwelt (2015). The vegetation communities are shown on Figure 3 and include:

- HU905 – Narrow-leaved Ironbark - Grey Box Grassy Woodland of the Central and Upper Hunter – Low Condition Derived Native Grassland, and
- HU905 – Narrow-leaved Ironbark - Grey Box Grassy Woodland of the Central and Upper Hunter – Moderate to Good Condition (consistent with Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions endangered ecological community (EEC) (listed under the Biodiversity Conservation Act 2016 (BC Act).

An additional six vegetation communities occur in the vicinity of the Quarry disturbance area. Further details can be found in the Ecological Assessment (Umwelt 2015).

The following threatened flora and fauna species and threatened populations have also been identified in the vicinity of the Project Disturbance Area or the Quarry:

- Pine donkey orchid (*Diuris tricolor*) – vulnerable under the BC Act;
- Pine donkey orchid population in the Muswellbrook local government area – endangered population under the BC Act;
- Speckled warbler (*Chthonicola saggitata*) – vulnerable under the BC Act; and
- Grey-crowned babbler (*Pomatostomus temporalis temporalis*) – vulnerable under the BC Act.

Exotic plant species include: scarlet pimpernel (Anagallis arvensis), common prickly pear (*Opuntia stricta var. stricta*), tiger pear (*Opuntia aurantiaca*), creeping pear (Opuntia humifusa), fireweed (*Senecio madagascariensis*) and narrow-leaved cotton bush (*Gomphocarpus fruticosus*).

Feral animal species identified include:

- Domestic dog (*Canis lupus familiaris*);
- Rabbit (*Oryctolagus cuniculus*);
- Red fox (*Vulpes vulpes*);
- Brown hare (*Lepus capensis*);
- Fallow deer (*Dama dama*); and
- Cat (*Felis catus*).

4.2 Remnant vegetation and habitat on Site

For the purposes of this BRMP, remnant vegetation and habitat on site concerns land outside of and to the north, east and south of the extraction area and within the development consent boundary and vegetation outside of the haul road footprint in Figure 2 (derived from Appendix 2 of Development Consent). If remnant vegetation and habitat is not disturbed by the development it does not require rehabilitation. The site will complete land management (eg. Pest and weed management) within the consent area.

4.3 Biodiversity Offset Area

The biodiversity offset area is located north of the Quarry in Lot 1 and is currently owned and managed by UHH. The offset area is approximately 16 ha and is shown on **Figure 1** and **Figure 2**. The Biodiversity Offset Area adjoins a dedicated conservation offset for the Mangoola Coal project (Umwelt 2006) to the north, south and east.

The vegetation communities present within the Biodiversity Offset Area includes (refer to **Figure 3**):

- HU905 - Moderate to Good Condition - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter. This community conforms to the final determination of the Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions Endangered Ecological Community listed under the BC Act. A total of 13 hectares of this community has been mapped within the Offset Area;
- HU730 – White Box x Grey Box; Red Gum; Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley – Moderate to Good Condition. This community conforms to the final determination of the White Box Yellow Box Blakely's Red Gum Endangered Ecological Community under the BC Act. A total of 1.6 hectares of this community has been mapped within the Biodiversity Offset Area; and
- HU730 – White Box x Grey Box; Red Gum; Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley – Derived Native Grassland (DNG). This community does not conform to the EEC. A total of 1.3 hectares of this DNG community has been mapped. It is likely to have once supported White Box-Yellow Box-Blakely's Red Gum Woodland.

The following threatened flora, fauna and populations occur within the Biodiversity Offset Area:

- Pine donkey orchid (*Diuris tricolor*) – vulnerable under the BC Act, a total of 247 individuals were recorded;
- Pine donkey orchid population in the Muswellbrook local government area – endangered population under the BC Act; and
- Speckled warbler (Chthonicola saggitata) – vulnerable under the BC Act.

A number of other threatened species have been recorded in adjacent areas to the Biodiversity Offset Area and Quarry (Umwelt 2015). These species include:

- Tarengo leek orchid (*Prasophyllum petilum*) – endangered under the BC Act and Commonwealth.

Species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), recorded near the site include:

- Glossy black-cockatoo (*Calyptorhynchus lathami*) – vulnerable under the BC Act;
- Brown treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) – vulnerable under the BC Act;
- Squirrel glider (*Petaurus norfolcensis*) – vulnerable under the BC Act;
- Yellow-bellied sheathtail-bat (*Saccolaimus flaviventris*) – vulnerable under the BC Act;
- Little bentwing-bat (*Miniopterus australis*) – vulnerable under the BC Act;
- Eastern bentwing-bat (*Miniopterus schreibersii oceanensis*) – vulnerable under the BC Act; and

- Large-eared pied bat (*Chalinolobus dwyeri*) – vulnerable under the BC Act and EPBC Act.

The majority of these species are mobile and may utilise both the Quarry site and the Biodiversity Offset Area.

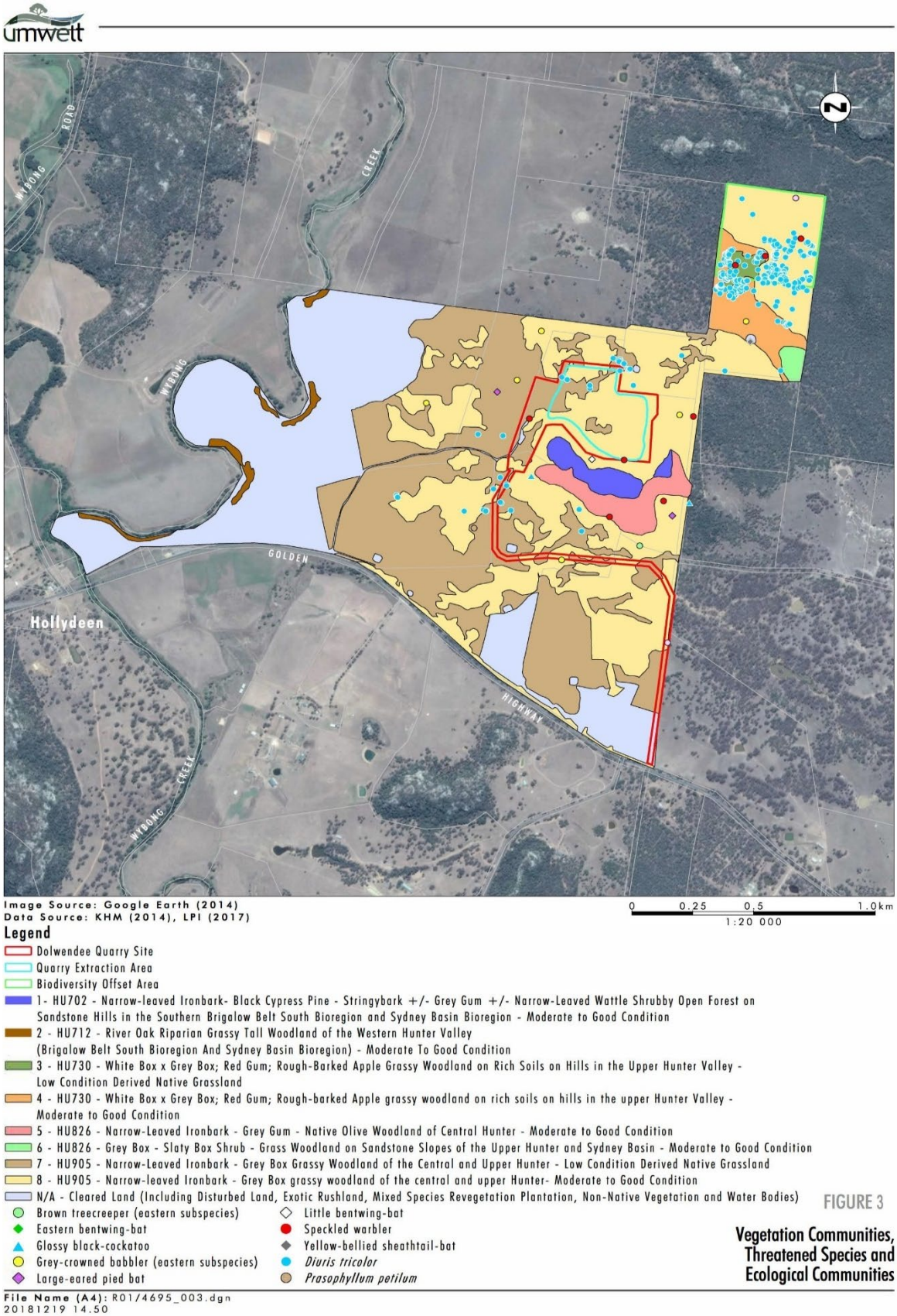


Figure 3 Vegetation Communities

5 BIODIVERSITY AND REHABILITATION MANAGEMENT MEASURES

As noted in **Section 1.3**, this BRMP identifies the biodiversity and rehabilitation management and monitoring measures that will be implemented for Phase 1 and 2 of the Quarry. A range of controls and strategies have also been formulated to minimise and mitigate direct impacts associated with the Quarry, particularly in relation to land clearing and ground-disturbance and minimising impacts on the range of threatened species that are known to occur on the site. These management controls are aimed at ensuring that the purpose of the BRMP as described in **Section 1.3.1** is met.

These impact mitigation measures will be implemented for the next 3 years *starting from the date when all management plans have been approved and UHH formally advise of DPIE of date development is commencing* These management measures will be applicable for the life of the Quarry. Potential for continuous improvements in the type and way mitigation measures are implemented, will be regularly reviewed. These improvements will be taken into consideration in future revisions of this BRMP.

5.1 Land Disturbance Management Controls

The following measures apply to works associated with land clearing and ground disturbance within the Quarry area.

5.1.1 Defining Limits of Clearing

The limits of clearing for each stage of clearing works will be clearly delineated prior to clearing. This is to ensure that clearing does not have an impact to remnant vegetation. To avoid unnecessary or inadvertent vegetation and habitat removal, disturbance must be restricted to the delineated area and no stockpiling of equipment, machinery, soil or vegetation will occur beyond this boundary.

Particular attention will be paid to demarcation of records of pine donkey orchid (*Diuris tricolor*) located adjacent to the approved extraction areas and haul road.

The person/s responsible for the clearing activities will be responsible for ensuring that the boundary markers, barriers and permanent signs are installed to enable the suitable environmental and technical inspections of the proposed disturbance to be undertaken.

Site inductions are to be given to ensure all site workers and visitors are aware of any sensitive vegetation. No clearance will be completed until site inductions have been completed.

Prior to clearing the Quarry Manager (or their delegate) will check the marked clearing limits and provide approval of the disturbance boundary. Approval must be granted before clearing commences.

5.1.2 Pre-Clearance Surveys

Pre-clearing surveys will be undertaken by a suitably experienced and licensed ecologist, no more than 2 weeks prior to felling. This will include marking of hollow-bearing trees, as well as any other notable features such as fallen timber, hollow logs or boulders suitable for salvage; active nests, dreys or dens requiring consideration, and seed-bearing trees for salvage. Surveys will include detailed searches for threatened flora and fauna species including microbats.

5.1.3 Timing of Clearing/Seed Collection

As far as practicable, vegetation clearing is to be planned for periods outside of the breeding season for threatened species known to nest in the site or surrounds and outside of torpor periods for hollow-roosting microbat species known to occur within the site or vicinity. **Table 11** identifies the critical periods of use for threatened species recorded on site.

Clearing of hollow resources suitable for breeding will also be conducted outside of the winter period (June and July) and will not be cleared during the suspected breeding period for these species. This is generally between October and January.

Table 11 Critical Periods of use for Threatened Species known to occur within or surrounding the Site

Species Name	Recorded in Wider Study Area	Recorded in Project Disturbance Area	Resource Utilisation in Extraction Area*	Critical Periods of Use
glossy black cockatoo *Calyptorhynchus lathami*	✓	×	Requires large hollow- bearing eucalypts as nest sites	Breeds from March to August
brown treecreeper *Climacteris picumnus victoriae*	✓	×	Hollows in standing live or dead trees and tree stumps required for nesting	Breeds from May to December
speckled warbler *Chthonicola saggitata*	✓	✓	Utilises slight hollows at ground or base of low dense plants often amid fallen branches and litter for nesting	Breeds from August to January
grey-crowned babbler *Pomatostomus temporalis*	✓	✓	Builds conspicuous dome-shaped nests in shrubs or young eucalypts	Breeds from July to February
squirrel glider *Petaurus norfolcensis*	✓	×	Requires abundant tree hollows for refuge and nest sites	Breeding usually occurs between April and November, with a peak in winter and spring, with up to two litters a year
yellow-bellied sheathtail bat *Saccolaimus flaviventris*	✓	×	Roosts in tree hollows and buildings and occasionally mammal burrows	Breeds between December and mid-March
large-eared pied bat *Chalinolobus dwyeri*	✓	×	Roosts in caves, crevices in cliffs old mines, and disused Fairy Martin nests.	Breeds from November to January
little bentwing-bat *Miniopterus australis*	✓	×	Roosts in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings.	Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer.
eastern bentwing-bat *Miniopterus schreibersii oceanensis*	✓	x	Roosts primarily in caves but also derelict mines, storm water tunnels, buildings, and other man-made structures	Maternity colonies form in spring and summer

Note: * = information from NSW Threatened Biodiversity Profile Database (2018)

Seed will be collected and propagated for rehabilitation. This would be completed in accordance with the advice of an ecologist/bush regenerator. Details of collection and propagation would be included in the Annual Review. In October 2020, BCD recommended that seed collection and propagation is completed as per the Florabank guidelines.

https://www.greeningaustralia.org.au/publications/

UHH will inform the ecologist/bush regenerator that these guidelines are to be used.

5.1.4 Tree Felling Procedure

A robust tree felling procedure will be implemented to minimise the potential for impacts on native fauna species (including threatened species) as a result of the clearing of hollow-bearing trees. The tree felling procedure is designed to minimise impacts to hollow-dependent fauna. The procedure includes the following:

- Pre-clearing surveys by a suitably experienced and licensed ecologist, no more than 2 weeks prior to felling (refer **Section 5.1.2**);
- Removal of trees without hollows/vegetation on the day or as close to the date of clearing of habitat trees as possible (in order to discourage fauna usage of the area). Removal of vegetation identified as not providing tree-hollows during pre-clearing surveys encourages hollow-dependent fauna to vacate clearing areas prior to the clearing of habitat trees, reducing the likelihood of mortality during clearing. It is not considered necessary for a suitably experienced and licensed person to be present to supervise such works, providing pre-clearing surveys have been completed within the designated timeframe;
- Visual canopy inspection of all trees to be removed on the day of clearing by suitably experienced and licensed person to ensure that fauna is not injured during tree felling operations on the day of clearing;
- Detailed hollow-bearing tree felling procedures, including (but not limited to):
  - Supervision of all hollow-bearing tree felling works by a suitably experienced and licensed person. Where necessary, this can be undertaken by the Environmental Officer with instruction by a suitably experience and licensed person off site;
  - Visual canopy inspection on the day of the felling of hollow-bearing trees for fauna species and active nests;
  - Shaking of hollow-bearing tree (with heavy machinery) for at least 30 seconds to encourage resident fauna to abandon tree, prior to felling;
  - Lowering of hollow-bearing trees as gently with heavy machinery;
  - Inspection of all hollows in felled trees;
  - Capture of any displaced/injured fauna. Any injured fauna will be taken to a wildlife carer or vet;
  - Release of unharmed fauna into nearby secure habitats;
  - Felled trees to be rolled so that the number of hollows blocked against the ground are minimised;
  - All felled trees to remain in place overnight to allow any unidentified fauna to escape; and
  - Salvage of suitable hollows (i.e. hollows of appropriate size and structural integrity and that can be salvaged safely) for treatment and installation within rehabilitation and revegetation areas as compensatory habitat, where feasible.

In the event that threatened fauna are located within hollow-bearing trees during pre-clearance surveys or tree felling, no works will be undertaken within 5 metres of the identified tree until the species is captured and relocated, or moves from within the clearing area of its own volition.

All personnel who will capture/handle/house and/or transport native fauna species (injured or uninjured) will be appropriately licensed under the requirements of the NSW Animal Ethics Committee.

Site personnel (particularly vehicle operators) will be briefed on fauna awareness issues and will be required to report incidents involving injury to native wildlife. Assistance from a wildlife carer or veterinarian will be sought if injured native wildlife are encountered.

5.2 Progressive and Final Rehabilitation

Rehabilitation will be undertaken progressively to minimise the potential for erosion, dust generation and disturbance to native vegetation and fauna habitat. **Section 5.2.1** and **Section 5.2.2** outline the progressive rehabilitation.

There are two areas where progressive rehabilitation is proposed , with these being:
Temporary stabilisation (within first three years) – hydromulching will be used in areas that were disturbed as part of the initial clearing that remain as infrastructure. This includes areas such as bunds and would be completed within one month of disturbance occurring.

UHH will liaise with a specialist regarding the hydromulching seed mix, with the goal to be using native grass seed.

Benches (After the first three years) – Once a bench is no longer required for extraction or operations, it is to be made safe (a consideration during creation of the bench and associated faces and subject to a risk assessment then rehabilitation would be completed during the operational phase as per **Section 5.**

There is no final rehabilitation of benches planned in the first three years (ie. final shaping, topsoil and seeding), therefore hydromulching would be used for benches. All benches at closure will need to be rehabilitated using a seed mix consistent with PCT 905.

Remaining Areas (At Closure) – the remaining areas at site will need to be active during operation with no rehabilitation completed until closure. These would include infrastructure areas (buildings, roads plant), much of the quarry pit and water management areas.

5.2.1 Removal of Infrastructure

Appendix 6 of the Development Consent states: Once extraction activities have been completed, the site office, car park, amenities and the crushing and screening plant will be removed. There are no proposed powerlines associated with the project, with power supplied by diesel generator.

5.2.2 Topsoil Management

The key method of rehabilitation involves the transfer of topsoil and brush material obtained directly from cleared areas prior to their excavation. This material will be utilised in rehabilitation as:

- A seed source;
- Mulch;
- Erosion control; and
- Habitat for small fauna.

The direct return (within a 4 - 6 week period of clearing) of topsoil and brush matting is the chief method employed for revegetation of native vegetation for Phase 1. The timing of the clearing and return of soil and brush material is programmed to ensure that the maximum amount of viable seed and the best growing conditions coincide to produce the best chance of achieving high species diversity.

Topsoil extracted during the construction of the Quarry will be managed in accordance with the topsoil management measures outlined below in order to protect topsoil quality and enhance rehabilitation outcomes:

- Where possible, topsoil will be stripped when moist to help maintain viability and to reduce dust generation;
- The topsoil stripped will be between 100 - 300 mm in depth (dependent on the soil type present);
- Where practical, topsoil will be direct-returned to disturbed areas available for revegetation during the construction of Phase 1 and 2 of the Quarry;
- Topsoil stockpiles are to be located away from quarrying, traffic areas and watercourses and positioned within the perimeter of the closed water management system;
- Topsoil stockpiles will be located within the Quarry disturbance area and not within conservation or other areas adjacent to the Quarry;
- Level or gently sloping areas will be selected as stockpiles sites to minimise erosion and potential soil loss;

- Silt fences will be established clear of drainage lines and will be installed at the base of stockpiles to prevent soil loss to the surrounding area;
- Stockpiles will be generally less than 3 m high and will be set out in windrows to maximise surface exposure and biological activity;
- Stockpiles to be kept longer than 3 months (i.e. approximately how long it will take to establish a stable vegetative cover) will be sown with a suitable cover crop of native grass seeds to minimise soil erosion and invasion of weed species. This will assist with natural regeneration of native seeds in the soil stockpiles;
- Weed growth will be monitored on a monthly basis and controlled either by removing by hand or spraying if large areas (i.e. >40 m2) are observed; and
- Prior to re-spreading, weed growth will be scalped from the top of the stockpiles to minimise the transport of weeds into rehabilitated areas. Soil testing should be completed prior to respreading, with ameliorants used to improve soil if required.

See **Table 9** for information regarding soil management.

5.2.3 Direct Seeding and Planting

In addition to the topsoil management, direct seeding and / or planting will also occur during progressive rehabilitation of Phase 1, 2 and 3 This will include sowing and / or planting of native grass species and utilisation of a suitable cover crop to assist with erosion control where required.

Seeds and plant material (cuttings) used to augment the rehabilitation areas will be sourced locally. Tubestock utilised will preferentially be 6 - 9 months old at the time of planting to maximise the potential for successful rehabilitation. Seeds and tubestock will comprise species consistent with the remnant native vegetation community; PCT HU905 - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter. The baseline ecological survey will assist in determining the most suitable species for rehabilitation. A seed list will be provided in the first Annual Review document.

Section 5.1 outlines the process of clearing. Key habitat features such as fallen timber, hollow logs or boulders suitable will be stored onsite for salvage and used in the rehabilitation area. At this point it is not proposed that these features would be used for habitat enhancement in the offset area. This will assist in the restoration, enhancement and rehabilitation of native vegetation and introduction of fauna habitat features.

Thorough site preparation will be undertaken to ensure rapid establishment and growth of seedlings. All areas proposed for seeding will be deep ripped to an approximate depth of 400 – 500mm.

Where ripping on slopes is required, the ripping will be undertaken around the contour of the land at right angles to water flow. Benches will be deep ripped to actively promote infiltration of water which will enhance soil moisture requirements for direct tree seeding and minimise surface runoff to underlying benches and the pit floor dirty water control system. Revegetation will also visually screen disturbed areas and will re-establish habitat for native fauna.

5.3 Weed Management

Consistent with the Development Consent conditions, an effective weed control program will be implemented to limit the spread and colonisation of noxious and environmental weeds within the Quarry.

In general, the weed control program for the Quarry will include:

- General observations of the presence of weeds will also be made as part of the bi-monthly inspections (refer to **Section 7**);
- Undertake appropriate, targeted weed control activities (including minimum disturbance techniques such as hand removal where feasible), specific to the weed species identified; and
- Assess the effectiveness of the control programs and in response make any necessary modifications.

In particular, the presence of fireweed (*Senecio madagascariensis*), tiger pear (*Opuntia aurantiaca*), common prickly pear (*Opuntia stricta var. stricta*), Paterson's curse (*Echium plantagineum*), and African boxthorn (*Lycium ferocissimum*) have been recorded within the site and vicinity and are declared priority weeds under the NSW Biosecurity Act 2015 for the Muswellbrook Shire Council and the Hunter Local Land Services region (Department of Primary Industries (DPI) 2018). Under the NSW Biosecurity Act 2015, these plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk it poses. Any person who deals with these plants has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practical. The specific methodologies for the control of declared weeds within the site are as follows:

- All areas of declared weeds will be removed mechanically and/or chemically (depending on the most suitable method for the maturity of the weed) and stockpiled within the area of infestation to ensure it is isolated from native vegetation;
- Stockpiled areas of declared weeds are to be dealt with either by use of herbicides or through burning;
- Topsoil within areas of declared weeds can only be translocated into rehabilitation areas of the site after being treated with the measures listed above; and
- No declared weeds or topsoil within declared weed infestations will be transferred offsite.

Weed control works will include the development and implementation of an eradication plan applicable to the circumstances, which may include manual removal, spot spraying or biological control. The specific method selected will consider the known locations of threatened flora and fauna species. Low impact weed management techniques such as manual removal will be used within 40 metres of known threatened species records.

The weed control works will also consider:

- Minimisation of vegetation disturbance by reducing the number of tracks;
- Minimisation of clearing and other disturbance of vegetation associated with civil works; and

Maintenance of topsoil stockpiles to eradicate weed infestation. Weed management programs will focus on disturbed areas, areas of rehabilitation and the offset area.

5.4 Pest Management

Pest management will be conducted as required based on the bi-monthly inspection results (refer to **Section 7**) or reports from neighbours or other authorities. Experienced pest control contractors will be engaged to perform any control programs required, including baiting, trapping, warren ripping and open range shooting. When necessary, UHH, will work in collaboration with neighbouring land-owners to develop a strategic approach to pest management. Pest management will be undertaken for the entire site.

Monitoring of pest species populations and the effectiveness of the control program will be undertaken and reported annually as part of general biodiversity monitoring. Recommendations and the proposed control program for subsequent years will also be included as an outcome of the monitoring.

5.5 Plant Disease Management

Schedule 3 Condition 31 g) outlines the requirement to *avoid & minimise the spread of phytophthora, myrtle rust and chytrid fungus.*

Key controls are outlined on the NSW Department of Primary Industries (DPI) website and will include:

- Staff and contractors are to be made aware of the signs of myrtle rust and phytophthora in the site induction;
- All vehicles and equipment are to be cleaned before attending site; and
- Clearance and rehabilitation completed by experienced contractors; and

- Chemical treatment and effective disposal if plants are found. If the disease was found then the site would report it to the BCD.

In the unlikely event that chytrid fungus is found in frogs during ecological surveys, then the ecologist will liaise with Dolwenedee Quarry or would report the issue to the BCD. A management plan would be prepared and implemented between the site and the BCD.

5.6 Sediment and Erosion Control

Erosion and migration of sediment from within the site into adjacent vegetation and aquatic systems has the potential to facilitate weed invasion through the introduction of weed seeds and nutrients that favour weed species.

This potential impact will be avoided through the implementation of appropriate erosion and sediment control measures in accordance with the Soil and Water Management Plan. This will include:

- Clearly identifying and delineating areas required to be disturbed and ensuring that disturbance is limited to those areas;
- Clearing as little vegetation as required and minimising machinery disturbance outside of these areas;
- Installing appropriate erosion and sediment controls prior to stripping topsoil or disturbing areas;
- Limiting the number of roads and tracks established;
- Stabilising site entry/exit points to ensure sediment is not tracked onto sealed roadways;
- Construction of drains upslope of areas to be disturbed to convey clean runoff away from most disturbed areas where required;
- Reshaping, topsoiling and vegetating road and cut and fill batters as soon as practical;
- Construction of sediment dams where required to capture and treat runoff from disturbed catchment areas;
- Diversion of surface and road runoff away from disturbed areas;
- Regular maintenance of all erosion control works and rehabilitated areas; and
- Revegetation of areas as soon as practical following the completion of earthworks or operations.

5.7 Vegetation Screening

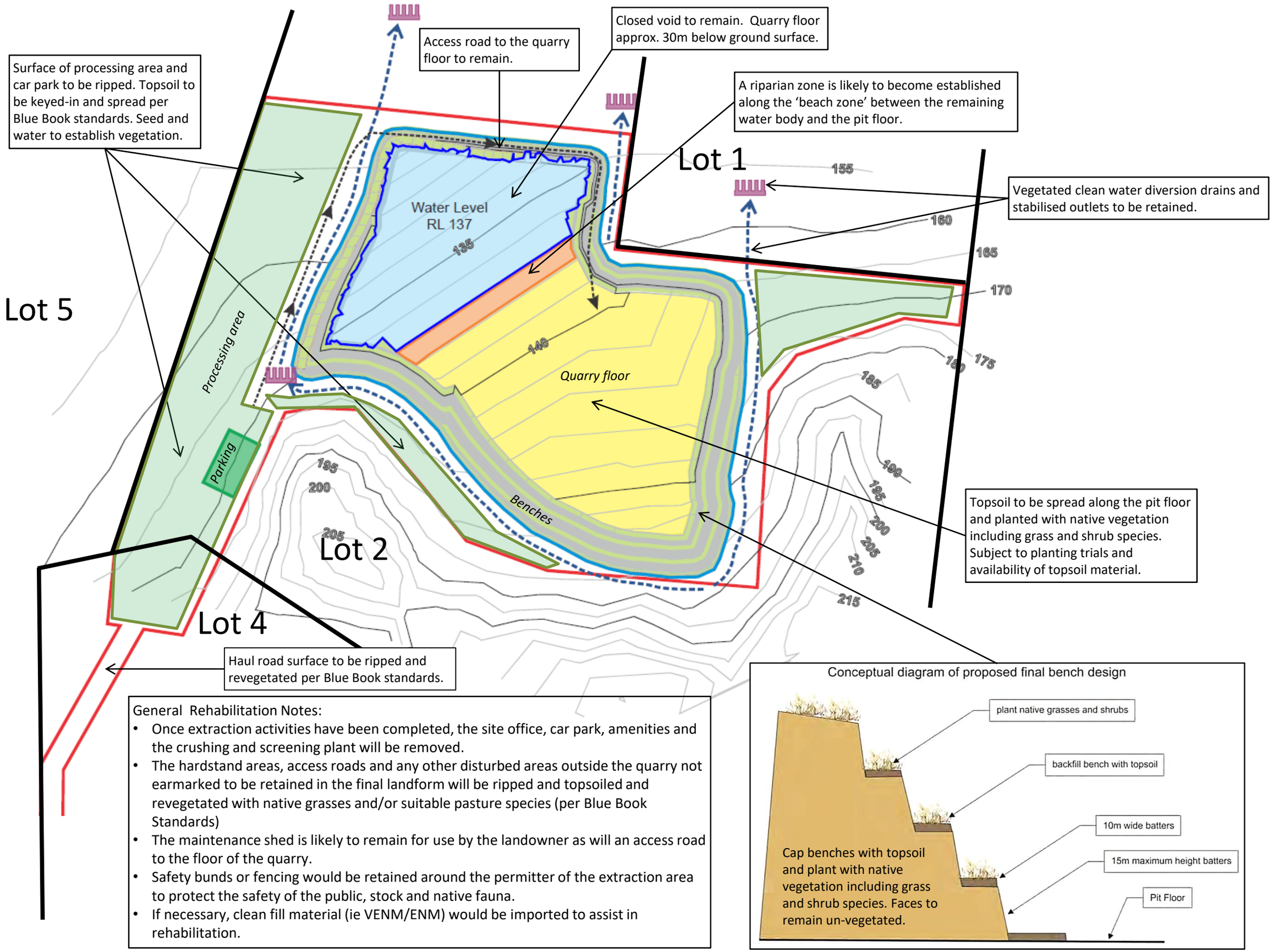
Section 6.13 of the EIS assessed the visual impacts of the proposed quarry as low and hence did not identify required mitigation measures. Page 135 of the EIS states “The proposed quarry would only be visible from a very limited number of areas because of topography and vegetation. These areas are located to the west and northwest of the site, but not from any residences. At any offsite public or private location where the proposed quarry is visible, the distance to the quarry and the small percentage of the quarry in the field of view suggest the visual impact would be very low”.

If in the event, a receiver (identified in the EIS) were to identify they are visually impacted by the quarry operations area and the quarry owner/operator is satisfied a visual impact is occurring and can be mitigated by vegetation screening, then vegetation screening will be implemented using appropriate plant species associated with Plant Community Type 905.

5.8 Final Landform

The proposed Final landform is included in the Development Consent under Appendix 6**.** The key management aspects are outlined below. A summary of the figure colours is outlined below:

- The yellow colour area (Quarry Floor) identified in the figure 4 will be shaped at closure. The topography of the final landform will consist of a large number of stepped benches formed in an amphitheatre configuration, each with a revegetated bench;
- A section of the final void at closure will fill with water, with an indicative location outlined in the area below (blue colour area); and
- The apricot colour area illustrates a riparian zone between the final void and the quarry floor.



General Rehabilitation Notes:

- Once extraction activities have been completed, the site office, car park, amenities and the crushing and screening plant will be removed.
- The hardstand areas, access roads and any other disturbed areas outside the quarry not earmarked to be retained in the final landform will be ripped and topsoiled and revegetated with native grasses and/or suitable pasture species (per Blue Book Standards)
- The maintenance shed is likely to remain for use by the landowner as will an access road to the floor of the quarry.
- Safety bunds or fencing would be retained around the permitter of the extraction area to protect the safety of the public, stock and native fauna.
- If necessary, clean fill material (ie VENM/ENM) would be imported to assist in rehabilitation.

Figure 4 - Conceptual Rehabilitation Plan/Final Landform

5.9 Summary of Biodiversity and Rehabilitation Bonds

Separate Biodiversity and Rehabilitation Bonds have been prepared to meet the requirement of Schedule 3 Condition 32 of the Development Consent:

Within 6 months of the date of approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site is implemented in accordance with the performance and completion criteria set out in the plan (Figure 9 in Appendix 6) and relevant conditions of this consent. The sum of the bond must be determined by:

a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years;

b) calculating the cost of rehabilitating all disturbed areas of the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and

c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.

Notes:

- *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
- *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond and arrange for the completion of the relevant works.*

Schedule 5 Condition 10 states that *Within 3 months of each Independent Environmental Audit (see condition 10 of Schedule 5), the Applicant must review, and if necessary revise, the sum of the Rehabilitation and/or Conservation Bonds to the satisfaction of the Secretary.*

The CV's for Chris Jones (IEMA) and Fiona Iolinni (SLR) will be provided under a separate cover letter to DPIE for endorsement as specialists.

5.9.1 Rehabilitation Bond

The Rehabilitation Bond has been prepared based on a previous version of the Division of Resources and Geosciences Guideline for Rehabilitation Cost Estimate (RCE). This version was chosen as it had an option for Hardrock Quarries. The current RCE guidelines and spreadsheet (2017) do not have an option for Hardrock Quarries, rather they are set up for open cut mines. This is not applicable to the level of scale for Dolwendee Quarry. Of note:

- The Rehabilitation Bond covers rehabilitation of the site at Year 3;
- The full disturbance area of the quarry will not be reached until well after Year 3;
- A separate bond for offset areas is provided in **Section 5.9.2**;
- The bond has been prepared to rehabilitate the site to Appendix 6 of the Development Consent;
- This includes removal of infrastructure, rehabilitation of benches, rehabilitation of a section of the quarry floor; and
- A void will remain at closure and has been costed based on the area in Appendix 6 of the Development Consent. However as the Bond is based on Year 3, we have costed to rehabilitated the entire disturbed area of the pit and benches.

5.9.2 Offset Bond

The Offset Bond was calculated using the NSW Department of Planning, Industry and Environment method for calculating Biodiversity Stewardship Sites. Key aspects of the Offset bond includes:

- Fencing;
- Weed control and vertebrate pest control;
- Seed collection and propagation – where viable;
- Rehabilitation planting – where applicable;
- Ecological monitoring surveys .

5.10 Integration between Rehabilitation and Biodiversity

This section has been prepared to satisfy Schedule 3 Condition 31 d).

The nature of the quarrying process indicates it is unlikely there will be significant final rehabilitation at the Quarry until close to quarry closure**.**. There will be some co-ordinated weed and pest management between the quarry and the offset area during the life of the operation with this outlined in **Section 5.5 and 5.6.**

Where final rehabilitation can occur, e.g along the clean water diversion swale, future ecological monitoring will be completed in both offset and rehabilitation areas. Key learnings from inspections and monitoring of offset areas will assist informing future rehabilitation practices with the objective that the final rehabilitation areas have or are beginning to have, floristic characteristics similar to Plant Community 905 in the offset area.

5.11 Bushfire Management

This section has been prepared to satisfy Schedule 3 Condition 31 g) concerning managing bushfire risk. UHH will ensure there is sufficient equipment available to assist with bushfire management as required under Schedule 3 Condition 39 of the Development Consent.

The Applicant must:

(a) Ensure that the development is suitably equipped to respond to any fires on site; and

(b) Assist the RFS and emergency services as much as possible if there is a fire in the vicinity of the site.

In terms of bushfire risk in the offset area this will be assessed during weed management programs. If additional controls are required within the offset area the site will liaise with the NSW Rural Fire Service.

6 PRELIMINARY PERFORMANCE AND COMPLETION CRITERIA

Preliminary performance and completion criteria will be utilised to demonstrate achievement of management objectives.

The preliminary performance and completion criteria will be reviewed and revised and used as the basis for further refinement prior to the commencement of further phases of the Quarry, rehabilitation activities, along with consideration of the results of rehabilitation monitoring programs and stakeholder feedback.

Schedule 3 Condition 31 i) of the Development Consent states the proponent must "*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".* These risks are outlined in **Table 12** through the 'Trigger for Action' column.

A risk that is not covered under **Table 11** relates to funding to complete biodiversity and rehabilitation management. Funding will be provided for the Project to satisfy the implementation of the offset bond and rehabilitation bond.

Criteria within **Table 12** relate to final rehabilitation, and not meeting a criteria during operations does not constitute an exceedance. **Table 13** refers to criteria for the biodiversity offset area and if triggers occur during operations they will be reported in the Annual Review. However, this does not constitute an exceedance of a criteria.

Table 12 Preliminary Performance and Completion Criteria for Rehabilitation Areas

Aspect	Preliminary Rehabilitation Performance and Completion Criteria	Trigger for Action	Potential Corrective Action
Weed and Pests	• Bi-monthly inspections indicate declining weed diversity, density and abundance and decline in feral animal activity.	• Increased noxious or environmental weeds and evidence of feral animal activity.	• Undertake weed/feral animal control as required.
	• No increase in priority weeds listed for the Muswellbrook Shire Council and Hunter Local Land Services Regions.	• Priority weeds listed for Muswellbrook and Hunter LLS Regions increase.	• Undertake weed/feral animal control as required
	• There is no evidence of significant damage resulting from feral animal activity.	• Evidence of significant feral animal damage to rehabilitation area.	• Adapt/modify feral animal control strategy.
Soil	• Topsoil or a suitable alternative has been spread uniformly over the rehabilitation surface. See **Section 5.2** for methodology. • Monitoring demonstrates soil profile development in rehabilitated areas (e.g. development of organic layer, litter layer).	• Non-uniform spreading of topsoil or alternative on rehabilitated surface. • No evidence of soil profile development in rehabilitated areas.	• Monthly inspection to identify need for corrective action. Topsoil to be re-worked to achieve uniform distribution. Additional ameliorants may be required. • Soil profile development influenced by original placement techniques and vegetation growth. Corrective actions to be developed based on specific conditions.
Landform	• Rehabilitated slopes are stable. • No significant erosion is present that would constitute a safety hazard or compromise the capability of supporting the end land use.	• Rehabilitated slopes are unstable or eroding. • Erosion causing a safety issue or impacting final land use.	• Stabilise slopes via erosion control or earthworks, or drainage controls as appropriate. • Adapt erosion control strategy to stabilise landform.

Aspect	Preliminary Rehabilitation Performance and Completion Criteria	Trigger for Action	Potential Corrective Action
Vegetation Composition, Function and Structure	• Key BAM rehabilitation criteria for vegetation, composition and structure are generally consistent with analogue monitoring sites based on the ecological monitoring program.	• Rehabilitation monitoring locations are greater than 20% outside the preferred BAM criteria compared to analogue sites.	• Increase rehabilitation maintenance. • Possible additional work such as replanting or seeding.
Water	• Runoff water quality from the site does not pose a threat to downstream water quality.	• Poor quality runoff downstream. Water samples not within the range of the EPL criteria. Section 7.2 of the approved Water Management Plan states: *Prior to discharging from sedimentation basins over the design storm, the following criteria will be achieved:* • *50 mg/L Total Suspended Solids (TSS)* • *No visual oil and grease; and* • *pH between 6.5 and 8.5.*	• Review water quality results and determine activities/site locations contributing to water quality. Modify erosion control/water treatment measures as required.

Table 13 Completion Criteria for Offset Area

Aspect	Preliminary Rehabilitation Performance and Completion Criteria	Trigger for Action	Potential Corrective Action
Weed and Pests	• Regular bi-monthly inspections indicate declining weed diversity, density and abundance and a decline in signs of feral animal activity.	• Increased noxious or environmental weeds and evidence of feral animal activity.	• Undertake weed/feral animal control as required.
	• No increase in priority weeds under listed for the Muswellbrook Shire Council and Hunter Local Land Services Regions.	• Priority weeds under listed for the Muswellbrook Shire Council and Hunter Local Land Services Regions high threat weed species increase.	• Undertake weed/feral animal control as required.
	• There is no evidence of significant damage resulting from feral animal activity.	• Evidence of significant feral animal damage to offset area.	• Adapt/modify feral animal control strategy.
Landform	• The offset area is stable. • No significant erosion is present that would constitute a safety hazard for the longterm landform stability.	• The offset area slopes are unstable or eroding. • Erosion causing a safety issue or impacting longterm landform stability.	• Stabilise slopes via erosion control or earthworks, or drainage controls as appropriate. • Adapt erosion control strategy to stabilise landform.
Vegetation Composition, Function and Structure	Key BAM offset criteria for vegetation, composition and structure are generally consistent with analogue monitoring sites based on the ecological monitoring program.	• Offset monitoring locations are greater than 20% outside the preferred BAM criteria compared to analogue sites.	• Increase maintenance. • Possible additional work such as replanting or seeding.
Water	• Runoff water quality from the site does not pose a threat to downstream water quality. Note there is no EPL criteria associated with the offset area.	• Poor quality runoff downstream.	• Water quality testing if required. Modify erosion control/water treatment measures as required.

7 MONITORING AND INSPECTIONS

7.1 Proposed Ecological Monitoring/Offset Area

An ecological baseline survey will be completed in the Project Approval area and within offset area prior to quarry commencement.

- Based on feedback from the BCD in October 2020 additional information has been added to this section (see Table 6 - BCD Recommendation 10). The BCD recommends that the monitoring of flora and fauna on site follows the Biodiversity Assessment Method. A copy of the BAM DPIE Guideline is included in the link below:

https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-2020-200438.pdf

Following the completion of the ecological baseline survey, UHH will undertake formal ecological monitoring every two years. In the intervening years, the site manager will qualitatively monitor the progress, area and status of temporary and permanent rehabilitation areas in the annual report under Schedule 5 Condition 9.

UHH is still liaising with the ecologists about the specific components of this ecological monitoring program for the Development Consent and the offset area. A copy of the proposed methodology will be provided to DPIE and the BCD prior to commencing the ecological monitoring program. Ecological monitoring reports will be included as appendices in Annual Reviews.

The monitoring program will also review performance against the criteria in **Section 6.** Analogue sites will be selected as part of the ecological monitoring program, with these to be developed based on the advice of the ecologist.

The BCD has recommended (see Section 2.3) that additional information is included about recording of weeds as part of ecological monitoring. This will include:

- Reproductive state (e.g. juvenile, mature, in flower, in fruit / with young);
- Numbers of individuals; and
- Numbers of individuals in each reproductive state.

7.2 Proposed Rehabilitation Monitoring

Rehabilitation monitoring will be completed once there have been areas of final rehabilitation. It is proposed the following:

- As per the timing of the ecological monitoring (every two years until operations cease at the site);
- Same methodology as the ecological monitoring;
- Comparison of results to analogue sites.

7.3 Proposed Inspection Program

A walkover of the site should be conducted on a bi-monthly basis when the site is operational by completing an inspection checklist. The checklist will include but not be limited to, the following:

- Date of inspection;
- Location of weed, pest species, taken using a GPS;
- Name of pest species or weed species recorded;
- Number of individuals of the pest or weed species recorded;
- Photo if appropriate; and
- Methods of control implemented.

This walkover will include disturbed areas required for active mining, remnant vegetation and any rehabilitation areas.

8 REPORTING AND COMPLIANCE MANAGEMENT

8.1 Annual Review

When informal qualitative biodiversity monitoring is undertaken (Section 7.1), a summary of the results will be provided in the Quarry Annual Review. When the formal ecological monitoring is undertaken every two years and reported it will be provided in the next Annual Review report with any ecological/rehabilitation monitoring reports attached. The Annual Review will be prepared and submitted to the Secretary, in accordance with Schedule 5 Condition 9 of the Development Consent. The Annual Review will be made available to the public on the Quarry's website once developed.

A qualitative discussion of the effectiveness of the biodiversity management controls utilised will be reported to the DPIE in the Annual Review. This will be supplemented every second year by a discussion of the quantitative effectiveness of the controls following the formal two year ecological monitoring process. The Annual Review will also identify whether any change to existing or additional management controls are required to be implemented at the Quarry in order to achieve the rehabilitation objectives or completion criteria.

8.2 External Reporting

In accordance with Schedule 5 Condition 8 of the Development Consent, UHH will provide regular reporting on the environmental performance of the operations on its website. This will include outcomes of plans and programs as contained within this BRMP.

8.3 Incident/ Non Compliance Reporting

Incidents that have caused or threaten to cause material harm to the environment will be reported to the Secretary, EPA and relevant stakeholders immediately once the Quarry becomes aware of the incident in accordance with the Quarry's Pollution Incident Response Management Plan (PIRMP). Reporting for material harm incidents will be undertaken in accordance with Schedule 5 Condition 7 of the Development Consent.

If non – compliances of the Development Consent have been identified , they will be reported to DPIE in accordance with Schedule 5 Condition 9

8.4 Complaints Management

If there are any complaints related to rehabilitation or biodiversity management these will be managed in accordance with the Environmental Management Strategy.

8.5 Adaptive Management

In accordance with Schedule 5 Condition 5 of the Development Consent, UHH will assess and manage biodiversity related risks to ensure compliance with the objectives and completion criteria outlined in this plan.

Where a non-compliance relating to biodiversity impact has occurred, UHH, at the earliest opportunity will:

- Take all reasonable and feasible steps to ensure the incident ceases and does not reoccur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

Contingency measures that will be implemented while reasonable and feasible options are being explored include demarcating affected areas to prevent further access, implementing additional sediment and erosion controls to minimise potential for further disturbance.

8.6 Document Review

Schedule 5 Condition 3 of the Development Consent states management plans should be reviewed:

Within 3 months of the submission of an:

a) Annual Review under condition 9 below;

b) incident report under condition 7 below;

c) audit report under condition 10 below; and

d) any modifications to this consent,

the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.

The requirement to update management plans at the site will be assessed as part of each Annual review, unless triggered earlier under this consent condition. If no update is required, then no management plan review will be completed.

9 ACCOUNTABILITIES

Environmental management at the Quarry will be the responsibility of all employees and contractors, with the Quarry Manager having overall responsibility for environmental management of the operations.

Environmental roles and responsibilities related to biodiversity and rehabilitation management for the project personnel are outlined in **Table 14**.

Table 14 Roles and Responsibilities

Role	Accountabilities for this document
Quarry Manager	• Approve appropriate resources for the effective implementation of this plan. • Coordinate and assist with the review of this plan in accordance with the requirements of the Development Consent. • Coordinate the implementation of biodiversity management controls and strategies in accordance with this Plan. • Coordinate the biodiversity monitoring requirements of this plan. • Ensure monitoring records are effectively maintained on site. • Ensure that the personnel involved in carrying out and monitoring of the activities required under this plan are suitably qualified, licensed and experienced to undertake the task. • Ensure all internal and external biodiversity reporting requirements are met. • Periodically review monitoring results and progress against targets and performance indicators in accordance with the requirements of this plan. • Assess the effectiveness of the management strategies and instigate the adaptive management process as required. • Identify any corrective actions required to meet the objectives and targets of this plan. • Coordinate biodiversity related incident investigations and reporting as required by legislation and internal standards and guidelines. • Review of this plan as required by the Development Consent. • Comply with all requirements in this Plan. • Report all potential environmental incidents to the Quarry Manager immediately. • Seek approval from the Quarry Manager prior to making changes to infrastructure/ processes which may result in increased biodiversity risks.

10 DEFINITIONS

The terminology utilised within this BRMP is defined in **Table 15** below.

Table 15 Definitions

Term	Definition
BC Act	NSW *Biodiversity Conservation Act 2016*
BCD	Biodiversity Conservation Division
BRMP	Biodiversity and Rehabilitation Management Plan
CCC	Community Consultative Committee
Development Consent	DA SSD 6519
DNG	Derived Native Grassland
DPI	Department of Primary Industries
EEC	Endangered Ecological Community
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EIS	Environmental Impact Statement
DA	Development Application
DPE	Department of Planning and Environment
Incident	An occurrence or set of circumstances that: Causes, or threatens to cause material harm to the environment; or results in non- compliance with the consent
Secretary	The Secretary of the NSW Department of Planning and Environment, including any authorised delegate or nominee.
UHH	Upper Hunter Holdings Pty Ltd

11 REFERENCES

Department of Primary Industries (DPI). 2018. Priority Weeds for the Hunter. https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=95. Accessed December 2018

KMH Environmental. 2015. Dolwendee Quarry Project Environmental Impact Statement. Prepared by KMH Environmental for Upper Hunter Holdings.

NSW Rural Fire Service, 2006a. Bush Fire Environmental Assessment Code for New South Wales

NSW Rural Fire Service, 2006b. Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code

National Parks and Wildlife Services (NPWS) 2004. Guidelines for Ecologically Sustainable Fire Management

Office of Environment and Heritage (OEH) (2018) Threatened Biodiversity Profile. https://www.environment.nsw.gov.au/threatenedSpeciesApp/ accessed December 2018.

Umwelt (Australia) Pty Ltd (Umwelt), 2015. Ecological Assessment Dolwendee Quarry. Prepared by Umwelt for Upper Hunter Holdings Pty Ltd

Umwelt (Australia) Pty Limited 2006. 2006 Ecological Assessment Anvil Hill Project – Centennial Hunter Pty Limited – June 2006.

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

APPENDIX A

Rehabilitation Bond

Site Registration

Complete the following fields prior to calculating the security bond.

Mine Name:	Dolwendee Quarry Project		
Lease(s)	No Leases		
Quarry Owner	Upper Hunter Holdings Pty Ltd		
Quarry Operator	Upper Hunter Holdings Pty Ltd		
Expiry of MOP	N/A		
Current Security	$ -	**Date of last Security Bond review**	First calculation
Mine Contact	Gary Williams		
Position			
Address	Lot 1 DP 1160936 Lot 2 DP 1160936 Lot 3 DP 1160936 Lot 4 DP 1160936 Lot 1 DP 1178562		
Phone	427016101	**e-mail**	gary@united.services

NSW GOVERNMENT Resources & Energy

Summary Rehabilitation Cost Calculation

Note: Sections of this page are automatically filled in from the registration page

Mine Name:	Dolwendee Quarry Project
Lease(s):	No Leases
Mine Owner:	Upper Hunter Holdings Pty Ltd
Mine Operator:	Upper Hunter Holdings Pty Ltd
Expiry of MOP:	N/A
Current Security:	$ -
Date of Last Security Bond Review:	First calculation
Mine Contact:	Gary Williams
Position:	
Address:	Lot 1 DP 1160936 Lot 2 DP 1160936 Lot 3 DP 1160936 Lot 4 DP 1160936 Lot 1 DP 1178562
Phone:	427016101
email:	gary@united.services

Domain	Security Deposit
Domain 1: Infrastructure Areas	$23,672.25
Domain 2: Tailings & Rejects Emplacements (if applicable)	
Domain 3: Waste Rock Dumps	
Domain 4: Active Quarry & Voids	$67,992.23
Domain 5: Other	
Sub-Total (Domains and Sundry Items)	**$91,664.48**
Contingency	$13,680.08
Third Party Project Management	$45,136.32
Total Security Deposit for the Mining Project (excl. of GST)	**$150,480.88**

Note: GST is not included in the above calculation or as part of rehabilitation security deposits required by the Department

☐ Alterations have been made to unit prices within this spreadsheet. (Attach a separate sheet providing details of changes)

☑ The proposed rehabilitation design is generally consistent with the development consent for the project

This Registration Form, Summary Report and calculation pages are to be printed and attached as an appendix the AEMR.

This mine security calculation has been estimated using the best available information at the time.
It is a true and accurate reflection of the total rehabilitation liability held by this mine.

Signature **Print Name** **Date:**
Project Manager

Signature **Print Name** **Date:**
Accepted: DPIE Reporting Officer

Domain 1: Infrastructure Areas

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

General Assumptions:
* The haul road will remain and intersection will remain at closure;
* This RCE calculates the cost for 'rehabilitation of disturbed areas at site at end of Year 3'; and
* Areas and dxf files have been provided by Dolwendee Quarry representatives.

Management Precinct	Activity / Description	Quantity	Unit	Unit Price	Total Cost	2020 Comments
Workshops, Rock Crushing & Product Stockpile area(s)	Disconnect and terminate services	0	@	$12,773.29	**$0.00**	No cost. Power by generator.
	Disconnect and terminate powerlines	0	km	$14,050.62	**$0.00**	No powerlines for this project. Diesel generators used for power.
	Demolish and remove small buildings (Portable)	40	m^2	$40.00	**$1,600.00**	General area based on information from Dolwendee Quarry representatives. Portable building removal cost.
	Demolish and remove industrial buildings - crushing plant, washplant and pug mill	0	m^2	$204.37	**$0.00**	No cost proposed. Dolwendee Quarry representatives are stating that all plant will be temporary (ie. No fixed plant).
	Demolish and remove industrial buildings - workshop area buildings	0	m^2	$204.37	**$0.00**	N/A to site
	Demolish and remove conveyors & gantries (includes overland conveyors)	0	m	$70.25	**$0.00**	No cost proposed. Dolwendee Quarry representatives are stating that all plant will be temporary (ie. No fixed plant).
	Remove Concrete pads and Footings		m^2	$12.77	**$0.00**	No cost proposed. Dolwendee Quarry representatives are stating that all plant will be temporary (ie. No fixed plant).
	Remove contaminated material from workshop and hardstand areas for disposal in the void **AND/OR**	0	m^3	$2.55	**$0.00**	N/A to site
	Reshaping, capping, sealing of material presenting environmental difficulties (AMD, Hydrocarbon material, etc)	0	Ha	$57,479.81	**$0.00**	N/A to site
	Removal of UG tank (including pipes, bunds, etc). Include all facilities on site.	0	@	$95,799.69	**$0.00**	N/A to site
	On site remediation of contaminated soil (<1000m^3)	0	m^3	$63.87	**$0.00**	N/A to site
	On site remediation of contaminated soil (1000-10,000m^3)	0	m^3	$51.09	**$0.00**	N/A to site
	On site remediation of contaminated soil (>10,000m^3)	0	m^3	$38.32	**$0.00**	N/A to site
				Precinct Security Deposit	**$1,600.00**	
Rail Line and Loop (if applicable)	Remove Rail Loop and spur	0	m	$7.66	**$0.00**	N/A to site
	Reshape rail spur and loadout area	0	Ha	$6,386.65	**$0.00**	N/A to site
	Final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	N/A to site
	Spoil amelioration and supply and spread pasture seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	N/A to site
				Precinct Security Deposit	**$0.00**	
Admin Buildings	Disconnect and terminate services	0	@	$6,386.65	**$0.00**	All power is by diesel generator.
	Demolish and remove small buildings	0	m^2	$40.00	**$0.00**	
	Demolish and remove industrial buildings	0	m^2	$204.37	**$0.00**	
	Remove Concrete pads, Footings and bitumen (carpark)	0	m^2	$12.77	**$0.00**	
				Precinct Security Deposit	**$0.00**	

Access & Haul Roads	Management of Extension Access Roads	0	m^2	$12.77	**$0.00**	The site is planning to keep the haul road at closure to assist with future fire fighting access. Therefore no cost.
	Reshape deep rip and ameliorate sealed unsealed roads within the site.	0	Ha	$6,386.65	**$0.00**	
	Source, cart and spread topsoil.	0	m^3	$1.53	**$0.00**	
	Spoil amelioration and supply and spread seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	
				Precinct Security Deposit	**$0.00**	
Sewerage Treatement	Disconnect and terminate services	0	@	$3,193.32	**$0.00**	Site will run on septic system. However there is an approval for an approved dwelling at the property, therefore this will remain. No cost.
	Demolish and remove small buildings / tanks	0	m^2	$40.00	**$0.00**	N/A to site
	Remove contaminated material from areas for disposal (ie. chemical spillage in / around storage sheds).	0	m^3	$2.55	**$0.00**	N/A to site
				Precinct Security Deposit	**$0.00**	
Overall Rehabilitation of Infrastructure Area	Remove contaminated material from areas for disposal (ie. chemical/hydrocarbon spillage in the hard stand area).	0	m^3	$2.55	**$0.00**	N/A to site
	Final trim, rock rake & deep rip	3.2	Ha	$638.66	**$2,043.73**	This includes the area classified as infrastructure. This includes the cleared area for carpark and buildings. Allowance for other clearing around entrance and areas for stockpiles. Assuming no major shaping required for this area.
	Source, cart and spread topsoil.	3200	m^3	$1.53	**$4,904.94**	Estimate of 3.2 ha x 0.1m of topsoil.
	Spoil amelioration and supply and spread seed and fertiliser.	3.2	Ha	$4,726.12	**$15,123.58**	Soil amelioration and seeding.
				Precinct Security Deposit	**$22,072.25**	

Total Security Deposit for the "Domain" **$23,672.25**

Domain 2: Tailings & Rejects Emplacements (if applicable)

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

Tailings Dam / Impoundment (Key Information):

Materials Stored (ie. coal fines, coarse or co-disposed)	0
Volume Stored (m3)	0
Maximum Embankment Height (m)	0
Maximum Embankment Length (m)	0
Year Dam / Emplacement Commissioned	0
Storage area (ha)	0
Catchment Area of Tailings Dam / Emplacement (ha)	0
Briefly describe embankment construction. (earthen, clay /rejects core, etc)	No tailings associated with this quarry.

Management Precinct	Activity / Description	Quantity	Unit	Unit Price	Total Cost	2020 Comments
Tailings Dams / Emplacements	Source, cart and spread suitable material to cap the tailings emplacement (cap thickness determined by MOP)	0	m^3	$2.55	**$0.00**	No tailings associated with this quarry.
	Apply engineered treatment as required (i.e. capping, capillary breaks, etc) - design in accordance with the MOP commitments.	0	Ha	$57,479.81	**$0.00**	
	Reshape walls / buttress around the dam / emplacement - *earthworks only*	0	Ha	$6,386.65	**$0.00**	
	Final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	
	Structural works, banks waterways	0	Ha	$1,788.26	**$0.00**	
	Source, cart and spread topsoil.	0	m^3	$1.53	**$0.00**	
	Spoil amelioration and supply and spread seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	
	Maintenance of rehabilitated areas (up to 5 years)	0	Ha	$830.26	**$0.00**	
		Precinct Security Deposit			**$0.00**	

Total Security Deposit for the "Domain" **$0.00**

Domain 3: Waste Rock Dumps

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

Management Precinct	Activity / Description	Quantity	Unit	Unit Price	Total Cost	2020 Comments
Successful Rehabilitation	Maintenance of **Established** Revegetated Area	0	Ha	$830.26	**$0.00**	No areas classified as waste rock dumps at Yr 3. All covered under 'Active Quarry and Voids'.
	Maintenance of Shaped Topsoiled and Seeded	0	Ha	$830.26	**$0.00**	
				Precinct Security Deposit	**$0.00**	
Shaped Waste Rock Dumps	Final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	
	Structural works, banks, rock lined waterways	0	Ha	$1,788.26	**$0.00**	
	Source, cart and spread topsoil.	0	m^3	$1.53	**$0.00**	
	Spoil amelioration and supply and spread seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	
	Maintenance of rehabilitated areas (up to 5 years)	0	Ha	$830.26	**$0.00**	
				Precinct Security Deposit	**$0.00**	
Unshaped Waste Rock Dumps (minor reshaping required)	Minor pushing, final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	
	Structural works, banks, rock lined waterways	0	Ha	$1,788.26	**$0.00**	
	Source, cart and spread topsoil.	0	m^3	$1.53	**$0.00**	
	Spoil amelioration and supply and spread seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	
	Maintenance of rehabilitated areas (up to 5 years)	0	Ha	$830.26	**$0.00**	
				Precinct Security Deposit	**$0.00**	
Unshaped Waste Rock Dumps (major earthworks required)	Major bulk pushing to achieve grades nominated in the MOP (i.e < 18°)	0	m^3	$1.41	**$0.00**	
	Minor pushing, final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	
	Structural works, banks, rock lined waterways	0	Ha	$1,788.26	**$0.00**	
	Source, cart and spread topsoil.	0	m^3	$1.53	**$0.00**	
	Spoil amelioration and supply and spread seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	
	Maintenance of rehabilitated areas (up to 5 years)	0	Ha	$830.26	**$0.00**	
				Precinct Security Deposit	**$0.00**	

Total Security Deposit for the "Domain" **$0.00**

Domain 4: Active Quarry & Voids

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

Management Precinct	Activity / Description	Quantity	Unit	Unit Price	Total Cost	2020 Comments
Active Pit (including the voids and any internal benches or mine strips)	Major bulk pushing of the low wall are to achieve grades nominated in the MOP (i.e < 18°)	0	m^3	$1.41	**$0.00**	Assuming at Year 3 only minor reshaping in active pit area.
	Active pit area - benches blasted and doze to < 18°	0	m^3	$1.41	**$0.00**	
	Final trim, rock rake & deep rip	2.85	Ha	$638.66	**$1,820.19**	Area provided at Yr 3 is 2.85 ha. Includes some benches and pit areas. Assumes that there will be no final void at that point, therefore full cost of rehab area.
	Structural works, banks waterways	2.85	Ha	$1,788.26	**$5,096.54**	Area provided at Yr 3 is 2.85 ha. Includes some benches and pit areas. Assumes that there will be no final void at that point, therefore full cost of rehab area.
	Source, cart and spread topsoil (at 10cm)	2850	m^3	$1.53	**$4,368.47**	10cm of topsoil x 28500m2. Low rate used due to small distance of haulage.
	Spoil amelioration and supply and spread / tree pasture seed and fertiliser.	2.85	Ha	$4,726.12	**$13,469.44**	Area provided at Yr 3 is 2.85 ha. Includes some benches and pit areas. Assumes that there will be no final void at that point, therefore full cost of rehab area.
				Precinct Security Deposit	**$24,754.64**	
Ramps	Major bulk pushing of the low wall are to achieve grades nominated in the MOP (i.e < 18°)	0	m^3	$1.41	**$0.00**	N/A to the site.
	Final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	N/A to the site.
	Structural works, banks waterways	0	Ha	$1,788.26	**$0.00**	N/A to the site.
	Source, cart and spread topsoil.	0	m^3	$2.55	**$0.00**	N/A to the site.
	Spoil amelioration and supply and spread pasture / tree seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	N/A to the site.
				Precinct Security Deposit	**$0.00**	
Highwall/Bench Area	Drill & Blast Highwall **OR**	0	m^3	$0.89	**$0.00**	Covered under 'Active Pit area'.
	Major bulk pushing of the high wall are to achieve grades nominated in the MOP (i.e < 18°)	0	m^3	$1.41	**$0.00**	Assuming at Year 3 only minor reshaping of some benches would be required. No major bulk pushing.
	Final trim, rock rake & deep rip	0	Ha	$638.66	**$0.00**	N/A to the site.
	Source, cart and spread topsoil (at 15cm)	0	m^3	$1.53	**$0.00**	N/A to the site.
	Spoil amelioration and supply and spread pasture seed and fertiliser.	0	Ha	$4,726.12	**$0.00**	N/A to the site.
	Security Fence around steep section highwall	300	m	$63.87	**$19,159.94**	Estimate at Yr 3 there would be approximately 300m of steeper highwall areas. Estimation only. Cost to make safe if closure to occur at Yr 3.
	High wall treatment - (trench + safety berm)	300	m	$73.45	**$22,033.93**	Estimate at Yr 3 there would be approximately 300m of steeper highwall areas. Estimation only. Cost to make safe if closure to occur at Yr 3.
				Precinct Security Deposit	**$41,193.87**	
Disturbance ahead of Mining + water management structures	Areas cleared ahead of mining - re-establish vegetation commensurate with surround vegetation	0	Ha	$2,682.39	**$0.00**	N/A to the site.
	Areas topsoil stripped ahead of mining - source cart and respread topsoil	0	m^3	$2.55	**$0.00**	N/A to the site.
	Reshape, deep rip, ameliorate and seed highwall / internal access roads and tracks	0	Ha	$6,386.65	**$0.00**	N/A to the site.
	Reshape, deep rip, ameliorate and seed exploration lines / areas	0	Ha	$4,726.12	**$0.00**	N/A to the site.
	Clean water dams to be retained after mine closure -make safe and minor earthworks.	0	@	$2,554.66	**$0.00**	N/A to the site.
	Dirty Water Dams (Drain and remove sediments to make dam water clean)	500	m^3	$4.09	**$2,043.73**	Based on removing 0.5m of sediment from 1 onsite Dam. Estimate of 40m2 x 0.5m depth. Other small dams on site also included. Dams to be remained onsite at closure.
				Precinct Security Deposit	**$2,043.73**	

River & Creek Diversions	Creek diversion - Channel maintenance through spoil / backfill (20% of estimated diversion construction costs due to unknown in landform stability)	0	m	$383.20	**$0.00**	N/A to the site.
	Creek diversion - Channel maintenance insitu (10% of estimated construction cost for diversion)	0	m	$191.60	**$0.00**	N/A to the site.
	Creek diversion - Vegetation maintenance	0	m^2	$0.38	**$0.00**	N/A to the site.
			Precinct Security Deposit		**$0.00**	

Total Security Deposit for the "Domain" **$67,992.23**

Domain 5: Other

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

Management Precinct	Activity / Description	Quantity	Unit	Unit Price	Total Cost	2020 Comment
Other (eg. site contamination, closure plan preparation, etc)	The restoration and care and maintenance of items that have historical significance and are to be retained after the cessation of mining	0	@	$25,546.58	**$0.00**	N/A to the site.
	Cap exploration holes	0	@	$319.33	**$0.00**	N/A to the site.
	Construction / Deconstruction of Bridges and crossings	0	@	$0.00	**$0.00**	N/A to the site.
	Removal of Fencing Around Disturbance Footprint	0	m	$20.00	**$0.00**	None
				Precinct Security Deposit	**$0.00**	

Total Security Deposit for the "Domain" **$0.00**

Third Party Project Management & Contingencies

Detail of person filling out the Worksheet:

Name	Chris Jones (SLR Consulting)
Position	Principal Environmental Scientist
Department	
Date	May 2020

Legend:

	Item fixed no entry required
	Input from site optional (if information available)
	Input mandatory

Item	Activity / Description	Quantity	Unit	Cost	Total Cost	2020 Comment
				Sub-Total (Domains)	**$91,664.48**	
Third Party Project Management	Mobilisation & Demobilisation (third party contractor rates apply).	1	@	$10,000.00	**$10,000.00**	Cost would have to be determined (justified) on the basis of the equipment required and the distance of the mine from the likely contractor to be used.
	DRE Tender Preparation and Assessment	1	@	$6,386.65	**$6,386.65**	Values provided in this cell are provided as a minimum, and should be assessed based on the size of the site, and works required.
	Development of Unplanned Closure Plan	1	@	$15,000.00	**$15,000.00**	Estimated Cost - $15K
	Post closure environmental monitoring	5%	%	$4,583.22	**$4,583.22**	% of the subtotal for all domains. Requirement of the tool.
	Project Management & Surveying	10%	%	$9,166.45	**$9,166.45**	% of the subtotal for all domains. Requirement of the tool.
				Sub-Total (Sundry Items)	**$45,136.32**	
				Sub-Total (Domain and Sundry Items)	**$136,800.80**	
Contingency	Contingency	10%	%	$136,800.80	**$13,680.08**	
				Precinct Security Deposit	**$150,480.88**	**exclusive of GST**

Sub-Total Rehabilitation Estimate for "Domains"	$91,664.48
Total Rehabilitation Estimate for "Sundry Items"	$45,136.32
Contingency (based on Sundry and Domains)	$13,680.08

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

APPENDIX B

Offset Bond

Total Fund Deposit worksheet (Part A costs)

This template should be used for estimating the Total Fund Deposit and preparation of the payment schedule

Site location	**Lot 1 DP 1160936**
Site owner	**Upper Hunter Holdings Pty Ltd**
Are you registered for GST/do you have an ABN?	**Yes**
ABN	**45 107 761 179**
(OFFICE USE ONLY: REFERENCE NUMBER):	
(OFFICE USE ONLY: SAP WBS):	

Add row for **management action cost**

Add row for **other recurring cost**

Real discount rate
2.60%

Management action costs	Timing			Estimated annual cost ($)	1	2	3
	Start year	End year	Frequency				
Install Livestock Exclusion Fencing (southern boundary only)	1	1	1	3,600	3,600	0	0
Ecological Baseline Survey	1	20	5	7,500	7,500	0	0
Ecological Baseline Report	1	20	5	2,500	2,500	0	0
Weed Control - Intensive	1	5	1	3,000	3,000	3,000	3,000
Seed Collection and Propagation	4	4	1	3,000	0	0	0
Vertebrate Pest Control - Intensive	4	4	1	5,000	0	0	0
Vertebrate Pest Control - Ongoing	5	20	5	2,000	0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
Other recurring costs							
Annual reporting fee	1		1	1,545	1,545	1,545	1,545
Rates (E.g. Council)	1	20	1	1,000	1,000	1,000	1,000
Insurances (E.g. Fences, Public Liability)	1	20	1	600	600	600	600
Business management and administration costs	1	20	1	3,000	3,000	3,000	3,000
					0	0	0
					0	0	0
					0	0	0
Site management cost in today's value					22,745	9,145	9,145
Present Value (PV) of the site management cost					22,745	8,913	8,687
Discount factors					100%	97%	95%

	1	2	3
Annual site management costs in today's values	$22,745	$9,145	$9,145
Annual reporting fee	$1,545	$1,545	$1,545

630.12907 Three year TFD Calculations

Working Cost Estimates and Assumptions

Background Site Info (EA Umwelt 2015, BRMP Umwelt 2019)

Offset Area: 16ha Lot 1 DP 1160936 (approx northern half). LHH owned and managed. To be secured in perpetuity.

Endangered Flora: 247 specimens of *Diuris tricolor* (species and population) ($43.25 per species)

Endangered Fauna: Speckled Warbler

Endangered Communities: Central Hunter Grey Box Ironbark Woodland (13ha), White Box-Yellow Box-Blakely's Red Gum Woodland (1.6ha)

Other vegetation: Derived native grassland of WBYBBRW (1.3ha) - not assessed as TEC

Weeds at quarry impact area: Scarlet Pimpernel, Prickly Pear, Fireweed, Narrow-leaved Cottonbush

Pests at quarry impact area: Dog, Rabbit, Fox, Hare, Deer, Cat.

Management: "*Preliminary on-ground works will likely involve: weed and pest control programs; fencing of the southern boundary of the biodiversity offset area to exclude stock access (refer to Figure 7.2); undertaking ecological monitoring across the Biodiversity Offset Area to monitor the success of the recovery of DNG areas*. (Umwelt 2015)"

MANAGEMENT ACTION	Unit	No.	Rate	Sub-Total	Contin	Total	Comments and Assumptions
Install Livestock Exclusion Fencing	$/km	0.4	$9,000.00	$3,600.00	0.00	$3,600.00	* Southern boundary only (400m) as per Umwelt recommendation. * Cost to install 3-strand with barb stock exclusion fencing = $9/m ($9000/km) (material and labour).
Livestock Exclusion Fence Maintenance	Day rate fencing contrator ($500)	1	$1,000.00	$1,000.00	0.00	$1,000.00	* One-day inspection and maintenance every five years by fencing contractor * Including materials and labour.
Ecological Baseline Survey	Day rate ecologist team ($2500)	3	$2,500.00	$7,500.00	0.00	$7,500.00	* Three day/two night survey. * Flag specimens of *D. tricolor* within 1.3ha WBYBBRW Derived Native Grassland during flowering (Sept-Oct) * Three BBAM plots in each vegetation type. * Four D. tricolor population monitoring plots. * Map location and types of weeds. * Vertebrate pest survey map dens/burrows, IR cameras for two nights.
Ecological Baseline Reporting	Lump Sum	1	$2,500.00	$2,500.00	0.00	$2,500.00	* Weed and pest mapping. * Update Umwelt threatened flora and vegetation mapping if required.
Weed Control - Intensive	Day rate bush regen team ($1500)	2	$1,500.00	$3,000.00	0.00	$3,000.00	* Bi-annual hand removal weeding in first three years. * Low impact techniques due to *D. tricolor* and EEC veg. * Invoices to include work summary
Weed Control - Ongoing	Day rate bush regen team ($1500)	1	$1,500.00	$1,500.00	0.00	$1,500.00	* One-day low impact weeding on a five yearly basis. * Invoices to include work summary
Seed Collection and Propagation	Lump Sum	1	$3,000.00	$3,000.00	0.00	$3,000.00	* In preparation for year 5 planting, seed collection is to occur in year four during optimal seeding season (spring). * Small allowance as minimal revegetation likely (at 1.3ha WBYBBRW Derived Native Grassland). * Umwelt state that natural regen is likely after fencing. *D. tricolor* typically prefers areas of disturbance (more open). * Invoices to include work summary
Revegetation - Planting	Day rate bush regen team ($1500)	1	$1,500.00	$1,500.00	0.00	$1,500.00	* Small allowance in Year 5 (after results of stock exclusion are evident and seed has been propagated). * Minimal revegetation likely (at 1.3ha WBYBBRW Derived Native Grassland) * NB Umwelt state that natural regen is likely after fencing. Also note *D. tricolor* typically prefers areas of disturbance (more open?).
Revegetation - Maintenance	Day rate bush regen team ($1500)	3	$1,500.00	$4,500.00	0.00	$4,500.00	* Three follow-up surveys in Year 5 until plants are established, watering and replacement planting
Vertebrate Pest Control - Intensive	Lump Sum	1	$5,000.00	$5,000.00	0.00	$5,000.00	* Contractor to conduct appropriate pest control (e.g. baiting program) in consultation with DPIE and LLS.
Vertebrate Pest Control - Ongoing	Lump Sum	1	$2,000.00	$2,000.00	0.00	$2,000.00	* Contractor to conduct follow-up pest control every 5 years, starting in year 4, in consultation with DPIE and LLS.
Ecological Fire Management	NA	0	$0.00	$0.00	0.00	$0.00	* Not enough information known about fire regimes suitable for EEC veg or *D. tricolor*. Can assume fire woud be appropriate in at least 30 year intervals, but allow to occur naturally. Site specific ecological monitoring may detect changes in weed density, species diversity and structural diversity which may indicate a need for fire management.
OTHER RECURRING COSTS							
Ecological Monitoring Surveys	Day rate ecologist team ($2500)	3	$2,500.00	$7,500.00	0.00	$7,500.00	* Three day/two night survey every five years * Three BBAM plots in each vegetation type. * Four *D. tricolor* population monitoring plots. * Map location and types of weeds. * Vertebrate pest survey map dens/burrows, IR cameras for two nights.
Ecological Monitoring Reporting	Lump Sum	1	$2,500.00	$2,500.00	0.00	$2,500.00	* Report on monitoring survey every five years
Rates (e.g. council)						$1,000.00	Provided by client
Insurance (e.g. fences, public liability)						$600.00	Provided by client
Business management and administration costs						$3,000.00	Estimate taken from OEH example

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

APPENDIX C

Correspondence from Muswellbrook Shire Council.

muswellbrook shire council

Enquiries
Please ask for Sharon Pope
Direct 02 6549 3868
Our reference
Your reference **SSD 6519**

18 March 2019

Trevor Allen Project Manager
Associate Senior Environmental Planner
Pitt & Sherry
info@pittsh.com.au

Dear Mr Allen,

Dolwendee Quarry – Stage 1 (SSD 6519)
Request for Input into draft Biodiversity & Rehabilitation Management Plan

I refer to your email dated 5 February 2019, requesting Council's input on the draft Biodiversity and Rehabilitation Management Plan (B&RMP) for stage 1 of the above project. Council thanks you for the opportunity to provide comments.

It is noted that Stage 1 of the proposal is to construct the new intersection and internal haul road, along with associated drainage and sediment control infrastructure, a car park and site office and initial quarry extraction for material required for the haul road.

While unlikely, it is possible that works on site may not progress beyond Stage 1. On this basis, the following comments are made:

1. **Soils and Land Degradation –** Council understands that there are erosion issues in the area, low soil fertility, high salinity and structural issues. Detailed assessment of the soils and geology of the site, and areas that will receive stormwater flows from the site, will need to be included in the soil and water management plan. Weed and erosion monitoring, as part of the B&RMP, should note if salinity is becoming an issue for maintenance of ground cover or encouraging the growth of weeds. Detailed rehabilitation plans should also account for this salinity issue.
2. **Rehabilitation of all surface infrastructure in Stage 1 should be contemplated in current documents –** Council has a keen interest in ensuring that the rehabilitation of quarry sites is completed to high standards, in line with industry best practice and to support post quarry land uses. The B&RMP should include information on the decommissioning, removal and intended rehabilitation of surface infrastructure, as required by condition 29 of the approval. If no further stages of the proposal proceed beyond Stage 1, this rehabilitation work should occur no later than 21 years from the commencement of Stage 1 works. Condition 29 provides the proponent with an opportunity to seek an alternative to rehabilitation from the Secretary. It is expected that this would be contemplated closer to cessation of quarry operations, if a land use is anticipated that requires the surface infrastructure to remain.
3. **Rehabilitation of Quarry after extraction for haul road -** The B&RMP should include information on rehabilitation of the quarry if no further stages of the proposal proceed beyond Stage 1. This rehabilitation work should occur no later than 21

years from the commencement of Stage 1 works. Consideration should be given to the employment of micro-relief to the site, in line with the principles of Geofluv design, to ensure long-term site stability and erosion control, and to create a more natural looking landscape post development.

4. **Biodiversity** and **Rehabilitation Bond** – Works in Stage 1 will result in removal of some vegetation and other site disturbances. The B&RMP should calculate the Bond required to cover rehabilitation of the Stage 1 works, as required by condition 32 & identified in condition 29.
5. **Advice on Acacia saligna and Rhodes grass –** These to plant species have been used in the past as part of rehabilitation of mine sites. Both these species have been shown to behave as weed species in the upper Hunter and their use should be avoided.

Other aspects of the draft B&RMP appear to be satisfactory.

Council appreciates the opportunity to comment and would be pleased to provide additional information if requested.

Yours faithfully

Sharon Pope
Assistant Director Environment and Community Services
sharon.pope@muswellbrook.nsw.gov.au

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

APPENDIX D

Correspondence with BCD

Trevor Allen

From: Steven Cox <Steven.Cox@environment.nsw.gov.au>
Sent: Monday, 4 February 2019 1:51 PM
To: Trevor Allen
Subject: RE: Dolwendee Quarry - consultation on AHCMP and Biodiversity Rehabilitation Management Plan for Development Consent 6519

Hi Trevor,

Thanks for the option to comment on the management plans at this stage of the process.

However we will wait until you have submitted the plans to the Department of Planning and Environment, and the Department then requests our review.

Regards
Steven

Steven Cox
Senior Team Leader Planning
Hunter Central Coast Branch
Conservation and Regional Delivery Division
Office of Environment & Heritage

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From: Trevor Allen <tallen@pittsh.com.au>
Sent: Monday, 4 February 2019 9:04 AM
To: OEH ROD Hunter Central Coast Mailbox <rog.hcc@environment.nsw.gov.au>
Subject: FW: Dolwendee Quarry - consultation on AHCMP and Biodiversity Rehabilitation Management Plan for Development Consent 6519

Attention: Robert Gibson

Please find attached Letter containing **Attachment 1** and **Attachment 2** provided separately for your consideration.

Regards

pitt&sherry

Trevor Allen

Senior Associate Environmental Planner
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Our ref: DOC20/688011-19
Your ref: SSD 6519

Ms Sarah Clibborn

Senior Environmental Assessment Officer
Minerals Quarry Assessments
Planning and Assessment Group
Department of Planning, Industry and Assessment
Sarah.Clibborn@planning.nsw.gov.au

Dear Ms Clibborn

Dolwendee Quarry (SSD 6519) – review of Biodiversity and Rehabilitation Management Plan

I refer to the e-mail from Planning and Assessment Group dated 21 August 2020 inviting Biodiversity and Conservation Division (BCD) to review the draft Biodiversity and Rehabilitation Management Plan (BRMP) for the Dolwendee Quarry. On 25 September 2020 you provided BCD with an updated version of the BRMP. The BRMP, written by SLR Consulting Australia Pty Ltd (dated 2 September 2020), has been prepared to meet Schedule 3, Conditions 31 and 32.

BCD's recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154 or via email at rog.hcc@environment.nsw.gov.au

Yours sincerely

16 October 2020

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division

Enclosure: Attachments A and B

Attachment A

BCD's recommendations

Dolwendee Quarry – Biodiversity and Rehabilitation Management Plan

1. BCD recommends that BRMP includes details of how the proponent will secure the biodiversity offset on Lot 1 DP 1160936 within 12 months of commencement.

2. BCD recommends that the final version of the BRMP includes details of the early and progressive implementation of rehabilitation.

3. BCD recommends that the BRMP includes details that link rehabilitation actions and objectives to the Biodiversity Offset Strategy.

4. BCD recommends that topsoil piles more than three months old are sown with a cover crop of native groundcover species found in the Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter.

5. BCD recommends that the native species used in Landform Shaping are species from Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter. If any pasture species are also used, then BCD recommends that they are species that have no chance on spreading to adjacent areas.

6. BCD recommends that the native species propagule collection for the project follows Florabank guidelines.

7. BCD recommends that Table 9 and Table 10 include vegetation composition, function and structure measurable performance and completion criteria.

8. BCD recommends that the management and monitoring of ecological rehabilitation follows the 'National standards for the practice of ecological restoration in Australia'.

9. BCD recommends that the performance measures, trigger points for adaptive management, and completion criteria in Table 9 and Table 10 follow 'SMART' principles.

10. BCD recommends that the monitoring of flora and fauna on site follows the Biodiversity Assessment Method.

11. BCD recommends that the weed and pest species monitoring gathers data to help determine if local populations are reproducing, and trends in their population.

12. BCD recommends that all field data collected in the rehabilitation areas is provided in the Annual Review.

13. BCD recommends that Figure 4 is redrawn so that all text is clear and legible and that it has a legend that explains the meaning behind the colours used.

14. BCD recommends that refences to 'OEH' are updated to the current agency titles.

BCD's detailed comments

Dolwendee Quarry–Biodiversity and Rehabilitation Management Plan

1. More details are required of how the proponent will secure the biodiversity offset

Section 3.1 of the Biodiversity and Rehabilitation Management Plan (BRMP) prepared by SLR Consulting Australia Pty Ltd (dated 2 September 2020) has the commitment from the proponent to provide a suitable arrangement for securing the biodiversity offset on Lot 1 in Deposited Plan 1160936. Schedule 3, Condition 28 of the consent provides 12 months from the commencement of development for the offset to be secured. The Biodiversity Conservation Trust is the lead agency for securing biodiversity offsets, and the process may take more than 12 months to be completed.

Recommendation 1

BCD recommends that BRMP includes details of how the proponent will secure the biodiversity offset on Lot 1 DP 1160936 within 12 months of commencement.

2. On-going rehabilitation is required in order to meet consent conditions

Sections 2.1 and 5.10 of the BRMP state that major rehabilitation works would not occur until 20 years or more into the future, associated with quarry closure; but this not in agreement with Schedule 3, Condition 30 of the consent.

Recommendation 2

BCD recommends that the final version of the BRMP includes details of the early and progressive implementation of rehabilitation.

3. The integration between rehabilitation and biodiversity needs to be explained

Section 5.10 'Integration between Rehabilitation and Biodiversity' does not describe how these two aspects of the project are linked. For example, how will rehabilitation of the site be done to favour particular local threatened species? What is the planned use of the site following cessation of quarrying activities? How does rehabilitation of the quarry site relate to the Biodiversity Offset land to the north east?

Recommendation 3

BCD recommends that the BRMP includes details that link rehabilitation actions and objectives to the Biodiversity Offset Strategy.

4. Topsoil stockpiles should be managed to preserve local biodiversity values

Section 5.2.3 of the BRMP summarises topsoil management planned for the site and identifies the stages of development likely to require soil stockpiling in Table 1 'Phase 1 and 2 Summary'. No details have been provided of the 'suitable cover crop' that would be used for soil stockpiles more than three months old. There is the risk that cover crops of species such as Rhodes Grass (*Chrloris gayana*), Couch (*Cynodon dactylon*) or African Lovegrass (*Eragrostis curvula*) could act as weeds that inhibit regeneration when the topsoil is respread.

Recommendation 4

BCD recommends that topsoil piles more than three months old are sown with a cover crop of native groundcover species found in the Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter.

5. More details are required on the plant species mix to be used in Landform Shaping

Section 5.2.2 'Landform Shaping' states that disturbed areas outside of the quarry that are not planned to be retained in the final landform will be ripped and revegetated with either native species or pasture species as per the 'Blue Book'. BCD recommends that the native species chosen are species found in Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter.

The 'Blue Book' (Managing Urban Stormwater: Soils and Construction by Landcom (2004)) is written primarily for urban areas where the use of a largely exotic pasture mix to stabilise landforms is more appropriate. However, the Dolwendee Quarry Site is within a large remnant of primarily native vegetation, so care is needed when adding exotic plants to the site, where they may become weeds.

Recommendation 5

BCD recommends that the native species used in Landform Shaping are species from Plant Community Type HU905 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter. If any pasture species are also used, then BCD recommends that they are species that have no chance on spreading to adjacent areas.

6. Seed and propagule collection from local plants should follow Florabank guidelines

Section 5.2.4 'Direct Seeding and Planting' states that seeds and plant materials to augment rehabilitation will be sourced locally, but few details of how this will be done are provided. BCD recommends that Florabank guidelines are followed to ensure that current best-practice seed and propagule collection is applied. The Florabank guidelines are available at https://www.greeningaustralia.org.au/publications/

Recommendation 6

BCD recommends that the native species propagule collection for the project follows Florabank guidelines.

7. Preliminary Performance and Completion Criteria require measurements for vegetation composition, function and structure

Table 9 'Preliminary Performance and Completion Criteria for Rehabilitation Areas' and Table 10 'Completion Criteria for Offset Area' do not include measurements of vegetation composition, function or structure. BCD recommends that those aspects are added to Tables 9 and 10. That would enable those features to be tracked over time. This would best ensure that the rehabilitation and the management of remnant native vegetation achieves the required outcomes in a timely and cost-effective way.

Recommendation 7

BCD recommends that Table 9 and Table 10 include vegetation composition, function and structure measurable performance and completion criteria.

8. Management of rehabilitation areas should follow best-practice guidelines

Table 9 covers only four aspects of rehabilitation (weeds and pests, soil, landform and water) which therefore miss other aspects that influence the success of rehabilitation. Current best-

practise for ecological rehabilitation is defined in the 'National standards for the practice of ecological restoration in Australia' [https://www.seraustralasia.com/standards/National%20Restoration%20Standards%202nd%20Edition.pdf], and describes ecological rehabilitation through six ecosystem goals (species composition, structural diversity, ecosystem function, external exchanges, absence of threats, and physical conditions), each with three sub-attributes.

Recommendation 8

BCD recommends that the management and monitoring of ecological rehabilitation follows the 'National standards for the practice of ecological restoration in Australia'.

9. Preliminary Performance and Completion Criteria for rehabilitation areas and the biodiversity offset require tangible trigger points set at appropriate levels

Table 9 'Preliminary Performance and Completion Criteria for Rehabilitation Areas' and Table 10 'Completion Criteria for Offset Area' include poorly defined targets and trigger points, such as the use of undefined terms like 'increased', 'decline', and 'significant'. These relatively defined thresholds and goals are difficult to implement and interpret. BCD recommends that quantitative criteria are set, that follow the 'SMART' principles (i.e. specific, measurable, attainable, relevant and time-bound), so that trigger points, rehabilitation milestones, and completion criteria are clearly measurable, and allow for the quick use of adaptive management, if needed.

Recommendation 9

BCD recommends that the performance measures, trigger points for adaptive management, and completion criteria in Table 9 and Table 10 follow 'SMART' principles.

10. Ecological monitoring requires consideration of vegetation composition, function and structure

Chapter 7 'Ecological Monitoring' does not include details of vegetation monitoring. BCD acknowledges that such details are planned to be included in a latter version of the BRMP. However, the means of measuring and monitoring vegetation is available now, through the implementation of the Biodiversity Assessment Method [https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biodiversity-assessment-method].

Recommendation 10

BCD recommends that the monitoring of flora and fauna on site follows the Biodiversity Assessment Method.

11. Weed and pest monitoring requires collection of data on reproductive state and numbers of individuals to determine population trends

Chapter 7 'Ecological Monitoring' provides a checklist of some of the data to be monitored about weeds and pests on the project site. BCD notes that this is not an exhaustive list, but recommends that the following details are also recorded:

- Reproductive state (e.g. juvenile, mature, in flower, in fruit / with young)
- Numbers of individuals
- Numbers of individuals in each reproductive state.

Recommendation 11

BCD recommends that the weed and pest species monitoring gathers data to help determine if local populations are reproducing, and trends in their population.

12. Background data behind monitoring provides more meaning to monitoring results

Chapter 8 'Reporting and Compliance Management' describes that a summary of biodiversity monitoring results will be provided in the Annual Review for the project, and that the Annual Reviews and regular reports of environmental performance will be posted on the project's website. The presentation of the background data behind the monitoring, such as the flora species found and their cover and abundance scores, enables monitoring results to be better understood, particularly by seeing which species are having the biggest influence of site variables, and whether any large changes are likely if short-lived species (such as some species of *Acacia*) are present. This in turn helps identify if rehabilitation issues may be present, and whether rehabilitation outcomes are likely to be met.

Recommendation 12

BCD recommends that all field data collected in the rehabilitation areas is provided in the Annual Review.

13. All details in Figure 4 needs to be clear and easily read

Figure 4 'Conceptual Rehabilitation Plan/Final Landform' in the Draft Biodiversity and Rehabilitation Management Plan has text that is small, grainy and often hard to read. It does not have a legend to explain the colours applied in the map. BCD recommends that this map has text that is easy to read, clear symbols, and a legend.

Recommendation 13

BCD recommends that Figure 4 is redrawn so that all text is clear and legible and that it has a legend that explains the meaning behind the colours used.

14. References to OEH as a current agency need to be changed to BCD

The BRMP includes 13 references to the Office of Environment and Heritage (OEH). References to the current agency, where it pertains to feedback on the BRMP in Table 5, should be changed to Biodiversity and Conservation Division (BCD).

Recommendation 14

BCD recommends that refences to 'OEH' are updated to the current agency titles.

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

APPENDIX E

DPIE Comments

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Biodiversity and Rehabilitation Plan, Condition 27, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must implement the Biodiversity Offset Strategy, described in the EIS and shown conceptually in Appendix 5, to the satisfaction of the Secretary.	Yes	**Section 3** provides information regarding the Biodiversity Offset Strategy**.**		**Nil**
Biodiversity and Rehabilitation Plan, Condition 28, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Within 12 months of the date of commencement of development under this consent, 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. *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, include a Biobanking Agreement, Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.*	Partial	**Section 3** provides information regarding the Biodiversity Offset Strategy. As the development is yet to commence, this condition has not yet been triggered. **Section 3.1** discusses the commitment to securing the offset in perpetuity within 12 months of the commencement of development.		**Nil**
Biodiversity and Rehabilitation Plan, Condition 29, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and the conceptual rehabilitation plan in Appendix 5 and must comply with the objectives in Table 4. *Table 4: Rehabilitation Objectives*	No	It is stated in **Table 2** that: "These are the current rehabilitation objectives of the site. Rehabilitation of the Quarry Site is to be addressed in a subsequent update of this BRMP	Include information regarding conceptual rehabilitation plans and timings for rehabilitation milestones.	**Section 5.2 has had info added:** *There are two areas where progressive rehabilitation could be possible, with these being:*

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Feature	***Objective***				
Site (as a whole)	• Safe, stable and non-polluting • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land		prior to site closure and rehabilitation". Conceptual plans for rehabilitation should be outlined in this version of the BRMP to satisfy this condition.		*Temporary stabilisation – hydromulching would be used in areas that were disturbed as part of the initial clearing that remain as infrastructure. These would include areas such as bunds and would be completed within one month of disturbance occurring. Disturbance will be kept to a minimum therefore little temporary stabilisation is expected;* *Benches – Once a bench is not required for operations the site will complete a risk assessment to assess whether rehabilitation of benches can be completed. If it is deemed safe then rehabilitation would be completed as per* ***Section 5.***
Surface Infrastructure	• Decommissioned and removed, unless otherwise agreed by the Secretary; and • Landscaped and revegetated using native flora species				
Quarry benches and pit floor	Landscaped and revegetated using native flora species				
Final Void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void				
Biodiversity and Rehabilitation Plan, Condition 30, Schedule 3		**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation. *Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.*		No	**Section 5.15** is noted as providing information on progressive rehabilitation. **Section 5.2** is titled "Progressive and Final Rehabilitation", stating that where practical, rehabilitation will be undertaken progressively, and that **Sections 5.2.1 and 5.2.2** outline progressive rehabilitation. These sections only outline rehabilitation to be undertaken at the cessation of quarrying. This response is not adequate, and the proposed	Provide information regarding plans for progressive rehabilitation. Information regarding progressive rehabilitation should also include proposed timings for rehabilitation milestones.	See information as per above added to Section 5.2 detailing information about the potential progressive rehabilitation of stabilisation areas and benches.

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		actions do not constitute progressive rehabilitation.		
Biodiversity and Rehabilitation Plan, Condition 31, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:				
(a) be prepared in consultation with Council and OEH;	No	**Section 2.3** – States that correspondence demonstrating consultation with Council and BCD (formerly OEH) will be provided in a future version of the BRMP. It is also stated in this section that a reply was received from the EPA stating that they do not comment on management plans. It is possible that the correct agency did not receive a copy of the plan.	Provide proof of correspondence in this version of the BRMP. Re-submit a copy of this plan to the Biodiversity and Conservation Division for comment. Also update OEH to BCD throughout the document to ensure that the correct agency name is being used.	Consultation was completed in version 1 of the management plan This was added to Section 2.3 *No further consultation was completed by Upper Hunter Holdings in the 2020 update, with consultation completed in 2019. Refer to Appendix C and D of BRMP*
(b) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless otherwise agreed;	Yes	**Section 2.3** – This plan.		Nil
(c) provide details of the conceptual final landform and associated land uses for the site;	Yes	**Section 5.8** – describes the final landform and provides a figure taken from Appendix 6 of the Development Consent.		Nil
(d) describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site;	No	**Section 5.10** – states that there is no proposed rehabilitation until close to Quarry closure.	This response does not meet the requirement of this condition. Please provide information	See information as per above added to Section 5.2 detailing information about the potential progressive rehabilitation of stabilisation areas and benches.

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			regarding rehabilitation strategies and integration with the Biodiversity Offset Strategy as per the consent condition.	Section 5.10 states: *There will be no proposed rehabilitation at the Quarry until close to quarry closure, unless it is deemed appropriate as per Section 5.2. However there can still be some co-ordinated weed and pest management between the quarry and the offset area during the life of the operation with this outlined in Section 5.3 and 5.4.*
(e) include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site, including triggers for any necessary remedial action;	Partial	**Section 6** and **Tables 9 and 10** outline the performance and completion criteria for the Biodiversity Offset and rehabilitation. Comments from the previous DPIE review noted issues with lack of context for soil and landform criteria. This has been amended by adding information into **Sections 5.2.2 and 5.2.3**. It is also stated that the water quality criteria has been updated, however, this has only been done for **Table 9**. **Table 10** still only states "poor quality runoff", and while it is noted that there are no EPL requirements for the Biodiversity Offset, a quantitative measure is still required. A vague statement is made in **Section 6** regarding risks around lack of funding to complete biodiversity and rehabilitation management – "Funding will be provided for the Project to satisfy	Update **Table 2** to reference **Sections 5.2.2 and 5.2.3** to provide context for landform and soil criteria. Suggest adopting EPL water quality criteria to monitor runoff quality from Biodiversity Offset against. Include more detailed information regarding security of funding.	Security of funding is not required in condition. This is outside of scope of condition and DPIE authority. The EPL requirement (including criteria) is not included as part of the offset area. This only covers the operational part of the site, therefore there are no plans to create specific criteria. No change made.

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		the implementation of the offset bon and rehabilitation bond." This does not provide a pathway or any surety in regard to funding, and more detail is required.		
(f) describe the short, medium and long term measures that would be implemented to: • manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and • ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;	No	**Table 2** states that this information can be found in **Section 5.1.5**, however, there is no **Section 5.1.5**. A word search locates some information in section **1.3.1** regarding the objectives of the BRMP being to provide direction for the short to long term management and enhancement of biodiversity values, however this does not satisfy this condition. It is stated that **Section 5** contains information regarding management of remnant vegetation and habitat on site and in the Biodiversity Offset area. However, **Section 5** only stipulates that delineation of vegetation will occur prior to clearing to ensure there is no impact on remnant vegetation. This is not an adequate control measure to ensure that accidental clearing of remnant vegetation does not occur, nor does it provide for good management of remnant vegetation. Remnant vegetation outside of the active Quarry	Address comments, make necessary corrections to section references and add in the required information and adequate controls and procedures for managing remnant vegetation and for performing progressive rehabilitation. Information regarding progressive rehabilitation should also include proposed timings for rehabilitation milestones.	<u>Signage:</u> Section 5.1.1 already had information about signage, with a small change to the sentence. *The person/s responsible for the clearing activities will be responsible for ensuring that the boundary markers, barriers and permanent signs are installed to enable the suitable environmental and technical inspections of the proposed disturbance to be undertaken.* *Site inductions are to be given to ensure all site workers and visitors are aware of any sensitive vegetation. No clearance will be completed until site inductions have been completed.* <u>Progressive rehabilitation.</u> See information as per above added to Section 5.2 detailing information about the potential progressive rehabilitation of stabilisation areas and benches.

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		footprint should be clearly demarcated and permanent signage erected to identify the BOS area. **Sections 5** is also noted as providing information on progressive rehabilitation. **Section 5.2** is titled "Progressive and Final Rehabilitation", stating that where practical, rehabilitation will be undertaken progressively, and that **Sections 5.2.1 and 5.2.2** outline progressive rehabilitation. These sections only outline rehabilitation to be undertaken at the cessation of quarrying. This response is not adequate, and the proposed actions do not constitute progressive rehabilitation.		
(g) include a detailed description of the measures that would 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:				
• 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 the offset area or site rehabilitation;	Yes	Stated as being in **Section 5.1**, however, it is actually in **Section 5.1.2**. Also reference to this condition in **Section 5.2.4**.	Amend references in **Table 2**.	Amendments made.
• restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural	Partial	**Section 5.8** describes final landform only, nothing about restoration, enhancement or rehabilitation. **Section 5.2.4**	More detail required regarding restoration, enhancement and rehabilitation of native	The document covers Phases 1 and 2. Further information added to Section 1.3. *Phase 3 will include the post operational*

regeneration, targeted vegetation establishment and the introduction of fauna habitat features;		refers only to direct seeding and planting during Phase 1 and 2.	vegetation and introduction of fauna habitat features.	*activities. Further information regarding this stage will be completed in subsequent reviews.* Most of this information is already covered in Section 5.2.4. Minor edits have been made: *Seeds and plant material (cuttings) used to augment the rehabilitation areas will be sourced locally. Tubestock utilised will preferentially be 6 - 9 months old at the time of planting to maximise the potential for successful rehabilitation. Seeds and tubestock will comprise species consistent with the remnant native vegetation community; HU905 - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter.* *Section 5.1 outlines the process of clearing. Key habitat features such as fallen timber, hollow logs or boulders suitable will be stored onsite for salvage and used in the rehabilitation area. At this point it is not proposed that these features would be used for habitat enhancement in the offset area. This will assist in the restoration, enhancement and rehabilitation of native vegetation and introduction of fauna habitat features.*
• protecting native vegetation and fauna habitat outside the approved disturbance area onsite;	Partial	See **Section 5.1.1**.	See previous comments regarding **Section 5.1.1** above.	<u>Signage:</u>

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				Section 5.1.1 already had information about signage, with a small change to the sentence. *The person/s responsible for the clearing activities will be responsible for ensuring that the boundary markers, barriers and permanent signs are installed to enable the suitable environmental and technical inspections of the proposed disturbance to be undertaken.* *Site inductions are to be given to ensure all site workers and visitors are aware of any sensitive vegetation. No clearance will be completed until site inductions have been completed.*
• minimising the impacts on native fauna, including undertaking pre-clearance surveys for the quarry site, haul road and the supplementary water supply pipeline;	Yes	**Section 5.1.2** outlines preclearance survey methods.		Nil
• establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;	No	**Section 5.7** quotes the EIS, claiming that screening is not required. However, the conditions of consent take precedence, therefore screening is required unless a modification is sought and approved to remove this condition.	Add relevant information and methods to achieve suitable vegetation screening. Include timings for when planting will occur.	Already address this in previous management plan comments to DPIE. Pitt and sherry matter.
• ensuring minimal environmental consequences for threatened species, populations and habitats, including for	Yes	**Sections 5 and 6** satisfy this condition.		Nil

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the quarry site, haul road and supplementary water supply pipeline;				
• avoiding and minimising the spread of Myrtle Rust, *Phytophthora cinnamomi* (Phytophthora) and Chytrid fungus;	Partial	**Section 5.5** outlines management measures for myrtle rust, but not for phytophthora or chytrid fungus.	Add more information regarding management measures for phytophthora and chytrid fungus.	Updates have been made to Section 5.5: *Key controls are outlined on the NSW Department of Primary Industries (DPI) website and will include:* • *Staff and contractors are to be made aware of the signs of myrtle rust and phytophthora in the site induction;* • *All vehicles and equipment are to be cleaned before attending site; and* • *Clearance and rehabilitation completed by experienced contractors; and* • *Chemical treatment and effective disposal if plants are found. If the disease was found then the site would report it to the BCD.* *In the unlikely event that chytrid fungus is found in frogs during ecological surveys, then the ecologist will liaise with Dolwenedee Quarry or would report the issue to the BCD. A management plan would be prepared and implemented between the site and the BCD.*
• collecting and propagating seed;	No	**Table 2** lists Section **5.2** as providing information regarding collecting and propagating seed,	Provide information regarding the collection and propagation of seed from site.	Table 2 refers to Section 5.1. Further details have now been added:

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		however, there is no reference to this in this section.		*Where practical seed will be collected and propagated for rehabilitation. This would be completed in accordance with the advice of an ecologist/bush regenerator. Details of collection and propagation would be included in the Annual Review.*
• controlling weeds and feral pests;	Yes	**Sections 5.3 and 5.4** satisfy this condition.		Nil
• controlling erosion;	Yes	**Section 5.6** satisfies this condition.		Nil
• managing bushfire risk;	Partial	**Section 5.11** addresses bushfire management, and quotes the EIS regarding the preparation of a Fire Management Plan in consultation with the NSW RFS. It would appear that this document is yet to be written, as it is not referred to in this plan.	Prepare Fire Management Plan in consultation with NSW RFS and refer to it and it's requirements within this plan.	Consent does not specifically require a Fire Management Plan. Schedule 3 Condition 39 prevails over Condition 31g and prevails over the EIS as per Schedule 2 Condition 3.
(h) include a program to monitor and report on the effectiveness of these measures and progress against the performance and completion criteria;	No	**Section 7** is stated as providing this information, however, **Section 7** only contains a very brief overview of what is referred to as "Ecological Monitoring", but appears to actually be a bi-monthly site inspection that notes the whereabouts of weed and pest species.	This condition refers to **all** of the measures listed in the previous condition. Provide information on a monitoring and reporting program that effectively captures progress and performance against **all** of the measures.	Wording has been added in Section 7. *An ecological baseline survey will be completed in the offset area prior to quarry commencement and then monitoring is to be completed every five years. Dolwendee Quarry is still liaising with the ecologists about the components of this monitoring program for the offset area, however it will be developed to be a further review of the baseline information completed for the EIS. The report will review performance against*

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				the criteria in Section 6 and outline specific methods. *Monitoring would likely include components from the EIS specialist report (Umwelt 2015):* *Flora and weed survey;* *Review of vegetation mapping; and* *Terrestrial fauna survey.*
(i) 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;	No	Information stated as being in **Section 5**, however, it is actually in **Section 6**. This condition is also incorrectly referenced as being condition (g), instead of (i). It also incorrectly states within **Section 6** that the risks are outlined in **Table 9**, when it is in fact **Table 10** that refers to the Biodiversity Offset. In addition, the information provided in **Table 10** does not satisfy this condition.	Amend references as per comments. Provide information that satisfies the condition.	Errors in referencing have been updated. Table 10 outlines key aspects including weeds and pests, soil, landform and water risks. It also has triggers and actions. These are the main biodiversity risks to the site and we believe this information sufficiently covers this section.
(j) include details of who would be responsible for monitoring, reviewing and implementing the plan.	No	Stated as being in **Section 7**, but this information cannot be located in this section or elsewhere in the document.	Provide information as per the condition.	Updated to be Section 9
The Applicant must implement the approved Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.	NA			Nil
Biodiversity and Rehabilitation Plan, Condition 32, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Within 6 months of the date of approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the	Yes	Bonds attached as **Appendix A and Appendix B**, information also provided in **Section 5.9**.	There is a reference to Karuah East in Appendix A – amend and check for	Reference updated in Appendix A

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Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site is implemented in accordance with the performance and completion criteria set out in the plan (Figure 9 in Appendix 6) and relevant conditions of this consent. The sum of the bond must be determined by:			references to other developments.	
(a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years;	Yes	**Appendix B**.	As a general comment, it is noted that in the calculations for the Offset Bond, weed management at the site ceases at year 5. Suggest amending this, as weeds are required to be managed for the life of the project. Will also need to review cost estimates.	The condition only requires calculating costs over the next three years, which has been completed. No change proposed.
(b) calculating the cost of rehabilitating all disturbed areas of the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and	Yes	**Appendix B**.		Nil
(c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.	No	No evidence of this having occurred.	Provide evidence.	Chris Jones and Fiona Iolini from SLR have completed the bond and have had past experience completing bonds.
Notes: • *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.* • *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the*	NA			

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satisfaction of the Secretary, then the Secretary will call in all or part of the bond and arrange for the completion of the relevant works.				
Biodiversity and Rehabilitation Plan, Condition 33, Schedule 3	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
Within 3 months of each Independent Environmental Audit (see condition 10 of Schedule 5), the Applicant must review, and if necessary revise, the sum of the Rehabilitation and/or Conservation Bonds to the satisfaction of the Secretary. This review must consider the:	NA	Not yet applicable as the first Independent Environmental Audit is yet to take place. However, this condition is incorrectly referred to as "Schedule 3 Condition 5" in **Section 5.9**.	Amend reference.	Updated to be Schedule 5 Condition 10
(a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council;	NA			
(b) minimise the waste generated by the development;	NA			
(c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and	NA			
(d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	NA			
Biodiversity and Rehabilitation Management Plan, Condition 2, Schedule 5	**Sufficient (Yes/No/Partial)**	**Document reference and comment**	**Action Required**	**Company Response**
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;	No	**Table 2** states "NA" for this condition. This does not satisfy the requirements of this condition.	For the purposes of this plan, and as the Quarry is yet to commence, detailed baseline data for the site can be found in the Ecological Assessment	Table has been updated. *Section 4 of the management plan. Section 6.2 of EIS. Ecology Assessment for the EIS.*

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			that forms Appendix K of the EIS. Its is suggested that this plan refers to Section 6.2 of the EIS and the Ecological Assessment and takes into account and incorporates any recommendations or commitments therein.	
(b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; and • 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;	Partial	**Section 2** outlines the statutory requirements regarding the BRMP, however, as noted in comments above, many responses to these requirements are inadequate and require further review.	Provide more detailed information as per previous comments.	Been updated
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Partial	This document – however refer to previous comments regarding adequacy.	Provide more detailed information as per previous comments.	Sections have been updated.
(d) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of any management measures (see (c) above);	No	Stated as being in **Section 7**. Refer to previous comments regarding the adequacy of this section.	Provide more detailed information as per previous comments.	Sections have been updated.
(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant	Partial	Noted as being in **Sections 6 and 8.5**. Refer to previous comments regarding **Section 6**. **Section 8.5** in the BRMP refers	Provide more detailed information as per previous comments.	Sections have been updated.

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	impact assessment criteria as quickly as possible;		to condition 5 of Schedule 5, and not this condition.		
(f)	a program to investigate and implement ways to improve the environmental performance of the development over time;	Partial	**Section 8** refers to the Annual Review, External Reporting, Incident Reporting, Complaints Management, Adaptive Management and Document Review. However, some of the methods proposed within the BRMP are not adequate as per previous comments.	Provide more detailed information as per previous comments.	The information in Section 8 is based on reporting as per the statutory requirements and best practice. There only minor changes to Section 8.
(g)	a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and	Partial	**Section 8** provides most of this information. There is no mention of management and reporting of exceedances or non-compliances, only incidents, complaints and material harm of the environment.	Provide more detailed information as per comments.	Additional wording added to Section 6 to discuss 'exceedances' *Criteria within Table 9 relate to final rehabilitation, and not meeting a criteria during operations does not constitute an exceedance. Table 10 refers to criteria for the biodiversity offset area and if triggers are enacted during operations they will be reported in the Annual Review. However this does not constitute an exceedance of a criteria.*
(h)	a protocol for periodic review of the plan.	Partial	**Section 8.6** states that management plans will be assessed as part of each Annual Review. This is good practice, however, there are other triggers for management plan reviews within the consent that should also be noted.	Provide more detailed information as per comments.	Section 8.6 covers this information. Minor change to wording. New wording included: *Schedule 5 Condition 3 of the Development Consent states management plans should be reviewed:* *Within 3 months of the submission of an:* *a) Annual Review under condition 9 below;*

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				b) incident report under condition 7 below; *c) audit report under condition 10 below; and* *d) any modifications to this consent,* *the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.* *The requirement to update management plans at the site will be assessed as part of each Annual review, unless triggered earlier under this consent condition. If no update is required, then no management plan review will be completed.*
Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.				
General Comments			**Action Required**	**Company Response**
Other Agency Comments			**Action Required**	**Company Response**

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Planning, Industry & Environment

Mr Trevor Allen
Senior Associate Environmental Planner
Pitt & Sherry
Level1, 81 Hunter Street
Newcastle, NSW, 2300

09/10/2020

Dear Mr Allen

Dolwendee Quarry (SSD 6519)
Biodiversity and Rehabilitation Management Plan - Request for Additional Information

I refer to the Biodiversity and Rehabilitation Management Plan (BRMP) submitted to the Department as required under condition 31, Schedule 3 of SSD 6519. After careful consideration, the Department is requesting that you provide additional information.

You are requested to submit a revised document that addresses the requirements of the following conditions:

- **Condition 29 of Schedule 3** – Provide information regarding conceptual rehabilitation plans and rehabilitation milestones. The providing of information regarding temporary stabilisation and potential bench rehabilitation is not an adequate response.
- **Condition 30 of Schedule 3** – Provide information regarding progressive rehabilitation. Stating that rehabilitation may be done if it is deemed safe, following a risk assessment, is not an adequate response. Quarry design should allow for a safe and stable landform that can readily be rehabilitated in a progressive manner throughout the life of the operation.
- **Condition 31(d) of Schedule 3** – Provide information regarding how implementation of the Biodiversity Offset Strategy would be integrated with the overall site rehabilitation. Stating that there will be no rehabilitation until close to quarry closure and referring to weed and pest management is not an adequate response.
- **Condition 31(e) of Schedule 3** – Update tables and sections as per the requests made in the Review conducted by Sarah Clibborn dated 16 July 2020. Provide quantitative measures regarding water quality criteria for rehabilitated areas.
- **Condition 31(f) of Schedule 3** – Provide information addressing the comments in the Review conducted by Sarah Clibborn dated 16 July 2020. The information provided thus far does not adequately address the requirements of this condition.
- **Condition 31(g) of Schedule 3** – Information was requested regarding vegetation screening. Your response indicates that this has been addressed in previous comments to the Department. Please provide evidence of this correspondence as an Appendix to the BRMP and refer to it in the relevant section/s.
- **Condition 31(i) of Schedule 3** – Provide further information in Table 10. Information provided to date refers to completion criteria for the Offset Area and does not sufficiently address or satisfy the condition. This condition requires identification of the potential risks and contingency measures for the successful implementation of the Biodiversity Offset Strategy.
- **Condition 32(c) of Schedule 3** – This condition requires the employment of suitably qualified experts to verify of cost calculations to the satisfaction of the Secretary. Providing consultants' names and stating that they have past experience does not satisfy this condition.

Please provide evidence that the Secretary is satisfied with, and approved, these consultants.

- **Condition 32(g) of Schedule 3** – The response to the request made in the Review conducted by Sarah Clibborn dated 16 July 202 does not address the requirement of the condition. Please provide more information in Section 8 as previously requested.

You are requested to provide the information, or notification that the information will not be provided, to the Department by Friday 30 October 2020. If you are unable to provide the requested information within this timeframe, you are required to provide, and commit to, a timeframe detailing the provision of this information.

If you have any questions, or would like to arrange a meeting to discuss these requests in more detail, please contact Sarah Clibborn on (02) 8837 6095 or at sarah.clibborn@planning.nsw.gov.au.

Yours sincerely

Colin Phillips
Team Leader
Resource Assessments (Coal & Quarries)