

APPENDIX 1
Mining Lease 1633

RENEWAL OF MINING LEASE 1633 (ACT 1992)
Held by Walker Quarries Pty Ltd, ACN 003 061 890

Section 114 of the Mining Act 1992

I, **Kevin Ruming, Director Strategic Resource Assessment and Advice** as delegate of the Minister for Resources for the State of New South Wales, under delegation dated 14 May 2018, and pursuant to section 114 of the *Mining Act 1992*, renew Mining Lease **1633 (Act 1992)** subject to the following:

1. The renewed Lease is as described in Schedule 1 of this document.
2. The Lease conditions are amended upon renewal and are set out in Schedule 2 of this document.
3. For the avoidance of doubt, Schedules 1 and 2 of the Lease are amended by deleting the details set out in those Schedules prior to the date of this renewal, and inserting the details set out in Schedules 1 and 2 of this document.

The conditions set out in Schedule 2 are imposed pursuant to provisions of the *Mining Act 1992* and are required to:

- ensure optimal resource recovery;
- prevent, minimise, and/or offset adverse environmental impacts;
- provide for the ongoing environmental management of the project; and
- ensure the areas disturbed by mineral production and exploration activities are appropriately rehabilitated.

The rights and duties of a Lease Holder are those prescribed by the *Mining Act 1992 and the Mining Regulation 2016*, subject to the terms and conditions of this Lease. This lease does not override any obligation on the Lease Holder to comply with the requirements of other legislation and regulatory instruments which may apply to the Lease Holder (including all relevant development approvals), unless specifically provided in the *Mining Act 1992* or other legislation or regulatory instruments.

Signed this 13th day of August 2018



Kevin Ruming
Director Strategic Resource Assessment & Advice
As delegate for the Minister for Resources
Delegation dated: 14 May 2018

SCHEDULE 1

Description of Lease

Land: The lease area embraces all land described in the attached lease plan titled **M27091** and approved on **16 October 2008**.

Area: 44.33 hectares

**Minerals/ Mining
Purpose/Ancillary Mining
Activities:** Quartzite

Method: Open Cutting

Term ending: 15 July 2040

SCHEDULE 2

MINING LEASE CONDITIONS 2013

Definitions

1. **Notice to Landholders**
2. **Rehabilitation**
3. **Mining Operations Plan and Annual Rehabilitation Report**
4. **Non-Compliance Reporting**
5. **Environmental Incident Report**
6. **Resource Recovery**
7. **Security**
8. **Cooperation Agreement**
9. **Prescribed Dam**

Note: Exploration Reports (Geological and Geophysical)

Definitions:

Words used in this mining lease have the same meaning as defined in the *Mining Act 1992* except where otherwise defined below:

Act means the *Mining Act 1992*.

Department means the Division of Resources and Geoscience within the Department of Planning and Environment.

Environment has the same meaning as in the *Protection of the Environment Operations Act 1997*.

Environmental incident notifications and reports means any notifications and reports required to be provided to relevant authorities under Part 5.7 or Part 5.7A of the *Protection of the Environment Operations Act 1997*.

Harm to the environment has the same meaning as in the *Protection of the Environment Operations Act 1997*.

Landholder for the purposes of these conditions does not include a secondary landholder and includes, in the case of exempted areas, the controlling body for the exempted area.

Minister means the Minister administering the Act.

MINING LEASE CONDITIONS 2013

1. Notice to Landholders

- (a) Within a period of three months from the date of grant/renewal of this mining lease, the lease holder must serve on each landholder a notice in writing indicating that this mining lease has been granted/renewed and whether the lease includes the surface. A plan identifying each landholder and individual land parcel subject to the lease area, and a description of the lease area must accompany the notice.
- (b) If there are ten or more landholders, the lease holder may serve the notice by publication in a newspaper circulating in the region where the lease area is situated. The notice must indicate that this mining lease has been granted/renewed; state whether the lease includes the surface and must contain a plan and description of the lease area. If a notice is made under condition 1(b), compliance with condition 1(a) is not required.

2. Rehabilitation

Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.

3. Mining Operations Plan and Annual Rehabilitation Report

- (a) The lease holder must comply with an approved Mining Operations Plan (MOP) in carrying out any significant surface disturbing activities, including mining operations, mining purposes and prospecting. The lease holder must apply to the Minister for approval of a MOP. An approved MOP must be in place prior to commencing any significant surface disturbing activities, including mining operations, mining purposes and prospecting.
- (b) The MOP must identify the post mining land use and set out a detailed rehabilitation strategy which:
- (i) identifies areas that will be disturbed;
 - (ii) details the staging of specific mining operations, mining purposes and prospecting;
 - (iii) identifies how the mine will be managed and rehabilitated to achieve the post mining land use;
 - (iv) identifies how mining operations, mining purposes and prospecting will be carried out in order to prevent and or minimise harm to the environment; and
 - (v) reflects the conditions of approval under:
 - the *Environmental Planning and Assessment Act 1979*;
 - the *Protection of the Environment Operations Act 1997*; and

- any other approvals relevant to the development including the conditions of this mining lease.
- (c) The MOP must be prepared in accordance with the *ESG3: Mining Operations Plan (MOP) Guidelines September 2013* published on the Department's website at www.resourcesandenergy.nsw.gov.au/miners-and-explorers/rules-and-forms/pgf/environmental-guidelines
- (d) The lease holder may apply to the Minister to amend an approved MOP at any time.
- (e) It is not a breach of this condition if:
- (i) the operations which, but for this condition 3(e) would be a breach of condition 3(a), were necessary to comply with a lawful order or direction given under the *Environmental Planning and Assessment Act 1979*, the *Protection of the Environment Operations Act 1997*, the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* or the *Work Health and Safety Act 2011*; and *Work Health and Safety Regulation 2011*
 - (ii) the Minister had been notified in writing of the terms of the order or direction prior to the operations constituting the breach being carried out.
- (f) The lease holder must prepare a Rehabilitation Report to the satisfaction of the Minister. The report must:
- (i) provide a detailed review of the progress of rehabilitation against the performance measures and criteria established in the approved MOP;
 - (ii) be submitted annually on the grant anniversary date (or at such other times as agreed by the Minister); and
 - (iii) be prepared in accordance with any relevant annual reporting guidelines published on the Department's website at www.resourcesandenergy.nsw.gov.au/miners-and-explorers/rules-and-forms/pgf/environmental-guidelines

Note: The Rehabilitation Report replaces the Annual Environmental Management Report.

4. Non-Compliance Reporting

- (a) The lease holder must notify the Department upon becoming aware of any breaches of the conditions of this mining lease or breaches of the Mining Act or Regulations;
- (b) Notifications under condition 4(a) must be provided in the form specified on the Department's website within seven (7) days of the mining lease holder becoming aware of the breach.

5. Environmental Incident Report

The lease holder must provide environmental incident notifications and reports to the Secretary no later than seven (7) days after those environmental incident notifications and reports are provided to the relevant authorities under the Protection of the Environment Operations Act 1997.

6. Resource Recovery

The lease holder must optimise recovery of the minerals that are the subject of this mining lease to the extent economically feasible.

7. Security

The lease holder is required to provide and maintain a security deposit to secure funding for the fulfilment of obligations of all or any kind under the mining lease, including obligations of all or any kind under the mining lease that may arise in the future.

The amount of the security deposit to be provided has been assessed by the Minister at **\$690,000**.

8. Cooperation Agreement

The lease holder must make every reasonable attempt, and be able to demonstrate its attempts, to enter into a cooperation agreement with the holder(s) of any overlapping title(s). The cooperation agreement should address but not be limited to issues such as:

- access arrangements
- operational interaction procedures
- dispute resolution
- information exchange
- well location
- timing of drilling
- potential resource extraction conflicts; and
- rehabilitation issues.

Exploration Reporting

Note: Exploration Reports (Geological and Geophysical)

The lease holder must lodge reports to the satisfaction of the Minister in accordance with section 163C of the Mining Act 1992 and in accordance with clause 59 of the Mining Regulation 2016.

Reports must be prepared in accordance with Exploration Reporting: A guide for reporting on exploration and prospecting in New South Wales.

SPECIAL CONDITIONS

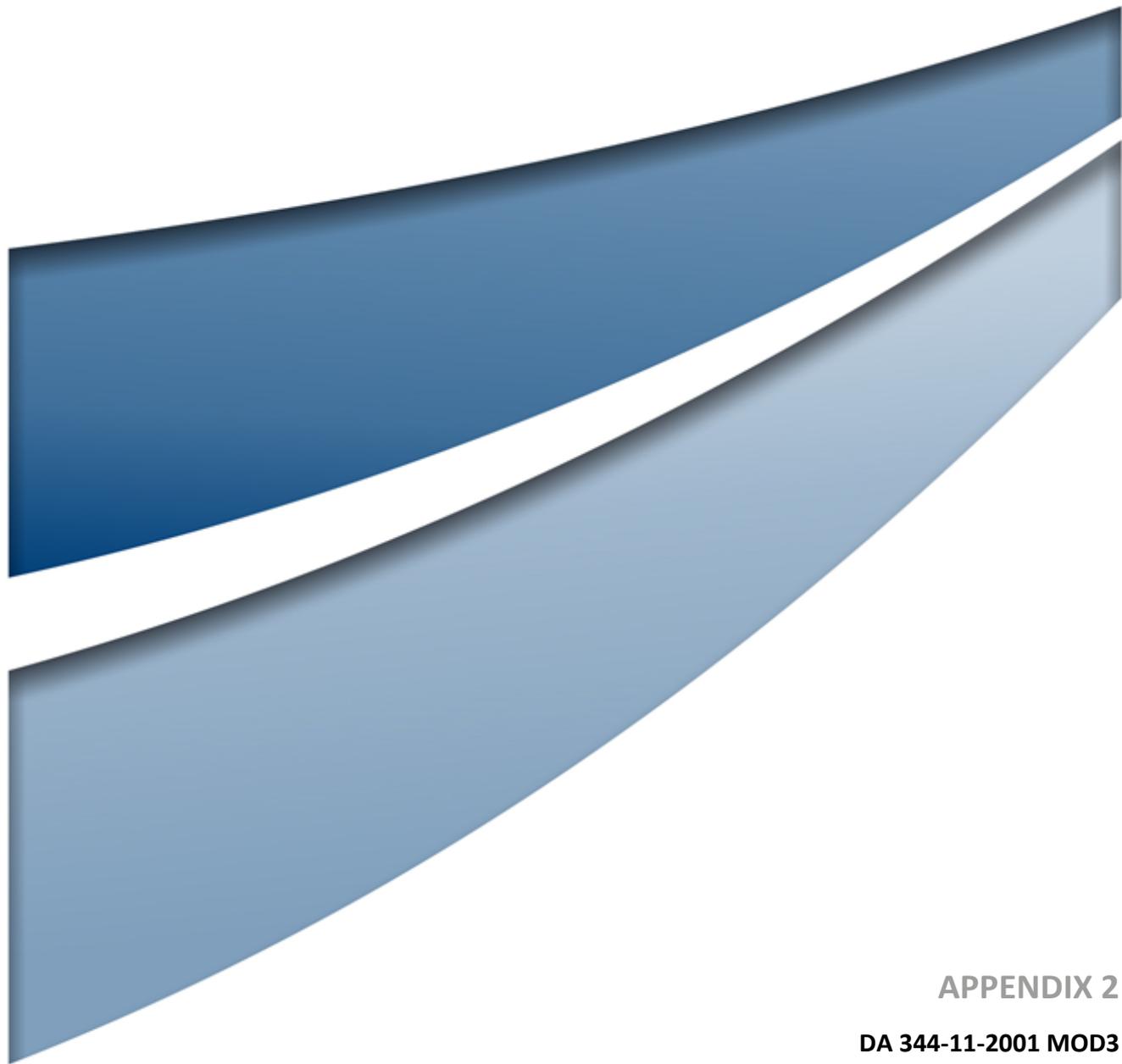
Note: The standard conditions apply to all mining leases. The Division of Resources and Geoscience (DRG) reserves the right to impose special conditions, based on individual circumstances, where appropriate.

9. Prescribed Dam

- (a) Notwithstanding any Mining Operations Plan, the lease holder must not mine within any part of the lease area which is within the Wallerawang Dam Notification Area without the prior written approval of the Minister and subject to any conditions he may stipulate.
- (b) Where the lease holder desires to mine within the notification area he must:
 - (i) at least twelve (12) months before mining is to commence or such lesser time as the Minister may permit, notify the Minister of the desire to do so. A plan of the mining system to be implemented must accompany the notice; and
 - (ii) provide such information as the Minister may direct.
- (c) The Minister must not, except in the circumstances set out in sub-paragraph (ii), grant approval unless sub-paragraph (i) of this paragraph has been complied with.
 - (i) This sub-paragraph is complied with if:
 - (a) the Dams Safety Committee as constituted by Section 7 of the Dams Safety Act 1978 and the owner of the dam have been notified in writing of the desire to mine referred to in paragraph (b).
 - (b) the notifications referred to in clause (a) are accompanied by a description or plan of the area to be mined.
 - (c) the Director-General has complied with any reasonable request made by the Dams Safety Committee or the owner of the dam for further information in connection with the mining proposal.
 - (d) the Dams Safety Committee has made its recommendations concerning the mining proposal or has informed the Minister in writing that it does not propose to make any such recommendations; and
 - (e) where the Dams Safety Committee has made recommendations, the approval is in terms that are:
 - (i) in accordance with those recommendations; or
 - (ii) where the Minister does not accept those recommendations or any of them - in accordance with a determination under sub-paragraph (ii) of this paragraph.
 - (ii) Where the Minister does not accept the recommendations of the Dams Safety Committee or where the Dams Safety Committee has failed to make any recommendations and has not informed the Minister in writing that it does not

propose to make any recommendations, the approval shall be in terms that are, in relation to matters dealing with the safety of the dam:

- (a) as determined by agreement between the Minister and the Minister administering the Dams Safety Act 1978; or
 - (b) in the event of failure to reach such agreement - as determined by the Premier.
- (d) The Minister, on notice from the Dams Safety Committee, may at any time or times:
- (i) cancel any approval given where a notice pursuant to Section 18 of the Dams Safety Act 1978 is given.
 - (ii) suspend for a period of time, alter, omit from or add to any approval given or conditions imposed.



APPENDIX 2

DA 344-11-2001 MOD3

Development Consent

Section 80 of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Infrastructure and Planning, approve the Development Application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the development.

Craig Knowles, MP
Minister for Infrastructure and Planning

Signed 14 October 2004.

Sydney,

2004

File No. S03/02385

SCHEDULE 1

Development Application:	DA No. 344-11-2001
Applicant:	Sitegoal Pty Ltd (A.C.N. 052 317 503)
Consent Authority:	Minister for Infrastructure and Planning
Land:	Lot 6, DP 872230 Lot 7322, DP 1149335 Lot 7071, DP 1201227
Proposed Development:	To develop and operate a hard rock quarry and associated infrastructure with access from the Great Western Highway, including crushing and transport of product.
State Significant Development:	The proposal is classified as State significant development, under Section 76A(7) of the <i>Environmental Planning and Assessment Act 1979</i> , because it is an extractive industry where the proposed extraction rate is greater than 200,000 tonnes per annum, and consequently satisfies the criteria in the declaration made by the then Minister for Urban Affairs and Planning on 3 August 1999.

Integrated Development: The proposal is classified as integrated development, under Section 91 of the *Environmental Planning and Assessment Act 1979*, because it requires additional approvals under the:

- *Protection of the Environment Operations Act 1997*; and
- *Roads Act 1993*.

Designated Development: The proposal is classified as designated development, under Section 77A of the *Environmental Planning and Assessment Act 1979*, because it is for an extractive industry that would "obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year", and consequently meets the criteria for designated development in Schedule 3 of the *Environmental Planning and Assessment Regulation 2000*.

BCA Classification:

Class 5	Office/amenities building
Class 8	Workshop/storage building

Notes:

- *To find out when this consent becomes effective, see Section 83 of the Environmental Planning and Assessment Act 1979;*
 - *To find out when this consent is liable to lapse, see Section 95 of the Environmental Planning and Assessment Act 1979; and*
 - *To find out about appeal rights, see Section 97 of the Environmental Planning and Assessment Act 1979.*
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Schedules 2-5 updated in entirety during Modification 1, dated 25 August 2017

Red type represents Modification 2 (7 December 2018)

Blue type represents Modification 3 (26 February 2020)

TABLE OF CONTENTS

DEFINITIONS	4
ADMINISTRATIVE CONDITIONS	6
Obligation to Minimise Harm to the Environment.....	6
Terms of Consent	6
Limits on Consent	6
Structural Adequacy.....	6
Demolition	7
Protection of Public Infrastructure	7
Operation of Plant and Equipment.....	7
Production Data	7
Compliance.....	7
Contributions to Council.....	7
Applicability of Guidelines	7
Crown Land	7
SPECIFIC ENVIRONMENTAL CONDITIONS	8
Noise.....	8
Blasting	9
Air Quality	10
Soil and Water	11
Transport	12
Protection of Aboriginal Heritage	12
Biodiversity and Rehabilitation	13
Visual	16
Waste.....	16
Liquid Storage.....	17
Dangerous Goods.....	17
Bushfire.....	17
ADDITIONAL PROCEDURES.....	18
Notification of Landowners.....	18
Independent Review	18
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING.....	19
Environmental Management.....	19
Community Consultative Committee.....	21
Reporting	21
Independent Environmental Audit.....	21
Access to Information	22
APPENDIX 1 DEVELOPMENT LAYOUT PLAN	23
APPENDIX 2 CONCEPTUAL REHABILITATION PLAN	25
APPENDIX 3 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS.....	26

DEFINITIONS

AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
Applicant	Walker Quarries Pty Ltd, or any other person/s who rely on this consent to carry out the development that is subject to this consent
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
BCD	Biodiversity Conservation Division within the Department
BCT	Biodiversity Conservation Trust
Calendar year	A period of 12 months from 1 January to 31 December
CCC	Community Consultative Committee required by condition 8 of Schedule 5
Conditions of consent	Conditions contained in Schedules 2 to 5 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
Council	Lithgow City Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	NSW Department of Planning, Industry and Environment
Development	The development described in the documents listed in condition 2(c) of Schedule 2 as modified by the conditions of this consent
DPIE - Crown Lands	Crown Lands Division within the Department
DPIE - Water	Water Group within the Department
DRG	Division of Resources and Geosciences within the Department
EA (Mod 1)	Environmental Assessment titled ' <i>Modification to Operations at the Wallerawang Quarry (DA 344-11-2001)</i> ' dated May 2017 and the Applicant's response to submissions documentation dated July 2017
EIS	Environmental Impact Statement titled <i>Proposed Wallerawang Quarry</i> , dated November 2001 and the Applicant's Supplementary Report to the EIS, dated July 2002
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Means what is possible and practical in the circumstances
FCNSW	Forestry Corporation NSW
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance
Land	Has the same meaning as the definition of the term in Section 1.4 of the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the NSW Land Registry Services office at the date of Modification 3
Material harm	Is harm to the environment that: <ul style="list-style-type: none"> • involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or • results in actual or potential loss of property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment) This definition excludes "harm" that is authorised under either this consent or any other statutory approval
Maximum groundwater level	The highest recorded groundwater level as established under condition 6A of Schedule 2
Minister	Minister for Planning and Public Spaces, or delegate
Mitigation	Activities associated with reducing the impacts of the development
Modification 3	The modification to the development as described in SEE (Mod 3)
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is in breach of this consent
NPfI	Noise Policy for Industry (NSW EPA 2017)
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not owned by a public agency or the Applicant (or its subsidiary)
Public infrastructure	Linear and other infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.

Quarrying operations	The extraction, processing, stockpiling and transportation of extractive materials (including quartzite, which is also a prescribed mineral) carried out on the site and the associated removal of vegetation, topsoil and overburden
Quarry products	Includes all saleable quarry products, but excludes tailings, other wastes and rehabilitation material
Reasonable	Means applying 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
Rehabilitation	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
RFS	NSW Rural Fire Service
RMS	Roads and Maritime Services
RR	NSW Resources Regulator within the Department
Secretary	Planning Secretary under the EP&A Act, or nominee
SEE	Statement of Environmental Effects
SEE (Mod 2)	The Statement of Environmental Effects titled <i>Proposed Modification No 2 (MOD 2) to DA 344-11-2001 (Wallerawang Quarry)</i> , prepared by R.W. Corkery & Co Pty Ltd, dated October 2018; and associated Response to Submissions titled <i>Response to Submissions for Proposed Modification No 2 (Mod 2) to DA 344-11-2001 (Wallerawang Quarry)</i> , prepared by R.W. Corkery & Co Pty Limited, dated November 2018
SEE (Mod 3)	The SEE titled "Walker Quarries – Wallerawang Quarry – Modification 3", prepared by Umwelt (Australia) Pty Ltd, dated June 2019; and associated Response to Submissions titled "Walker Quarries – Wallerawang Quarry – Modification 3 – Response to Submissions", prepared by Umwelt (Australia) Pty Ltd, dated September 2019
Site	The land described in Schedule 1
Waste	Has the same meaning as the definition of the term in the Dictionary of the POEO Act
WaterNSW	Water NSW
WSEA	Western Stockpile Extension Area

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The development may only be carried out:
 - (a) in compliance with the conditions of this consent;
 - (b) in accordance with all written directions of the Secretary;
 - (c) generally in accordance with the EIS, EA (Mod 1), SEE (Mod 2) and SEE (Mod 3); and
 - (d) generally in accordance with the Development Layout in Appendix 1.
3. If there is any inconsistency between the documents in [condition 2\(c\)](#), the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
4. The Applicant must comply with any written requirement/s of the Secretary arising from the Department's assessment of:
 - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent (including any stages of these documents);
 - (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this consent; and
 - (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Quarrying Operations

5. The Applicant may carry out quarrying operations on the site until 15 July 2040.

Note: Under this consent, the Applicant is required to rehabilitate the site and carry out additional requirements and undertakings to the satisfaction of the Secretary. Consequently, this consent will continue to apply in all respects other than the right to conduct quarrying operations until the rehabilitation of the site and those requirements and undertakings have been carried out to the standard required by the applicable conditions.

Extraction Depth

6. The Applicant must not conduct quarrying operations within one metre of the maximum groundwater level, with the exception of areas where the Applicant has received the written approval of the Secretary for the construction and use of drainage sumps, groundwater monitoring bores, exploration boreholes or other similar activity agreed by the Secretary.
- 6A. Prior to the commencement of quarrying operations below 901 mAHD (unless approved under condition 6 of this Schedule), the Applicant must:
 - (a) determine the maximum groundwater level within and adjacent to the proposed extraction area, in consultation with DPIE - Water, using all available groundwater and rainfall monitoring data collected from the site or in the vicinity of the site and appropriate modelling software and parameters;
 - (b) establish the proposed maximum extraction depth to comply with condition 6; and
 - (c) prepare a contour map or similar, showing the proposed maximum extraction depth; for the approval of the Secretary.

Limits on Extraction and Transport

7. The Applicant must not extract and/or transport more than 500,000 tonnes of quarry products from the site in any calendar year.

STRUCTURAL ADEQUACY

8. The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.

DEMOLITION

9. The Applicant must ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

10. Unless the Applicant and the applicable authority agree otherwise the Applicant must:
- repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
 - relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to damage to roads caused as a result of general road usage.

OPERATION OF PLANT AND EQUIPMENT

11. The Applicant must ensure that all the plant and equipment used at the site, or to monitor the performance of the development is:
- maintained in a proper and efficient condition; and
 - operated in a proper and efficient manner.

PRODUCTION DATA

12. The Applicant must:
- from the commencement of quarrying operations provide calendar year annual quarry production data to RR using the standard form for that purpose; and
 - include a copy of this data in the Annual Review.

COMPLIANCE

13. The Applicant must ensure that all employees, contractors and sub-contractors are aware of, **are instructed to** and comply with, the conditions of this consent relevant to their respective activities.

CONTRIBUTIONS TO COUNCIL

14. Within 6 months of the date of approval of Modification 3, the Applicant must make contributions to Council for the provision of public facilities and to enhance amenity and services within the Lithgow LGA, in accordance with the *Section 94A Development Contributions Plan for Lithgow City Council October 2015*, or its most recent version.

Note: See also section 7.11 of the EP&A Act.

APPLICABILITY OF GUIDELINES

15. References in the conditions of this consent to any guideline, protocol, Australia Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as the date of inclusion (or later update) in the condition.
16. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Secretary may, in respect of ongoing monitoring and management obligations, agree to or require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

CROWN LAND

17. The Applicant must consult with DPIE - Crown Lands prior to undertaking any development on Crown land or Crown roads.

Notes:

- Under Section 265 of the Mining Act 1992, the Applicant is required to enter into a compensation agreement with DPIE - Crown Lands prior to undertaking any mining operations or related activities on Crown land or Crown roads within a mining lease.
- Under Section 141 of the Mining Act 1992, the Applicant is required to enter into an access arrangement with DPIE - Crown Lands prior to undertaking any prospecting operations on Crown land or Crown roads within an exploration licence.

**SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS**

NOISE

Hours of Operation

1. The Applicant must comply with the operating hours set out in Table 1.

Table 1: Operating Hours

Activity	Permissible Hours
Quarrying operations	<ul style="list-style-type: none"> • 7 am to 6 pm Monday to Friday • 8 am to 1 pm Saturday • At no time on Sundays or public holidays
Loading and dispatch of trucks	<ul style="list-style-type: none"> • May be conducted at any time, provided these activities comply with the noise criteria in Table 2
Blasting	<ul style="list-style-type: none"> • 9 am to 5 pm Monday to Friday • 9 am to 1 pm on Saturdays • At no time on Sundays or public holidays
Maintenance	<ul style="list-style-type: none"> • May be conducted at any time, provided that these activities are not audible at any privately-owned residence

2. The following activities may be carried out outside the hours specified in condition 1 above:
 - (a) delivery or dispatch of materials as requested by Police or other public authorities; and
 - (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Operational Noise Criteria

3. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Operational noise criteria dB(A)

Noise Assessment Location	Day <i>L_{Aeq} (15 min)</i>	Evening <i>L_{Aeq} (15 min)</i>	Night <i>L_{Aeq} (15 min)</i>
All privately-owned residences	43	39	35

- 3A. Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).
- 3B. The noise criteria in Table 2 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

4. The Applicant must:
 - (a) implement best practice management to minimise the construction, operational and road transportation noise of the development;
 - (b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 3);
 - (c) carry out noise monitoring (at least every 3 months or as otherwise agreed with the Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
 - (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent,

to the satisfaction of the Secretary.

Note: Required frequency of noise monitoring may be reduced if approved by the Secretary.

Noise Management Plan

5. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with the EPA;
 - be submitted to the Secretary within three months of the determination of Modification 1, unless otherwise agreed by the Secretary;
 - describe the measures to be implemented to ensure:
 - compliance with the noise criteria and operating conditions of this consent;
 - best practice management is being employed; and
 - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply (see NPf1);
 - describe the proposed noise management system; and
 - include a monitoring program to be implemented to measure noise from the development against the noise criteria in Table 2, and which evaluates and reports on the effectiveness of the noise management system on site.

The Applicant must implement the Noise Management Plan as approved from time to time by the Secretary.

BLASTING

Blasting Impact Assessment Criteria

6. The Applicant must ensure that blasting on site does not cause any exceedance of the criteria in Table 3.
Table 3: Blasting Criteria

<i>Receiver</i>	<i>Airblast overpressure (dB(Lin Peak))</i>	<i>Ground vibration (mm/s)</i>	<i>Allowable exceedance</i>
Any residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months
All public infrastructure	-	50	0%

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner or infrastructure owner to exceed the limits in Table 3, and the Applicant has advised the Department in writing of the terms of this agreement.

Property Inspections

7. If the Applicant receives a written request from the owner of any privately-owned land within 2 kilometres of the site for a property inspection to establish the baseline condition of any buildings and structures on their land, or to have a previous property inspection updated, then within 2 months of receiving this request the Applicant must:
- commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to:
 - establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and
 - identify measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and structures; and
 - give the landowner a copy of the new or updated property inspection report.

If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the property inspection report, either party may refer the matter to the Secretary for resolution.

Property Investigations

8. If the owner of any privately-owned land within 2 kilometres of the site or any other landowner where the Secretary is satisfied an investigation is warranted, or claims in writing that buildings or structures on their land have been damaged as a result of blasting on the site, then within 2 months of receiving this written claim the Applicant must:
- commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and
 - give the landowner a copy of the property investigation report.

If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant must repair the damage to the satisfaction of the Secretary.

If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.

Operating Conditions

9. During blasting operations, the Applicant must:
- implement best practice management to:
 - protect the safety of people and livestock;
 - protect public or private infrastructure and property from damage; and
 - minimise the dust and fume emissions;
 - operate a suitable system to enable the local community to get up-to-date information on the proposed blasting schedule on site; and
 - carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Secretary.

Blast Management Plan

10. The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be submitted to the Secretary for approval within three months of the determination of Modification 1, unless otherwise agreed by the Secretary;
 - describe the measures to be implemented to ensure compliance with the blast criteria and operating conditions of this consent;
 - include measures to manage flyrock to ensure the safety of people and livestock and to protect properties;
 - include a monitoring program for evaluating and reporting on compliance with the blasting criteria in this consent;
 - include local community notification procedures for the blasting schedule, in particular to nearby residences; and
 - include a protocol for investigating and responding to complaints related to blasting operations.

The Applicant must implement the Blast Management Plan as approved from time to time by the Secretary.

AIR QUALITY

Air Quality Criteria

11. The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a, c} 25 µg/m ³
	24 hour	^b 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a, c} 8 µg/m ³
	24 hour	^b 25 µg/m ³
Total suspended particulate (TSP) matter	Annual	^{a, c} 90 µg/m ³
^d Deposited dust	Annual	^b 2 g/m ² /month ^a 4 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its

own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

^d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

12. The air quality criteria in Table 4 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

13. The Applicant must:
- implement best practice management to minimise the dust emissions of the development;
 - regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this consent;
 - minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note c under Table 4);
 - monitor and report on compliance with the relevant air quality conditions in this consent; and
 - minimise the area of surface disturbance and undertake progressive rehabilitation of the site, to the satisfaction of the Secretary.

Air Quality Management Plan

14. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be submitted to the Secretary for approval within three months of the determination of Modification 1, unless otherwise agreed by the Secretary;
 - describe the measures to be implemented to ensure:
 - compliance with the air quality criteria and operating conditions of this consent;
 - best practice management is being employed; and
 - the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;
 - describe the proposed air quality management system;
 - include an air quality monitoring program that:
 - is capable of evaluating the performance of the development;
 - includes a protocol for determining any exceedances of the relevant conditions of consent;
 - effectively supports the air quality management system; and
 - evaluates and reports on the adequacy of the air quality management system.

The Applicant must implement the approved Air Quality Management Plan as approved from time to time by the Secretary.

Meteorological Monitoring

15. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in close proximity to the site that:
- complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and
 - is capable of measuring meteorological conditions in accordance with the NSW Noise Policy for Industry (EPA, 2017), unless a suitable alternative is approved by the Secretary following consultation with EPA.

SOIL AND WATER

Water Supply

16. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply, to the satisfaction of the Secretary.

Water Discharges

17. The Applicant must comply with the discharge limits in any EPL, or with section 120 of the POEO Act.

Soil and Water Management Plan

18. The Applicant must prepare a Soil and Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
- (a) be prepared by suitably qualified and experienced person/s approved by the Secretary;
 - (b) be prepared in consultation with the EPA, [DPIE - Water](#) and WaterNSW;
 - (c) be submitted to the Secretary for approval within three months of the determination of [Modification 1](#) and [Modification 3](#), unless otherwise agreed by the Secretary; and
 - (d) include a:
 - i. Site Water Balance that includes:
 - details of:
 - a. sources and security of water supply;
 - b. water use and management on site;
 - c. any off-site water transfers; and
 - d. reporting procedures; and
 - measures to be implemented to minimise clean water use on site;
 - ii. Surface Water Management Plan, that includes:
 - a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the development;
 - a detailed description of the surface water management system on site including the:
 - a. clean water diversion system;
 - b. erosion and sediment controls;
 - c. dirty water management system; and
 - d. water storages; and
 - a program to monitor and report on:
 - a. any surface water discharges;
 - b. the effectiveness of the water management system,
 - c. the quality of water discharged from the site to the environment;
 - d. surface water flows and quality in local watercourses;
 - iii. Groundwater Management Plan that includes:
 - a provision that requires the Applicant to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor; and
 - a monitoring program to manage potential impacts, if any, on any alluvium and associated surface water source near the proposed extraction area that includes:
 - a. identification of a methodology for determining threshold water level criteria;
 - b. contingency measures in the event of a breach of thresholds; and
 - c. a program to regularly report on monitoring.

The Applicant must implement the approved Soil and Water Management Plan as approved from time to time by the Secretary.

TRANSPORT

Monitoring of Product Transport

19. The Applicant must keep accurate records of all laden truck movements to and from the site and publish a summary of records on its website every 6 months.

Operating Conditions

20. The Applicant must:
- a. ensure that all laden trucks entering or exiting the site have their loads covered, with the exception of loads consisting solely of boulders greater than one tonne in weight;
 - b. ensure that all laden trucks exiting the site are cleaned of material that may fall from vehicles, before leaving the site; and
 - c. use its best endeavours to ensure that appropriate signage is displayed on all trucks used to transport product from the development so they can be easily identified by road users.

PROTECTION OF ABORIGINAL HERITAGE

21. [The Applicant must ensure that the development does not cause any direct or indirect impact on any identified heritage item located outside the approved disturbance area, beyond those predicted in the document/s listed in condition 2\(c\) of Schedule 2.](#)

22. If suspected human remains are discovered on site, then all work surrounding the area must cease, and the area must be secured. The Applicant must immediately notify NSW Police and BCD, and work must not recommence in the area until authorised by NSW Police and BCD.
23. If any previously unknown Aboriginal object or Aboriginal place is discovered on the site:
- (a) all work in the immediate vicinity of the object or place must cease immediately;
 - (b) a 10 metre buffer area around the object or place must be cordoned off; and
 - (c) BCD must be contacted immediately.
- 23A. Work in the immediate vicinity may only recommence if:
- (a) the potential Aboriginal object or Aboriginal place is confirmed by BCD upon consultation with the Registered Aboriginal Parties not to be an Aboriginal object or Aboriginal Place; or
 - (b) the Aboriginal Cultural Heritage Management Plan required by condition 23C is revised to include the Aboriginal object or Aboriginal place and appropriate measures in respect of it, to the satisfaction of the Secretary; or
 - (c) the Secretary is satisfied as to the measures to be implemented in respect of the Aboriginal object or Aboriginal place and makes a written direction in that regard.
- 23B. The Applicant must ensure that all known Aboriginal objects or Aboriginal places on the site and within any offset areas are properly recorded, and those records are kept up to date, in the AHIMS Register.

Aboriginal Cultural Heritage Management Plan

- 23C. The Applicant must prepare an Aboriginal Cultural Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
- (a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;
 - (b) be prepared in consultation with BCD and Registered Aboriginal Parties;
 - (c) describe the measures to be implemented on the site or within any offset area to:
 - (i) comply with the heritage-related operating conditions of this consent;
 - (ii) ensure all workers receive suitable Aboriginal cultural heritage inductions prior to carrying out any activities which may cause impacts to Aboriginal objects or Aboriginal places, and that suitable records are kept of these inductions;
 - (iii) protect, monitor and manage identified Aboriginal objects and Aboriginal places (including any proposed archaeological investigations of potential subsurface objects and salvage of objects within the approved disturbance area) in accordance with the commitments made in the document/s listed in condition 2(c) of Schedule 2;
 - (iv) protect Aboriginal objects and Aboriginal places located outside the approved disturbance area from impacts of the development;
 - (v) manage the discovery of suspected human remains and any new Aboriginal objects or Aboriginal places, including provisions for burials, over the life of the development;
 - (vi) maintain and manage reasonable access for relevant Aboriginal stakeholders to Aboriginal objects and Aboriginal places (outside of the approved disturbance area); and
 - (vii) facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site;
 - (d) include a strategy for the care, control and storage of Aboriginal objects salvaged on site, in particular AHIMS Site #45-1-2802, both during the life of the development and in the long-term.
- 23D. The Applicant must not commence any ground disturbance associated with Modification 3 until the Aboriginal Cultural Heritage Management Plan is approved by the Secretary.
- 23E. The Applicant must implement the Aboriginal Cultural Heritage Management Plan approved by the Secretary.

BIODIVERSITY AND REHABILITATION

Biodiversity Offset Strategy

24. By 28 February 2018, the Applicant must provide a Biodiversity Offset Strategy in accordance with the *Framework for Biodiversity Assessment - NSW Biodiversity Offsets Policy for Major Projects*, for the retirement of ecosystem and species credits as set out in Table 5, to the satisfaction of the Secretary and BCD.

Table 5: Biodiversity credits to be retired

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

Security of Offsets

25. By 31 December 2018, unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide appropriate long-term security for the Biodiversity Offset Strategy, to the satisfaction of the Secretary. Any mechanism must remain in force in perpetuity.

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.

Biodiversity Management Plan

26. The Applicant must prepare a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
 - be prepared in consultation with BCD;
 - be submitted to the Secretary within three months of providing a satisfactory Biodiversity Offset Strategy or by 31 March 2018, whichever is earlier;
 - describe the short, medium, and long-term measures to be undertaken to manage the remnant vegetation and fauna habitat on the site
 - include a detailed description of the measures described in paragraph (d) to be implemented over the next 3 years (to be updated for each 3-year period following initial approval of the plan) including the procedures to be implemented for:
 - maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of any biodiversity offset areas or site rehabilitation;
 - restoring and enhancing the quality of native vegetation and fauna habitat in any biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
 - protecting vegetation and fauna habitat outside the approved disturbance area on-site;
 - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
 - ensuring minimal environmental consequences for threatened species, populations and habitats, including the Purple Copper Butterfly;
 - collecting and propagating seed;
 - controlling weeds and feral pests;
 - controlling erosion; and
 - managing bushfire risk;
 - include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
 - identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate these risks; and
 - include details of who is responsible for monitoring, reviewing, and implementing the plan.

The Applicant must implement the Biodiversity Management Plan as approved from time to time by the Secretary.

Conservation Bond

27. Within six months of the approval of the Biodiversity Offset Strategy, unless otherwise agreed by the Secretary, the Applicant must lodge a Conservation Bond with the Department to ensure that the Biodiversity Offset Strategy is implemented in accordance with the performance and completion criteria in the Biodiversity Management Plan. The sum of the bond must be determined by:

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

The calculation of the Conservation Bond must be submitted to the Department for approval at least 1 month prior to the lodgment of the bond.

28. The Conservation Bond must be reviewed and if required, an updated bond must be lodged with the Department within 3 months following:
 - a. an update or revision to the Biodiversity Management Plan;
 - b. the completion of an Independent Environmental Audit in which recommendations relating to the implementation of the Biodiversity Offset Strategy have been made; or
 - c. in response to a request by the Secretary.

If the Biodiversity Offset Strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond.

If the Biodiversity Offset Strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary will call in all, or part of, the conservation bond, and arrange for the completion of the relevant works.

Biodiversity Credits Required for Modification 3

- 28A. The Applicant must retire biodiversity credits for Stages A to D of the development approved under Modification 3 (see Figure 2 in Appendix 1) as specified in Table 5A below, prior to commencing vegetation clearing in that Stage. The retirement of credits must be carried out in consultation with BCD and in accordance with the Biodiversity Offsets Scheme of the BC Act, to the satisfaction of the BCT.

Table 5A: Biodiversity credit requirements

Credit Type	Credits Required
Ecosystem Credits	
Tranche 1 - Credits to be retired for Stage A PCT 1093 – 100 credits PCT 732 – 36 credits	136
Tranche 2 - Credits to be retired for Stage B PCT 1093 – 64 credits PCT 732 – 103 credits	167
Tranche 3 - Credits to be retired for Stage C PCT 1093 – 52 credits PCT 732 – 75 credits	127
Tranche 4 - Credits to be retired for Stage D PCT 1093 – 57 credits	57

Note: The stages referenced in Table 5A are shown in Figure 2 in Appendix 1.

Rehabilitation Objectives

29. The Applicant must rehabilitate the site to the satisfaction of RR and the Secretary. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the documents listed in condition 2 of Schedule 2 (and shown conceptually in the Rehabilitation Plan in Appendix 2), and comply with the objectives in Table 6.

Table 6: Rehabilitation Objectives

Feature	Objective
All areas of the site affected by the development	<ul style="list-style-type: none"> • Safe • Hydraulically and geotechnically stable • Non-polluting

	<ul style="list-style-type: none"> • Fit for the intended post-development land use(s) • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land
Surface Infrastructure	<ul style="list-style-type: none"> • Decommissioned and removed, unless otherwise agreed by the Secretary
Quarry benches and pit floor	<ul style="list-style-type: none"> • Landscaped and vegetated using native tree and understorey species
Final Void	<ul style="list-style-type: none"> • Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void

Progressive Rehabilitation

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 future re-disturbance.

Rehabilitation Management Plan

31. The Applicant must prepare a Rehabilitation Management Plan for the project to the satisfaction of [RR](#). This plan must:
- be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
 - be prepared in consultation with the Department, [DPIE - Water](#), FCNSW, [BCD](#), [WaterNSW](#) and Council;
 - be submitted to [RR and the Secretary](#) for approval within three months of the determination of Modification 1, unless the Secretary agrees otherwise, [and Modification 3, unless the RR agrees otherwise](#);
 - be prepared in accordance with any relevant [RR](#) Guideline;
 - describe how the rehabilitation of the site would achieve the objectives identified in Table 6 and be integrated with the Biodiversity Offset Strategy described in condition [24](#);
 - include a detailed soil and growing medium balance for the development;
 - include a detailed plan for the reinstatement and review of the proposed rehabilitated woodland areas and fauna habitat, including a protocol for periodic trials to demonstrate that the target vegetation community is being achieved;
 - include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and for triggering remedial action (if necessary);
 - describe the measures to be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including [closure of the development](#), final landform (including final voids), final land uses;
 - include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation;
 - include a program to monitor, independently audit and report on the effectiveness of the measures in paragraph (h) above, and progress against the detailed performance and completion criteria in paragraph (g) above; and
 - build on to the maximum extent practicable and integrate with the other Management Plans required under this consent.

VISUAL

32. The Applicant must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development to the satisfaction of the Secretary.
33. Prior to utilising the WSEA, the Applicant must construct a visual bund between the north-western boundary of the WSEA and the Great Western Highway, as described in EA (Mod 1). The visual bund must be maintained to the satisfaction of the Secretary.
34. The Applicant must install bunds at strategic locations around the site and plant additional trees along the boundary of the development site to screen, so far as is reasonable and feasible, the development from external viewers, to the satisfaction of the Secretary

WASTE

35. The Applicant must:

- (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;
- (b) minimise the waste generated by the development;
- (c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
- (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.

36. Except as expressly permitted in an EPL, [specific resource recovery order or exemption under the Protection of the Environment Operations \(Waste\) Regulation 2014](#), the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

LIQUID STORAGE

37. The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.

DANGEROUS GOODS

38. [The Applicant must ensure that the storage, handling and transport of:](#)
- (a) [dangerous goods are done in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the Dangerous Goods Code; and](#)
 - (b) [explosives are managed in accordance with the requirements of the RR.](#)

BUSHFIRE

39. The Applicant must:
- (a) ensure that the development is suitably equipped to respond to any fires on site; and
 - (b) assist the Rural Fire Service and emergency services to the extent practicable if there is a fire in the vicinity of the site.
40. The Applicant must prepare a Bushfire Management Plan for the site, in consultation with FCNSW, to the satisfaction of the Rural Fire Service.

SCHEDULE 4

ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable, and no longer than 7 days, after obtaining monitoring results showing:
 - (a) an exceedance of any criteria in Schedule 3, the Applicant must notify the affected landowners in writing of the exceedance, and provide regular monitoring results, at least every 3 months, to each affected landowner until the development is again complying with the relevant criteria; and
 - (b) an exceedance of any air quality criteria in Schedule 3, the Applicant must send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision, the Applicant must:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
 - consult with the landowner to determine his/her concerns;
 - conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
 - if the development is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and
- (b) give the Secretary and landowner a copy of the independent review; and
- (c) comply with any written requests made by the Secretary to implement any findings of the review.

VISUAL IMPACT MITIGATION

3. If an owner of privately-owned land considers that the visual impacts of the development at his/her land could be minimised, then he/she may ask the Secretary in writing for a review of the visual impacts of the development on his/her land.

If the Secretary is satisfied that a review is warranted, then within 2 months of the Secretary's decision, the Applicant must:

- (a) commission a suitably qualified and experienced person, whose appointment has been approved by the Secretary, to:
 - consult with the landowner to determine his/her concerns;
 - investigate ways to minimise the visual impacts of the development on land; and
 - prepare a visual mitigation report detailing the outcomes of the investigation and the proposed mitigation measures.
- (b) give the Secretary and landowner a copy of the review; and
- (c) comply with any written requests made by the Secretary to implement any findings of the review.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
 - (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Applicant;
 - (b) provide the strategic framework for environmental management of the development;
 - (c) identify the statutory approvals that apply to the development;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
 - (e) describe the procedures to be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - receive, record, handle and respond to complaints;
 - resolve any disputes that may arise during the course of the development;
 - respond to any non-compliance **and any incident**;
 - respond to emergencies; and
 - (f) include:
 - copies of any strategies, plans and programs approved under the conditions of this consent; and
 - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

The Applicant must implement any Environmental Management Strategy as approved from time to time by the Secretary.

Evidence of Consultation

2. **Where conditions of this consent require consultation with an identified party, the Applicant must:**
 - (a) consult with the relevant party prior to submitting the subject document; and
 - (b) provide details of the consultation undertaken including:
 - (i) the outcome of that consultation, matters resolved and unresolved; and
 - (ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

Management Plan Requirements

3. **Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:**
 - (a) a summary of relevant background or baseline data;
 - (b) details of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) 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) any relevant commitments or recommendations identified in the document/s listed in condition 2(c) of Schedule 2;
 - (d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
 - (e) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development; and
 - (ii) effectiveness of the management measures set out pursuant to condition 2(c) of Schedule 2;
 - (f) 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;
 - (g) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (h) a protocol for managing and reporting any:
 - (i) incident, non-compliance or exceedance of the impact assessment criteria or performance criteria;
 - (ii) complaint; or

- (iii) failure to comply with statutory requirements;
- (i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and
- (j) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

- 3A. The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.

Application of Existing Management Plans

4. The Applicant must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this consent, until the approval of a similar plan, strategy or program under this consent.

Revision of Strategies, Plans & Programs

5. Within 3 months of the submission of an:
- (a) incident report under condition 9 below;
 - (b) Annual Review under condition 11 below;
 - (c) audit report under [condition 14](#) 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. The applicant must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.

Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.

Updating and Staging of Strategies, Plans or Programs

6. [With the approval of the Secretary, the Applicant may:](#)
- (a) [prepare and submit any strategy, plan or program required by this consent on a staged basis \(if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program\);](#)
 - (b) [combine any strategy, plan or program required by this consent \(if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined\); and](#)
 - (c) [update any strategy, plan or program required by this consent \(to ensure the strategies, plans and programs required under the consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development\).](#)
- 6A. [If the Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this consent if those requirements are not applicable to a particular stage.](#)
- 6B. [If the Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.](#)

Adaptive Management

7. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must as soon as becoming aware of any exceedance:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur;
 - (b) consider all reasonable and feasible options for remediation (where relevant);
 - (c) within 14 days of the exceedance occurring, submit a report to the Secretary describing these remediation options and any preferred remediation measures or other course of action; and
 - (d) implement remediation measures as directed by the Secretary;
- to the satisfaction of the Secretary.

COMMUNITY CONSULTATIVE COMMITTEE

8. The Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. The CCC must be operated in general accordance with the Department's *Community Consultative Committee Guidelines, 2019* (or later version).

Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
- *In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*

REPORTING

Incident Reporting

9. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.

Non-Compliance Notification

10. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Annual Review

11. By the end of September in each year after the commencement of development, or other timeframe agreed by the Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Secretary. This review must:
 - (a) describe the development (including any progressive rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;
 - (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, including a comparison of these results against the:
 - (i) relevant statutory requirements, limits or performance measures/criteria;
 - (ii) requirements of any plan or program required under this consent;
 - (iii) monitoring results of previous years; and
 - (iv) relevant predictions in the documents listed in condition 2(c) of Schedule 2;
 - (c) identify any non-compliance or incident which occurred in the previous financial year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
 - (d) evaluate and report on:
 - (i) the effectiveness of the noise and air quality management systems; and
 - (ii) compliance with the performance measures, criteria and operating conditions of this consent;
 - (e) identify any trends in the monitoring data over the life of the development;
 - (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
 - (g) describe what measures will be implemented over the next financial year to improve the environmental performance of the development.
12. Copies of the Annual Review must be submitted to Council and made available to the CCC and any interested person upon request.

INDEPENDENT ENVIRONMENTAL AUDIT

13. Prior to the end of June 2021, and every three years after, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
 - (a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Secretary
 - (b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Secretary) whose appointment has been endorsed by the Secretary;

- (c) be carried out in consultation with the relevant agencies and CCC;
 - (d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);
 - (e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;
 - (f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and
 - (g) be conducted and reported to the satisfaction of the Secretary.
14. Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Applicant must implement these recommendations, to the satisfaction of the Secretary.

Monitoring and Environmental Audits

15. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

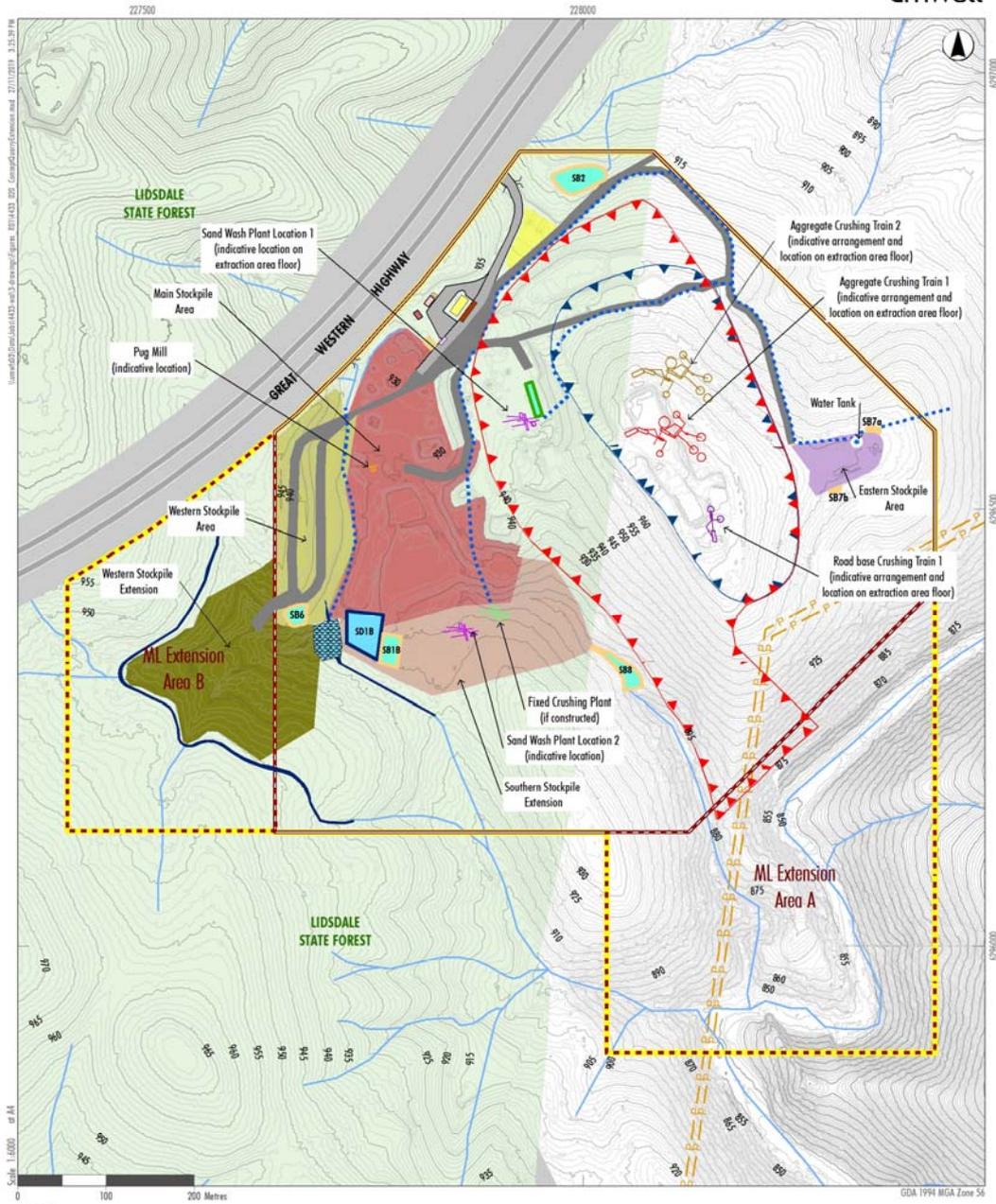
For the purposes of this condition, as set out in the EP&A Act, “monitoring” is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an “environmental audit” is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.

16. Noise, blast and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Schedule 3, providing that these representative monitoring locations are set out in the respective management plan/s.

ACCESS TO INFORMATION

17. Within 6 months of the date of this consent until the completion of all rehabilitation required under this consent, the Applicant must:
- (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:
 - (i) the document/s listed in condition 2(c) of Schedule 2;
 - (ii) all current statutory approvals for the development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development if it is to be staged;
 - (v) minutes of CCC meetings;
 - (vi) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
 - (vii) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (viii) a summary of the current progress of the development;
 - (ix) contact details to enquire about the development or to make a complaint;
 - (x) a complaints register, updated monthly;
 - (xi) the Annual Reviews of the development;
 - (xii) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant’s response to the recommendations in any audit report;
 - (xiii) any other matters required by the Secretary; and
 - (b) keep such information up to date, to the satisfaction of the Secretary.

APPENDIX 1 DEVELOPMENT LAYOUT PLAN



- | | | | |
|--|---|---|---|
| Legend
<ul style="list-style-type: none"> Project Site Quarry Site (ML1633) Quarry Site Extension Clean Water Drainage State Forest | Indicative Plant Infrastructure Locations <ul style="list-style-type: none"> Aggregate Crushing Train 1 Aggregate Crushing Train 2 Fixed Crushing Plant (if constructed) Pug Mill Road base Crushing Train 1 Sand Wash Plant | Approved & Proposed Quarry Layout <ul style="list-style-type: none"> Approved Extraction Area Proposed Extraction Area Main Stockpile Area (935m AHD) Southern Stockpile Area (935m AHD) Western Stockpile Area Western Stockpile Extension (940m AHD) Eastern Stockpile Area | Water Management Infrastructure (Proposed) <ul style="list-style-type: none"> Clean Water Diversion Sediment Basins Settlement Ponds Water Tank Water Pipeline (Indicative) Clean Water Drainage |
|--|---|---|---|

FIGURE 2.1
Modified Quarry Site Layout

Data source: Walker Quarries (2019) - NSW LPI DTDB (2019)

Figure 1: Development Layout incorporating Modification 3

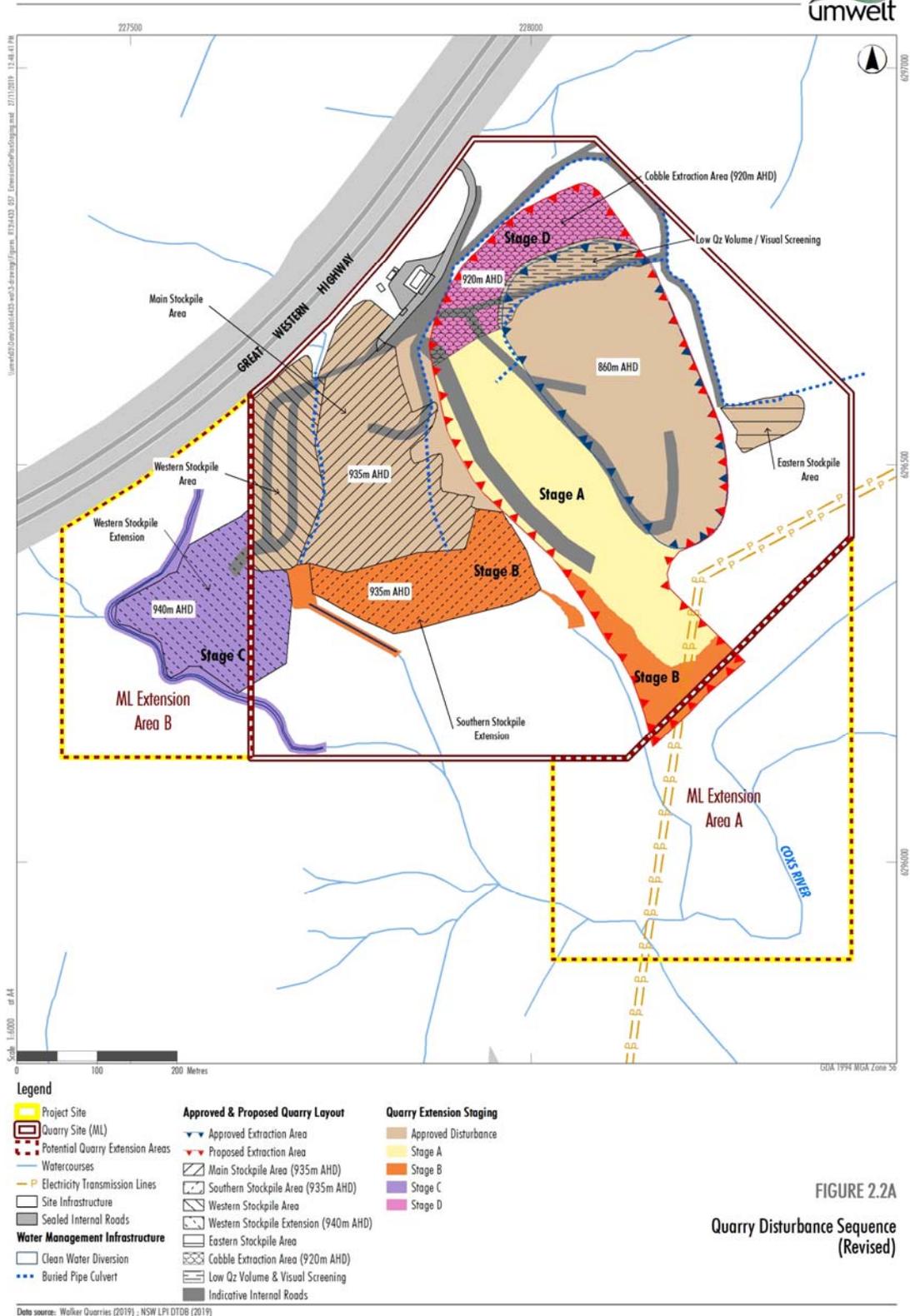


FIGURE 2.2A

Quarry Disturbance Sequence (Revised)

Figure 2: Development Layout incorporating proposed stages

APPENDIX 2 CONCEPTUAL REHABILITATION PLAN

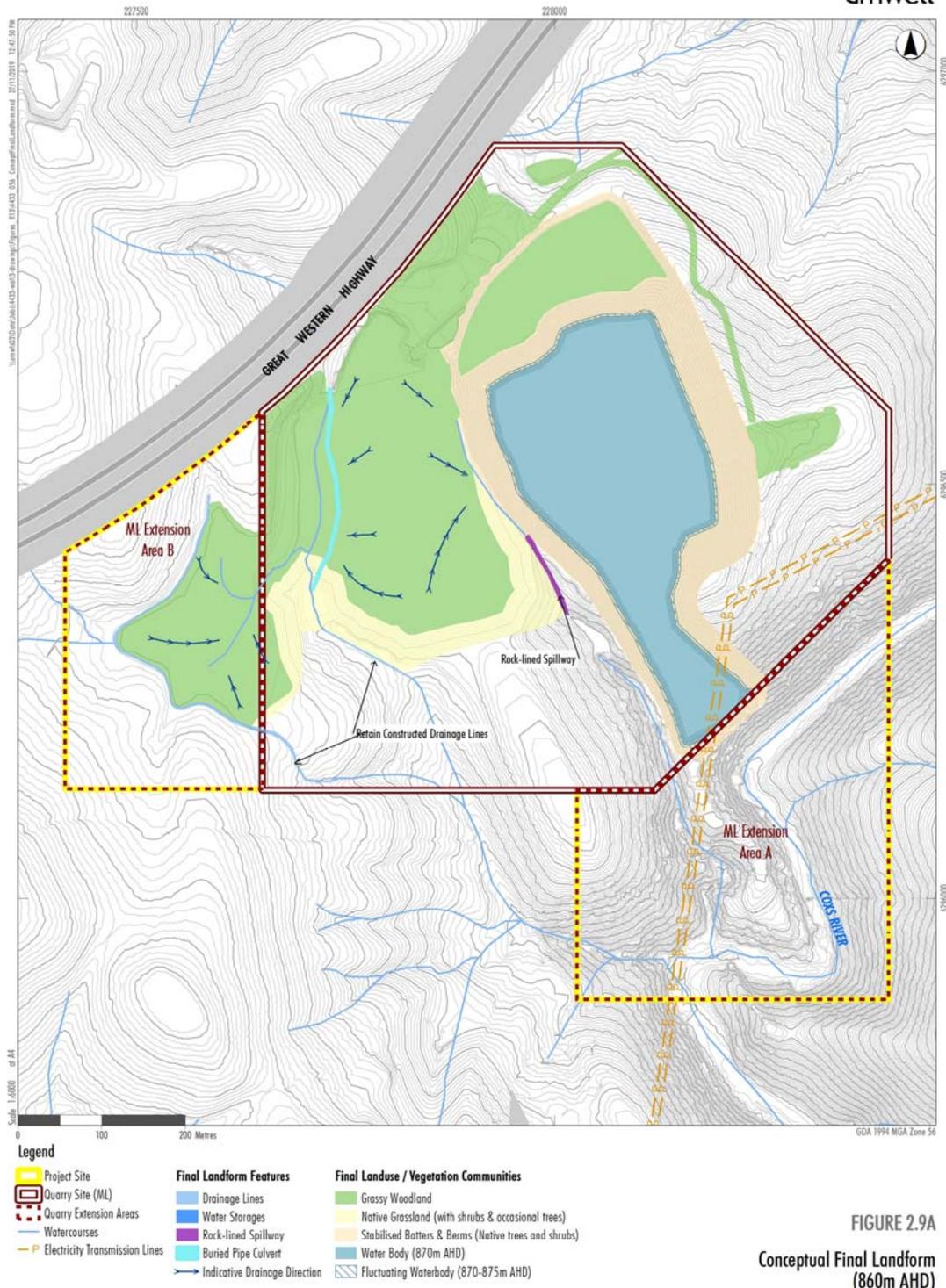


FIGURE 2.9A

Conceptual Final Landform
(860m AHD)

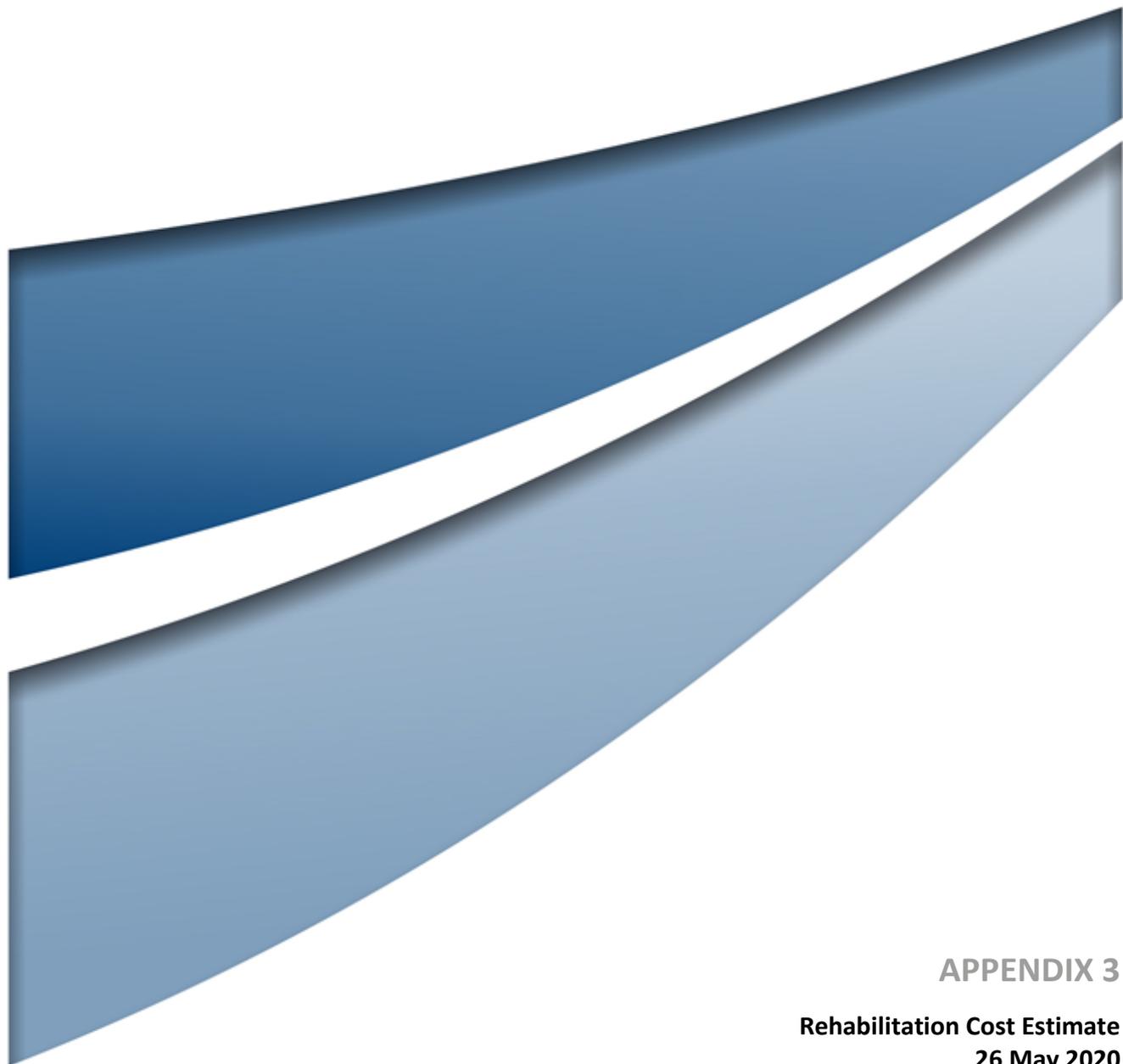
Data source: Walker Quarries (2019); NSW LPI DTDB (2019)

Figure 3: Conceptual final landform

APPENDIX 3 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under condition 9 of Schedule 5 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
 - (a) identify the development and application number,
 - (b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - (c) identify how the incident was detected;
 - (d) identify when the Applicant became aware of the incident;
 - (e) identify any actual or potential non-compliance with the conditions of this consent;
 - (f) describe what immediate steps were taken in relation to the incident;
 - (g) identify further action(s) that will be taken in relation to the incident; and
 - (h) identify a project contact for further communication regarding the incident.
3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Applicant must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
 - (a) a summary of the incident;
 - (b) outcomes of an incident investigation, including identification of the cause of the incident;
 - (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
 - (d) details of any communication with other stakeholders regarding the incident.



APPENDIX 3

Rehabilitation Cost Estimate
26 May 2020

Site Registration

Date

July 2020

Complete the following fields prior to calculating the Security Deposit.

Mine Name:	Wallerawang Quarry		
Lease(s):	ML 1633		
Title Holder:	Walker Quarries Pty Ltd		
Mine Operator:	Walker Quarries Pty Ltd		
Expiry of MOP:	20/12/2020		
Current Security:	\$690,000	Date of last Security Deposit review	28/03/2018
Mine Contact:	Johann van der Merwe		
Position:	Mine Manager		
Address:	Lot 6, Great Western Highway Wallerawang NSW 2845		
Phone:	02 6324 4066	Email:	johannv@walkerquarries.com.au



Open Cut Summary Rehabilitation Cost Estimation

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

Mine Name:	Wallerawang Quarry		
Lease(s):	ML 1633		
Authorisation Owner:	Walker Quarries Pty Ltd		
Mine Operator:	Walker Quarries Pty Ltd		
Expiry of MOP:	20/12/2020		
Current Security:	\$690,000	Date of Last Security Deposit Review:	28/03/2018
Mine Contact:	Johann van der Merwe		
Position:	Mine Manager		
Address:	Lot 6, Great Western Highway Wallerawang NSW 2845		
Phone:	02 6324 4066	Email:	johannv@walkerguarries.com.au

Domain		Security Deposit
Domain 1: Infrastructure		\$388,904
Domain 2: Tailings & Rejects		
Domain 3: Overburden & Waste		
Domain 4: Active Mine & Voids		\$97,309
Domain 5: Management Activities		\$137,395
Subtotal (Domains and Sundry Items)		\$623,608
Contingency	10%	\$62,361
Post Closure Environmental Monitoring	10%	\$62,361
Project Management and Surveying	10%	\$62,361
Total Security Deposit for the Mining Project (excl. of GST)		\$810,691

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 or MOP.

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.

David Murray
Company Representative's Name

6 July 2020
Date

Managing Director
Company Representative's Role / Responsibility


Signature

Open Cut Operations

**Domain 1a:
Infrastructure**

Total Cost for Infrastructure Domain

\$388,904

Additional Assumptions:
Record any relevant assumptions to
this domain below:

Includes MOP Domains 1, 3 and 5 (12.4 ha - 28 May 2020)

Key Rehabilitation Area Data for Domain		Enter data below manually
Total Landform Establishment:		0.00
Total Growth Media Development:		0.00
Total Ecosystem Establishment:		0.25

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Termination of Services and Demolition Works	Disconnect and terminate all services (Water, electricity, gas etc at point of attachment to site)	Y	1	allow	\$35,000		\$35,000		For disconnection of all services, at building boundaries, physical cut at the point of attachment or distribution location. If infrastructure is not consolidated (i.e., administration, camp and workshops are in separate places), consider multiple disconnection fees.
	Disconnect and terminate services at remote areas (i.e. pump stations, remote workshops, sewage treatment plant etc.)	Y	1	allow	\$5,500		\$5,500		Used for infrastructure remote from primary connection. Can also be used for small mines / quarries that do not have dedicated supplies from supply authorities such as steel lattice power lines.
	Removal of low/medium voltage powerlines including disconnection, rolling up the wires and removing the poles - does not include the removal of substations	n			km	\$15,000			Applies to power lines on stobie, concrete or similar poles.
	Removal of power lines on tower or lattice structures (this includes disconnection, rolling up the wires and removing the structures) - does not include the removal of substations	n			km	\$100,000			Applies to power lines on steel tower and steel lattice structures assuming 3 towers / km.
	Remove significant rail, road, water course overpass - manage potential interruptions and demolish and remove bridge supports/pylons/bridge structure etc. and dispose of waste material on-site/locally	n			Item	\$350,000			Major structures constructed for the purposes of mining related works - does not include transport to regional disposal facility or equivalent.
	Demolish and/or remove substations (assumes they are in a closed building). Dispose of waste material on-site/locally	n			m2	\$600.00			Simple structure to demolish. Assumes single story building and segregation of contents for scrap as applicable.
	Demolish and remove switchyard. Dispose of waste material on-site/locally	n			m2	\$55.00			Includes demolition and removal of all switchgear and transformers etc. and segregation of contents for scrap as applicable.
	Demolish and remove demountable structures on concrete stumps. Assumes not being re-used	Y	405		m2	\$40.00		\$16,200	Main office and training room complex
	Demolish and remove small buildings/tanks (admin buildings, single story accommodation etc) and disposal on-site/locally	Y	118		m2	\$65.00		\$7,670	weighbridge and wash bay
	Demolish and remove light industrial buildings and disposal on-site/locally	n			m2/floor	\$115.00			Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
	Demolish and remove industrial buildings (workshops tyre change and servicing area etc not CHPP/process plant) and disposal on-site/locally	n			m2/floor	\$180.00			Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
	Demolish and remove CHPP/process plant (include the area of each floor of the structure) and disposal on-site/locally	Y	200		m2/floor	\$265.00		\$53,000	It is noted that all processing plant is mobile and therefore would be floated off-site. This notwithstanding, the surface area of the wash plant and crushing plant have been accounted for to provide funding for plant dismantling and demolition of non-functional components at the end of Quarry life.
	Collapse, demolish and remove washery, crushers, hoppers, mills, furnaces, agglomeration, electrowinning, floatation, sizing stations, rotary breakers, etc (include the area of each floor of the structure) and disposal on-site/locally	Y	200		m2/floor	\$265.00		\$53,000	It is noted that the wash plant is mobile and therefore would be floated off-site. This notwithstanding, the surface area of the wash plant and crushing plant have been accounted for to provide funding for plant dismantling and demolition of non-functional components at the end of Quarry life.
	Collapse, demolish and remove stacker OR reclaim (radial or luffing etc. with maneuverability for stockpile control) and disposal on-site/locally	n			allow	\$1,000,000			Cost for removal of stacker or reclaim unit only. Does not include terminate services, remove rails and ballast etc. Does not include transport to regional disposal facility or equivalent.
	Collapse, demolish and remove bucket wheel stacker/reclaimer and disposal on-site/locally	n			allow	\$2,500,000			Cost for just removal of the bucket wheel stacker/reclaim units. Does not include terminate services, remove rails and ballast etc. Does not include transport to regional disposal facility or equivalent.
	Remove stacker/reclaimer rails and ballast and demolish and remove concrete footings etc and disposal on-site/locally	n			m	\$75.00			Includes both rails, does not include the conveyor system. Does not include transport to regional disposal facility or equivalent.
	Collapse, Cut and Remove 5000T coal silo and disposal on-site/locally	n			allow	\$100,000			Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
	Collapse, Cut and Remove 3000 T coal silo and disposal on-site/locally	n			allow	\$85,000			Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
	Collapse, Cut and Remove 1250 T coal silo and disposal on-site/locally	n			allow	\$65,000			Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
	Collapse, Cut and Remove rail loading bins and disposal on-site/locally	n			allow	\$65,000			Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
Demolish and remove onground conveyors, transfer stations & gantries (scrap only - does not include dismantling for reuse at another site) and disposal on-site/locally	n			m	\$210.00			Estimate for on-ground conveyor including anything up to 10 m off the ground. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove elevated conveyors, transfer stations & gantries (scrap only, does not include dismantling for reuse at another site) and disposal on-site/locally	n			m	\$370.00			Estimate for elevated conveyor up to ~10 m off the ground. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove overhead conveyors, transfer stations & gantries (scrap only, does not include dismantling for reuse at another site) and disposal on-site/locally.	n			m	\$1,200			Estimate for overhead conveyor including conveyors that are > 10 m off the ground that require a crane to remove. Does not include transport to regional disposal facility or equivalent.	
This may include small scale fixed material stacking infrastructure									

Demolish reclaim tunnel, cut reo and expose reclaim conveyor, then collapse into the reclaim tunnel void (Does not include excavation to expose reclaim tunnel, removal of conveyor or backfilling void)	n		m2	\$80.00			Does not include conveyor removal or backfill.	
Remove and demolish conveyor from reclaim tunnel (Does not include excavation and demolition of reclaim tunnel roof)	n		m	\$150.00			Due to no canopy or infrastructure attached.	
Demolition of reclaim tunnel concrete (Assumes complete removal and dumping in mine pit void)	n		m	\$950.00			Assumes this area will be used for another land-use that requires the structure to be dug up and re-buried somewhere else.	
Demolish and remove small tank clean (Thickener etc 3 - 9 m diameter) and disposal on-site/locally	n		allow	\$10,000			Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove medium tank clean (Thickener etc 10 - 15 m diameter) and disposal on-site/locally	n		allow	\$30,000			Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove large tank clean (Thickener etc 15 - 30 m diameter) and disposal on-site/locally	n		allow	\$45,000			Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove extra large tank clean (Thickener etc >30 m diameter) and disposal on-site/locally	n		allow	\$85,000			Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.	
Demolish and remove tank clean (Thickener etc) >50 m diameter and disposal on-site/locally	n		allow	\$100,000			Estimate only - may require a detailed assessment from demolition expert due to specialised equipment required for removal. Does not include transport to regional disposal facility or equivalent.	
Removal of UG tank <5000 L - including pipes, bunds etc. and disposal on-site/locally	n		allow	\$21,000			Assume tank is clean (contents removed), does not include transport to regional disposal facility or equivalent.	
Removal of UG tank 5000 L - 15000 L - including pipes, bunds etc. and disposal on-site/locally	n		allow	\$30,000			Assume tank is clean (contents removed), does not include transport to regional disposal facility or equivalent.	
Remove small underground pipe and disposal on-site/locally	n		m	\$25.00			For example: 300 mm pipes - 0.5 m deep, does not include transport to regional disposal facility or equivalent.	
Remove medium underground pipe and disposal on-site/locally	Y	200	m	\$60.00	\$12,000	Includes underground pipes between the wash plant and silt cells	For example: 500 mm pipes - 1 m deep, does not include transport to regional disposal facility or equivalent.	
Remove large underground pipe and disposal on-site/locally	n		m	\$165.00			For example: 1 m pipes - 2 m deep.	
Remove above ground pipe (supported) and disposal on-site/locally	Y	500	m	\$12.00	\$6,000	Clean water pipelines for transfer of water between sediment basins, water tank and dams	~300 mm pipes and assumes pipes are in close proximity to infrastructure areas. Does not include transport to regional disposal facility or equivalent.	
Remove surface pipelines (unsupported) and disposal on-site/locally	n		m	\$15.00			~300 mm pipes and assumes pipes are used for water transfer between pits (or similar) and remotely located. Does not include transport to regional disposal facility or equivalent.	
Remove pump and pontoon from a lake or dam including pipes and electrical supply or diesel tank/s and disposal on-site/locally	n		allow	\$150,000			Assumes infrastructure is moored and requires barge mobilisation to sever the mooring and / or is a significant fixed structure for controlled release of water. Does not include transport to regional disposal facility or equivalent.	
Remove bitumen (car park and access roads) and dispose on-site/locally	Y	1500	m2	\$10.00	\$15,000	Sealed Access Road to wash bay to be retained	Scalp bitumen and stabilised material. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.	
Remove bitumen (airstrip) and dispose on-site/locally	n		m2	\$20.00			Scalp bitumen and stabilised material. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.	
Remove concrete pads & footings (<300 mm thickness) and disposal on-site/locally	Y	80	m2	\$37.00	\$2,960	Includes aprons and head walls of silt cells and other water storage structures	Breaking up slab and disposal or for conversion to aggregate. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.	
Remove concrete pads & footings (>300 mm thickness) and disposal on-site/locally	n		m2	\$75.00			Breaking up slab and disposal or for conversion to aggregate. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.	
Crush concrete to make road aggregate - 75 mm	n		tonne	\$17.00			Does not include haulage of materials - assumes crushing plant is readily available.	
Crush concrete to make road aggregate - 50 mm	n		tonne	\$20.00			Does not include haulage of materials - assumes crushing plant is readily available.	
Crush concrete to make road aggregate - 30 mm	n		tonne	\$22.00			Does not include haulage of materials - assumes crushing plant is readily available.	
Remove fence (cyclone/wire fence) and disposal on-site/locally	Y	460	m	\$20.00	\$9,200	Western ML 1633 boundary with Lidsdale SF	Roll up fence and remove posts.	
Termination of Services and Demolition Works Subtotal							\$215,530	
Rail Infrastructure								
Remove rail loop and spur, ballast etc. and disposal on-site/locally	n		m	\$60.00			Remove all materials to allow area to be reshaped and rehabilitated - does not include transport to regional disposal facility or equivalent.	
Remove train loading facilities and disposal on-site/locally	n		m2	\$265.00			Remove rail load point infrastructure including gantries and control structures. Does not include transport to regional disposal facility or equivalent.	
Reshape rail spur and load out areas. Does not include growth media and revegetation	n		ha	\$2,500			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).	
Rail Infrastructure Subtotal							\$0	
Contaminated Materials								
Undertake a preliminary site investigation (Phase 1). This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple studies may be required.	n		Cluster	\$15,000			The preliminary investigation would include at minimum a desktop assessment of the area and site history, incidents, etc. as per the National Environmental Protection (Site Contamination) Measure (NEM) Phase 1 assessment (EP Act Section 388 (2) (iv)) or similar approved and recognised assessment method. A cluster may include: - Mine infrastructure (i.e., fuel / chemical store, workshop, vehicle wash-down, sewage treatment etc.) - Processing plants (i.e., ore and product storage, mine waste storage and disposal, rail load-out etc.) - Remote pit-top facilities (i.e., vehicle refuel, sewage treatment, secondary workshop, chemical storage etc.)	

Undertake an intrusive site investigation. This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple intrusive investigations should be included.	n		Cluster	\$100,000			One intrusive investigation would include at minimum a site walkover and field sampling as per the National Environmental Protection (Site Contamination) Measure (NEM) Phase 2 intrusive investigation (EP Act Section 389 (2) (iv)) or similar approved and recognised assessment method. Note: An intrusive investigation is not required for all contaminated areas and should be applied considering the rehabilitation program, site history, location, etc. A cluster area where it is highly anticipated that contamination has occurred (i.e. underground tanks / pipes that are known to have leaked, chemical stores with earthen bunds, around ineffective oil/water separators etc.) and further field work is required involving intrusive investigations.
Removal and disposal of contaminated water from tanks, bunded areas and sumps	n		L	\$0.35			Cost for recent sump clean-up from resource activity - requires specialists to treat.
Remove material (carbonaceous / metaliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (Select Haul Distance from list)	n		m3	Select from List			Select Haul Distance Here This item includes scraping and removal of the volume of carbonaceous material using dozer, grader etc. to make safe an area and enable the establishment of rehabilitation.
Load, cart and dispose of High Level contaminated material off site to a licensed landfill. Assumes cartage to a licensed landfill	n		m3	\$700.00			Includes load, haul and dump fees to a licensed facility.
Load, cart and disposal of Low Level contaminated material off site to a licensed landfill. Add \$50/m3 for cartage to regional landfill	n		m3	\$200.00			Includes load, haul and dump fees to a licensed facility.
Onsite remediation of hydrocarbon contaminated soils (<50 m3) - manual land farming	Y	10	m3	\$55.00		\$550	< 50m3 No current contamination on-site. Double skinned diesel tank and self-bunded pallets for oils and lubricants used. The potential for spillage / contamination is minimal and volume accounts for some minor requirement for on-site remediation. Current rates still adequate and recommend continue to allow for economies of scale.
Mobilisation of cement stabilisation plant and equipment for hydrocarbon (i.e., PAH, long chain hydrocarbons, etc.) contaminated soil treatment	n		Item	\$150,000			Required if treatment of hydrocarbon contamination is required to be fast tracked.
On-site remediation of hydrocarbon contaminated soils - using a mobile treatment unit	n		m3	\$165.00			Additional cost as the treatment process is fast tracked.
Remove and dispose of asbestos (<750 m2)	n		m2	\$50.00			Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.
Remove and dispose of asbestos (>750 m2)	n		m2	\$40			Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.
Remove and dispose of asbestos	n		tonne	\$2,400			6 mm asbestos sheet approx. 15 kg / m2 = ~70 m2 per ton. Allowing \$20 / m2 for removal, 4 hours trucking @\$125 and \$100 / t disposal plus 20% OHP = \$2,400 / t.
Treatment of known Acid Sulfate Soils	n		ha	\$2,580			Assumes ASS is treatable via neutralisation and does not require capping and isolation.
Removal and disposal of plastic liner (i.e. dam, leach pad, sump etc.)	n		m2	\$1.00			Provisional sum for cutting using ripping tyres and on-site disposal of the liner.
Contaminated Materials Subtotal						\$550	
Vents, Shafts and Boreholes							
Exploration boreholes – rehabilitate boreholes and drill pads as required	n		depth (m)	\$40.00			Where multiple boreholes exist, this is the rate for the total cumulative depth of all boreholes (e.g. two boreholes at 100m depth each = 200m). Assumes a per metre drilling rate of ~\$150 / m of which ~25 - 30% is for rehabilitation which may include a variety of works (i.e., cut casing and install cap, install poly pipe to facilitate back-filling, grout preparation, grouting and capping, reshaping / raising the drill pad).
Exploration boreholes – backfill open bore holes with cuttings	n		allow	\$300			May include cutting of casing, installation of a casing cap, and/or manually backfilling the hole with drill cuttings. Does not include reshaping / ripping the drill pad, amelioration / seeding etc.
Exploration boreholes – grout and cap open bore holes	n		allow	\$7,950			Includes grouting and capping 100 - 200 m exploration boreholes to meet the requirements of ED001.
Boreholes – cap and seal open bore holes with steel casing (i.e., goaf drainage etc.)	n		allow	\$6,960			Holes deeper than 100 m - includes cutting steel collar 6 m below surface, grouting and capping.
Boreholes – cap and seal open bore holes - surface-to-in-seam gas drainage	n		allow	\$15,000			Surface-to-in-seam gas drainage boreholes.
Boreholes – cap and seal open bore holes - vertical gas drainage	n		allow	\$16,000			Vertical gas drainage boreholes.
Boreholes – grout (with concrete) cap and seal bore holes (i.e. where sealing aquifers)	n		allow	\$35,000			Includes multi skin sleeves to prevent aquifer mixing.
Boreholes – cap and seal service boreholes for UG operations	n		allow	\$45,000			Includes large diameter boreholes used for supplying electricity (66kV), compressed air, water, solenoid etc.
Vents, Shafts and Boreholes Subtotal						\$0	
Roads and Tracks							
Unsealed roads / vehicle park-up areas – minor works including deep rip and trim	n		ha	\$960.00			Assumes ~6 m road width - 16H Grader @ \$212 per hour.
Unsealed roads / access tracks / vehicle park-up areas with windrows and/or small earthen bunds – minor earthworks and deep rip and trim	n		ha	\$1,500			Assumes ~20 m road width - D10 Dozer @ \$332 per hour.
Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip and seed (pasture grass)	n		ha	\$3,698			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	Y	1.8	ha	\$4,485		\$8,073	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (pasture grass)	n		ha	\$3,820			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	n		ha	\$4,595			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (Select Haul Distance from list)	n		m3	Select from List			Select Haul Distance Here This item includes the scraping and removal of the volume of stabilised material from the road, laydown or other surface using an excavator, dozer and grader to enable the establishment of rehabilitation.
Roads and Tracks Subtotal						\$8,073	
Earthworks / Structural Works							< 50m push

(Landform Establishment)	Minor reshaping and pushing	Y	4900	m3	\$0.80		\$3,911	Tiered slopes on Western and Main Stockpile Areas	D11 push at \$350 and 400 bcm/hr
	Structural works, banks, waterways - contour banks, drainage channels and other soil conservation measures	Y	1.8	ha	\$3,900		\$7,020	bnatter slopes of Main and Supplementary Stockpile Areas and Processing Pad	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (haul distance <1 km)	Y	0.9	ha	\$1,600		\$1,440	Reinstate central clean water drainage, construct contour banks on slopes and profile internal drainage lines	Combination of dozer and excavator work. Small dozer (D6 or similar) @ ~\$200 per hour plus grader @ \$212 per hour for ~4 hours each per ha.
	Shotcrete application on cuttings and steep slopes	n		m2	\$185.00		\$35,662	<=1km All sediment basins, storage dams and silt cells	D10 push over soft material at \$270/hr 657 Scrapers cut to spoil at \$430/hr, 150BCM/hr/machine. Ancillary watercart and grader at \$0.75c/m3
	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	Y	2.5	ha	\$960.00		\$2,400	Flat Sections of Main Stockpile Area, Northern Stockpile Area and Processing Pad	This rate is used to rehabilitate steep slopes of weathered rock, roadway cuttings, etc that cannot be cut back and stabilised. 16H Grader @ \$212 per hour - ripping in 1 direction only.
	Deep rip hard stand / lay down areas	Y	2.5	ha	\$960.00		\$2,400		D10 dozer @ \$332 per hour - deep rip in 2 directions @ 5 m spacing ~3 hr per hectare.
	Construction of spine drains / drop structures and/or stabilising water course entry points - required for large catchments	n		m2	\$35.00				Installation of on-site rock material (rip-rap) where managing water run-off from disturbed land and/or upon entry to water courses - prevents erosion of gully head (assumes competent material is locally available).
	Earthworks / Structural Works (Landform Establishment) Subtotal							\$52,833	
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)	Source, cart and spread growth media - haul distance <1 km	Y	31350	m3	\$3.26		\$102,082	<=1km Allows for 300mm of soil over existing disturbed areas of the infrastructure Domain	610 m3/hr with 4 x 657 scrapers at \$430/hr, D10 trimming at \$270/hr 3ha/day at 150mm depth
	Planting mature trees (>15 cm)	n		allow	\$20.00				4 m centres.
	Planting tube stock (<15 cm)	n		allow	\$10.00				4 m centres.
	Direct seeding / fertiliser (pasture grass species)	n		ha	\$1,240				Rate can fluctuate however this is a suitable standard rate.
	Direct seeding / fertiliser (tree or native grass species)	Y	4.3	ha	\$2,095		\$9,009		Rate can fluctuate however this is a suitable standard rate.
	Hydro-seeding with straw mulching and bitumen tack	n		m2	\$1.80				Rate can fluctuate however this is a suitable standard rate.
	Single application of fertiliser (pasture)	n		ha	\$420.00				Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Single application of fertiliser (trees)	Y	4.3	ha	\$140.00		\$602		These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	n		ha	\$860.00				Assumes 2.5 t / ha as an average application rate.
	growth media amelioration with biosolids	n		ha	\$1,015				Recent experience with agronomy projects.
	Construct no-climb stock fence around rehabilitated areas	n		m	\$9.50				Standard rate for no-climb stock fencing.
	Construct standard stock fence around rehabilitated areas	n		m	\$4.00				Standard rate for standard stock fencing.
	Purchase and erect warning signs	n		allow	\$250.00				Compliance with AS 1319-1994 - Safety signs for the occupational environment - installed every 25 m.
Supply from external sources virgin excavated natural material (VENM) for growth media.	n		m3	\$80.80				D7 to spread material at \$205/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$70/m3 for imported fill material.	
Supply from external sources a combination of virgin excavated natural material (VENM) and spoil from large excavation for filling voids and/or capping etc.	n		m3	\$72.50				D10 push into void at \$270/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$60/m3 for imported fill material.	
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal							\$111,693		
Water Management	Clean water dams to be retained after decommissioning – make safe and minor earthworks	n		allow	\$2,500				Provisional sum for earthworks and revegetation required to rehabilitate dam batters etc suitable for re-use by an alternate land-user - D6 Dozer (or similar) @ ~\$200 per hour and pasture grass.
	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (Select Haul Distance from list)	n		m3	Select from List			Select Haul Distance Here	This item includes the volume of contaminated sediment requiring removal using an excavator, truck and dozer to clean out the dam.
	Removal of evaporation fans and/or other water transfer and management infrastructure	n		allow	\$25,000				Provisional sum for removal of water management infrastructure.
Water Management Subtotal							\$0		
Maintenance of Rehabilitated Areas	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	Y	0.25	ha	\$900		\$225	Visual Amenity bund	Rehabilitation maintenance might include re-seeding, watering, fertilising, minor reshaping, erosion control, inspections/audits - does not include major repair works.
	Existing rehabilitation repair - minor	n		ha	\$1,200				Areas requiring minor repair - rills, minor growth media replacement.
	Existing rehabilitation repair - moderate	n		ha	\$1,700				Areas requiring moderate repair - rills, significant growth media replacement.
	Existing rehabilitation repair - major	n		ha	\$2,500				Areas requiring major repair - rills, gullies, growth media replacement, some level of additional surface water management.
	Existing rehabilitation repair - total failure of landform	n		ha	\$40,000				Areas that require extensive rehabilitation repair - re-design and re-construction of landform.
Maintenance of Rehabilitated Areas Subtotal							\$225		
Additional Items	Other 1 <insert>	N			This is				This item includes <<to be added by the operator>>
	Other 2 <insert>	N			deliberately				This item includes <<to be added by the operator>>
	Other 3 <insert>	N			left blank				This item includes <<to be added by the operator>>
	Additional Items Subtotal							\$0	
Total Cost for Infrastructure Domain							\$388,904		

Open Cut Operations

Domain 2a:

Tailings & Rejects

Total Cost for Tailings & Rejects Domain

\$0

Additional Assumptions:
Record any relevant assumptions to this domain below:

No Tailings & Rejects Domain	Key Rehabilitation Area Data for Domain	Enter data below manually
	Total Landform Establishment:	
	Total Growth Media Development:	
	Total Ecosystem Establishment:	

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Contaminated Materials	Undertake a preliminary site investigation (Phase 1). This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple studies may be required.	n		Cluster	\$15,000				The preliminary investigation would include at minimum a desktop assessment of the area and site history, incidents, etc. as per the National Environmental Protection (Site Contamination) Measure (NEPM) Phase 1 assessment (EP Act Section 389 (2) (iv)) or similar approved and recognised assessment method. A cluster may include: - Mine infrastructure (i.e., fuel / chemical store, workshop, vehicle wash-down, sewage treatment etc.) - Processing plants (i.e., ore and product storage, mine waste storage and disposal, rail load-out etc.) - Remote pit-top facilities (i.e., vehicle refuel, sewage treatment, secondary
	Undertake an intrusive site investigation. This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple intrusive investigations should be included.	n		Cluster	\$100,000				The intrusive investigation would include at minimum a site walkover and field sampling as per the National Environmental Protection (Site Contamination) Measure (NEPM) Phase 2 intrusive investigation (EP Act Section 389 (2) (iv)) or similar approved and recognised assessment method. Note: An intrusive investigation is not required for all contaminated areas and should be applied considering the rehabilitation program, site history, location, etc. A cluster area where it is highly anticipated that contamination has occurred (i.e. underground tanks / pipes that are known to have leaked, chemical stores with earthen bunds, around ineffective oil/water separators etc.) and further field work is required involving
	Removal and disposal of contaminated water from tanks, bunded areas and sumps	n		L	\$0.35				Cost for recent sump clean-up from resource activity - requires specialists to treat.
	Remove material (carbonaceous / metaliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (Select Haul Distance from list)	n		m3	Select from List				Select Haul Distance Here This item includes scraping and removal of the volume of carbonaceous material using dozer, grader etc. to make safe an area and enable the establishment of rehabilitation.
	Load, cart and dispose of High Level contaminated material off site to a licensed landfill. Assumes cartage to a licensed landfill	n		m3	\$700.00				Includes load, haul and dump fees to a licensed facility.
	Load, cart and disposal of Low Level contaminated material off site to a licensed landfill. Add \$50/m3 for cartage to regional landfill	n		m3	\$200.00				Includes load, haul and dump fees to a licensed facility.
	Onsite remediation of hydrocarbon contaminated soils manual land farming (Select Volume from List)	n		m3	Select from List				Select Volume Here Spreading of contaminated soils on a prepared surface and stimulation of aerobic microbial activity within the soils through aeration and/or the addition of minerals, nutrients and moisture to promote the aerobic degradation of organic chemicals - time frame of up to 24 months.
	Mobilisation of cement stabilisation plant and equipment for hydrocarbon (i.e., PAH, long chain hydrocarbons, etc.) contaminated soil treatment	n		Item	\$150,000				Required if treatment of hydrocarbon contamination is required to be fast tracked.
	On-site remediation of hydrocarbon contaminated soils - using a mobile treatment unit	n		m3	\$165.00				Additional cost as the treatment process is fast tracked.
	Remove and dispose of asbestos (<750 m2)	n		m2	\$50.00				Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.
	Remove and dispose of asbestos (>750 m2)	n		m2	\$40.00				Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.
	Remove and dispose of asbestos	n		tonne	\$2,400				6 mm asbestos sheet approx. 15 kg / m2 = ~70 m2 per ton. Allowing \$20 / m2 for removal, 4 hours trucking @ \$125 and \$100 / t disposal plus 20% OHP = \$2,400 / t.
	Treatment of known Acid Sulfate Soils	n		ha	\$2,580				Assumes ASS is treatable via neutralisation and does not require capping and isolation.
	Removal and disposal of plastic liner (i.e. dam, leach pad, sump etc.)	n		m2	\$1.00				Provisional sum for cutting using ripping tyres and on-site disposal of the liner.
Contaminated Materials Subtotal							\$0		
Roads and Tracks	Unsealed roads / vehicle park-up areas - minor works including deep rip and trim	n		ha	\$960.00				Assumes ~6 m road width - 16H Grader @ \$212 per hour.
	Unsealed roads / access tracks / vehicle park-up areas with windrows and/or small earthen bunds - minor earthworks and deep rip and trim	n		ha	\$1,500				Assumes ~20 m road width - D10 Dozer @ \$332 per hour.
	Unsealed roads / vehicle park-up areas - Minor earthworks, final trim and deep rip and seed (pasture grass)	n		ha	\$3,698				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
	Unsealed roads / vehicle park-up areas - Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	n		ha	\$4,485				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds - Minor earthworks, final trim and deep rip, ameliorate and seed (pasture grass)	n		ha	\$3,820				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.

	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	n		ha	\$4,595			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (Select Haul Distance from list)	n		m3	Select from List		Select Haul Distance Here	This item includes the scraping and removal of the volume of stabilised material from the road, laydown or other surface using an excavator, dozer and grader to enable the establishment of rehabilitation.
n								\$0
Earthworks / Structural Works (Landform Establishment)								
	Major bulk pushing to achieve grades nominated in the approval/permit – Select Push Length	n		m3	Select from List		Select Push Length Here	Major bulk pushing to achieve grades nominated in the approval/permit
	Minor reshaping and pushing	n		ha	\$3,900			D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (Select Haul Distance from List)	n		m3	Select from List		Select Haul Distance Here	This item includes the volume of material requiring backfill using an excavator and scraper to fill the void and enable the establishment of rehabilitation.
	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	n		ha	\$960.00			16H Grader @ \$212 per hour - ripping in 1 direction only.
	Structural works, banks, waterways - contour banks, drainage channels and other soil conservation measures	n		ha	\$1,600			Combination of dozer and excavator work. Small dozer (D6 or similar) @ ~\$200 per hour plus grader @ \$212 per hour for ~4 hours each per ha.
	Construction of spine drains / drop structures and/or stabilising water course entry points - required for large catchments	n		m2	\$35.00			Installation of on-site rock material (rip-rap) where managing water run-off from disturbed land and/or upon entry to water courses - prevents erosion of gully head (assumes competent material is locally available).
Earthworks / Structural Works (Landform Establishment) Subtotal								\$0
Mine Waste								
	Reshaping, capping / sealing of a structure unlikely to present difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and physical properties (i.e., shear strength, etc.) - where the mine waste stream is geochemically benign and / or the strength condition within the upper 4 - 6 m meets the target shear strength profile.	n		ha	\$81,000			This includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume of material with the appropriate chemical and physical properties. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 1 m including growth media. Water quality from runoff, seepage etc. meets site-specific environment water quality values.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Reshaping, capping / sealing of structure likely to present moderate difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), or physical properties – shear strength, etc. limiting equipment choice.	n		ha	\$108,000			This item includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities where the tailings or rejects base is at a strength that enables economically efficient construction methods with small plant. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 2 m including growth media. This may require additional materials (such as capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if required.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Reshaping, capping / sealing of structure likely to present considerable difficulties due to reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and / or physical properties (low shear strength greatly limiting equipment selection for material placement etc.)	n		ha	\$170,000			This item includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities of high geochemical risk, and / or low shear strength that prohibits economically efficient construction methods. This rate assumes suitable capping material/s are available on site within 10 km, and an average cap thickness of approximately 2.5 m including growth media. This may require additional materials (i.e., capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if required.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
Mine Waste Subtotal								\$0
Land Preparation and Revegetation (Growth Media)								
	Source and spread growth media (Select Haul						Select Haul Distance Here	If topsoil is not available on-site, then

Development and Ecosystem Establishment)	Source, cart and spread growth media (Select Haul Distance from List)	n		m3	Select from List			Virgin excavated natural material (VENM) may need to be externally sourced.
	Direct seeding / fertiliser (pasture grass species)	n		ha	\$1,240			Rate can fluctuate however this is a suitable standard rate.
	Direct seeding / fertiliser (tree or native grass species)	n		ha	\$2,095			Rate can fluctuate however this is a suitable standard rate.
	Hydro-seeding with straw mulching and bitumen tack	n		m2	\$1.80			Rate can fluctuate however this is a suitable standard rate.
	Single application of fertiliser (pasture)	n		ha	\$420.00			Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Single application of fertiliser (trees)	n		ha	\$140.00			These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	n		ha	\$860.00			Assumes 2.5 t / ha as an average application rate.
	growth media amelioration with biosolids	n		ha	\$1,015			Recent experience with agronomy projects.
	Construct no-climb stock fence around rehabilitated areas	n		m	\$9.50			Standard rate for no-climb stock fencing.
	Construct standard stock fence around rehabilitated areas	n		m	\$4.00			Standard rate for standard stock fencing.
	Purchase and erect warning signs	n		allow	\$250.00			Compliance with AS 1319-1994 - Safety signs for the occupational environment - installed every 25 m.
	Supply from external sources virgin excavated natural material (VENM) for growth media.	n		m3	\$80.80			D7 to spread material at \$205/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$70/m3 for imported fill material.
Supply from external sources a combination of virgin excavated natural material (VENM) and spoil from large excavation for filling voids and/or capping etc.	n		m3	\$72.50			D10 push into void at \$270/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$60/m3 for imported fill material.	
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal						\$0		
Water Management	Clean water dams to be retained after decommissioning – make safe and minor earthworks	n		allow	\$2,500			Provisional sum for earthworks and revegetation required to rehabilitate dam batters etc suitable for re-use by an alternate land-user - D6 Dozer (or similar) @ ~\$200 per hour and pasture grass.
	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (Select Haul Distance from list)	n		m3	Select from List		Select Haul Distance Here	This item includes the volume of contaminated sediment requiring removal using an excavator, truck and dozer to clean out the dam.
Water Management Subtotal						\$0		
Maintenance of Rehabilitated Areas	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	n		ha	\$900			Rehabilitation maintenance might include re-seeding, watering, fertilising, minor re-shaping, erosion control, inspections/audits - does not include major repair works.
	Existing rehabilitation repair - minor	n		ha	\$1,200			Areas requiring minor repair - rills, minor growth media replacement.
	Existing rehabilitation repair - moderate	n		ha	\$1,700			Areas requiring moderate repair - rills, significant growth media replacement.
	Existing rehabilitation repair - major	n		ha	\$2,500			Areas requiring major repair - rills, gullies, growth media replacement, some level of additional surface water management.
	Existing rehabilitation repair - total failure of landform	n		ha	\$40,000			Areas that require extensive rehabilitation repair - re-design and re-construction of landform.
Maintenance of Rehabilitated Areas Subtotal						\$0		
Additional Items	Other 1 <insert>	n			This is			This item includes <<to be added by the operator>>
	Other 2 <insert>	n			deliberately			This item includes <<to be added by the operator>>
	Other 3 <insert>	n			left blank			This item includes <<to be added by the operator>>
Additional Items Subtotal						\$0		
Total Cost for Tailings & Rejects Domain						\$0		

Open Cut Operations

Domain 3a:

Total Cost for Overburden & Waste Domain

Overburden & Waste

\$0

Additional Assumptions:
Record any relevant assumptions to this domain below:

No Overburden Domain (non-quartzite material managed as part of infrastructure domain (1a))	Key Rehabilitation Area Data for Domain	Enter data below manually
	Total Landform Establishment:	
	Total Growth Media Development:	
	Total Ecosystem Establishment:	

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Contaminated Materials	Treatment of known Acid Sulfate Soils	n		ha	\$2,580				Assumes ASS is treatable via neutralisation and does not require capping and isolation.
	Removal and disposal of plastic liner (i.e. dam, leach pad, sump etc.)	n		m2	\$1.00				Provisional sum for cutting using ripping tyres and on-site disposal of the liner.
Contaminated Materials Subtotal							\$0		
Roads and Tracks	Unsealed roads / vehicle park-up areas – minor works including deep rip and trim	n		ha	\$960.00				Assumes ~6 m road width - 16H Grader @ \$212 per hour.
	Unsealed roads / access tracks / vehicle park-up areas with windrows and/or small earthen bunds – minor earthworks and deep rip and trim	n		ha	\$1,500				Assumes ~20 m road width - D10 Dozer @ \$332 per hour.
	Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip and seed (pasture grass)	n		ha	\$3,698				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
	Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	n		ha	\$4,485				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (pasture grass)	n		ha	\$3,820				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	n		ha	\$4,595				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (Select Haul Distance from list)	n			m3	Select from List			Select Haul Distance Here This item includes the scraping and removal of the volume of stabilised material from the road, laydown or other surface using an excavator, dozer and grader to enable the establishment of rehabilitation.
Roads and Tracks Subtotal							\$0		
Earthworks / Structural Works (Landform Establishment)	Major bulk pushing to achieve grades nominated in the approval/permit – Select Push Length	n		m3	Select from List			Select Push Length Here	Major bulk pushing to achieve grades nominated in the approval/permit
	Minor reshaping and pushing	n		ha	\$3,900				D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (Select Haul Distance from List)	n			m3	Select from List		Select Haul Distance Here	This item includes the volume of material requiring backfill using an excavator and scraper to fill the void and enable the establishment of rehabilitation.
	Shotcrete application on cuttings and steep slopes	n			m2	\$185.00			This rate is used to rehabilitate steep slopes of weathered rock, roadway cuttings, etc that cannot be cut back and stabilised.
	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	n			ha	\$960.00			16H Grader @ \$212 per hour - ripping in 1 direction only.
	Structural works, banks, waterways - contour banks, drainage channels and other soil conservation measures	n			ha	\$1,600			Combination of dozer and excavator work. Small dozer (D6 or similar) @ ~\$200 per hour plus grader @ \$212 per hour for ~4 hours each per ha.
	Construction of spine drains / drop structures and/or stabilising water course entry points - required for large catchments	n			m2	\$35.00			Installation of on-site rock material (rip-rap) where managing water run-off from disturbed land and/or upon entry to water courses - prevents erosion of gully head (assumes competent material is locally available).
Earthworks / Structural Works (Landform Establishment) Subtotal							\$0		
Mine Waste	Reshaping, capping / sealing of a structure unlikely to present difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and physical properties (i.e., shear strength, etc.) - where the mine waste stream is geochemically benign and / or the strength condition within the upper 4 - 6 m meets the target shear strength profile.	n		ha	\$81,000				This includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume material with the appropriate chemical and physical properties. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 1 m including growth media. Water quality from runoff, seepage etc. meets site-specific environment water quality values.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell				Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.)
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n		allow	Use alternate rate cell				Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.)

	Reshaping, capping / sealing of structure likely to present moderate difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), or physical properties – shear strength, etc. limiting equipment choice.	n	ha	\$108,000			This item includes sourcing, curing, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities where the tailings or rejects base is at a strength that enables economically efficient construction methods with small plant. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 2 m including growth media. This may require additional materials (such as capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if considered.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n	allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n	allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Reshaping, capping / sealing of structure likely to present considerable difficulties due to reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and / or physical properties (low shear strength greatly limiting equipment selection for material placement etc.)	n	ha	\$170,000			This item includes sourcing, curing, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities of high geochemical risk, and / or low shear strength that prohibits economically efficient construction methods. This rate assumes suitable capping materials are available on site within 10 km, and an average cap thickness of approximately 2.5 m including growth media. This may require additional materials (i.e., capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if considered.
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n	allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	n	allow	Use alternate rate cell			Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
Mine Waste Subtotal						\$0	
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)							
	Source, cart and spread growth media (Select Haul Distance from List)	n	m3	Select from List			Select Haul Distance Here If topsoil is not available on-site, then Virgin Excavated Natural Material (VENM) may need to be externally sourced.
	Planting mature trees (>15 cm)	n	allow	\$20.00			4 m centres.
	Planting tube stock (<15 cm)	n	allow	\$10.00			4 m centres.
	Direct seeding / fertiliser (pasture grass species)	n	ha	\$1,240			Rate can fluctuate however this is a suitable standard rate.
	Direct seeding / fertiliser (tree or native grass species)	n	ha	\$2,095			Rate can fluctuate however this is a suitable standard rate.
	Hydro-seeding with straw mulching and bitumen tack	n	m2	\$1.80			Rate can fluctuate however this is a suitable standard rate.
	Single application of fertiliser (pasture)	n	ha	\$420.00			Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Single application of fertiliser (trees)	n	ha	\$140.00			These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	n	ha	\$860			Assumes 2.5 t / ha as an average application rate.
	growth media amelioration with biosolids	n	ha	\$1,015			Recent experience with agronomy projects.
	Construct no-climb stock fence around rehabilitated areas	n	m	\$9.50			Standard rate for no-climb stock fencing.
	Construct standard stock fence around rehabilitated areas	n	m	\$4.00			Standard rate for standard stock fencing.
	Purchase and erect warning signs	n	allow	\$250.00			Compliance with AS 1319-1994 - Safety signs for the occupational environment - installed every 25 m.
	Supply from external sources virgin excavated natural material (VENM) for growth media.	n	m3	\$80.80			D7 to spread material at \$205/hr, Excavator (\$220/hr) load Artic Trucks (90km) from imported stockpile - allow nominal rate of \$70/m3 for imported fill material.
	Supply from external sources a combination of virgin excavated natural material (VENM) and spoil from large excavation for filling voids and/or capping etc.	n	m3	\$72.50			D10 push into void at \$270/hr, Excavator (\$220/hr) load Artic Trucks (90km) from imported stockpile - allow nominal rate of \$60/m3 for imported fill material.
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal						\$0	
Water Management							
	Clean water dams to be retained after decommissioning – make safe and minor earthworks	n	allow	\$2,500			Provisional sum for earthworks and revegetation required to rehabilitate dam batters etc suitable for re-use by an alternate land-user - D6 Dozer (or similar) @ ~\$200 per hour and pasture grass.
	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (Select Haul Distance from list)	n	m3	Select from List			Select Haul Distance Here This item includes the volume of contaminated sediment requiring removal using an excavator, truck and dozer to clean out the dam.
Water Management Subtotal						\$0	
Maintenance of Rehabilitated Areas							
	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	n	ha	\$900			Rehabilitation maintenance might include re-seeding, watering, fertilising, minor re-shaping, erosion control, inspections/audits - does not include major repair works.
	Existing rehabilitation repair - minor	n	ha	\$1,200			Areas requiring minor repair - rills, minor growth media replacement.
	Existing rehabilitation repair - moderate	n	ha	\$1,700			Areas requiring moderate repair - rills, significant growth media replacement.

	Existing rehabilitation repair - major	n		ha	\$2,500			Areas requiring major repair - rills, gullies, growth media replacement, some level of additional surface water management.	
	Existing rehabilitation repair - total failure of landform	n		ha	\$40,000			Areas that require extensive rehabilitation repair - re-design and re-construction of landform.	
Maintenance of Rehabilitated Areas Subtotal							\$0		
Additional Items	Other 1 <insert>	n			This is			This item includes <<to be added by the operator>>	
	Other 2 <insert>	n			deliberately			This item includes <<to be added by the operator>>	
	Other 3 <insert>	n			left blank			This item includes <<to be added by the operator>>	
Additional Items Subtotal							\$0		
Total Cost for Overburden & Waste Domain							\$0		

Open Cut Operations

Domain 4a:

Active Mine & Voids

Total Cost for Active Mine & Voids Domain

\$97,309

Additional Assumptions:

Record any relevant assumptions to this domain below:

Domain 6 of MOP (5.0 ha - 28/5/2020)	Key Rehabilitation Area Data for Domain	Enter data below manually
	Total Landform Establishment:	0.50
	Total Growth Media Development:	
	Total Ecosystem Establishment:	

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Open Cut	Active pit area – benches blasted and doze to acceptable grade	n		Lm	\$1.70				Blasting at 90c/m ³ , D11 push at \$350 and 375 bcm/hr (80c/m ³).
	Drill & blast faces to make safe	n		m ³	\$0.90				Bulk Drilling say 6" 9" pattern, assuming a stem height of 6 m, charge length of 19 m, explosive density of 0.9, diameter of 229 mm, explosives at 665.3 kg/hole with a powder factor of 0.37 with an approximate bench height of 25 m will allow drilling and blasting at \$0.90/bcm.
	High wall treatment – (trench and safety berm)	Y	400	m	\$90.00		\$36,000	A safety berm would be required along the western perimeter and northern perimeter of the open cut area where there are currently no bunds.	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour including revegetation with pasture grass.
Open Cut Subtotal							\$36,000		
Earthworks / Structural Works (Landform Establishment)	Major bulk pushing to achieve grades nominated in the approval/permit – 50 m push length	Y	40000	m ³	\$0.80		\$31,925	< 50m push	D11 push at \$350 and 400 bcm/hr
	Minor reshaping and pushing	n		ha	\$3,900			Void floor only	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (Select Haul Distance from List)	n		m ³	Select from List		FALSE	Select Haul Distance Here	This item includes the volume of material requiring backfill using an excavator and scraper to fill the void and enable the establishment of rehabilitation.
	Shotcrete application on cuttings and steep slopes	n		m ²	\$185.00				This rate is used to rehabilitate steep slopes of weathered rock, roadway cuttings, etc that cannot be cut back and stabilised.
	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	n		ha	\$960.00				16H Grader @ \$212 per hour - ripping in 1 direction only.
	Structural works, banks, waterways - contour banks, drainage channels and other soil conservation measures	n		ha	\$1,600				Combination of dozer and excavator work. Small dozer (D6 or similar) @ ~\$200 per hour plus grader @ \$212 per hour for ~4 hours each per ha.
Construction of spine drains / drop structures and/or stabilising water course entry points - required for large catchments	n		m ²	\$35.00				Installation of on-site rock material (rip-rap) where managing water run-off from disturbed land and/or upon entry to water courses - prevents erosion of gully head (assumes competent material is locally available).	
Earthworks / Structural Works (Landform Establishment) Subtotal							\$31,925		
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)	Source, cart and spread growth media - haul distance <1 km	Y	5500	m ³	\$3.26		\$17,909	< =1km	Void floor only - refer to Section 5.4 of MOP
	Planting mature trees (>15 cm)	n		allow	\$20.00				610 m ³ /hr with 4 x 657 scrapers at \$430/hr, D10 trimming at \$270/hr 3ha/day at 150mm depth
	Planting tube stock (<15 cm)	n		allow	\$10.00				4 m centres.
	Direct seeding / fertiliser (pasture grass species)	n		ha	\$1,240				4 m centres.
	Direct seeding / fertiliser (tree or native grass species)	Y	5	ha	\$2,095		\$10,475		Rate can fluctuate however this is a suitable standard rate.
	Hydro-seeding with straw mulching and bitumen tack	n		m ²	\$1.80				Rate can fluctuate however this is a suitable standard rate.
	Single application of fertiliser (pasture)	n		ha	\$420.00				Rate can fluctuate however this is a suitable standard rate.
	Single application of fertiliser (trees)	n		ha	\$140.00				Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	n		ha	\$860.00				These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	growth media amelioration with biosolids	n		ha	\$1,015				Assumes 2.5 t / ha as an average application rate.
	Security fence around steep section of high wall	n		m	\$55.00				Recent experience with agronomy projects.
Purchase and erect warning signs	Y	4	allow	\$250.00		\$1,000		Class 1 cyclone wire (or similar) security fence @ 2.1 m with 3-4 m post spacing - complying with AS1725-2010 - Chain-link fabric security fences and gates.	
Supply from external sources virgin excavated natural material (VENM) for growth media.	n		m ³	\$80.80				Compliance with AS 1319-1994 - Safety signs for the occupational environment - installed every 25 m.	
Supply from external sources a combination of virgin excavated natural material (VENM) and spoil from large excavation for filling voids and/or capping etc.	n		m ³	\$72.50				D7 to spread material at \$205/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$70/m ³ for imported fill material.	
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal							\$29,384		
Water Management	Clean water dams to be retained after decommissioning – make safe and minor earthworks	n		allow	\$2,500				D10 push into void at \$270/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$60/m ³ for imported fill material.
	Remove sediments from the floor of the dam to							Select Haul Distance Here	This item includes the volume of

	enable it to be converted into clean water structure (Select Haul Distance from list)	n		m3	Select from List			contaminated sediment requiring removal using an excavator, truck and dozer to clean out the dam.
Water Management Subtotal							\$0	
Maintenance of Rehabilitated Areas	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	n		ha	\$900			Rehabilitation maintenance might include re-seeding, watering, fertilising, minor re-shaping, erosion control, inspections/audits - does not include major repair works.
	Existing rehabilitation repair - minor	n		ha	\$1,200			Areas requiring minor repair - rills, minor growth media replacement.
	Existing rehabilitation repair - moderate	n		ha	\$1,700			Areas requiring moderate repair - rills, significant growth media replacement.
	Existing rehabilitation repair - major	n		ha	\$2,500			Areas requiring major repair - rills, gullies, growth media replacement, some level of additional surface water management.
	Existing rehabilitation repair - total failure of landform	n		ha	\$40,000			Areas that require extensive rehabilitation repair - re-design and re-construction of landform.
Maintenance of Rehabilitated Areas Subtotal							\$0	
Additional Items	Other 1 <insert>	N			This is			This item includes <<to be added by the operator>>
	Other 2 <insert>	N			deliberately			This item includes <<to be added by the operator>>
	Other 3 <insert>	N			left blank			This item includes <<to be added by the operator>>
Additional Items Subtotal							\$0	
Total Cost for Active Mine & Voids Domain							\$97,309	

Open Cut Operations

Domain 5a:

Management Activities

Total Cost for Management Activities

\$137,395

Additional Assumptions:
Record any relevant assumptions to this domain below:

		Key Rehabilitation Area Data for Domain	
		Total Landform Establishment:	
		Total Growth Media Development:	
		Total Ecosystem Establishment:	

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Water Management	On-site treatment of contaminated water due to high salt (includes removal of metals etc, brine disposal and cost of mobile water treatment unit)	n		ML	\$3,600				Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
	On-site treatment of contaminated water due to low pH (includes removal of metals etc, neutralisation treatments and cost of mobile water treatment unit)	n		ML	\$1,500				Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
Water Management Subtotal							\$0		
Creek Diversions	Repairs and/or stabilisation of new or compromised water course diversion	n		m	\$2,500				Assumes material is suitable for revegetating and has a reasonable chance of stabilising.
	Long term maintenance of water course diversion – Channel constructed through backfilled material	n		m	\$1,500				Assumes maintenance has been kept up and significant works are not required.
	Long term maintenance of water course diversion – Channel constructed through competent material	n		m	\$750.00				Assumes maintenance has been kept up and significant works are not required.
	Installation of rock armouring	Y	1600	m2	\$6.00		\$9,600	Assumes length of clean water drain x 6m	Assumes competent material is locally available - multiply costs by 2 for sourcing and transporting from offsite
Creek Diversions Subtotal							\$9,600		
Maintenance of Rehabilitated Areas	Pest management on buffer lands, non-disturbed, and rehabilitated areas	Y	26.9	ha	\$150.00		\$4,035		Feral animal baiting programs if required and waste materials required to be removed.
	Land management of undisturbed areas (rehabilitation, weeds, ferals, erosion and sediment control works)	Y	26.9	ha	\$400.00		\$10,760		Undisturbed areas within the lease boundary that require land management activities.
Maintenance of Rehabilitated Areas Subtotal							\$14,795		
Heritage Items	The restoration and care and maintenance of items that have heritage significance	n		allow	Use alternate rate cell				Item for the redistribution of Aboriginal artefacts, preservation of European heritage items or a combination of activities.
Heritage Items Subtotal							\$0		
Sundry Items	Development of an 'Unplanned' Project Closure Plan - Non State Significant Development	Y	1	allow	\$40,000		\$40,000	Non-SSD	Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities.
	DRG tender preparation and assessment, stakeholder consultation, risk assessment facilitation and management, statutory reporting and instruments, permitting and compliance requirements, document and data management	Y	1	allow	Use alternate rate cell	\$18,000	\$18,000	Estimate provided by Umwelt (Australia) Pty Ltd	Provisional sum for the NSW Government to prepare tender documentation (i.e. demolition, waste disposal, earthworks, environmental management etc.) manage stakeholders and establish permitting and compliance requirements for closure.
	Site security during closure	Y	1	yr.	\$75,000	\$15,000	\$15,000	ML 1633 includes a security gate with a camera and security fencing along accessible boundaries. Security costs would be restricted to regular (weekly) inspections by a security contractor	Provisional sum for site security measures required during closure. This includes nightly patrols and first response in the event of an out of hours incident.
	HAZMAT Clean-up - cleaning and decontaminating plant and equipment, chemical storage locations, oil and grease traps, tanks, vessels, and pipe work etc	n		allow	\$100,000				Provisional sum to perform the site clean-up and ensuring the demolition program is not interrupted due to potential contamination of waste streams
	Removal and disposal of radiation devices	n		each	\$25,000				Provisional sum for removal and disposal of monitoring devices on conveyors using a radiation source (i.e. Americium - 241, Plutonium - 238, Caesium - 137 etc).
	Additional fees for accessing State, Crown or other public lands for rehabilitation/remediation activities	n		allow	Use alternate rate cell				Provisional sum.
Sundry Items Subtotal							\$73,000		
Mobilisation and Demobilisation	Mobilisation & Demobilisation for small mine or quarry	y	1	Item	\$40,000		\$40,000	While operating mobile equipment would be appropriate for decommissioning and rehabilitation, mobilisation of equipment has been accounted for.	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation (Distance to site <150 km)	n		item	\$100,000				
	Mobilisation & Demobilisation (Distance to site >150 km but <500 km)	n		item	\$150,000				
	Mobilisation & Demobilisation (Distance to site >500 km but <1000 km)	n		item	\$300,000				
	Mobilisation & Demobilisation (Distance to site >1000 km)	n		item	\$500,000				
Mobilisation and Demobilisation Subtotal							\$40,000		
Additional Items	Other 1 <insert>	N			This is				This item includes <<to be added by the operator>>
	Other 2 <insert>	N			deliberately				This item includes <<to be added by the operator>>
	Other 3 <insert>	N			left blank				This item includes <<to be added by the operator>>
Additional Items Subtotal							\$0		
Total Cost for Management Activities							\$137,395		



Justification for Change of Rates in the DRG's Rehabilitation Cost Estimation Tool

Domain	Activity	DRG unit/rate	Adopted Rates	Justification
5A	Development of an 'Unplanned' Mine Closure Plan	SSD - \$100,00	Non-SSD - \$40,000	The Quarry has <25 ha of disturbance by end Year 5 which is more equivalent to a moderately sized designated development. This comparison has been previously accepted.
5B	Site Security during closure	\$75,000.00	\$15,000.00	As included in previous RCE's security costs would be limited to weekly inspections based on ML 1633 being secured by a locked gate, security camera and 2m high fencing along accessible perimeters.
Sundry	Post closure environmental monitoring	10%	5%	The percentage of overall costs has been reduced to reflect the small size of the site and contemporary status of site monitoring and survey.
Sundry	Project management and surveying			

In completing the Rehabilitation Cost Estimation, we are seeking an adjustment to the rates currently utilised in the DRG Rehabilitation Cost Estimation Tool. A justification for the rate change by a third party has been included and I confirm that only the rates identified in the above table have been altered in the Rehabilitation Cost Estimation Tool.

David Murray

Authorisation Representatives Name

Managing Director

Authorisation Representatives Role / Responsibility

6/07/2020

Date

Signature

Definitions for the DRG Rehabilitation Cost Estimation Tool

Term	Meaning
adit	Entrance to an underground mine which is horizontal or nearly horizontal, by which the mine can be entered, drained of water and ventilated
amelioration	Addition of materials to change physical or chemical properties of soil, tailings, or other materials.
aquifer	Has the same meaning as it has in the <i>Water Management Act 2000</i> .
armouring	Application of a self-sustaining mechanism for erosion control typically utilising rock.
authority	Means an exploration licence, an assessment lease or a mining lease granted under the <i>Mining Act 1992</i> .
authorisation	Means an authority, a small-scale title or an environmental assessment permit granted under section 252 in force under the <i>Mining Act 1992</i> .
backfill	The act of placing material to refill an excavation or void (such as an open cut or dam).
ballast (rail)	A free draining coarse aggregate or metallurgical slag used to support railway tracks and allow for drainage.
batters	Slopes manufactured during mining and/or excavation activities.
borehole	A hole made by drilling or boring, but excludes sampling and coring using hand held equipment; and petroleum wells.
capillary break	A layer of coarse material placed between finer-textured materials to prevent the vertical movement of water (and associated salts) by surface tension from the lower, finer-textured material into the upper finer-textured material (such as topsoil or growth media). It can also function to limit root penetration into the underlying seal and more than one capillary break can be present within a cover design.
capping / sealing	The act of applying material (such as clay) in a usually engineered design to seal off underlying material (such as waste, contaminated soil or spoil) in order to prevent exposure of this material to the environment and outside conditions.
CHPP	Coal Handling and Processing Plant - A plant used to upgrade the quality of coal including crushing, sizing washing and drying.
Clearing of vegetation	Any one or more of the following: <ul style="list-style-type: none"> • cutting down, felling, thinning, lopping, logging or removing vegetation • killing, destroying, poisoning, ringbarking, uprooting or burning vegetation.
contaminated	Condition or state where there is/are potentially hazardous substance(s) at concentrations above background or recommended land use levels and where assessment shows it poses, or is likely to pose, an immediate or long-term hazard to human health or the environment.
contour banks	Earthen structures constructed across cultivated slopes.
crusher/crushing plant	Equipment that crushes ore or rock - also referred to as a mill
demountable	A transportable prefabricated structure/building produced off site and transported to site, designed to be movable rather than permanently located.
Department	The Division of Resources and Geosciences within the NSW Department of Planning and Environment.
desiccation	Process of removing moisture or extreme drying.
de-water	Removal or draining groundwater or surface water from a structure by pumping or evaporation.
diversion	A drain or channel that diverts stormwater runoff around a site or landform.
earthworks	Equipment activity involving the placement and working of large amounts of earth to engineering or other design specification (such as cut and fill operations for roads, dams, landforms, etc.).
evaporation fans	Fans used to evaporate water as an alternative to discharging water off-site.
excavation	The removal of the surface layer of land to a depth greater than 500 mm from the natural surface level of that land.

exploration	Has the same meaning as it has in the <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i> .
gas drainage	A method of reducing the in-situ gas content of the seam to within acceptable limits by drilling holes into the seam or surrounding strata ahead of mining.
goaf	The space remaining following extraction of the mineral.
groundwater	Water that occurs beneath the ground surface in the saturated zone.
hardstand	A hard-surfaced area on which heavy vehicles can be parked and equipment can be stored.
haul road	Roads used to transport mine materials (product and waste).
HAZMAT	Anything that, when produced, stored, moved, used or otherwise dealt with without adequate safeguards to prevent it from escaping, may cause injury or death or damage to life, property or the environment.
Item of heritage significance	Means: <ul style="list-style-type: none"> • any heritage items listed in one or more of the following: <ul style="list-style-type: none"> — the Commonwealth Heritage List — the World Heritage List — the National Heritage List — the State Heritage Register — an Environmental Planning Instrument • any relic (being any deposit, object or material evidence which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and which is 50 or more years old) • within State Conservation Areas: <ul style="list-style-type: none"> — items that are listed on the DECC Historic Heritage Information Management System — in all other circumstances, any deposit, object or material evidence relating to the settlement or occupation of New South Wales or a part of New South Wales (not being Aboriginal settlement or occupation) if the deposit, object or material evidence is more than 25 years old at the date of the interference or removal.
leach	Dissolution and removal of a soluble substance from a substrate.
mine subsidence	Movement of strata resulting from the extraction of coal, metals or minerals and incorporates vertical ground movement (strain) and differential vertical movement (tilt).
open cut	Open-cut mining occurs where mineral deposits are close to the surface and typically involves blasting and removing surface layers of soil and rock to reach the mineral deposit. Also referred to as open-pit, or open-cast mining.
overburden	Top soil/strata overlying a coal seam.
petroleum title	means an exploration licence, assessment lease, production lease or special prospecting authority in force under the <i>Petroleum (Onshore) Act 1991</i> .
petroleum well	Means a hole made by drilling or boring in connection with prospecting for petroleum or operations for the recovery of petroleum, but excludes: <ul style="list-style-type: none"> • sampling and coring using hand held equipment • a hole constructed and operated for the following purposes where the operation of that hole does not involve fracture stimulation or the recovery of petroleum: <ul style="list-style-type: none"> — stratigraphic definition — seismic (for example shot holes, geophone, tilt meters bores)

DRG Schedule of Rehabilitation Costs

Reference Data V4

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
Termination of Services and Demolition Works				
1.01	Disconnect and terminate all services (Water, electricity, gas etc at point of attachment to site)	allow	\$ 35,000	For disconnection of all services, at building boundaries, physical cut at the point of attachment or distribution location. If infrastructure is not consolidated (i.e., administration, camp and workshops are in separate places), consider multiple disconnection fees.
1.02	Disconnect and terminate services at remote areas (i.e. pump stations, remote workshops, sewage treatment plant etc.)	allow	\$ 5,500	Used for infrastructure remote from primary connection. Can also be used for small mines / quarries that do not have dedicated supplies from supply authorities such as steel lattice power lines.
1.03	Removal of low/medium voltage powerlines including disconnection, rolling up the wires and removing the poles - does not include the removal of substations	km	\$ 15,000	Applies to power lines on stobie, concrete or similar poles.
1.04	Removal of power lines on tower or lattice structures (this includes disconnection, rolling up the wires and removing the structures) - does not include the removal of substations	km	\$ 100,000	Applies to power lines on steel tower and steel lattice structures assuming 3 towers / km.
1.05	Remove significant rail, road, water course overpass - manage potential interruptions and demolish and remove bridge supports/pylons/bridge structure etc. and dispose of waste material on-site/locally	Item	\$ 350,000	Major structures constructed for the purposes of mining related works - does not include transport to regional disposal facility or equivalent.
1.06	Demolish and/or remove substations (assumes they are in a closed building). Dispose of waste material on-site/locally	m ²	\$ 600.00	Simple structure to demolish. Assumes single story building and segregation of contents for scrap as applicable.
1.07	Demolish and remove switchyard. Dispose of waste material on-site/locally	m ²	\$ 55.00	Includes demolition and removal of all switchgear and transformers etc. and segregation of contents for scrap as applicable.
1.08	Demolish and remove demountable structures on concrete stumps. Assumes not being re-used	m ²	\$ 40.00	Crib huts, temporary offices and other 'non permanent' structures. Does not include transport to regional disposal facility or equivalent.
1.09	Demolish and remove small buildings/tanks (admin buildings, single story accommodation etc) and disposal on-site/locally	m ²	\$ 65.00	Simple structure to demolish, assumes no greater than 2 stories high. Does not include transport to regional disposal facility or equivalent.
1.10	Demolish and remove light industrial buildings and disposal on-site/locally	m ² /floor	\$ 115.00	Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
1.11	Demolish and remove industrial buildings (workshops tyre change and servicing area etc not CHPP/process plant) and disposal on-site/locally	m ² /floor	\$ 180.00	Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
1.12	Demolish and remove CHPP/process plant (include the area of each floor of the structure) and disposal on-site/locally	m ² /floor	\$ 265.00	Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
1.13	Collapse, demolish and remove washery, crushers, hoppers, mills, furnaces, agglomeration, electrowinning, floatation, sizing stations, rotary breakers, etc (include the area of each floor of the structure) and disposal on-site/locally	m ² /floor	\$ 265.00	Needs to be calculated per floor/level (Assume 1 floor/level = 3-4 m). Does not include transport to regional disposal facility or equivalent.
1.14	Collapse, demolish and remove stacker OR reclaim (radial or luffing etc. with maneuverability for stockpile control) and disposal on-site/locally	allow	\$ 1,000,000	Cost for removal of stacker or reclaim unit only. Does not include terminate services, remove rails and ballast etc. Does not include transport to regional disposal facility or equivalent.
1.15	Collapse, demolish and remove bucket wheel stacker/reclaimer and disposal on-site/locally	allow	\$ 2,500,000	Cost for just removal of the bucket wheel stacker/reclaim units. Does not include terminate services, remove rails and ballast etc. Does not include transport to regional disposal facility or equivalent.
1.16	Remove stacker/reclaimer rails and ballast and demolish and remove concrete footings etc and disposal on-site/locally	m	\$ 75.00	Includes both rails, does not include the conveyor system. Does not include transport to regional disposal facility or equivalent.
1.17	Collapse, Cut and Remove 5000T coal silo and disposal on-site/locally	allow	\$ 100,000	Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
1.18	Collapse, Cut and Remove 3000 T coal silo and disposal on-site/locally	allow	\$ 85,000	Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
1.19	Collapse, Cut and Remove 1250 T coal silo and disposal on-site/locally	allow	\$ 65,000	Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
1.20	Collapse, Cut and Remove rail loading bins and disposal on-site/locally	allow	\$ 65,000	Collapse structure and remove. Does not include transport to regional disposal facility or equivalent.
1.21	Demolish and remove onground conveyors, transfer stations & gantries (scrap only – does not include dismantling for reuse at another site) and disposal on-site/locally	m	\$ 210.00	Estimate for on-ground conveyor including anything up to 10 m off the ground. Does not include transport to regional disposal facility or equivalent.
1.22	Demolish and remove elevated conveyors, transfer stations & gantries (scrap only, does not include dismantling for reuse at another site) and disposal on-site/locally	m	\$ 370.00	Estimate for elevated conveyor up to ~10 m off the ground. Does not include transport to regional disposal facility or equivalent.
1.23	Demolish and remove overhead conveyors, transfer stations & gantries (scrap only, does not include dismantling for reuse at another site) and disposal on-site/locally. This may include small scale fixed material stacking infrastructure	m	\$ 1,200	Estimate for overhead conveyor including conveyors that are >10 m off the ground that require a crane to remove. Does not include transport to regional disposal facility or equivalent.
1.24	Demolish reclaim tunnel, cut reo and expose reclaim conveyor, then collapse into the reclaim tunnel void (Does not include excavation to expose reclaim tunnel, removal of conveyor or backfilling void)	m ²	\$ 80.00	Does not include conveyor removal or backfill.
1.25	Remove and demolish conveyor from reclaim tunnel (Does not include excavation and demolition of reclaim tunnel roof)	m	\$ 150.00	Due to no canopy or infrastructure attached.
1.26	Demolition of reclaim tunnel concrete (Assumes complete removal and dumping in mine pit void)	m	\$ 950.00	Assumes this area will be used for another land-use that requires the structure to be dug up and re-buried somewhere else.
1.27	Demolition and removal of vent raise fans, electrical substation and winch and disposal on-site/locally	allow	\$ 25,000	Does not include filling and capping the shaft. Does not include transport to regional disposal facility or equivalent.
1.28	Demolish and remove small tank clean (Thickener etc 3 - 9 m diameter) and disposal on-site/locally	allow	\$ 10,000	Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.
1.29	Demolish and remove medium tank clean (Thickener etc 10 - 15 m diameter) and disposal on-site/locally	allow	\$ 30,000	Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.
1.30	Demolish and remove large tank clean (Thickener etc 15 - 30 m diameter) and disposal on-site/locally	allow	\$ 45,000	Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.
1.31	Demolish and remove extra large tank clean (Thickener etc >30 m diameter) and disposal on-site/locally	allow	\$ 85,000	Assume tank is clean - contents removed. If tank is full allow extra 30% for excavator and 2 men to dig out and dispose. Does not include transport to regional disposal facility or equivalent.
1.32	Demolish and remove tank clean (Thickener etc) >50 m diameter and disposal on-site/locally	allow	\$ 100,000	Estimate only - may require a detailed assessment from demolition expert due to specialised equipment required for removal. Does not include transport to regional disposal facility or equivalent.
1.33	Removal of UG tank <5000 L - including pipes, bunds etc. and disposal on-site/locally	allow	\$ 21,000	Assume tank is clean (contents removed), does not include transport to regional disposal facility or equivalent.
1.34	Removal of UG tank 5000 L - 15000 L - including pipes, bunds etc. and disposal on-site/locally	allow	\$ 30,000	Assume tank is clean (contents removed), does not include transport to regional disposal facility or equivalent.
1.35	Remove small underground pipe and disposal on-site/locally	m	\$ 25.00	For example: 300 mm pipes - 0.5 m deep, does not include transport to regional disposal facility or equivalent.
1.36	Remove medium underground pipe and disposal on-site/locally	m	\$ 60.00	For example: 500 mm pipes - 1 m deep, does not include transport to regional disposal facility or equivalent.

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
1.37	Remove large underground pipe and disposal on-site/locally	m	\$ 165.00	For example: 1 m pipes - 2 m deep.

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
1.38	Remove above ground pipe (supported) and disposal on-site/locally	m	\$ 12.00	~300 mm pipes and assumes pipes are in close proximity to infrastructure areas. Does not include transport to regional disposal facility or equivalent.
1.39	Remove surface pipelines (unsupported) and disposal on-site/locally	m	\$ 15.00	~300 mm pipes and assumes pipes are used for water transfer between pits (or similar) and remotely located. Does not include transport to regional disposal facility or equivalent.
1.40	Remove pump and pontoon from a lake or dam including pipes and electrical supply or diesel tank/s and disposal on-site/locally	allow	\$ 150,000	Assumes infrastructure is moored and requires barge mobilisation to sever the mooring and / or is a significant fixed structure for controlled release of water. Does not include transport to regional disposal facility or equivalent.
1.41	Remove bitumen (car park and access roads) and dispose on-site/locally	m ²	\$ 10.00	Scalp bitumen and stabilised material. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.
1.42	Remove bitumen (airstrip) and dispose on-site/locally	m ²	\$ 20.00	Scalp bitumen and stabilised material. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.
1.43	Remove concrete pads & footings (<300 mm thickness) and disposal on-site/locally	m ²	\$ 37.00	Breaking up slab and disposal or for conversion to aggregate. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.
1.44	Remove concrete pads & footings (>300 mm thickness) and disposal on-site/locally	m ²	\$ 75.00	Breaking up slab and disposal or for conversion to aggregate. Generally haulage rates will be \$0.60 - \$1.20 / km, depending on truck fleet, loaders etc. For off-site disposal use alternate rate option and add \$0.90 / km for transport.
1.45	Crush concrete to make road aggregate - 75 mm	tonne	\$ 17.00	Does not include haulage of materials - assumes crushing plant is readily available.
1.46	Crush concrete to make road aggregate - 50 mm	tonne	\$ 20.00	Does not include haulage of materials - assumes crushing plant is readily available.
1.47	Crush concrete to make road aggregate - 30 mm	tonne	\$ 22.00	Does not include haulage of materials - assumes crushing plant is readily available.
1.48	Remove fence (cyclone/wire fence) and disposal on-site/locally	m	\$ 20.00	Roll up fence and remove posts.
Rail Infrastructure				
2.01	Remove rail loop and spur, ballast etc. and disposal on-site/locally	m	\$ 60.00	Remove all materials to allow area to be reshaped and rehabilitated - does not include transport to regional disposal facility or equivalent.
2.02	Remove train loading facilities and disposal on-site/locally	m ²	\$ 265.00	Remove rail load point infrastructure including gantries and control structures. Does not include transport to regional disposal facility or equivalent.
2.03	Reshape rail spur and load out areas. Does not include growth media and revegetation	ha	\$ 2,500	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
Contaminated Materials				
3.01a	Undertake a preliminary site investigation (Phase 1). This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple studies may be required.	Cluster	\$ 15,000	The preliminary investigation would include at minimum a desktop assessment of the area and site history, incidents, etc. as per the National Environmental Protection (Site Contamination) Measure (NEPM) Phase 1 assessment (EP Act Section 389 (2) (iv)) or similar approved and recognised assessment method. A cluster may include: - Mine infrastructure (i.e., fuel / chemical store, workshop, vehicle wash-down, sewage treatment etc.) - Processing plants (i.e., ore and product storage, mine waste storage and disposal, rail load-out etc.) - Remote pit-top facilities (i.e., vehicle re-fuel, sewage treatment, secondary workshop, chemical storage etc.)
3.01b	Undertake an intrusive site investigation. This accounts for current and historical locations where areas of disturbance are clustered. If there are multiple cluster areas on site, multiple intrusive investigations should be included.	Cluster	\$ 100,000	The intrusive investigation would include at minimum a site walkover and field sampling as per the National Environmental Protection (Site Contamination) Measure (NEPM) Phase 2 intrusive investigation (EP Act Section 389 (2) (iv)) or similar approved and recognised assessment method. Note: An intrusive investigation is not required for all contaminated areas and should be applied considering the rehabilitation program, site history, location, etc. A cluster area where it is highly anticipated that contamination has occurred (i.e. underground tanks / pipes that are known to have leaked, chemical stores with earthen bunds, around ineffective oil/water separators etc.) and further field work is required involving intrusive investigation.
3.02	Removal and disposal of contaminated water from tanks, bunded areas and sumps	L	\$ 0.35	Cost for recent sump clean-up from resource activity - requires specialists to treat.
3.03-	Remove material (carbonaceous / metalliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (Select Haul Distance from list)	m ³	Select from List	This item includes scraping and removal of the volume of carbonaceous material using dozer, grader etc. to make safe an area and enable the establishment of rehabilitation.
3.03a	Remove material (carbonaceous / metalliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (haul distance < 1km)	m ³	\$ 3.90	D10 Rip and push into void at \$270/hr, 0.2ha/hr, 150mm deep. 657 Scrapers cut to spoil at \$430/hr, 150BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
3.03b	Remove material (carbonaceous / metalliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (haul distance >1 km but <2 km)	m ³	\$ 5.31	D10 Rip and push into void at \$270/hr, 0.2ha/hr, 150mm deep. 657 Scrapers cut to spoil at \$430/hr, 130BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
3.03c	Remove material (carbonaceous / metalliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (haul distance >2 km but <5 km)	m ³	\$ 6.67	D10 Rip and push into stockpile at \$270/hr, 0.2ha/hr, 150mm deep. Excavator (\$220/hr) load Artic Trucks (90c/km)
3.03d	Remove material (carbonaceous / metalliferous spillage or otherwise) from footprint of the process facility (leach pads) / stockpile area (ROM product) / roads and dump in a void on-site (haul distance >5 km)	m ³	\$ 8.92	As above, generally overhaul rates will be 60c-\$1.2, depending on truck fleet, loaders etc. - assumed 7.5 km. If haul distance is greater than 7.5 km, alternate rate option should be used - \$8.92 + additional km x \$0.90.
3.04	Load, cart and dispose of High Level contaminated material off site to a licensed landfill. Assumes cartage to a licensed landfill	m ³	\$ 700.00	Includes load, haul and dump fees to a licensed facility.
3.05	Load, cart and disposal of Low Level contaminated material off site to a licensed landfill. Add \$50/m ³ for cartage to regional landfill	m ³	\$ 200.00	Includes load, haul and dump fees to a licensed facility.
3.06-	Onsite remediation of hydrocarbon contaminated soils manual land farming (Select Volume from List)	m ³	Select from List	Spreading of contaminated soils on a prepared surface and stimulation of aerobic microbial activity within the soils through aeration and/or the addition of minerals, nutrients and moisture to promote the aerobic degradation of organic chemicals - time frame of up to 24 months.
3.06a	Onsite remediation of hydrocarbon contaminated soils (<50 m ³) - manual land farming	m ³	\$ 55.00	Current rates still adequate and recommend continue to allow for economies of scale.
3.06b	Onsite remediation of hydrocarbon contaminated soils (>50 m ³ but <100 m ³) - manual land farming	m ³	\$ 44.00	Current rates still adequate and recommend continue to allow for economies of scale.
3.06c	Onsite remediation of hydrocarbon contaminated soils (>100 m ³ but <500 m ³) - manual land farming	m ³	\$ 33.00	Current rates still adequate and recommend continue to allow for economies of scale.
3.06d	Onsite remediation of hydrocarbon contaminated soils (>500 m ³) - manual land farming	m ³	\$ 30.00	Current rates still adequate and recommend continue to allow for economies of scale.
3.07	Mobilisation of cement stabilisation plant and equipment for hydrocarbon (i.e., PAH, long chain hydrocarbons, etc.) contaminated soil treatment	Item	\$ 150,000	Required if treatment of hydrocarbon contamination is required to be fast tracked.
3.08	On-site remediation of hydrocarbon contaminated soils - using a mobile treatment unit	m ³	\$ 165.00	Additional cost as the treatment process is fast tracked.
3.09	Remove and dispose of asbestos (<750 m ²)	m ²	\$ 50.00	Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.

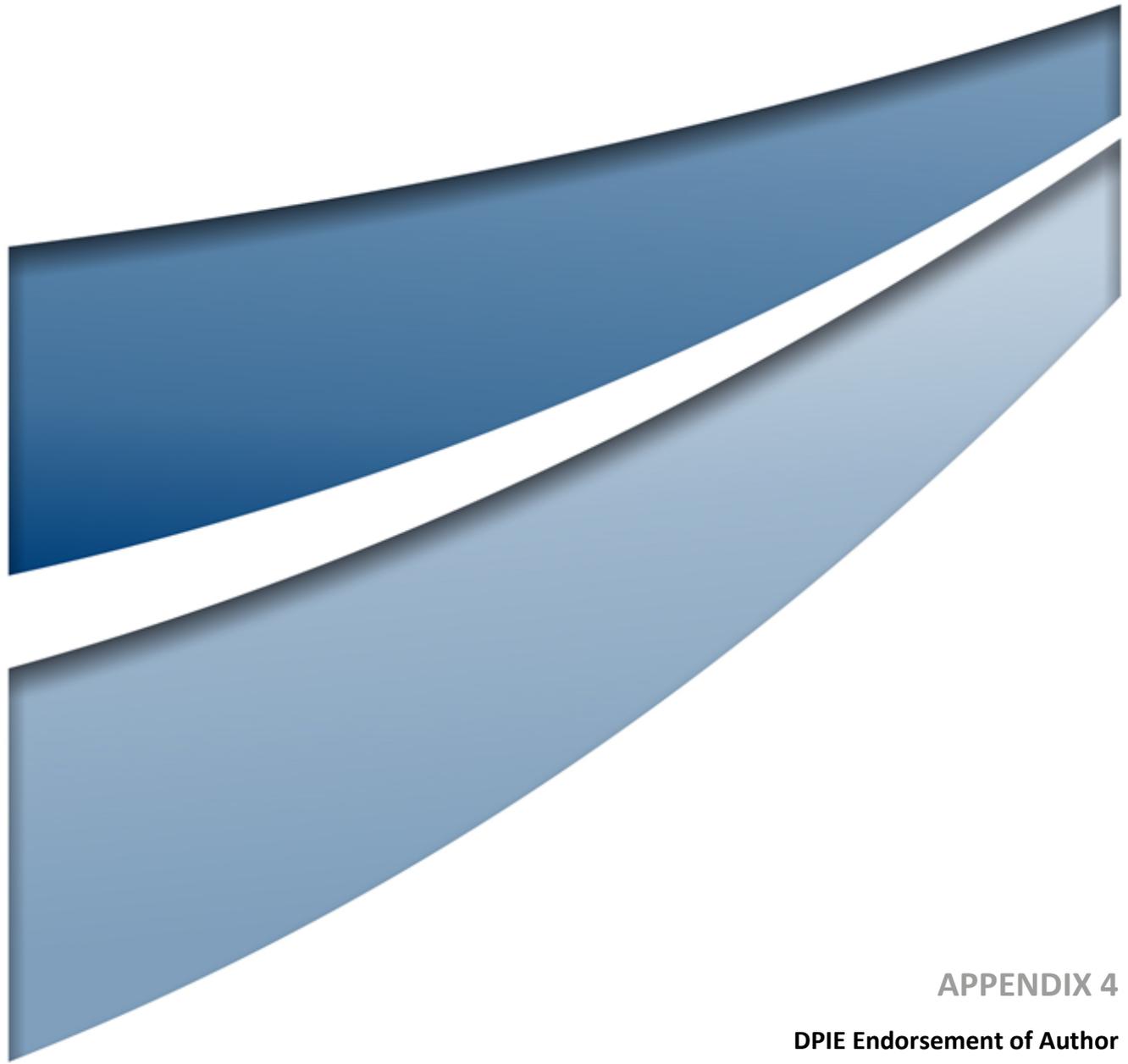
Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
3.10	Remove and dispose of asbestos (>750 m ²)	m ²	\$ 40.00	Where an assessment/estimation has been made to confirm the volume of asbestos to be removed.
3.11	Remove and dispose of asbestos	tonne	\$ 2,400	6 mm asbestos sheet approx. 15 kg / m ² = ~70 m ² per ton. Allowing \$20 / m ² for removal, 4 hours trucking @\$125 and \$100 / t disposal plus 20% OHP = \$2,400 / t.
3.12	Treatment of known Acid Sulfate Soils	ha	\$ 2,580	Assumes ASS is treatable via neutralisation and does not require capping and isolation.
3.13	Removal and disposal of plastic liner (i.e. dam, leach pad, sump etc.)	m ²	\$ 1.00	Provisional sum for cutting using ripping tynes and on-site disposal of the liner.

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
Vents, Shafts and Boreholes				
4.01	Seal portals / drifts (width >3 m) – backfill the access for at least 50 m against a concrete bulk head with drainage slots. The rate includes some reshaping of batters around the adit entrance. If concrete bulk head not required, reduce rate by 25%	allow	\$ 250,000	Cost estimated from planned and executed works programs in NSW from multiple sites. Rate accounts for a range of factors including variations in depth and size, accessibility limitations, requirements for extra roof and/or rib support, equipment transport into the underground etc.
4.02	Seal small adits (width <3 m) – install 0.5 concrete plug 3 m back from adit and backfill with appropriate material. The rate includes some reshaping of the batter around the entrance of the adit	allow	\$ 25,000	Cost estimated from planned and executed works programs in NSW from multiple sites. Rate assumes standard works program with suitable access, and additional roof and rib stabilisation works etc. is not required.
4.03	Seal and rehabilitate ventilation fans shafts - allows for works in a remote location	allow	\$ 150,000	Cost estimated from planned and executed works programs in NSW from multiple sites. Rate accounts for a range of factors including variations in depth and size, accessibility limitations, equipment transport to the shaft etc.
4.04	Maintenance and monitoring of sealed adits/portals and shafts (for a total of 5 years)	allow	\$ 25,000	Estimate to undertake periodic inspections by a qualified person and provide a completions report for DRG sign-off.
4.05	Install gate or grill over the adit (Where site might be used by bats)	Item	\$ 200,000	Rate accounts for a range of factors including establishing clear access, and/or working in remote locations without services, and/or stabilisation works to prevent the entry collapsing and compromising the gate etc.
4.06a	Exploration boreholes – rehabilitate boreholes and drill pads as required	depth (m)	\$ 40.00	Where multiple boreholes exist, this is the rate for the total cumulative depth of all boreholes (e.g. two boreholes at 100m depth each = 200m). Assumes a per metre drilling rate of ~\$150 / m of which ~25 - 30% is for rehabilitation which may include a variety of works (i.e., cut casing and install cap, install poly pipe to facilitate back-filling, grout preparation, grouting and capping, reshaping / ripping the drill pad, amelioration / seeding etc.)
4.06b	Exploration boreholes – backfill open bore holes with cuttings	allow	\$ 300.00	May include cutting of casing, installation of a casing cap, and/or manually backfilling the hole with drill cuttings. Does not include reshaping / ripping the drill pad, amelioration / seeding etc.
4.07	Exploration boreholes – grout and cap open bore holes	allow	\$ 7,950	Includes grouting and capping 100 - 200 m exploration boreholes to meet the requirements of EDG01.
4.08	Boreholes – cap and seal open bore holes with steel casing (i.e., goaf drainage etc.)	allow	\$ 6,960	Holes deeper than 100 m - includes cutting steel collar 6 m below surface, grouting and capping.
4.09	Boreholes – cap and seal open bore holes - surface-to-in-seam gas drainage	allow	\$ 15,000	Surface-to-in-seam gas drainage boreholes.
4.10	Boreholes – cap and seal open bore holes - vertical gas drainage	allow	\$ 16,000	Vertical gas drainage boreholes.
4.11	Boreholes – grout (with concrete) cap and seal bore holes (i.e. where sealing aquifers)	allow	\$ 35,000	Includes multi skin sleeves to prevent aquifer mixing.
4.12	Boreholes – cap and seal service boreholes for UG operations	allow	\$ 45,000	Includes large diameter boreholes used for supplying electricity (66kV), compressed air, water, solsenic etc.
Roads and Tracks				
5.01	Unsealed roads / vehicle park-up areas – minor works including deep rip and trim	ha	\$ 960	Assumes ~6 m road width - 16H Grader @ \$212 per hour.
5.02	Unsealed roads / access tracks / vehicle park-up areas with windrows and/or small earthen bunds – minor earthworks and deep rip and trim	ha	\$ 1,500	Assumes ~20 m road width - D10 Dozer @ \$332 per hour.
5.03	Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip and seed (pasture grass)	ha	\$ 3,698	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
5.04	Unsealed roads / vehicle park-up areas – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	ha	\$ 4,485	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
5.05	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (pasture grass)	ha	\$ 3,820	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - pasture grass seed.
5.06	Unsealed roads / haul roads / vehicle park-up areas with windrows and/or small earthen bunds – Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)	ha	\$ 4,595	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation) - tree/shrub seed.
5.07-	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (Select Haul Distance from list)	m ³	Select from List	This item includes the scraping and removal of the volume of stabilised material from the road, laydown or other surface using an excavator, dozer and grader to enable the establishment of rehabilitation.
5.07a	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (haul distance < 1km)	m ³	\$ 4.45	D10 Rip and push into void at \$270/hr, 0.2ha/hr, 150mm deep. 657 Scrapers cut to spoil at \$430/hr, 150BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
5.07b	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (haul distance >1 km but <2 km)	m ³	\$ 5.64	D10 Rip and push into void at \$270/hr, 0.2ha/hr, 150mm deep. 657 Scrapers cut to spoil at \$430/hr, 130BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
5.07c	Remove stabilised material (blue metal, aggregate etc.) from roadways and disposal on-site/locally (haul distance >2 km but <5 km)	m ³	\$ 7.20	D10 Rip and push into stockpile at \$270/hr, 0.2ha/hr, 150mm deep. Excavator (\$220/hr) load Artic Trucks (90c/km)
5.07d	Remove stabilised material (blue metal, aggregate etc.) from roadways and dump in a void on-site (haul distance >5 km)	m ³	\$ 9.45	Generally overhaul rates will be 60c-\$1.2, depending on truck fleet, loaders etc. - assumed 7.5 km. If haul distance is greater than 7.5 km, alternate rate option should be used - \$9.45 + additional km x \$0.90.
Open Cut				
6.01	Active pit area – benches blasted and doze to acceptable grade	Lm	\$ 1.70	Blasting at 90c/m3, D11 push at \$350 and 375 bcm/hr (80c/m3).
6.02	Drill & blast faces to make safe	m ³	\$ 0.90	Bulk Drilling say 8*9 pattern, assuming a stem height of 6 m, charge length of 19 m, explosive density of 0.9, diameter of 229 mm, explosives at 665.3 kg/hole with a powder factor of 0.37 with an approximate bench height of 25 m will allow drilling and blasting at \$0.90/bcm.
6.03	High wall treatment – (trench and safety berm)	m	\$ 90.00	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour including revegetation with pasture grass.
Earthworks / Structural Works				
7.01-	Major bulk pushing to achieve grades nominated in the approval/permit – Select Push Length	m ³	Select from List	Major bulk pushing to achieve grades nominated in the approval/permit
7.01a	Major bulk pushing to achieve grades nominated in the approval/permit – 50 m push length	m ³	\$ 0.80	D11 push at \$350 and 400 bcm/hr
7.01b	Major bulk pushing to achieve grades nominated in the approval/permit – 50 m-75 m push length	m ³	\$ 1.14	D11 push at \$350 and 375 bcm/hr
7.01c	Major bulk pushing to achieve grades nominated in the approval/permit – 75 m-100 m push length	m ³	\$ 1.42	D11 push at \$350 and 250 bcm/hr
7.01d	Major bulk pushing to achieve grades nominated in the approval/permit – 150 m push length	m ³	\$ 1.89	D11 push at \$350 and 175 bcm/hr
7.02	Minor reshaping and pushing	ha	\$ 3,900	D10 Dozer @ \$332 per hour and 16H Grader @ \$212 per hour (50% utilisation).
7.03	Structural works, banks, waterways - contour banks, drainage channels and other soil conservation measures	ha	\$ 1,600	Combination of dozer and excavator work. Small dozer (D6 or similar) @ ~\$200 per hour plus grader @ \$212 per hour for ~4 hours each per ha.
7.04	Construction of spine drains / drop structures and/or stabilising water course entry points - required for large catchments	m ²	\$ 35.00	Installation of on-site rock material (rip-rap) where managing water run-off from disturbed land and/or upon entry to water courses - prevents erosion of gully head (assumes competent material is locally available).
Mine Waste				
8.01	Reshaping, capping / sealing of a structure unlikely to present difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and physical properties (i.e., shear strength, etc.) - where the mine waste stream is geochemically benign and / or the strength condition within the upper 4 - 6 m meets the target shear strength profile.	ha	\$ 81,000	This includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume material with the appropriate chemical and physical properties. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 1 m including growth media. Water quality from runoff, seepage etc. meets site-specific environment water quality values.
8.01a	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
8.01b	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
8.02	Reshaping, capping / sealing of structure likely to present moderate difficulties due to chemistry – reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), or physical properties – shear strength, etc. limiting equipment choice.	ha	\$ 108,000	This item includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities where the tailings or rejects base is at a strength that enables economically efficient construction methods with small plant. This rate assumes suitable capping material is available on site within 10 km, and an average cap thickness of approximately 2 m including growth media. This may require additional materials (such as capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if required.
8.02a	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
8.02b	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
8.03	Reshaping, capping / sealing of structure likely to present considerable difficulties due to reactive materials (ARD / AMD / PAF / NMD / carbonaceous / saline), and / or physical properties (low shear strength greatly limiting equipment selection for material placement etc.)	ha	\$ 170,000	This item includes sourcing, carting, spreading, moisture conditioning and compaction of a suitable volume of material to cap / cover facilities of high geochemical risk, and / or low shear strength that prohibits economically efficient construction methods. This rate assumes suitable capping material/s are available on site within 10 km, and an average cap thickness of approximately 2.5 m including growth media. This may require additional materials (i.e., capillary breaks, geofabric, etc.), specific material types (e.g. acid neutralising / consuming materials, competent rock etc.), and associated activities (i.e., load / haul / place / crush / screen / borrow etc.). Costs for haulage of specialised materials must be added separately if required.
8.03a	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).
8.03b	Additional materials required for reshaping, capping / sealing of structure to facilitate water quality from runoff, seepage etc. meeting site-specific environment water quality values.	allow	Use alternate rate cell	Include additional cost to import materials (i.e., shale / clay, competent drainage materials etc.) and / or additional requirements (i.e., geofabric / composite lining etc.).

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
Rehabilitation				
9.01-	Source, cart and spread growth media (Select Haul Distance from List)	m ³	Select from List	If topsoil is not available on-site, then Virgin Excavated Natural Material (VENM) may need to be externally sourced.
9.01a	Source, cart and spread growth media - haul distance <1 km	m ³	\$ 3.26	610 m3/hr with 4 x 657 scrapers at \$430/hr, D10 trimming at \$270/hr 3ha/day at 150mm depth
9.01b	Source, cart and spread growth media - haul distance >1 km but <2 km	m ³	\$ 3.91	550 m3/hr with 4 x 657 scrapers at \$430/hr, D10 trimming at \$270/hr 3ha/day at 150mm depth
9.01c	Source, cart and spread growth media - haul distance >2 km but <5 km	m ³	\$ 5.97	D10 (2ha/day) pushing from stockpiled material from 80t exc and artic trucks.
9.01d	Source, cart and spread growth media - haul distance >5 km	m ³	\$ 8.22	Plus 90c/km - assumed 7.5 km. If haul distance is greater than 7.5 km, alternate rate option should be used - \$9.50 + additional km x \$0.90.
9.02-	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (Select Haul Distance from List)	m ³	Select from List	This item includes the volume of material requiring backfill using an excavator and scraper to fill the void and enable the establishment of rehabilitation.
9.02a	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (haul distance <1 km)	m ³	\$ 3.90	D10 push over soft material at \$270/hr 657 Scrapers cut to spoil at \$430/hr, 150BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
9.02b	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (haul distance >1 km but <2 km)	m ³	\$ 5.22	D10 push over soft material at \$270/hr 657 Scrapers cut to spoil at \$430/hr, 130BCM/hr/machine, Ancillary watercart and grader at \$0.75c/m3
9.02c	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (haul distance >2 km but <5 km)	m ³	\$ 6.88	D10 Rip and push into stockpile at \$270/hr, 0.2ha/hr, 150mm deep. Excavator (\$220/hr) load Artic Trucks (90c/km)
9.02d	Fill dams, voids etc. - Source local material, cart and spread to cap or backfill, cap thickness determined by approval / permit (haul distance >5 km)	m ³	\$ 9.13	Generally overhaul rates will be 60c-\$1.2, depending on truck fleet, loaders etc. If haul distance is greater than 7.5 km, alternate rate option should be used - \$9.13 + additional km x \$0.90
9.03	Shotcrete application on cuttings and steep slopes	m ²	\$ 185.00	This rate is used to rehabilitate steep slopes of weathered rock, roadway cuttings, etc that cannot be cut back and stabilised.
9.04	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	ha	\$ 960.00	16H Grader @ \$212 per hour - ripping in 1 direction only.
9.05	Deep rip hard stand / lay down areas	ha	\$ 960.00	D10 dozer @ \$332 per hour - deep rip in 2 directions @ 5 m spacing ~3 hr per hectare.
9.06	Planting mature trees (>15 cm)	allow	\$ 20.00	4 m centres.
9.07	Planting tube stock (<15 cm)	allow	\$ 10.00	4 m centres.
9.08	Direct seeding / fertiliser (pasture grass species)	ha	\$ 1,240	Rate can fluctuate however this is a suitable standard rate.
9.09	Direct seeding / fertiliser (tree or native grass species)	ha	\$ 2,095	Rate can fluctuate however this is a suitable standard rate.
9.10	Hydro-seeding with straw mulching and bitumen tack	m ²	\$ 1.80	Rate can fluctuate however this is a suitable standard rate.
9.11	Single application of fertiliser (pasture)	ha	\$ 420.00	Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
9.12	Single application of fertiliser (trees)	ha	\$ 140.00	These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
9.13	Spoil amelioration (adding lime / gypsum etc.)	ha	\$ 860.00	Assumes 2.5 t / ha as an average application rate.
9.14	growth media amelioration with biosolids	ha	\$ 1,015	Recent experience with agronomy projects.
9.15	Security fence around steep section of high wall	m	\$ 55.00	Class 1 cyclone wire (or similar) security fence @ 2.1 m with 3-4 m post spacing - complying with AS1725-2010 - Chain-link fabric security fences and gates.
9.16	Construct no-climb stock fence around rehabilitated areas	m	\$ 9.50	Standard rate for no-climb stock fencing.
9.17	Construct standard stock fence around rehabilitated areas	m	\$ 4.00	Standard rate for standard stock fencing.
9.18	Purchase and erect warning signs	allow	\$ 250.00	Compliance with AS 1319-1994 - Safety signs for the occupational environment - installed every 25 m.
9.19	Supply from external sources virgin excavated natural material (VENM) for growth media.	m ³	\$ 80.80	D7 to spread material at \$205/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$70/m3 for imported fill material.
9.20	Supply from external sources a combination of virgin excavated natural material (VENM) and spoil from large excavation for filling voids and/or capping etc.	m ³	\$ 72.50	D10 push into void at \$270/hr, Excavator (\$220/hr) load Artic Trucks (90c/km) from imported stockpile - allow nominal rate of \$60/m3 for imported fill material.
Water Management				
10.01	On-site treatment of contaminated water due to high salt (includes removal of metals etc, brine disposal and cost of mobile water treatment unit)	ML	\$ 3,600	Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
10.02	On-site treatment of contaminated water due to low pH (includes removal of metals etc, neutralisation treatments and cost of mobile water treatment unit)	ML	\$ 1,500	Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
10.03	Clean water dams to be retained after decommissioning – make safe and minor earthworks	allow	\$ 2,500	Provisional sum for earthworks and revegetation required to rehabilitate dam batters etc suitable for re-use by an alternate land-user - D6 Dozer (or similar) @ ~\$200 per hour and pasture grass.
10.04-	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (Select Haul Distance from list)	m ³	Select from List	This item includes the volume of contaminated sediment requiring removal using an excavator, truck and dozer to clean out the dam.
10.04a	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (haul distance <1km)	m ³	\$ 3.55	80t excavator and 90c/m3 haul with artic trucks, 220m3/hr, two trucks required for short distance + 75c ancillary - excludes any stockpile treatment: no dozer (add 90c/m3 if required).
10.04b	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (haul distance >1km but <2km)	m ³	\$ 4.45	80t excavator and 90c/m3 haul with artic trucks, 220m3/hr, three trucks required for short distance + 75c ancillary - excludes any stockpile treatment: no dozer (add 90c/m3 if required).
10.04c	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (haul distance >2km but <5km)	m ³	\$ 7.25	80t excavator and 90c/m3 haul with artic trucks, 220m3/hr, five trucks required for short distance + 75c ancillary - excludes any stockpile treatment: no dozer (add 90c/m3 if required).
10.04d	Remove sediments from the floor of the dam to enable it to be converted into clean water structure (haul distance >5km)	m ³	\$ 9.50	If haul distance is greater than 7.5 km, alternate rate option should be used \$9.50 + additional km x \$0.90.
10.05	Removal of evaporation fans and/or other water transfer and management infrastructure	allow	\$ 25,000	Provisional sum for removal of water management infrastructure.
10.06	Exploration sump decommissioning	m ³	\$ 180.00	Rate based on capacity of sump developed for borehole. Includes filling of sump.
10.07	Water / mud disposal from sump	L	\$ 0.30	Disposal of non-contaminated sediments removed from sump.

Item	Activity Description	Unit	Unit Prices	Justification and Assumptions for Proposed Rates
Creek Diversions				
11.01	Repairs and/or stabilisation of new or compromised water course diversion	m	\$ 2,500	Assumes material is suitable for revegetating and has a reasonable chance of stabilising.
11.02	Long term maintenance of water course diversion – Channel constructed through backfilled material	m	\$ 1,500	Assumes maintenance has been kept up and significant works are not required.
11.03	Long term maintenance of water course diversion – Channel constructed through competent material	m	\$ 750.00	Assumes maintenance has been kept up and significant works are not required.
11.04	Installation of rock armouring	m ²	\$ 6.00	Assumes competent material is locally available - multiply costs by 2 for sourcing and transporting from offsite location.
Maintenance of Rehabilitated Areas				
12.01	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	ha	\$ 900	Rehabilitation maintenance might include re-seeding, watering, fertilising, minor re-shaping, erosion control, inspections/audits - does not include major repair works.
12.02	Pest management on buffer lands, non-disturbed, and rehabilitated areas	ha	\$ 150.00	Feral animal baiting programs if required and waste materials required to be removed.
12.03	Land management of undisturbed areas (rehabilitation, weeds, ferals, erosion and sediment control works)	ha	\$ 400.00	Undisturbed areas within the lease boundary that require land management activities.
12.04a	Minor stabilisation works and maintenance of mine subsidence areas - ripping etc.	ha	\$ 1,500	D8 Dozer @ \$240 per hour and/or grader @ \$160 per hour.
12.04b	Crack filling to repair subsidence impacts	m	\$ 1,485	Undertake more substantial works to backfill cracks and/or sink holes (e.g., filling with mulch prior to grouting, grouting, etc.)
12.05a	Water course restoration to repair subsidence impacts	allow	Use alternate rate cell	Undertake more substantial works to remediate water courses (e.g., channel bed repairs, rock bar repairs, swamp stabilisation etc.)
12.05b	Create cut-through to re-establish natural water courses/drainage channels following subsidence	allow	\$ 3,000	Includes all earthworks and revegetation required to re-establish the natural drainage profile of the subsided area.
12.06	Existing rehabilitation repair - minor	ha	\$ 1,200	Areas requiring minor repair - rills, minor growth media replacement.
12.07	Existing rehabilitation repair - moderate	ha	\$ 1,700	Areas requiring moderate repair - rills, significant growth media replacement.
12.08	Existing rehabilitation repair - major	ha	\$ 2,500	Areas requiring major repair - rills, gullies, growth media replacement, some level of additional surface water management.
12.09	Existing rehabilitation repair - total failure of landform	ha	\$ 40,000	Areas that require extensive rehabilitation repair - re-design and re-construction of landform.
Heritage Items				
13.01	The restoration and care and maintenance of items that have heritage significance	allow	Use alternate rate cell	Item for the redistribution of Aboriginal artefacts, preservation of European heritage items or a combination of activities.
Sundry Items				
14.01-	Development of an 'Unplanned' Project Closure Plan - for either State Significant or Non State Significant Developments	allow	Select from List	Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities.
14.01a	Development of an 'Unplanned' Project Closure Plan - State Significant Development	allow	\$ 100,000	Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities.
14.01b	Development of an 'Unplanned' Project Closure Plan - Non State Significant Development	allow	\$ 40,000	Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities.
14.02	DRG tender preparation and assessment, stakeholder consultation, risk assessment facilitation and management, statutory reporting and instruments, permitting and compliance requirements, document and data management	allow	Use alternate rate cell	Provisional sum for the NSW Government to prepare tender documentation (i.e. demolition, waste disposal, earthworks, environmental management etc.) manage stakeholders and establish permitting and compliance requirements for closure.
14.03	Site security during closure	yr.	\$ 75,000	Provisional sum for site security measures required during closure. This includes nightly patrols and first response in the event of an out of hours incident.
14.04	HAZMAT Clean-up - cleaning and decontaminating plant and equipment, chemical storage locations, oil and grease traps, tanks, vessels, and pipe work etc	allow	\$ 100,000	Provisional sum to perform the site clean-up and ensuring the demolition program is not interrupted due to potential contamination of waste streams.
14.05	Removal and disposal of radiation devices	each	\$ 25,000	Provisional sum for removal and disposal of monitoring devices on conveyors using a radiation source (i.e., Americium – 241, Plutonium – 238, Caesium - 137 etc).
14.06	Additional fees for accessing State, Crown or other public lands for rehabilitation/remediation activities	allow	Use alternate rate cell	Provisional sum.
Third Party Project Management and Contingencies				
15.00	Mobilisation & Demobilisation for exploration programs	Item	\$ 7,000	Assumes an exploration program of 10 or fewer holes and local contractors within 250 km are available to undertake rehabilitation of disturbance generated by dedicated exploration companies. Apply once per exploration pad.
15.00a	Mobilisation & Demobilisation for small mine or quarry	Item	\$ 40,000	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
15.01	Mobilisation & Demobilisation (Distance to site <150 km)	item	\$ 100,000	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
15.02	Mobilisation & Demobilisation (Distance to site >150 km but <500 km)	item	\$ 150,000	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
15.03	Mobilisation & Demobilisation (Distance to site >500 km but <1000 km)	item	\$ 300,000	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
15.04	Mobilisation & Demobilisation (Distance to site >1000 km)	item	\$ 500,000	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
15.05	Contingency	Total	X%	A contingent amount to account for "unkown unknowns" and areas were data / details of rehabilitation methods are uncertain.
15.06	Post Closure Environmental Monitoring	Total	X%	Includes all monitoring post closure execution works and compilation of all monitoring and maintenance data into a final rehabilitation report and submission for regulatory sign-off.
15.07	Project Management and Surveying	Total	X%	Includes all costs for project management of the closure execution works and post closure management requirements until land and/or tenure relinquishment.



APPENDIX 4

DPIE Endorsement of Author



Mr Alex Irwin
Principal Environmental Consultant

Wallerawang Quarry
963 Great Western Highway
MARRANGAROO NSW 2790

28/05/2020

Dear Mr Irwin

**Wallerawang Quarry (DA344-11-2001)
Approval of Expert for Management Plan Preparation**

I refer to your request for the Planning Secretary's approval of suitably qualified persons to prepare three management plans required under the Wallerawang Quarry (DA344-11-2001) development consent.

The Department has reviewed the nomination of Mr Alex Irwin, and the supporting information you have provided, and is satisfied that Mr Irwin is suitably qualified and experienced. The Department also notes that Mr Irwin has been previously approved by the Department to prepare the management plans listed below.

Consequently, I can advise that the Planning Secretary approves the appointment of Mr Irwin to prepare and/or revise the following management plans:

- Soils and Water Management Plan (as required by condition 18(a) of Schedule 3);
- Biodiversity Management Plan (as required by condition 26(a) of Schedule 3); and
- Rehabilitation Management Plan (as required by condition 31(a) of Schedule 3).

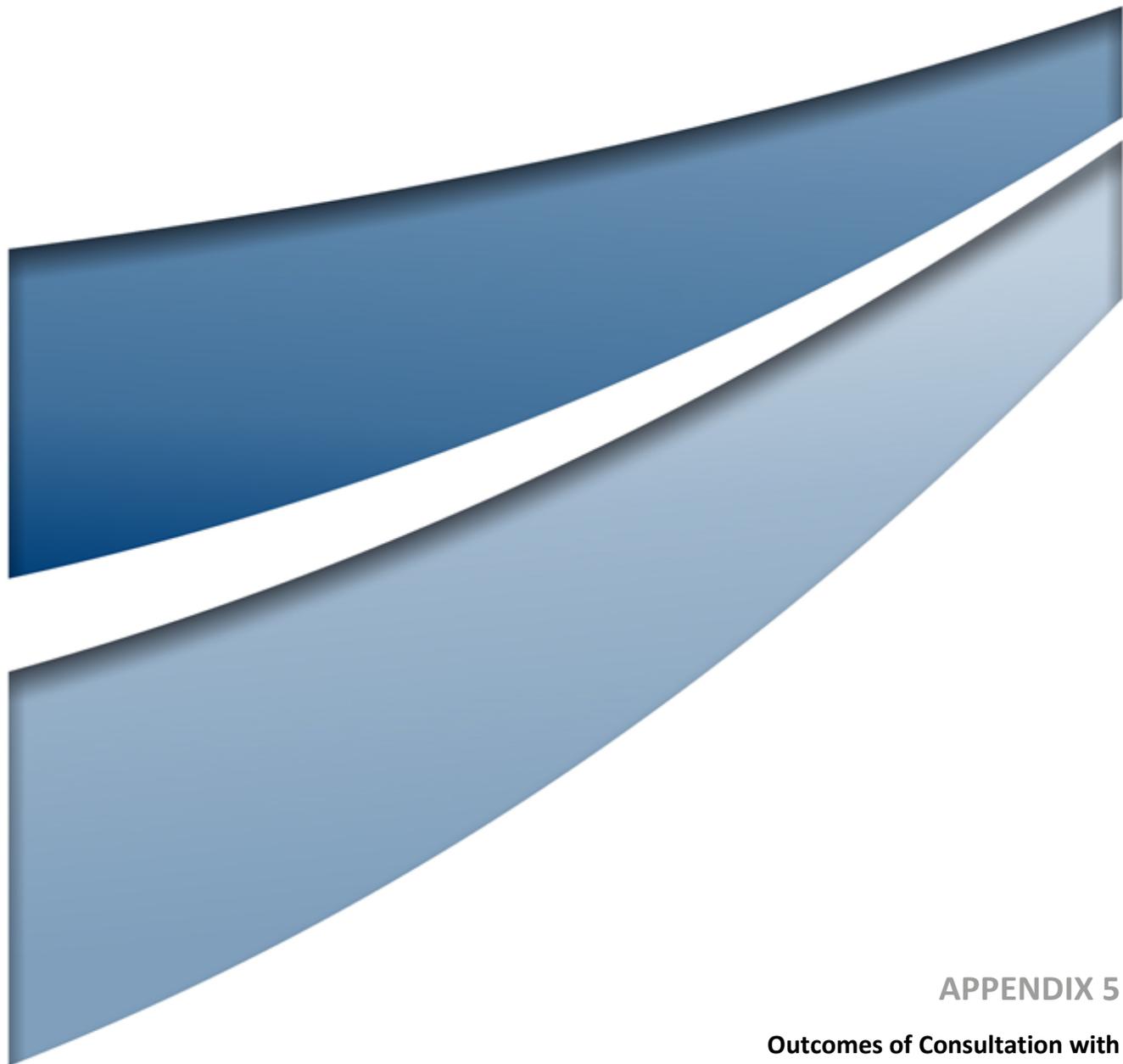
If you wish to discuss the matter further, please contact Melissa Anderson on 8275 1392.

Yours sincerely

A handwritten signature in black ink, appearing to read 'M Spratt'.

Matthew Spratt
Director
Resource Assessments (Coal & Quarries)

As nominee of the Planning Secretary



APPENDIX 5

Outcomes of Consultation with Government Agencies

From: Alex Irwin <airwin@umwelt.com.au> on behalf of Alex Irwin
Sent on: Wednesday, March 18, 2020 12:54:33 AM
To: Melanie Klootwijk <Melanie.Klootwijk@fcnsw.com.au>
Subject: 4433_Wallerawang Quarry_Review of Management Plans_Request for Forestry Corporation NSW Requirements or Recommendations
Attachments: Final Consolidated Consent Mod 3_.pdf (846.5 KB)

Good morning Melanie,

As you may be aware, Walker Quarries received approval for a proposed modification to operations at the Wallerawang Quarry which is operated under State Significant Development [344-11-2001](#) and EPL 13172.

Wallerawang Quarry currently operates in accordance with a number of environmental management plans required by DA [344-11-2001](#). Condition 5(40) of DA [344-11-2001](#) requires that these management plans are reviewed and updated as necessary within 3 months of receiving approval for a modification.

Several of the management plans are prepared in accordance with conditions of DA [344-11-2001](#) which require consultation with the Forestry Corporation NSW, namely:

- Condition 31(b) of Schedule 3 requires the Rehabilitation Management plan to be prepared in consultation with Forestry Corporation NSW.
- Condition 40 of Schedule 3 requires the Bush Fire Management plan to be prepared in consultation with Forestry Corporation NSW.

I have attached DA [344-11-2001](#) for the EPA's benefit. The current version of the Bushfire Management Plan can be viewed and downloaded from Walker Quarries website here:

<https://walkerquarries.com.au/statutory-information/#section3>

It is noted that the Rehabilitation Management Plan has been incorporated into the Mining Operations Plan of the Quarry. This can be viewed and downloaded from Walker Quarries website here:

<http://walkerquarries.com.au/statutory-information/#section2>

It is requested that Forestry Corporation NSW provide any requirements for the update of the nominated management plans. It is noted that Umwelt is currently updating these management plans to reflect the modified operations and conditions relating to water. This includes updating the Erosion and Sediment Control Plan for the Quarry.

Alternatively, should the Forestry Corporation NSW decline the invitation to provide requirements or recommendations for the management plans, a response from Forestry Corporation NSW to confirm this is requested.

As Walker Quarries has until the 26 May 2020 to resubmit the management plans, a response from Forestry Corporation NSW by 17 April is requested. Should Forestry Corporation NSW's preference be to review updated versions of the management plans and comment on these, an earlier response would be appreciated.

Should you require any further information, please do not hesitate to contact me.

Regards,

Alex Irwin
Principal Environmental Consultant

Umwelt (Australia) Pty Limited
Office 1, 3 Hampden Avenue
Orange, NSW 2800

Phone: [\(02\) 4950 5322](tel:0249505322)
Mobile: [0436 606 529](tel:0436606529)

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RE: 4433_Wallerawang Quarry_Review of Management Plans_Request for Forestry Corporation NSW Requirements or Rec...



Melanie Klootwijk <Melanie.Klootwijk@fcnsw.com.au>
To Alex Irwin

Reply Reply All Forward

Thu 19/03/2020 2:52 PM

You replied to this message on 20/03/2020 8:15 AM.

Hi Alex,
I was not aware the Determination had occurred – Planning have changed the way they communicate to agencies and it is not ideal. This will take a bit of time for me to review with all the other things going on but I will endeavour to respond by the dates below.
Thanks, Melanie

From: Alex Irwin <airwin@umwelt.com.au>
Sent: Wednesday, 18 March 2020 11:55 AM
To: Melanie Klootwijk <Melanie.Klootwijk@fcnsw.com.au>
Subject: 4433_Wallerawang Quarry_Review of Management Plans_Request for Forestry Corporation NSW Requirements or Recommendations

Good morning Melanie,

As you may be aware, Walker Quarries received approval for a proposed modification to operations at the Wallerawang Quarry which is operated under State Significant Development 344-11-2001 and EPL 13172.

Wallerawang Quarry currently operates in accordance with a number of environmental management plans required by DA 344-11-2001. Condition 5(40) of DA 344-11-2001 requires that these management plans are reviewed and updated as necessary within 3 months of receiving approval for a modification.

Several of the management plans are prepared in accordance with conditions of DA 344-11-2001 which require consultation with the Forestry Corporation NSW, namely:

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Alternatively, should the Forestry Corporation NSW decline the invitation to provide requirements or recommendations for the management plans, a response from Forestry Corporation NSW to confirm this is requested.

As Walker Quarries has until the 26 May 2020 to resubmit the management plans, a response from Forestry Corporation NSW by 17 April is requested. Should Forestry Corporation NSW's preference be to review updated versions of the management plans and comment on these, an earlier response would be appreciated.

Should you require any further information, please do not hesitate to contact me.

Regards,

Alex Irwin
Principal Environmental Consultant

Umwelt (Australia) Pty Limited
Office 1, 3 Hampden Avenue
Orange, NSW 2800

Phone: (02) 4950 5322
Mobile: 0436 606 529

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8/04/2020

Ref No.: F2010/01613

Alex Irwin
Umwelt Australia
Office 1, 3 Hampden Avenue
Orange NSW 2800

Sent via email: airwin@umwelt.com.au

Dear Alex,

Wallerawang Quarry Review of Management plans – FCNSW response

Thank you for the opportunity to comment on the review of the following management plans for Wallerawang Quarry:

- Bush Fire Management Plan
- Rehabilitation Management Plan (incorporated into the MOP)

Bushfire Management Plan

FCNSW is satisfied with the current contents of the plan and has no further recommendations for incorporation.

Rehabilitation Management Plan

FCNSW and Walker Quarries have had several discussions and correspondence in relation to the Rehabilitation Management Plan since the current one was written. FCNSW requests updated information in relation to rehabilitation is incorporated into the plan, as outlined in the recent MOD3 documentation.

FCNSW requests to review final drafts of both management plans prior to submission to ensure our interests are covered.

Kind Regards,

A handwritten signature in black ink, appearing to read "Melanie Klootwijk".

Melanie Klootwijk
Stewardship Coordinator
Northern Softwood Region

From: Alex Irwin <airwin@umwelt.com.au> on behalf of Alex Irwin
Sent on: Wednesday, March 18, 2020 12:52:38 AM
To: Lauren Stevens <Lauren.Stevens@lithgow.nsw.gov.au>
CC: andrew.muir@lithgow.nsw.gov.au
Subject: 4433_Wallerawang Quarry_Review of Management Plans_Request for Lithgow City Council Requirements or Recommendations
Attachments: Final Consolidated Consent Mod 3_.pdf (846.5 KB)

Good morning Lauren,

As you may be aware, Walker Quarries received approval for a proposed modification to operations at the Wallerawang Quarry which is operated under State Significant Development [344-11-2001](#) and EPL 13172.

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Condition 31(b) of Schedule 3 requires the Rehabilitation Management plan to be prepared in consultation with Lithgow City Council.

It is noted that the Rehabilitation Management Plan has been incorporated into the Mining Operations Plan (MOP) of the Quarry. The current version can be viewed and downloaded from Walker Quarries website here:

<http://walkerquarries.com.au/statutory-information/#section2>

It is requested that Lithgow City Council provide any requirements for the update of the Rehabilitation Management Plan (and MOP). It is noted that Umwelt is currently updating these management plans to reflect the modified operations and conditions relating to water.

Alternatively, should the Lithgow City Council decline the invitation to provide requirements or recommendations for the management plans, a response from Lithgow City Council to confirm this is requested.

As Walker Quarries has until the 26 May 2020 to resubmit the management plans, a response from Lithgow City Council by 17 April is requested. Should Lithgow City Council's preference be to review updated versions of the management plans and comment on these, an earlier response would be appreciated.

Should you require any further information, please do not hesitate to contact me.

Regards,

Alex Irwin
Principal Environmental Consultant

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Orange, NSW 2800

Phone: [\(02\) 4950 5322](tel:0249505322)
Mobile: [0436 606 529](tel:0436606529)

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RE: 4433_Wallerawang Quarry_Review of Management Plans_Request for Lithgow City Council Requirements or Recomme...



Lithgow City Council <council@lithgow.nsw.gov.au>

To Alex Irwin

Reply Reply All Forward

Thu 2/04/2020 3:11 PM

You replied to this message on 2/04/2020 3:13 PM.



Hi Alex,

Please refer to Council's response attached in relation to the Wallerawang Quarry Rehabilitation Management Plan.

Yours Sincerely

Lauren Stevens | Development Planner

Economic Development & Environment | Lithgow City Council

Phone: (02) 6354 9999 | Fax: (02) 6351 4259

From: Alex Irwin <airwin@umwelt.com.au>

Sent: Wednesday, 18 March 2020 11:53 AM

To: Lauren Stevens <Lauren.Stevens@lithgow.nsw.gov.au>

Cc: Andrew Muir <andrew.muir@lithgow.nsw.gov.au>

Subject: 4433_Wallerawang Quarry_Review of Management Plans_Request for Lithgow City Council Requirements or Recommendations

Good morning Lauren,

As you may be aware, Walker Quarries received approval for a proposed modification to operations at the Wallerawang Quarry which is operated under State Significant Development 344-11-2001 and EPL 13172.

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Should you require any further information, please do not hesitate to contact me.

Regards,

Alex Irwin

Principal Environmental Consultant

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Mobile: 0436 606 529

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1775540: LGS
Economic Development and Environment

2 April 2020

Alex Irwin
Principal Environmental Consultant
airwin@umwelt.com.au

Dear Alex

WALKER QUARRIES- REHABILITATION MANAGEMENT PLAN/MINING OPERATIONS PLAN – DEVELOPMENT CONSENT SSD- 344-11-2001

I refer to your email received 18 March 2020 and your request for review of the Walker Quarries Rehabilitation Management Plan and the Mining Operations Plan (MOP).

Council advises that continued rehabilitation is important throughout the life of the quarry especially around the voids and along the front boundary of the property that has a frontage to the Great Western Highway. This is to help minimise visual impacts to the surrounding properties and public infrastructure.

The final rehabilitation of the site should ensure that the disturbed areas are rehabilitated to the natural levels, prior to the quarry, as much as possible and that the land is stabilised.

As such, Council considers that the Rehabilitation Management Plan, that forms part of the Mining Operations Plan, adequately highlights the relevant issues and therefore has no objection to the submission of the Plan for approval in accordance with the requirements of Development Consent SSD- 344-11-2001.

Please do not hesitate to contact Miss Lauren Stevens who is available between 8.15 am and 10.30 am on (02) 6354 9999, Monday to Friday; in Council's Economic Development and Environment Department should you require any additional information in relation to this matter.

Yours Sincerely

Lauren Stevens
DEVELOPMENT ASSESSMENT PLANNER

From: Wayne Jones <wayne.jones@planning.nsw.gov.au>
Sent on: Thursday, May 14, 2020 5:29:17 AM
To: Alex Irwin <airwin@umwelt.com.au>
Subject: RE: 4433_Wallerawang Quarry

Good day Alex,

It is the proponent's responsibility to prepare and submit management plans.

DPIE review and, where appropriate, approve them.

As an environmental consultant representing a proponent I trust you are capable of reviewing conditions of consent and extracting those conditions that may be relevant to each environmental issue being managed. Generally multiple conditions of consent apply to each environmental issue being managed.

Cheers Wayne

Wayne Jones
Team Leader | Post Approval
Energy and Resources | Planning and Assessment
GPO Box 3145 | Singleton NSW 2330
T 02 6575 3406 M [0437 533 549](tel:0437533549)



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From: Alex Irwin <airwin@umwelt.com.au>
Sent: Thursday, 14 May 2020 2:19 PM
To: Wayne Jones <wayne.jones@planning.nsw.gov.au>
Subject: 4433_Wallerawang Quarry

Wayne,

Can I please confirm that the Department has no additional requirements for inclusion in a revised Rehabilitation Management Plan for the Wallerawang Quarry to those nominated in Condition 31 of Schedule 3 of the development consent (DA [344-11-2001](#)).

Regards,

Alex Irwin
Principal Environmental Consultant

Umwelt (Australia) Pty Limited
Office 1, 3 Hampden Avenue
Orange, NSW 2800

Phone: [\(02\) 4950 5322](tel:0249505322)
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Team Leader | Post Approval
Energy and Resources | Planning and Assessment
GPO Box 3145 | Singleton NSW 2330
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Subject: 4433_Wallerawang Quarry

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Alex Irwin
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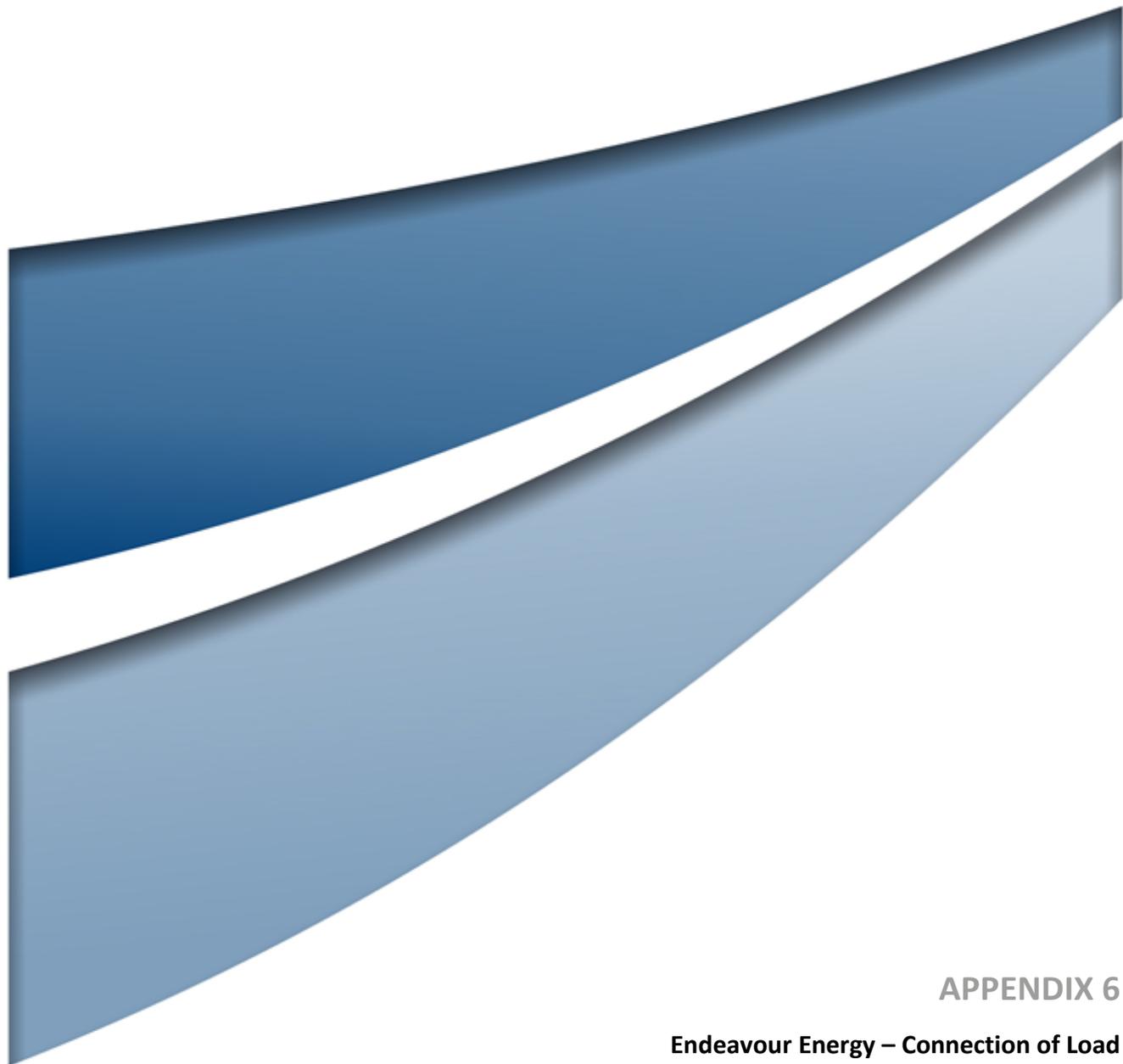
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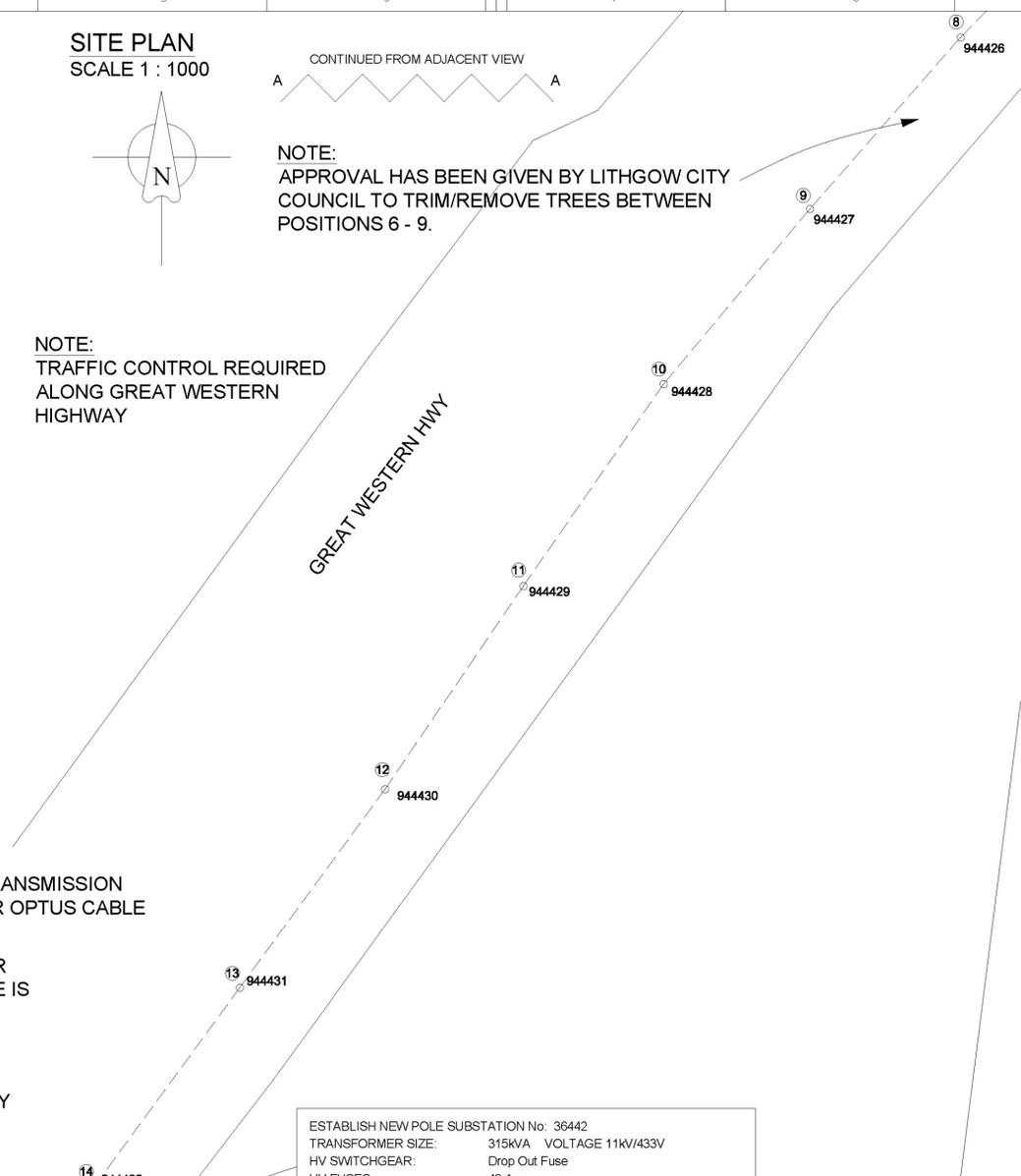
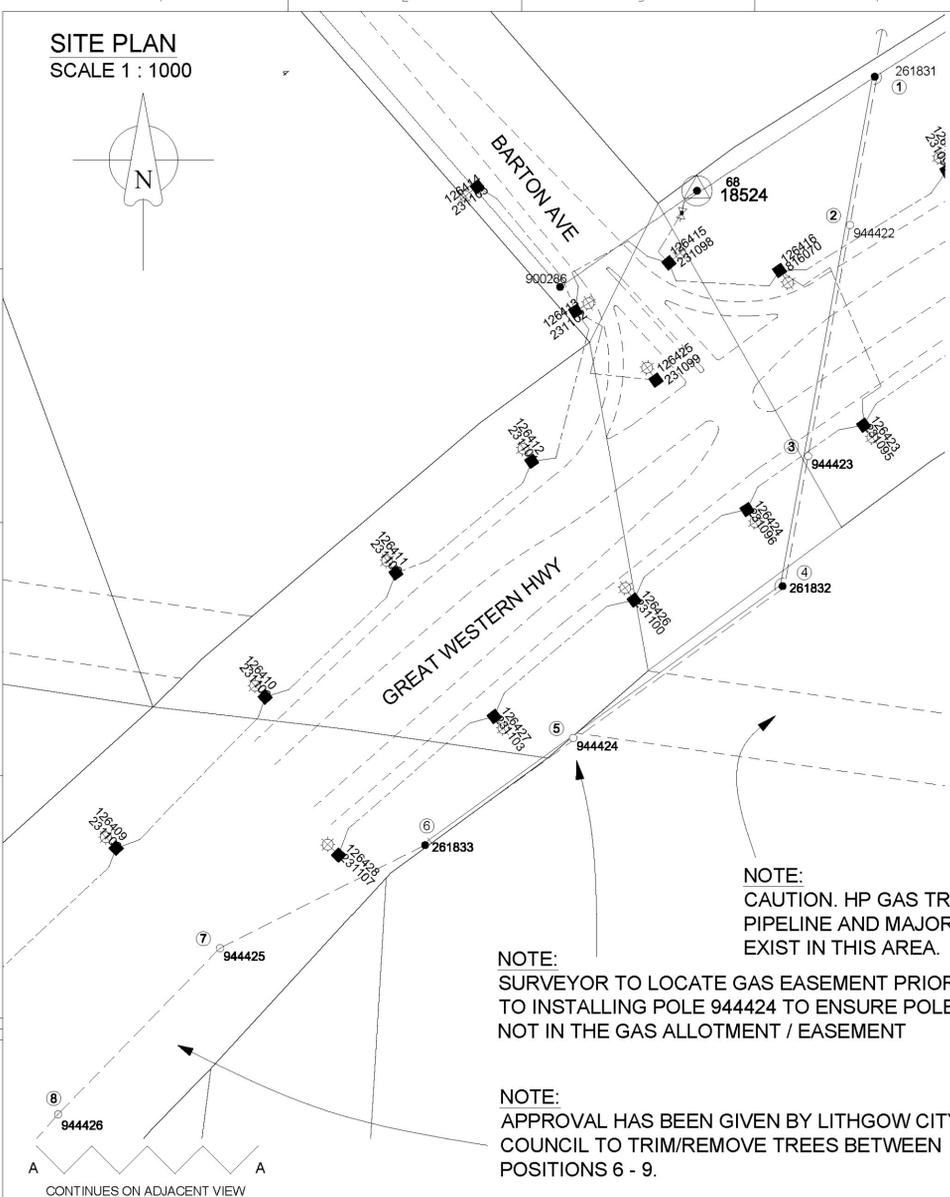


APPENDIX 6

**Endeavour Energy – Connection of Load
Lot 7071 DP1201227**

SITE PLAN
SCALE 1 : 1000

SITE PLAN
SCALE 1 : 1000



NOTE:
APPROVAL HAS BEEN GIVEN BY LITHGOW CITY COUNCIL TO TRIM/REMOVE TREES BETWEEN POSITIONS 6 - 9.

NOTE:
TRAFFIC CONTROL REQUIRED ALONG GREAT WESTERN HIGHWAY

NOTE:
CAUTION. HP GAS TRANSMISSION PIPELINE AND MAJOR OPTUS CABLE EXIST IN THIS AREA.

NOTE:
SURVEYOR TO LOCATE GAS EASEMENT PRIOR TO INSTALLING POLE 944424 TO ENSURE POLE IS NOT IN THE GAS ALLOTMENT / EASEMENT

NOTE:
APPROVAL HAS BEEN GIVEN BY LITHGOW CITY COUNCIL TO TRIM/REMOVE TREES BETWEEN POSITIONS 6 - 9.

NOTE
ALL POSITIONS & LENGTHS SHOWN ON THIS DRAWING ARE APPROXIMATE SCALE ONLY & MUST BE CONFIRMED ON-SITE PRIOR TO CONSTRUCTION.

WORKS SCHEDULE

Positions 2, 3, 5 & 7-15 inclusive: Install poles as per Pole Table. Earth concrete poles in accordance with this design.

Position 15: Install Pole Substation including Earthing as per Substation Dialogue Box, Final HV, LV & Duct layout plans.

Positions 1 - 6 inclusive: Augment existing OH mains as per Final HV Circuit

Positions 1 - 15 inclusive: Install HV OH mains as per Final HV Circuit

Positions 2 & 3: Connect existing HV & LV mains to proposed poles.

Reinstate roadways, concrete footpaths and natural ground as required.

KEY DOCUMENTS TABLE
THE CERTIFICATION OF THIS PROJECT IS SUPPORTED BY THE FOLLOWING KEY DOCUMENTS

DOCUMENT NAME	NOTATION DATE
SUMMARY ENVIRONMENTAL REPORT (SER) - FAT0038 part of EMS0003	1 / 9 / 2017
AGREEMENT FOR ENTRY, GRANT and CREATION OF EASEMENT - FPJ0913	TBA
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4252	N/A
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4253	N/A
TELECOMMUNICATION ASSET AGREEMENT - FPJ4184	N/A
PROJECT DEFINITION	N/A
LIST ANY KEY DOCUMENTS SUPPORTING THE CERTIFICATION:	
1) SAFE DESIGN REPORT	1 / 9 / 2017
2) TREE TRIMMING	8 / 11 / 2017

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

- CP: Connection Policy
- EMS: Environmental Management Standard
- MCI: Mains Construction Instruction
- MDI: Mains Design Instruction
- POI: Protection Design Instruction
- SDI: Substation Design Instruction
- SAD 0001: Design Drawing Standard
- MMI: Mains Maintenance Instruction
- SMI: Substation Maintenance Instruction
- LDI 0001: Public Lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 'Overhead Line Design - Detailed Procedures' published by The Australian Standards.

Network Electrical Engineering P/L indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: *G. Ragen*
Name: Garry Ragen
Service Provider Number: 2511 Date: 1 / 9 / 2017

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

ESTABLISH NEW POLE SUBSTATION No: 36442
TRANSFORMER SIZE: 315kVA VOLTAGE 11kV/433V
HV SWITCHGEAR: Drop Out Fuse
HV FUSES: 40 Amp
LV SWITCHGEAR: 400 Amp
SUBSTATION CUBICLE SIZE: N/A
EARTHING SYSTEM: SEPARATE

FUNDING ARRANGEMENTS FOR SCOPE OF WORKS

ASP LEVEL 1 ELECTRICAL WORKS		CUSTOMER
ENDEAVOUR ENERGY SUPPLIED MATERIALS	CUSTOMER FUNDED NON-CONTESTABLE WORKS	CUSTOMER FUNDED
NIL	Inspection and Access Authority - System switching - Provision of Access Authority (As per Fee sent by EE's CWA's)	Includes but not limited to: - Pegging of easements, property boundaries & infrastructure locations - Registering of easements - Providing site access - Own service & service connection - Confirm finished ground levels
ENDEAVOUR ENERGY FUNDED & CONSTRUCTED	Works Required Prior to Completion of Customer Contestable Project	EXISTING DUCT USAGE CHARGES (exc GST)
NIL	Works Required in Association of Customer Contestable Project	NIL
ENDEAVOUR ENERGY FUNDED & ASP L1 CONSTRUCTED - REIMBURSEMENT (exc GST)	CUSTOMER FUNDED CONTESTABLE WORKS	CO-ORDINATION SUPPLY REQUIRED DATE (TO BE CONFIRMED BY THE CUSTOMER) 1 APRIL 2018
DUCT REIMBURSEMENT = NIL COST OF 315kVA 11kV 3 PHASE TRANSFORMER = \$8828.00 TOTAL EE CAPITAL CONTRIBUTION (EXCLUDING PM & DESIGN) = \$8828.00 EE CAPITAL CONTRIBUTION (HV REIMBURSED) = \$10,461.00	All other works and materials including but not limited to: - Installation & establishment of Pole Substation - Trenching - Cable laying and/or installations - Joining - Overhead installation	ASSET TO BE RETURNED TO NEAREST ENDEAVOUR ENERGY DEPOT BY L1 ASP
		NIL

WARNING!
DIAL BEFORE YOU DIG

CAUTION OTHER UTILITIES' SERVICES EXIST IN GREAT WESTERN HIGHWAY AND SITE INCLUDING BUT NOT LIMITED TO:

- ENDEAVOUR ENERGY
- NBN Co. NSW/ACT
- TELSTRA NSW CENTRAL
- OPTUS AND/OR UECCOM, NSW
- JEMENA GAS WEST
- SYDNEY WATER
- ROADS AND MARITIME SERVICES

PLEASE CONTACT 'DIAL BEFORE YOU DIG' ON TEL 1100 FOR SEARCH INFORMATION A MINIMUM OF 2 DAYS PRIOR TO EXCAVATION.

AUTHORISATION OF ESTIMATE VALUE OF ENDEAVOUR ENERGY FUNDED ASSETS

Signed: _____

Print Name: _____

Service Number: _____

Funding Amount: \$ _____

Date: _____

THIS DRAWING SUPPLIES...LOTS						
C.A.P. No	FILE No	LOT Nos	No of LOTS	DEVELOPER	DEVELOPERS REP	PHONE No
NIL0269	2017/01710001	7071	1	Walkers Quarries	Kerry Burke	0418 242 818

WARNING
LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TEL: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.

ALL THE REQUIREMENTS OF THE ENVIRONMENTAL PROTECTION AUTHORITY POLLUTION CONTROL LEGISLATION ARE TO BE STRICTLY ADHERED TO.

WARNING!
SEARCHES CARRIED OUT ON 9 / 5 / 2017 INDICATE THAT NO THREATENED SPECIES HAVE HABITAT IN THE VICINITY OF THE SITE.

NOTE
ACCESS TO SUBSTATION TO COMPLY WITH ENDEAVOUR ENERGY STANDARD MCI0008. THE LOCATION OF THE SUBSTATION WILL REQUIRE 24/7 ALL WEATHER ACCESS. ENDEAVOUR ENERGY LOCK TO BE PLACED IN SERIES WITH CLIENT'S LOCK ON FRONT ACCESS GATE.

SITE PLAN LEGEND

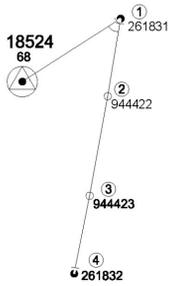
	EXISTING HV MAINS
	EXISTING SL MAINS
	PROPOSED OH MAINS
	PROPOSED AUGMENTED MAINS
	POLE SUBSTATION EXISTING
	POLE SUBSTATION NEW
	COLUMN EXISTING
	POLE EXISTING
	POLE PROPOSED NEW
	EXISTING STREET LIGHT (lantern)

CERTIFIED BY ENDEAVOUR ENERGY
Amendment: _____
Date Approved: _____
Examiner's Signature: _____
Print Name: _____
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY.
 - ENDEAVOUR ENERGY CONTACT PHONE: 131081
 - DESIGN CERTIFICATION SHALL LAPSE WHERE:
 - (i) NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION, OR
 - (ii) CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX (6) MONTHS.
 WHERE DESIGN CERTIFICATION HAS LAPSED THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.
 - ATTENTION: PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF WORK.
 - ATTENTION: ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.
 - ATTENTION: SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPT. DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE 131081
 - OPERATIONAL LIMITS UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED
 - MOBILE GENERATORS AND SUBSTATIONS
 - LIVE LINE WORK
 - DESIGN ALTERNATIVES
 - LOW VOLTAGE PARALLELS
 - WORK PRACTICES / STANDARDS
 THE COST IS TO BE FUNDED BY THE CUSTOMER / DEVELOPER.
 - AN EASEMENT FOR POLE SUBSTATION, EARTHING AND OH POWERLINE IS TO BE CREATED IN FAVOUR OF ENDEAVOUR ENERGY WITHIN EXISTING LOT 7071 DP 1201227.
 - REIMBURSEMENTS WILL BE PAID TO THE NOMINATED PARTY ON THE LETTER OF INTENT AFTER THE WORKS HAVE BEEN COMPLETED AND THE LETTER OF ACCEPTANCE HAS BEEN ISSUED. THE REIMBURSED AMOUNT IS SHOWN IN THE FUNDING ARRANGEMENTS FOR SCOPE OF WORK. ANY DISAGREEMENT WITH THE AMOUNT SHOULD BE RESOLVED WITH ENDEAVOUR ENERGY PRIOR TO THE COMMENCEMENT OF WORKS.
 - HAVE ALL THE EXISTING ASSETS BEEN FIELD CHECKED AND ARE ACCURATE AT THE TIME OF DESIGN? YES
 - ENVIRONMENTAL MANAGEMENT PLAN EMS001 IS PART OF THIS DESIGN. ENVIRONMENTAL MITIGATION MEASURES TO BE CARRIED OUT IN ACCORDANCE WITH FAT 0051 AND THIS DESIGN, IN PARTICULAR:
 - COMMUNITY CONSULTATION. LAND HOLDERS IN THE AREA TO BE NOTIFIED.
 - PUBLIC ROADS AND TRAFFIC MANAGEMENT. LOCAL COUNCIL TO BE CONTACTED FOR REQUIREMENTS.
 - UTILITIES AND SERVICES. 'DIAL BEFORE YOU DIG' SEARCHES REQUIRED.
 - SOIL AND WATER MANAGEMENT. SEDIMENT AND EROSION CONTROLS TO BE PUT IN PLACE.
 - SPOIL MANAGEMENT. REUSE OF SPOIL TO BE IMPLEMENTED.
 - STORAGE AND TRANSPORT OF OILS AND FUELS. RELATING TO SUBSTATION TRANSFORMER.

FINAL LV CIRCUIT AT SUB 18524

NOT TO SCALE



FINAL LV CIRCUIT LEGEND (SUB 18524)

	EXISTING LV MAINS
	EXISTING POLE SUBSTATION
	EXISTING POLE
	NEW POLE

FINAL LV CIRCUIT AT SUB 36442

NOT TO SCALE



15
Sub no. 36442
315kVA
Pole no. 944433

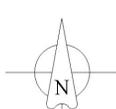
FINAL LV CIRCUIT LEGEND (SUB 36442)

	NEW POLE SUBSTATION
	NEW POLE

SEPARATE EARTHING LAYOUT POLE SUBSTATION 36442

NOT TO SCALE

THIS EARTHING DIAGRAM IS A GUIDE ONLY AND SHOWS A MINIMUM REQUIREMENT. ADDITIONAL EARTHING MAY BE REQUIRED TO MEET THE REQUIRED MAXIMUM EARTH RESISTANCE MEASUREMENTS AS STATED IN ENDEAVOUR ENERGY'S EDI 100.



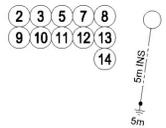
Sub no. 36442
315kVA
Pole no. 944433
Lot 6 DP872230
963 Great Western Highway
Marrangaroo

POLE EARTHING LEGEND

	POLE SUBSTATION NEW
	POLE PROPOSED NEW
	1 x 70 mm ² Cu PVC 1C EARTH CABLE RL: 17m, CL: 19m.
	1 x 70 mm ² Cu BARE 1C EARTH CABLE RL: 5m, CL: 7m.
	EARTH ELECTRODE

EARTHING OF CONCRETE POLES

NOT TO SCALE



Poles 944422 to 944432 inclusive

Earthing data to be capture to GIS

Earthing of Concrete Poles	944422 - 944432 incl.
Installation Type	Underground
Earthing System Type	Separate
Soil Resistivity Average in Ohm Metres	324.5 Ωm
HV Separate Earthing Grid Resistance (Separate Earthing Only)	84.21 Ω
Size / No. of HV Electrodes (Separate Earthing Only)	1 x 5m
LV Separate Earthing Grid Resistance (Separate Earthing Only)	N/A
Size / No. of LV Electrodes (Separate Earthing Only)	N/A
Combined Earth Resistance in Ohms (For Common Earthing)	N/A
Size / No. of Combined Electrodes (Common Earthing)	N/A
Size / No. of the Supplementary Electrode	N/A
Bonding Conductor Size in mm ² (Insulated / Bare)	70mm ² Insulated & Bare
Connection Type (CAD or Crimp)	Crimp
Ambient Temperature / Weather Condition	8 °C
Date of Soil Test	31 / 5 / 2017
Insulated depth from Ground Level (in Metres)	N/A
Length of MEN Connection Cable (in Metres)	6m
Total length of Earth Electrode System Cable (incl. Insulated & Bare in Metres)	10m
Measured Earth Resistance in Ohms (to be measured by L1 ASP on commissioning)	

DUCT LAYOUT PLAN

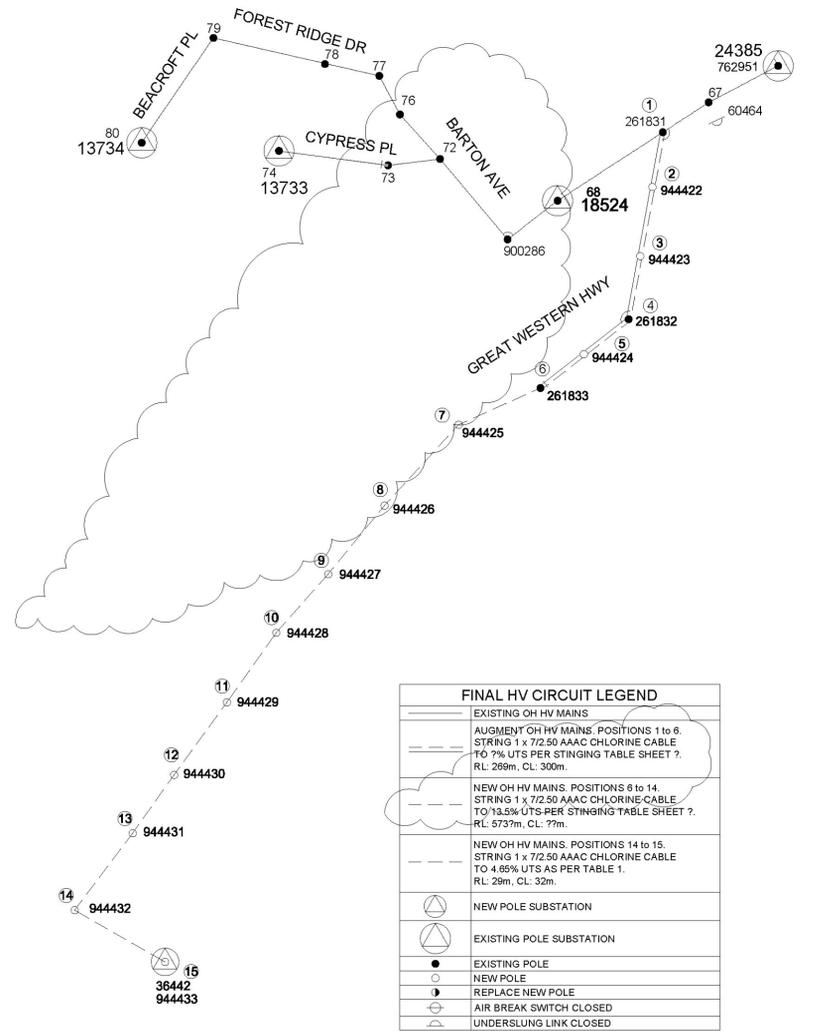


DUCT BREAKDOWN TABLE

Route	Configuration	Route Length (m)	Reimbursement (m) x (\$)	Existing Duct Usage Charge (m) x (\$)
15 - A		17	NIL	NIL
A - A1		5	NIL	NIL
TOTAL		22m	\$0000.00	\$0000.00

FINAL HV CIRCUIT

NOT TO SCALE



FINAL HV CIRCUIT LEGEND

	EXISTING OH HV MAINS
	AUGMENT OH HV MAINS POSITIONS 1 to 6. STRING 1 x 7/2.50 AAAC CHLORINE CABLE TO 7% UTS PER STINGING TABLE SHEET 7. RL: 269m, CL: 300m.
	NEW OH HV MAINS POSITIONS 6 to 14. STRING 1 x 7/2.50 AAAC CHLORINE CABLE TO 13.5% UTS PER STINGING TABLE SHEET 7. RL: 573m, CL: 7m.
	NEW OH HV MAINS POSITIONS 14 to 15. STRING 1 x 7/2.50 AAAC CHLORINE CABLE TO 4.85% UTS AS PER TABLE 1. RL: 29m, CL: 32m.
	NEW POLE SUBSTATION
	EXISTING POLE SUBSTATION
	EXISTING POLE
	NEW POLE
	REPLACE NEW POLE
	AIR BREAK SWITCH CLOSED
	UNDERSLUNG LINK CLOSED

NOTE
ALL POSITIONS & LENGTHS SHOWN ON THIS DRAWING ARE APPROXIMATE SCALE ONLY & MUST BE CONFIRMED ON-SITE PRIOR TO CONSTRUCTION.

DESIGN COMPLIANCE AND INDEMNITY

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- SDI: Substation Design Instruction
- SAD 0001: Design Drawing Standard
- MMI: Mains Maintenance Instruction
- SMI: Substation Maintenance Instruction
- LDI 0001: Public Lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 'Overhead Line Design - Detailed Procedures' published by The Australian Standards.

Network Electrical Engineering P/L indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:
Name: Garry Ragen
Service Provider Number: 2511 Date: 1/9/2017

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____
WORKS COMPLETED: _____
SIGNATURE: _____ DATE: _____
INSPECTED BY: _____
SIGNATURE: _____ DATE: _____
ASSET RECORDING
I: _____
OF: _____
CONTACT No.: _____
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
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CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____
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POLE TABLE

NEW	EXISTING	REMOVE	REMOVE	BRACKET	BRACKET	HEIGHT (m)	SPAN LENGTH (m)	LINE DEV. DEGREES	HV	LV	DIA mm	DEPTH (m)	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	REMOVE	DESIGN NUMBER	EASTINGS	NORTHINGS
944433	--	NA	NA	NA	NA	29	0	B26	LSUB	750	2.00	125Sub	TIMBER	C						15	227846.3182	6296782.6799
944432	--	NA	NA	NA	NA	70	97	B26 + B26	NA	750	2.00	MBC CONC		C						14	227820.1321	6296797.7537
944431	--	NA	NA	NA	NA	70	0	B21	NA	600	1.85	MBC CONC		C						13	227861.6066	6296854.1440
944430	--	NA	NA	NA	NA	70	0	B21	NA	600	1.85	MBC CONC		C						12	227903.0811	6296810.5343
944429	--	NA	NA	NA	NA	70	0	B21	NA	600	1.85	MBC CONC		C						11	227942.6333	6296868.2892
944428	--	NA	NA	NA	NA	65	5	B21	NA	600	1.85	MBC CONC		C						10	227982.6802	6297025.7021
944427	--	NA	NA	NA	NA	65	1	B21	NA	600	1.85	MBC CONC		C						9	228024.4892	6297075.4725
944426	--	NA	NA	NA	NA	65	3	B21	NA	600	1.85	MBC CONC		C						8	228067.5039	6297124.2022
944425	--	NA	NA	NA	NA	64	19	B22	NA	600	1.85	MBC CONC		C						7	228112.9854	6297170.6397
261833	NA	NA	NA	NA	NA	62	9	B24	NA	EX	EX	EXISTING	EX							6	--	--
944424	--	NA	NA	NA	NA	62	0	B21	NA	600	1.85	MBC CONC		C						5	228220.5074	6297235.6560
261832	NA	NA	NA	NA	NA	37	44	B26 + B26	NA	EX	EX	EXISTING	EX							4	--	--
944423	--	NA	NA	NA	NA	66	0	B24	NA	900	2.00	M15C CONC		C						3	228277.9863	6297308.0498
944422	--	NA	NA	NA	NA	42	0	B24	NA	900	2.00	M15C CONC		C						2	228286.7763	6297372.6156
261831	NA	NA	NA	NA	NA	0	0	B24	NA	EX	EX	EXISTING	EX							1	--	--

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AMENDMENTS	ORIGINAL ISSUE	DATE	BY
A			

NEE REF No: 00937

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REFERENCE DRAWING'S

WORK ORDERS

CAP / SAMP No. NIL0269
AM PROJ. No. 2017/01710/001
HV SWITCHING YES
UBD/PENGUIN REF COUNTRY MAP 29_D6
GIS MAP No U10978
HV DP DIAGRAM Lithgow Sh2 AE12
LOCAL GOV AREA LITHGOW

ORIGINAL SCALE

DO NOT SCALE DIMENSIONS IN METRES

GREAT WESTERN HIGHWAY MARRANGAROO NIL0269 CONNECTION OF LOAD LOT 7071 DP 1201227

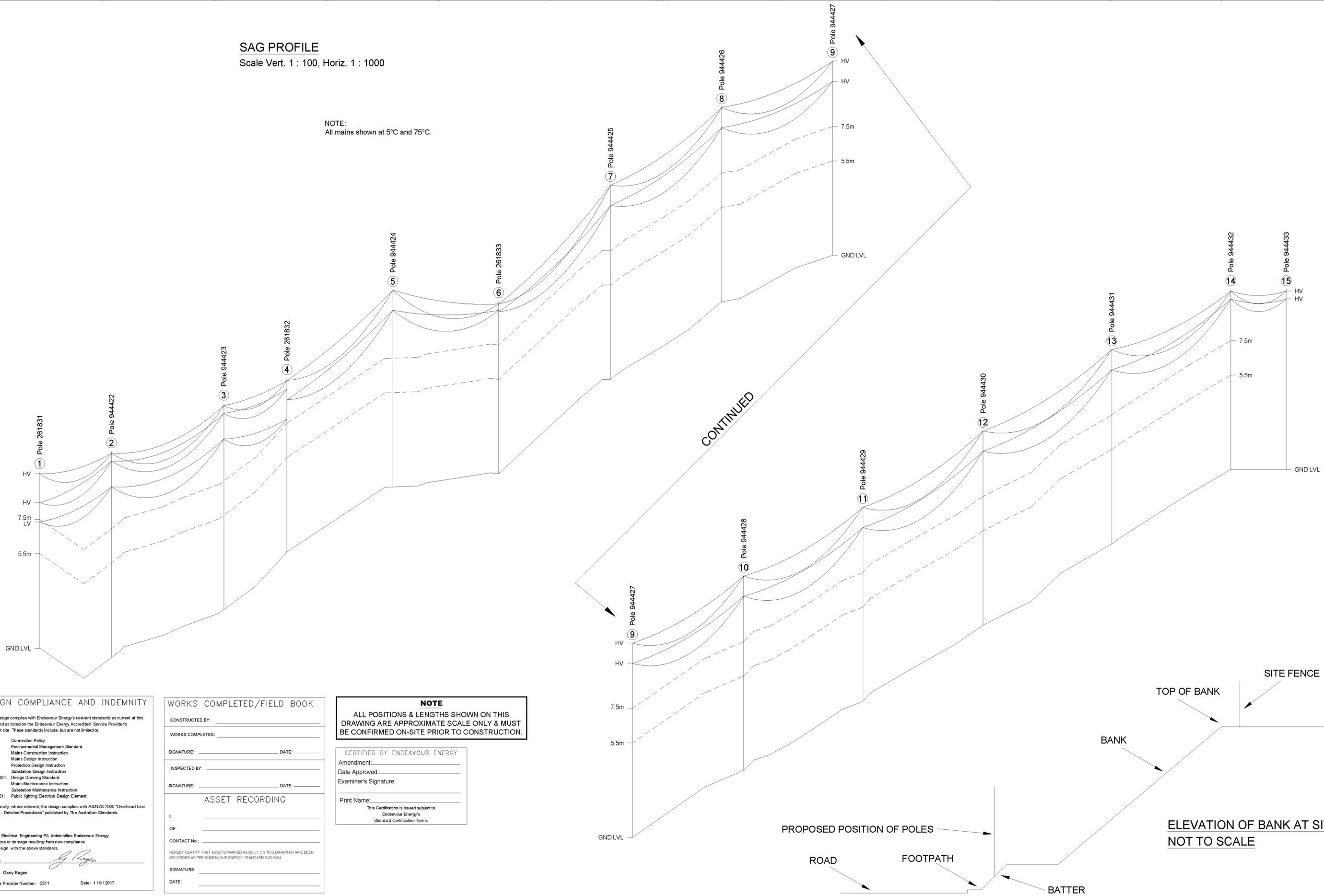
Endeavour Energy

A1 507225 A

SHEET No 2 OF 4 SHEETS

SAG PROFILE
Scale Vert. 1 : 100, Horiz. 1 : 1000

NOTE:
All mains shown at 5°C and 75°C.



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Signed: *[Signature]*
Name: Garry Ragen
Service Provider Number: 2511 Date: 1/9/2017

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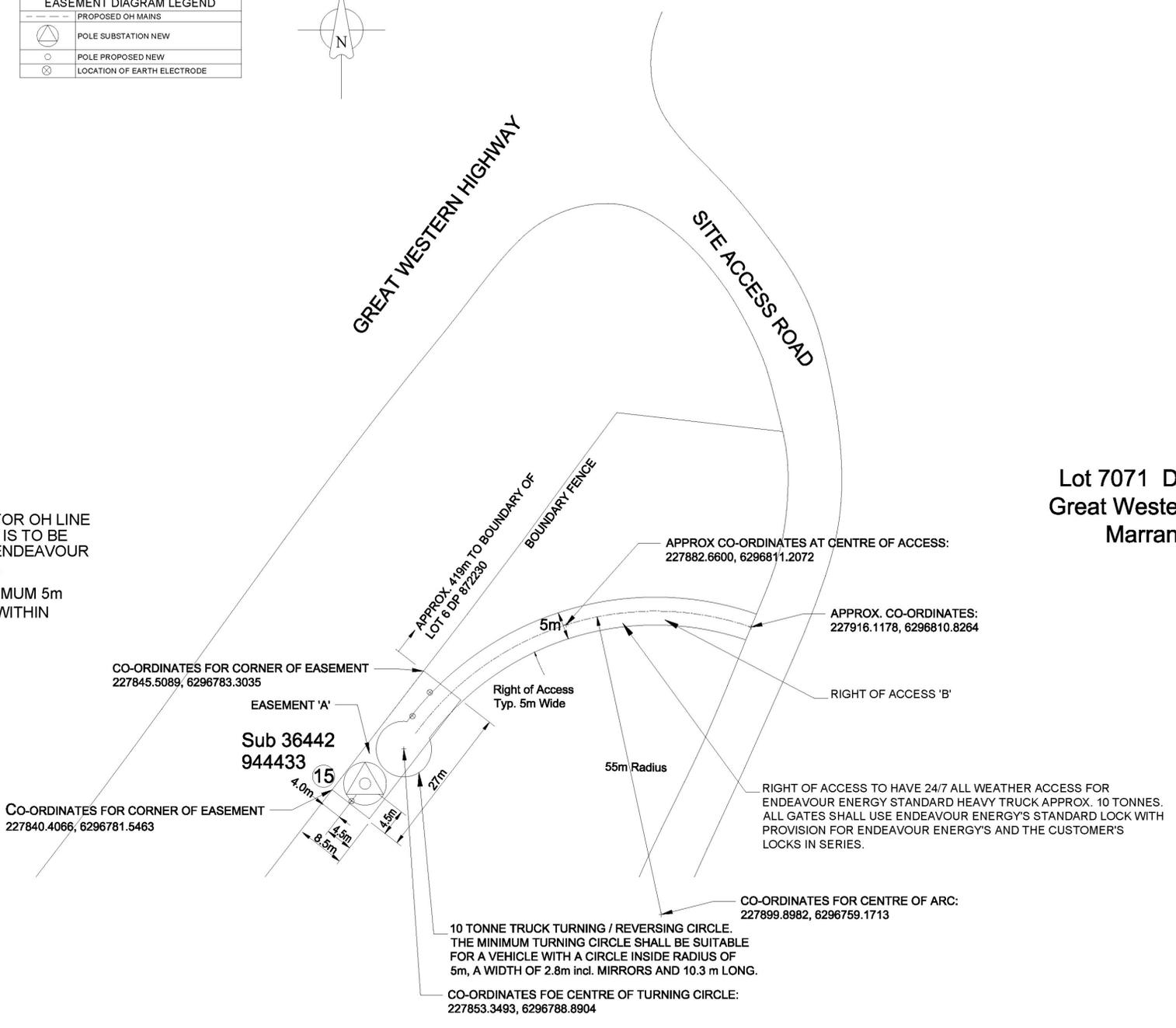
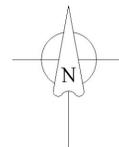
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AMENDMENTS	ORIGINAL	ISSUE	DATE	BY	REASON
	A				
NEE REF No: 00937		THIS DOCUMENT IS SUPPLIED IN CONFIDENCE AND MUST NOT BE REPRODUCED IN ANY PART OR FORM WITHOUT PERMISSION IN WRITING FROM THE OWNERS		© NETWORK ELECTRICAL ENGINEERING PTY. LTD. 2004	
NETWORK ELECTRICAL ENGINEERING PTY. LTD. A.B.N. 61 106 678 214 16 WOODBURN ROAD KURRALOONG NSW 2159 TEL: (02) 4573 1034 FAX: (02) 4573 1472		REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL		CAP / SAMP No. NIL0269	
		OVERHEAD		AM PROJ. No. 2017/01710/001	
		UNDERGROUND		HV SWITCHING YES	
		SUBSTATIONS		UBD/PENGUIN REF COUNTRY MAP 29_06	
				GIS MAP No U10978	
				HV DP DIAGRAM Lithgow Sht 2 AE12	
				LOCAL GOV AREA LITHGOW	
				DRAWN C JW	
				DATE 1/9/2017	
				CHD GR	
				DESIGN GR	
				ORIGINAL SCALE	
				DO NOT SCALE DIMENSIONS IN METRES	
				GREAT WESTERN HIGHWAY MARRANGAROO NIL0269 CONNECTION OF LOAD LOT 7071 DP 1201227	
				A1 507225 A	
				SHEET No 3 OF 4 SHEETS	

EASEMENT & RIGHT OF WAY DIAGRAM

SCALE 1:500

EASEMENT DIAGRAM LEGEND	
---	PROPOSED OH MAINS
	POLE SUBSTATION NEW
	POLE PROPOSED NEW
	LOCATION OF EARTH ELECTRODE



- NOTES:
- A. EASEMENT 'A' 8.5m WIDE FOR OH LINE AND EARTH ELECTRODES IS TO BE CREATED IN FAVOUR OF ENDEAVOUR ENERGY WITHIN LOT 7071.
 - B. RIGHT OF ACCESS 'B' MINIMUM 5m WIDE IS TO BE CREATED WITHIN LOT 7071.

**Lot 7071 DP1201227
Great Western Highway
Marrangaroo**

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Service Provider Number: 2511 Date: 1/9/2017

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SIGNATURE: _____ DATE: _____

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OF: _____

CONTACT No.: _____

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