vgt environmental compliance solutions and laboratories

August 2023

Closure Mine Operation Plan for Lockhart Clay Mine ML 1762 (Act 1992)

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Lockhart Clay Mine Closure Mine Operation Plan	
Name of Mine	Lockhart Clay Mine
MOP Commencement Date	July 2023
MOP Completion Date	At completion of rehabilitation
Mining Authorisations	ML1762 (Act 1992)
Mine Lease Grant Date	13th September 2017
Name of Authorisation Holder	PGH Bricks & Pavers Pty Ltd
Name of Mine Operator (s)	PGH Bricks & Pavers Pty Ltd
Name and Contact Details of the Mine Manager	Mr Joe Gauci, (02) 9826 3964 jgauci@csr.com.au
Name of the Representative of the Authorisation Holder	Mr Joe Gauci, (02) 9826 3964 jgauci@csr.com.au

Revision Table

Date	Version	Author	Reviewed	Approved
17/05/2023	D0	TO	GT/BK/JG	TO
29/06/2023	D1	TO	GT/BK/JG	TO
3/07/2023	F0	TO	GT/BK/JG	TO
4/08/2023	F1	TO	GT/BK/JG	TO

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1 Introduction

1.1 SCOPE

The Lockhart Clay Mine is located at Lot 1 DP 1153001, 270 Krauses Lane, Lockhart, Parish of Galore, County of Urana, see *Figure One.* The site is considered a small mine under the Mining Act, under the recent reforms to the Mining Act. The reforms come into effect from July 2023 and previously approved Mine Operation Plans (MOPs) are no longer valid from the end of June. Under recent guidance from the Regulator, the Forward Program, Rehabilitation Completion Criteria and Rehabilitation Completion Criteria are not required to be submitted to the Regulator for approval until 1st March 2024. In addition, Rehabilitation Management Plans are not required to be prepared for small mines. Thus, there is no approved Rehabilitation Plan for the site.

To commence orderly rehabilitation works on the site, this Report was prepared by VGT Environmental Compliance Solutions Pty Ltd (VGT) to provide PGH, the Regulator and the Landowner and overview of the proposed rehabilitation works. It is referred to as a Closure Mine Operation Plan (CMOP) for ease of reference and acknowledges that the Regulator will not approve this plan, however they may provide comment.

The preparation of this Closure MOP has been undertaken in accordance with the conditions of Development Consent No. 42/90 (Included in Appendix A), Mine Lease No. 1762 (Included in *Appendix B)* and generally in accordance with the ESG3: Mining Operations Plan (MOP) Guidelines (2013) [Ref 1].

The contents of this MOP provide relevant information on the rehabilitation operations for the period of this CMOP. The document also provides environmental risks associated with rehabilitation operations and the management strategies for water dust and noise on the site.

1.2 HISTORY OF OPERATIONS

Extraction of clay commenced in the mine in 1979 on the site at Krause Lane, Lockhart, and a formal development consent 42/09 was issued to Lockhart Shire Council in 1991. The land is privately owned by Mr James Morgan with the site being subject to a commercial lease arrangement enabling ongoing access for clay extraction.

Boral CSR Bricks Pty Ltd applied for a Mine Lease over the site in 2015 to comply with the Mining Act (1992). During the assessment of the application the Department of Industry- Resources and Energy (DRE) requested clarification of the consent boundary in order to ensure that the Mine Lease lies within the consent area. Clarification was required due to apparent ambiguities around the 'boundary' illustrated in the EIS figures and the accompanying text descriptions of works locations.

Liaison with Lockhart Council, to obtain clarification on the consent boundary, resulted in a report entitled *Lockhart Clay Mine- Summary of Works* **[Ref 4]** being submitted to Lockhart City Council in February 2016, by VGT, on behalf of Boral CSR Bricks Pty Ltd. This report provided an update for Council on the site activities and to propose that Council endorse a consent boundary that would align with the proposed Mine Lease Application (MLA) boundary on the site. Following this, Council concluded in a letter dated 6 June 2016 that a modification to Development Consent 42/90 was to be lodged with Council. Along with this modification, an updated rehabilitation and site management plan was requested as supporting documentation. This modification was approved by Council on 27th September 2016 (see *Appendix A*).

Since then, PGH has resolved to close the mine and provides this Closure MOP to describe the proposed rehabilitation works to be undertaken on the site prior to relinquishment of the mining tenement.

1.3 MINE CONTACTS

Table 1. Contact Details

Aspect	Mine Manager:
Name	Joe Gauci
Company	PGH Bricks & Pavers Pty Ltd
Address	59-67 Cecil Road
	Cecil Park
Mobile	0417 683 526
Phone	02 9826 3952
Email	jgauci@csr.com.au

2 Consents, Leases and Licences

2.1 LOCAL COUNCIL

Table 2. Development Approvals

No.	Date Approved	Expires	Notes
Consent 42/90 (modified)	22/1/1991 Modified 27/9/2016	No expiry	Part Portions 54 and 55 of Parish of Galore Shire of Lockhart

2.2 DEPARTMENT OF PLANNING & ENVIRONMENT (DPE)

The details for Mining Lease 1762 (Act 1992), held in the name PGH Bricks & Pavers Pty Ltd are shown in *Table 3*. The conditions are included in *Appendix B.*

Table 3. Mining Authorisations

No.	Act	Company	Granted	Expires	Area (Ha)	Minerals
1762	1992	PGH Bricks & Pavers Pty Ltd	13 September 2017	13 September 2038	11.28	Clay/Shale

2.3 ENVIRONMENTAL PROTECTION AUTHORITY (EPA)

No EPL has been issued for the site.

2.4 WATER NSW

A water licence was granted to the landowner on 11 June 2021 (40WA418367) (see *Appendix D*) for the southern dam under the Murrumbidgee Unregulated River Water Sources 2012 water sharing plan. The dam must have a volume capacity not exceeding 47ML and is approved for domestic and stock watering uses.

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Site Location**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55 EPSG:7855 & Google OpenStreetMap	**Plan By:**	JD
Figure:	**ONE**	**Council:**	Lockhart Shire Council	**Survey:**	Not Applicable	**Project Manager:**	SK
Version/ Date:	V0 08/05/2023	**Tenure:**	Development Consent 42/90 & ML 1762	**Projection:**	GDA2020/MGAA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q001_V0_F1	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Site Layout**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55, NSW Spatial Services	**Plan By:**	SK/JD
Figure:	**TWO**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015, CEH June 2023	**Project Manager:**	TO
Version/ Date:	V1 29/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q002_V1_F2	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

N

0 25 50 75 100 m

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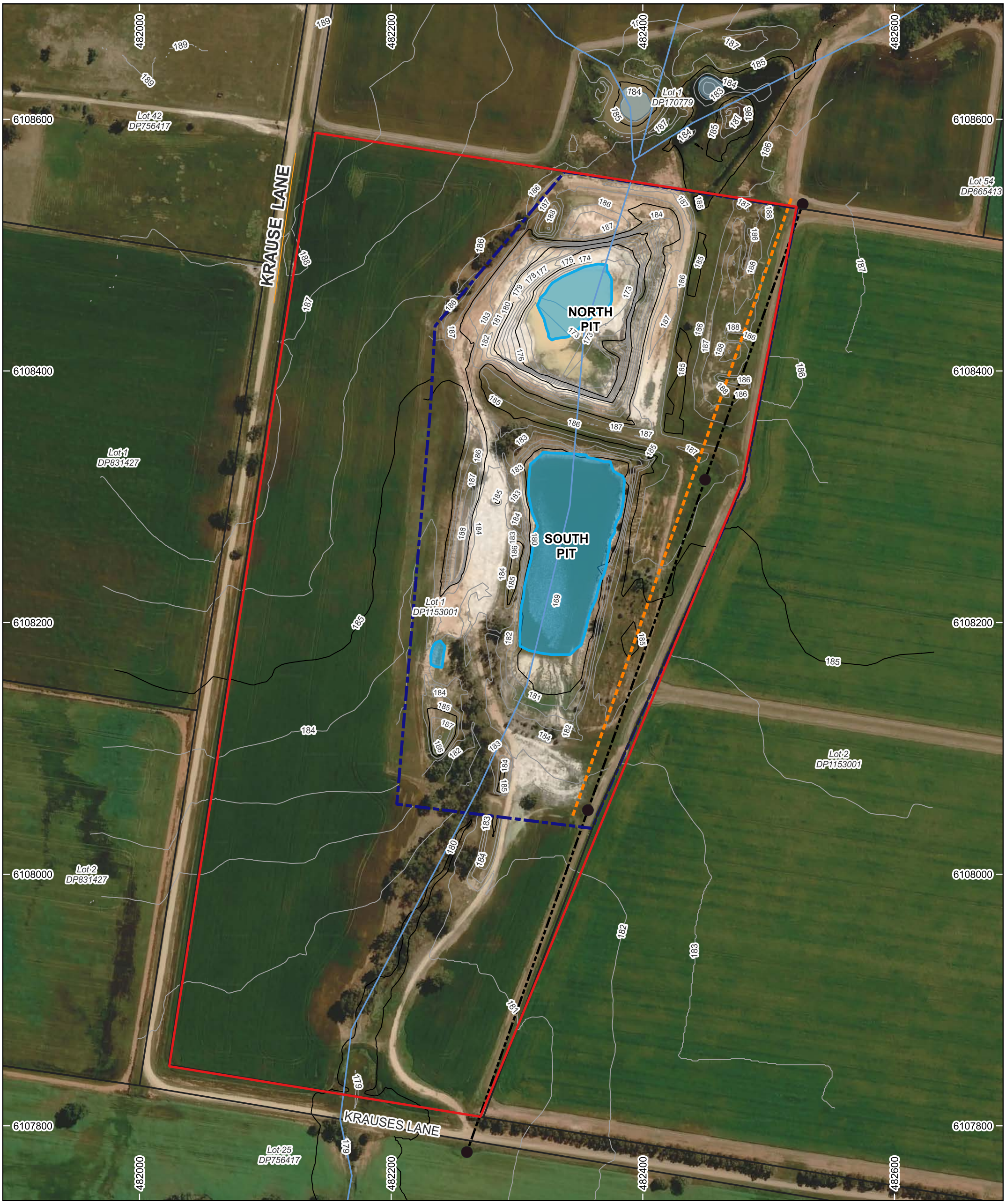

Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- Water Management Area
- River/Creek/Main Drainage Line (NSW Spatial Services)
- 10m Buffer for Power Easement
- 11kv Powerline Easement
- Power Pole
- 1m Contour
- 5m Contour

2.5 LAND OWNERSHIP AND LAND USE

The land is privately owned by Mr James Gordon Morgan. Surrounding land uses are agricultural grazing and cropping.

2.6 STAKEHOLDER CONSULTATION

Stakeholders include Lockhart Shire Council, the landowner and the Regulator.

Consultation regarding rehabilitation is summarised in *Table 4*.

Table 4. Consultation and Reporting

Consultation Details	Where Addressed in this report
Site meeting with Landowner, PGH, VGT and the Regulator on 8/11/2022	-
Notes from the meeting: *'Key principles of rehabilitation process:* • *PGH commit to Jim Morgan, that he will always have access to the water in the south dam via the existing solar pump so he can undertake usual stock and domestic uses throughout the rehabilitation process;* • *Works will be undertaken generally in accordance with the stages presented in Figure FS7 and FS8, see attached. '*	Section 3.3.11, Section 5.2 Figure Six Figure Seven
General items discussed: • *The Mining Lease (ML 1762) i.e., the north and south dams require rehabilitation;* • *The south dam is licensed with Water NSW to hold 47 megalitres of water and is currently at 182mRL;* • *The current discharge point will remain;* • *As described in Stage 2, approximately the upper 4 metres depth of water of the south dam will be temporarily relocated to the north dam so that shaping works can be undertaken in the south dam;* • *As described in Stage 4, the central dam wall will be lowered to 180mRL. Once completed a gabion rock spillway will be installed between north and south dams from 180mRL to 178mRL;* • *At the south dam discharge point, a spillway will be installed. The design height of the spillway will ensure this dam will not exceed the licenced 47 megalitres;* • *As described in Stage 5, stored water in the north dam will be pumped into the south dam. PGH will ensure south dam water quality will not be compromised;* • *Seed all south area works, either by hydro-mulch or direct seeding. Seed mix can consist of pasture, oats, rye type grasses;* • *As described in Stage 6, batter all slopes to fall to the central grassed drain. Construct a rock lined entry waterway. The central drain will be 20 metres wide, guiding water from 185mRL to the gabion rock spillway at 180mRL.'*	Section 3.3 Section 4 Section 5

Further consultation was undertaken with the landowner on the 20th June 2023 where agreement on the schedule of works was signed (see *Appendix F*).

3 Proposed Mining Activities

3.1 PROJECT DESCRIPTION

The site will be undertaking rehabilitation works in the next 12 months and seeking relinquishment of the mine lease.

3.1.1 Rehabilitation Goals

The aim of the rehabilitation is to establish within the excavated area of the mine a sloped wetland area that drains to the existing Southern Dam via a spillway. Within the southern portion of the mine, the slopes will be battered to safe and stable angles whilst the southern dam will be untouched. Overflows from the Southern Dam will be directed back to the natural watercourse in the south of the site. The Southern Dam will be used for stock water with the surrounding slopes to be revegetated with pasture species suitable for grazing. Some over-storey of eucalyptus trees may be established to provide shelter for stock.

3.1.2 Pre-Existing Site Conditions

The site is characterised as having two distinct former extraction areas, the North Pit and South Pit. The southern portion of the mine comprises a mine void of which the Southern Dam occupies. A stockpile material pad exists to the west of the dam, with only a small volume of material remaining. To the north lies the most recently extracted area with resultant void.

The majority of overburden is currently stored on the eastern side of the North and South Pits. Minor amounts form the pit bunds to the north and west of the North Pit as well as along the western side of the Lower East Dam.

Surface water entering the site in the north is diverted around the North Pit and enters the Southern Dam. Surface water is also captured within the North Pit void and is not discharged. The Southern Dam overtops in the south to the natural watercourse. A solar pump is installed on the north-western bank of the Southern Dam and supplies the landowner with domestic and stock water.

Photoplate 1. North Pit Void

Photoplate 2. Southern Dam in the Former South Pit

Photoplate 3. Material Stockpile Area

Photoplate 4. Solar Pump

Photoplate 5. Watercourse to the North of Site

Photoplate 6. Bundwall Between North Pit and Southern Dam

Photoplate 7. Flow Diversion Around the North Pit

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Photoplate 8. Pipe Outlet from North Pit Flow Diversion into Southern Dam

Photoplate 9. Water Flow in Southern Water Course

Photoplate 10. Wooded Area South of the Southern Dam

Photoplate 11. Surrounding Cropping Landuse

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Domains at Commencement of MOP**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55	**Plan By:**	SK/JD
Figure:	**THREE**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015	**Project Manager:**	TO
Version/ Date:	V0 08/05/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q003_V1_F3	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- 10m Buffer for Power Easement
- 11kv Powerline Easement
- Power Pole
- Clean Water Flow (Existing)
- 1m Contour
- 5m Contour

Primary Domain (Operational)

- 1 - Infrastructure Area
- 4 - Overburden Emplacement Area
- 3 - Water Management Area
- 6 - Void (Open Cut Void)

Secondary Domain (Post Mining Land Use)

- D - Rehabilitation Area - Pasture
- I - Final Void

3.2 ASSET REGISTER

Each domain is listed in *Table 5*.

Table 5. Current Operational Domain Assets

Code	Primary Domains (Operational)	Area (Ha)	Asset – Use	Removal Details
1	Infrastructure Area	0.86	Haul roads Stockpile Area	Haul roads would be retained to enable access to the site. Any remaining product stockpiles will be spread prior to revegetation.
3	Water Management Area	0.97	Southern Dam	Dam to be retained in the final landform.
4	Overburden Emplacement Material	2.72	Overburden storage and visual/acoustic bunds	Overburden and topsoil material will be used to batter slope and rehabilitate the site.
5	Stockpiled Material	0.00	No material stockpiles remain on the site.	Not applicable.
6	Void (open cut void)	2.28	Former active pit.	The void will be battered to a minimum of 3 horizontal : 1 vertical slopes.

3.3 ACTIVITIES OVER THE MOP TERM

3.3.1 Exploration

There will be no exploration activities during this closure MOP period.

3.3.2 Construction

Prior to rehabilitation works commencing, pre-works consisting of a clean water diversion to convey the upstream creek around the site to the east and rejoining the downstream drainage south of the Southern Dam, will be undertaken. This will permit rehabilitation works to operate without excessive surface water potentially entering the works areas.

3.3.3 Mining Operations

There will be no mining activities during this closure MOP period.

3.3.4 Rock/Overburden Emplacement

There will be no generation of overburden material due to mining activities. The reuse of stored overburden material in attaining the final landform is discussed in *Section 3.3.11.*

3.3.5 Processing Residues and Tailings

There are no residues or tailings on the site.

3.3.6 Transportation and Traffic Management

Access to the site is gained via the existing established access road which leads to the Mine from Krause Lane. The access road and fenced mine area are both locked between campaigns but the site is accessed by the landowner as required to maintain the pumping and water reticulation system which runs from the onsite dam to the surrounding agricultural property. Krause Lane joins the Lockhart-Collingullie Road at a 'T Intersection' with excellent lines of sight to enable safe turning movements.

3.3.7 Equipment

Table 6. Equipment List

Equipment	Number	Use	Duration/Frequency
Excavator	1	Load Dump trucks. Move material to batter slopes.	Operational hours
Dozer	1	Push material to create final slopes.	Operational hours
Dump trucks	1	Transport to material to final slopes.	Operational hours
Front end loader	1	Load dump trucks and move material to final slopes.	Operational hours
Water truck	1	Dust Suppression	Operational hours- as required.

3.3.8 Waste Management

No waste will be generated during the rehabilitation operations. Vegetation will be reused on site. Any domestic waste generated by contractors will be removed by them at the end of each day.

3.3.9 Decommissioning and Demolition Activities

There is no infrastructure on site to be decommissioned or demolished.

3.3.10 Temporary Stabilisation

There will be no temporary stabilisation during the MOP period as the final landform will be achieved.

3.3.11 Progressive Rehabilitation and Completion

The Landform Establishment and Ecosystem and Landuse Sustainability phases proposed in this MOP will be completed within the next 12 months. The following details the proposed steps to be undertaken to achieve the final landform and are illustrated in *Figure Three* and *.Figure Four.*

Table 7. Proposed Schedule of Works for Rehabilitation

Item	Work Item	Description	Equipment
1	Identify Stockpiles	Using small excavator dig into all piles identify earth soil or burden material.	Small excavator
2	Remove water from north pit	Pump either into south pit or bypass into creek after testing if meets quality criteria (see *Section 4.1.7.4*).	Pump
3	Dry north pit	Wait for sediment to dry.	Sun and wind
4	Secure solar pump pipes	Encase pipes, used to transfer water to the landowner, in steel pipe and secure underground.	Backhoe
5	Install discharge swale in Southern Dam	Dig discharge cause way and place large rocks for trucks to access over.	Backhoe / excavator
6	Move stockpile south of mine lease, adjacent to site entrance.	Dig, load and haul to north pit, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
7	Remove shallow clay pile east of haul road entrance and stockpile west of haul road.	Scrape, pile and load into dump trucks to emplace in the north pit.	Excavator / Dump Trucks / Dozer
8	Remove water from small west pond.	Pump either into creek after testing if meets quality criteria (see *Section 4.1.7.4*).	Pump
9	Dry wet pond.	Wait for sediment to dry.	Sun and wind
10	Move remaining stockpiled material on west boundary.	Dig, load and haul to north pit and fill west pond, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
11	Rehabilitation	Progressively, as works are complete in areas described above for material removal, scrape, gently rip and seed with pasture grasses.	Posi Track
12	West area shaping around Pump	Excavate down to RL182 m shape, grade and tidy area, leave pump in place.	Excavator / Dump Trucks / Dozer

Item	Work Item	Description	Equipment
13	Shape internal dam wall	Excavate down to RL182 m in centre of wall to form a spillway, shape and grade and tidy area.	D10 Dozer, with D6 assist
14	North Pit major fill	Push and shape all burden material into hole.	D10 Dozer, with D6 assist
15	North Pit shaping	Push and shape material to form either a drain (if enough material) as shown in *Figure Three* or small wetland as shown in *Figure Four*.	D6 Dozer, Grader, Excavator, Posi Track
16	Top dress	Place all remaining soil, mulch and vegetation over disturbed areas.	Excavator, Dump Truck and Posi Track
17	Seeding and planting	Spread pasture grasses and some iron bark trees.	Posi Track
18	Water, weed and maintain		

3.3.12 Material Production Schedule During MOP Term

There will be no production of material during the MOP period.

Table 8. Material Production Schedule during the MOP Term

Material	Unit	2022	2023
Stripped topsoil	m^3	Nil	Nil
Rock/Overburden	T	Nil	Nil
Ore	T	Nil	Nil

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Proposed Works 2023 Option One**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55, NSW Spatial Services	**Plan By:**	SK/JD
Figure:	**FOUR**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015, CEH June 2023	**Project Manager:**	TO
Version/ Date:	V1 29/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q004_V1_F4	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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0 25 50 75 m

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14 & 15. North Pit major fill & shaping - Push & shape all burden material into hole & shape material into either a drain or small wetlands.

Drain in North Pit from North to South

13.Shape internal Dam wall - Excavate down to RL182m shape, grade& tidy area.

NORTH PIT

12. West Area shaping around Pump - Excavate down to RL182m shape, grade & tidy, leave Pump in place.

Solar Pump Not to be Touched

South Pit Not to be Touched

SOUTH PIT

5. Discharge Swale - Dig discharge causeway & place large rocks for trucks to acces over.

10. Move Stockpiles on West Boundary - Dig, load & haul to North Pit & fill West Pond, do not disturb existing soil.

6. Move Stockpile South of ML - Dig, load & haul to North Pit. Do not disturb existing soil underneath.

7. Remove shallow clay pile east of the Haul Road & Stockpile west of Haul Road - scrape pile & load into dump truck.

KRAUSE LANE

Lot 42 DP756417

Lot 1 DP831427

Lot 1 DP170779

Lot 1 DP1153001

Lot 2 DP1153001

Item No.	Work Item	Description	Equipment
1	Identify Stockpiles	Using small excavator dig into all piles identify earth soil or burden material	Small excavator
2	Remove water from north pit	Pump either into south pit or by pass into creek after testing ok to do so	Pump
3	Dry north pit	Wait for sediment to dry	Sun and wind
4	Pump Pipe Secure	Encase pipes in steel pipe and secure underground	Back hoe
5	Discharge Swale	Dig discharge cause way and place large rocks for trucks to access over	Backhoe / excavator
6	Move stockpile south of ML	Dig, load and haul to north pit, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
7	Remove shallow clay pile east of haul road and stockpile west of haul road	Scrape, pile and load into dump truck	Excavator / Dump Trucks / Dozer
8	Remove water from small west dam	Pump either into creek after testing ok to do so.	Pump
9	Dry wet pond	Wait for sediment to dry	Sun and wind
10	Move stockpiles on west boundary	Dig, load and haul to north pit and fill west pond, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
11	Rehabilitation	Progressively as works are complete for pile removal, scape gently rip and seed with pasture grasses	Posi Track
12	West area shaping around Pump	Excavate down to RL182 m shape and grade and tidy area, leave pump in place	Excavator / Dump Trucks / Dozer
13	Shape internal dam wall	Excavate down to RL182 m in centre of wall, shape and grade and tidy area,	D10 Dozer, with D6 assist
14	North Pit major fill	Push and shape all burden material into hole	D10 Dozer, with D6 assist
15	North Pit Shaping	Push and shape material into either a drain (if enough material) or small wet lands	D6 Dozer, Grader, Excavator, Posi Track
16	Top Dress	Place all remaining soil, mulch and vegetation over disturbed areas	Excavator dump track and posi
17	Seeding and planting	Spread pasture grasses and some iron bark trees	Posi Track
18	Water, weed and maintain		

Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- 10m Buffer for Power Easement
- 11kv Powerline Easement
- Power Pole
- 1m Contour
- 5m Contour
- Excavate Material
- Stockpile Material to be Used if not Enough Material
- Item 8 & 9
- Item 12 & 13
- Item 14 & 15
- RL182m
- Drain
- Solar Pump
- Spillway
- Rehabilitation with Landowner Agreement

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Proposed Works 2023 Option Two**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55	**Plan By:**	SK/JD
Figure:	**FIVE**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015, CEH June 2023	**Project Manager:**	TO
Version/ Date:	V1 29/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q005_V1_F5	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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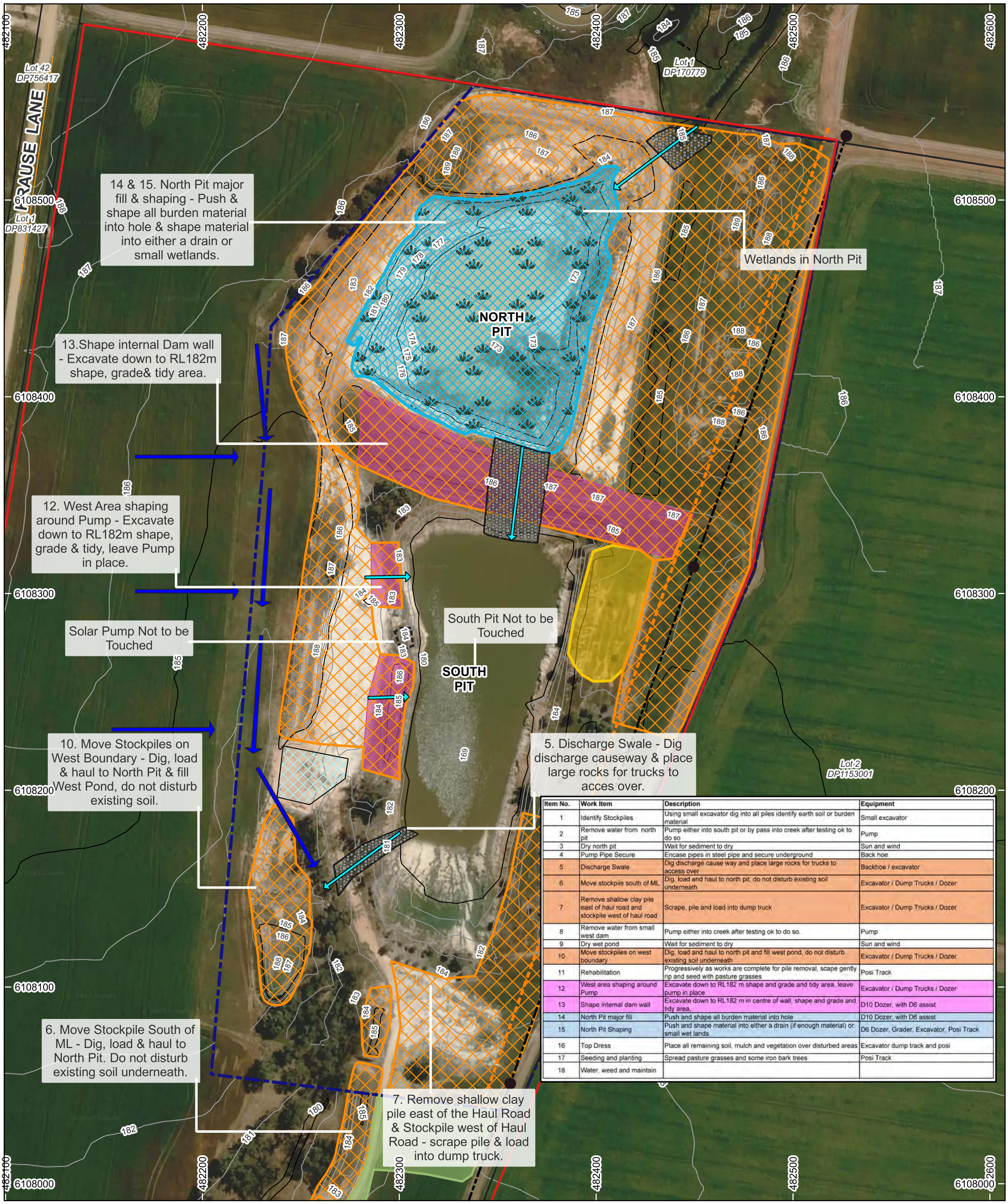

Item No.	Work Item	Description	Equipment
1	Identify Stockpiles	Using small excavator dig into all piles identify earth soil or burden material	Small excavator
2	Remove water from north pit	Pump either into south pit or by pass into creek after testing ok to do so	Pump
3	Dry north pit	Wait for sediment to dry	Sun and wind
4	Pump Pipe Secure	Encase pipes in steel pipe and secure underground	Back hoe
5	Discharge Swale	Dig discharge cause way and place large rocks for trucks to access over	Backhoe / excavator
6	Move stockpile south of ML	Dig, load and haul to north pit, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
7	Remove shallow clay pile east of haul road and stockpile west of haul road	Scrape, pile and load into dump truck	Excavator / Dump Trucks / Dozer
8	Remove water from small west dam	Pump either into creek after testing ok to do so.	Pump
9	Dry wet pond	Wait for sediment to dry	Sun and wind
10	Move stockpiles on west boundary	Dig, load and haul to north pit and fill west pond, do not disturb existing soil underneath	Excavator / Dump Trucks / Dozer
11	Rehabilitation	Progressively as works are complete for pile removal, scape gently rip and seed with pasture grasses	Posi Track
12	West area shaping around Pump	Excavate down to RL182 m shape and grade and tidy area, leave pump in place	Excavator / Dump Trucks / Dozer
13	Shape internal dam wall	Excavate down to RL182 m in centre of wall, shape and grade and tidy area,	D10 Dozer, with D6 assist
14	North Pit major fill	Push and shape all burden material into hole	D10 Dozer, with D6 assist
15	North Pit Shaping	Push and shape material into either a drain (if enough material) or small wet lands	D6 Dozer, Grader, Excavator, Posi Track
16	Top Dress	Place all remaining soil, mulch and vegetation over disturbed areas	Excavator dump track and posi
17	Seeding and planting	Spread pasture grasses and some iron bark trees	Posi Track
18	Water, weed and maintain		

Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- 10m Buffer for Power Easement
- 11kv Powerline Easement
- Power Pole
- 1m Contour
- 5m Contour
- Drain
- Excavate Material
- Stockpile Material to be Used if not Enough Material
- Item 8 & 9
- Item 12 & 13
- Item 14 & 15
- RL182m
- Solar Pump
- Spillway
- Wetland
- Rehabilitation with Landowner Agreement

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Conceptual Final Landform Option One**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55	**Plan By:**	SK/JD
Figure:	**SIX**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015, CEH June 2023, 12D	**Project Manager:**	TO
Version/ Date:	V1 29/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q006_V1_F6	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

N

0 25 50 75 m

vgt environmental compliance solutions and laboratories

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- Power Pole
- Clean Water Flow
- 11kv Powerline Easement
- 10m Buffer for Power Easement
- Spillway
- 1m Contour
- 5m Contour

Secondary Domain (Post Mining Landuse)

- Infrastructure Area (Access Track)
- Water Management Area
- Final Void (Water Filled)
- Rehabilitaton Area - Grassland
- Wetland

Plan of:	**Closure Mine Operation Plan for Lockhart Clay Mine June 2023 - Conceptual Final Landform Option Two**	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55	**Plan By:**	SK/JD
Figure:	**SEVEN**	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015, CEH June 2023, 12D	**Project Manager:**	TO
Version/ Date:	V1 29/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CMOP2023_Q007_V1_F7	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

N

0 25 50 75 m

vgt environmental compliance solutions and laboratories

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- Wetland

4 Environmental Management and Performance

A risk assessment of Environmental and Rehabilitation issues has been undertaken in accordance with standard risk assessment practices outlined in ISO 31000 *Risk Management – Principles and Guidelines*. The Consequence/ Likelihood Matrix has been used with the following scale definitions:

Table 9. Consequence/Likelihood Matrix

			Consequence				
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Severe
Likelihood	E	Almost Certain	IV	III	II	I	I
	D	Likely	IV	III	III	II	I
	C	Possible	V	IV	III	II	II
	B	Unlikely	V	IV	III	III	II
	A	Rare	V	V	IV	III	II

Likelihood Scale

E	Almost Certain	Expected to occur within weeks
D	Likely	Will probably occur, has happened within recent months
C	Possible	Might occur at sometime within next 2-3 months
B	Unlikely	Could occur within 6-12 months although unlikely
A	Rare	Might occur at some time in exceptional circumstances

Consequence

5	Severe	Irreversible long term environmental harm.
4	Major	Prolonged environmental impact with significant remedial measures required.
3	Moderate	Moderate environmental impacts with immediate remedial measures effective.
2	Minor	Minimal environmental harm with minor remediation activities
1	Insignificant	Little or no environmental harm. Remediation not required.

Note: In this document if an issue has been assessed to have a Consequence/ Likelihood rating of V, management procedures have not been developed except where relevant.

Table 10. Site Summary Environmental Risk Assessment

Environmental Risks	Description	Likelihood	Consequence	Risk
Erosion and Sediment Control	Risk of sediment leaving the site	Unlikely	Minor	IV
Flora	Risk of harm to endangered ecological communities	Rare	Minor	V
Fauna	Risk of harm to endangered species	Rare	Minor	V
Air Quality	Risk of harm caused by nuisance dust emissions	Possible	Minor	IV
Surface Water Quality	Risk of harm caused by uncontrolled discharge	Unlikely	Minor	IV
Groundwater	Risk of impact on groundwater	Unlikely	Insignificant	V
Noise	Risk of noise impact on neighbours from operations on the site	Possible	Minor	IV
Trespassing	Risk of vandalism to site and rehabilitation	Rare	Minor	V
Visual Amenity	Risk of impact on local residences	Possible	Insignificant	V
Heritage	Risk of harm to items of aboriginal heritage	Rare	Minor	V

Table 11. Site Summary Rehabilitation Risk Assessment

Environmental Risks	Description	Likelihood	Consequence	Risk
Geology and Geochemistry	Risk of degradation of soil quality i.e. salinity	Unlikely	Minor	IV
Erosion and Sediment Control	Risk of soil loss due to erosion	Possible	Moderate	III
Soil and Overburden Types(s) and Suitability	Risk of growth media be unsuitable for growth of grasses	Possible	Moderate	III
Flora	Risk of weeds impacting on growth of grasses	Possible	Moderate	III
Fauna	Risk of endangered fauna habitat for foraging being impacted by the final landform	Unlikely	Insignificant	V
Fauna	Risk of feral animals impacting on ecological sustainability	Unlikely	Minor	IV
Slopes and Slope Management	Risk of unstable slopes impacting on final landform	Possible	Moderate	III
Surface Water Quantity	Risk of insufficient water for revegetation	Unlikely	Moderate	III
Bushfire	Risk of harm to vegetation, fauna and rehabilitation plantation	Rare	Moderate	IV
Trespassing	Risk of impact on rehabilitation areas by public	Unlikely	Minor	IV

4.1 ENVIRONMENTAL AND REHABILITATION RISK MANAGEMENT

4.1.1 Geology and Geochemistry

The district around the Mine comprises Ordovician meta-sediments overlain by residual soils and Quaternary alluvial deposits. Silurian aged granites are mapped approximately five kilometres to the east of the Mine.

The material being quarried for brickmaking is clay with high kaolinite and muscovite content along with minor quartz. This assemblage suggests that the mine lies within a weathered granite or pegmatite. The surface expression of the deposit is hidden beneath two to three meters of residual soils and alluvium (together 'overburden').

The clay extracted at Lockhart is used to manufacture white bricks at the Albury Brickworks. The basic chemical structure is a hydrous aluminium phyllosilicate.

4.1.2 Erosion and Sediment Control

The erosion and sediment control and water management of the site has been developed to comply with *Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries* in the EIS. Sediment basins are designed for a 90th percentile, 5-day rainfall event assuming a non-sensitive receiving environment.

4.1.2.1 Constraints and Characteristics

Important site physical characteristics are identified in the table below.

Table 12. Constraints and Characteristics

Constraint/Opportunity	Value
IFD:2 year, 6 hour storm	5.68 (from the BOM IFD data)
Slope Gradients	Within the excavation, up to 1H:1V on highwalls and 10% on the pit floor and surrounding slopes. After reshaping, rehabilitated landform from 5H:1V to 3H:1V depending on available material.
Soil Erodibility	0.050 (assumed) High
Calculated Soil Loss	Up to 62 tonnes per Ha/yr on average
Soil Loss Class	1
Soil Hydrological Group	D
Runoff Coefficient (Cv)	0.56
Disturbed Site Area	11.28 ha (Whole Site)

The Soil Hydrological Group for the soil materials is assumed to be D, very high run-off potential. Water moves into and through these soils very slowly when thoroughly wetted. They regularly shed run-off from most rainfall events.

Conservatively, sediment retention basins are designed using the Type D Soils calculations. This includes the sediment storage zone calculation using the estimated soil loss for the site over two months.

The likely soil loss is calculated with the Revised Universal Soil Loss Equation (RUSLE). The values of the other RUSLE factors are: P of 1.3 and the C is assumed to be 1.0 for bare soil. Calculations can be found in *Appendix E.*

4.1.2.2 Management of Soil and Erosion

The control of erosion and sedimentation at the site focusses on source reduction measures. In general, these measures include:

- Reading the Closure Mine Operation Plan (CMOP) and any other plans or written instructions issued in relation to development at the subject site.
- Ensure contractors undertake all soil and water management works as instructed in this specification and constructed following the guidelines stated in the NSW Managing Urban Stormwater (the "Blue Book") and *Managing Urban Stormwater, Soil and Construction, Volume 2E Mines and* Quarries
- Informing all subcontractors of their responsibilities in minimising the potential for soil erosion and pollution to downslope areas.

4.1.2.3 Works Sequence

All works are to be undertaken in the following sequence:

- Install any silt fencing required prior to commencing rehabilitation works.
- Strip vegetation and any topsoil from the overburden stockpile in the west, and vegetation from the topsoil stockpile in the east, and store in the south of the main pit area, away from concentrated flows.
- Rehabilitate lands in exhausted areas with the stored overburden, replace topsoil material, mulched vegetation and revegetate;
- Install barrier fencing to limit access to rehabilitated areas; and
- Ensure management practices are carried out to minimise areas being affected by wind and water erosion.

4.1.2.3.1 Erosion Control Instructions

The soil erosion hazard on the site will be kept as low as practicable by minimising disturbance. Some ways of doing this are outlined in *Table 13.* Rehabilitation will take place within a defined work area. Entry to land not involved directly in the rehabilitation process will be prohibited and will be managed as natural grassland/pasture or woodland as appropriate. Vehicular access to the site will be limited to that essential for extraction or rehabilitation.

Table 13. Limitations to Access

Landuse	Access Limitations	Comments
Rehabilitation Areas	Land disturbances beyond five (preferably two) metres from the edge of the operations are prohibited. Note: rehabilitation of the access track area to the south of the mine lease will be undertaken in agreement with the landowner.	All site workers should clearly recognise these areas and they should be clearly marked — suitable materials include barrier mesh, sediment fencing, etc. The project manager will determine their actual location on site. They can vary in position to conserve existing vegetation best while being considerate of the needs of efficient works activities.
Access Roads	Roads and tracks are limited to a width that are the minimum necessary to allow safe operation of heavy equipment.	
Remaining Lands	Land disturbances are prohibited except for essential management works.	

Rehabilitation means:

Achieving a C-factor (Revised Universal Soil Loss Equation) of less than 0.1 and setting in motion a program that should ensure it will drop permanently, by reducing the risk of erosion by vegetation, paving, armouring, etc. as soon as practicable after extraction activities cease.

It should be noted that the cover factor, C, is the ratio of soil loss from land under specified crop or mulch conditions to the corresponding loss from continuously tilled, bare soil. A C-factor of 1.0 corresponds to that of bare soil.

While C-factors are likely to rise to 1.0 during the work's program, they should not exceed those given in *Table 14* within the specified times.

Table 14. Maximum acceptable C-factors at nominated times during works

Lands	Maximum C-Factor	Remarks
Waterways and other areas subjected to concentrated flows, post construction.	0.05	Applies after ten working days from completion of formation and before they are allowed to carry any concentrated flows. Flows are limited to those indicated in "Blue Book". Foot and vehicular traffic are prohibited in these areas.
Stockpiles, post clearance	0.1	Applies after ten working days from completion of formation.
All lands, including waterways and stockpiles during construction	0.15	Applies after 20 working days of inactivity, even though works might continue later.

Note: *working days* does not include public holidays, weekends or days when work is not possible due to wet weather.

The required C factors can be achieved in the short term (temporary protection for up to six months) with either:

- a suitable soil binder in areas of sheet flow, e.g. topsoil stockpiles; and
- a temporary vegetative or mulch cover.

Any soil binders applied should be employed following the manufacturer's instructions.

A suggested listing of suitable plant species is shown in *Table 15.* Before sowing, additional tests should be undertaken to assess the requirements of ameliorants such as lime to help plant growth.

Table 15. Plant Species for Temporary Cover

Sowing Season	Seed Mix
Autumn/Winter	Oats @ 40kg/Ha Japanese Millet @ 10kg/Ha
Spring/Summer	Oats @ 20kg/Ha Japanese Millet @ 20kg/Ha

While ever the C-factor is higher than 0.1, maintain the lands in a condition that resists removal by wind. This can be achieved by keeping the soil moist (not wet) by sprinkling with water and where practicable, leaving the surface in a cloddy state. Notwithstanding the above, schedule works so that the duration from the conclusion of land shaping to completion of final stabilisation is less than 10 days on slopes steeper than 30 per cent and 20 days on slopes less steep than 30 per cent.

Lands planted recently with grass species will be watered regularly until an effective cover has properly established and plants are growing vigorously. Follow-up seed and fertiliser will be applied as necessary in areas of minor soil

erosion and/or inadequate vegetative protection. Where practicable, foot and vehicular traffic will be kept away from all recently stabilised areas.

Topsoil is to be stripped in a moist condition to avoid pulverisation and dust and topsoil stockpiles are not to exceed 2m in height with a minimum crest width of 2m. They should be seeded with a temporary vegetation cover if stockpiles are to remain longer than 30 days. Stockpiles are to be located at least five metres from areas of likely concentrated or high velocity flows, especially drainage lines and access roads. If necessary, earth banks or drains will be constructed to divert localised run-on. Soil materials are to be replaced in the same order they are removed from the ground. It is particularly important that all subsoils are buried and topsoils remain on the surface at the completion of works.

Earth batters can have maximum gradients of 2(H):1(V) during the works program but will be laid back to lower grades before the rehabilitation program starts.

All waterways, drains, spillways and outlets will be constructed to be stable in accordance with the "Blue Book" for soils with high erodibilities.

4.1.3 Soil and Overburden Types(s) and Suitability

4.1.3.1 General Soil Description

Land in the general vicinity of the subject site is classified as Class II or slightly lower. The pH of the topsoils is slightly acidic to neutral and the sub soil pH is slightly alkaline and the soils can also be considered somewhat saline. Soils are relatively deep sand clay-loams of up to 1m thick which are overlain by heavy clay subsoils. Colour grades from brown to light brown to white in the vicinity of the clay resource.

Soils within the existing mine area are extensively disturbed with the majority of topsoil and subsoil having already been stripped during mining activities and stockpiled within the existing bunds.

4.1.3.2 Topsoils

Topsoil (organic horizon) on the site is generally within the first 10cm of the soil profile. Previously stripped topsoil has been stockpiled in various bunds around the pit and is currently vegetated. Further topsoil may be reclaimed from the revegetated overburden stockpile as the first 10 cm of covering material will be stripped for reuse in rehabilitation. As the rehabilitation activities will be undertaken within a short period of time, stabilisation of any new temporary topsoil stockpiles will be unnecessary.

4.1.3.3 Overburden

The overburden stockpiles will be used to batter the in-pit slopes.

4.1.3.4 Suitability and Emplacement

Final rehabilitation faces will be ripped using a dozer and the overburden material will be keyed into the surface. This will increase water retention and reduce erosion and slumping of the emplaced overburden. The organic topsoil layer will then be placed over the overburden in a similar manner up to a depth of 10cm.

The existing topsoil and overburden are suitable for rehabilitation but may require some amelioration with lime to increase the soil pH, depending on the vegetation species selected. Soil testing would be undertaken prior to permanent revegetation and advice from a suitably qualified specialist would be sought. Soil ameliorants would be added, if recommended by soil testing results, to provide a suitable soil medium for the growth of the targeted species and ecosystems.

Consideration of the erosion potential of the soils would be made in the re-use of the soils in rehabilitation. If overburden or topsoil is unable to be re-used immediately on final faces, temporary stockpiles will be created.

All final landforms should have a coverage factor (C) from the Blue Book of at least 0.05 within 30 days of the completion of works. This is equivalent to a total projected foliage cover greater than or equal to 70%. It is recommended that the slopes on the final batters be broken by diversion banks or similar to reduce erosion i.e. slope lengths shall not exceed 25 metres for a 3H:1V slope.

4.1.3.5 Methods of Propagation

Seeds will be required to be purchased to establish the pasture and certified seeds will be preferential. Consultation with an ecologist will be sought determine the most effective methods for propagating plant species. Tree lots will be established by hand planting tubestock in targeted areas. Plant guards will be installed around the tubestock to protect from weather and grazing. Rehabilitation areas will be watered, as required, via a water cart or temporary irrigation system using water contained within the remaining water bodies, until the vegetation is sufficiently established.

4.1.4 Flora and Fauna

There is a stand of trees in and along the water course in the south. Surrounding the watercourse is an area of agricultural land variously used for cropping, irrigation and pasture. According to the EIS [Ref 1], there are no endangered species known to exist on the site. Stock are prevented from entering the site via rural style fencing.

4.1.5 Slopes and Slope Management

Final landform slopes will be for the most part no greater than 3 horizontal to 1 vertical, with slope lengths generally 25m or less. Slopes greater than 25 metres will be broken by catch drains or similar to reduce erosion impacts. The final landform, in the north pit, will be a gently sloping bowl with either a drain installed or a wetlands area to transfer water from the north of the site to the southern dam. The southern dam will be untouched however the surrounding areas, including bunds will be battered. Revegetation of final slopes will be undertaken as soon as practicable to reduce the risk of erosion effects and possible slope failure.

4.1.6 Air Quality

There are several sources of airborne dust on the Lockhart Clay Mine site. The principal source is earth-moving activities. Dozer, excavator and dump trucks will produce air-borne dust while undertaking rehabilitation activities and by travelling along unsealed internal roads. The use of a water cart during all these activities will minimise impact on the environment. Rehabilitation with vegetation will be established as soon as practicable and will assist with prevention of dust generation.

4.1.7 Surface Water

4.1.7.1 Existing Water Management

The mine intercepts an unnamed water course whose origin lies to the north of the site that would have naturally fed into the Brookong Creek to the south of the site. There are several farm dams within the watercourse upstream of the mine which appear to capture the intermittent flows. No water from the upstream catchments enters the north pit but is diverted to the Southern Dam. The Southern Dam is permitted to overflow into the natural creek line in the south if sufficient rainfall is received.

Incident rainfall collected over the disturbed area in the north is directed to the North Pit sump. Testing of the water in the main dam undertaken for the Mine Lease Application shows that the water is from natural runoff and contains very little salt and low metals and mineralisation. The water is considered ‘soft’ and suitable for agricultural purposes.

A solar pump controller is present on site that feeds header storage tanks located elsewhere on the landowner’s property (outside the mine lease area). This water is currently used for various activities such as irrigation and stock water.

Due to the small catchment of the North Pit, discharge of water from the sump has not been required.

4.1.7.2 Catchments

Consent conditions place no stipulation on the design capacity of the sediment dams. According to best practice however, the *Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries guidelines* has been used in the EIS. Sediment basins are designed for a 90th percentile, 5-day rainfall event assuming a non-sensitive receiving environment for a 20-day management period.

The capacities of the sediment dams/pit sumps and catchments is summarised below.

Table 16. Catchment Volumes

Dam Identification/ Catchment	Catchment Area (Ha)	Sediment Basin Storage (soil) volume (m^3)	Sediment Basin Storage (water) volume (m^3)	Dam Volume Required for 90th percentile, 5-day rainfall event (m^3)
North	4.4	35	724	**759**
South	5.6	36	741	**777**
South West Dam	1.1	9	181	**190**

Table 17. Total Sediment Dam Volumes

Dam Identification/ Catchment	Dam Area (m^2)	Estimated Depth (m)	Estimated Volume (m^3)
North Dam	1,100	1.5	1,650
South Dam	15,400	1.5	23,100
South West Dam	440	2.5	1,100
	Total		**25,850**

As can be seen from the above tables the current in pit dams have more than sufficient capacity for the design storm event.

4.1.7.3 Proposed Works

Water management works are described in Section 3.3.11.

4.1.7.4 Testing and Discharge

Should discharge of the North Pit water to the downstream environment be required, the water will be tested for pH and Total Suspended Solids (TSS). The discharged water should have the following quality limits.

- pH is between 6.5 to 8.5
- TSS is less than or equal to 50mg/L

If the quality limits are not met, the dam will be treated by flocculation and/or pH adjusted until it meets the criteria. Only then will water be discharged from the site.

4.1.8 Noise

There have been no background noise readings taken at this site. Sources of noise during rehabilitation works are the operation of bulldozers, front-end loaders, excavators, and haul trucks.

Background noise levels area assumed to be consistent with rural settings undertaking agricultural activities. Extraction is consistent with rural residential expectations of noise impacts. As mentioned previously the nearest residence is some 700m distant which allows for sufficient attenuation.

4.1.9 Bushfire

The proximity of the site to surrounding bushlands raises the risk of bushfire on the site. Rehabilitation operations themselves will not increase the risk of bushfire, although the increased vegetation of the rehabilitated site will slightly increase the risk of bushfire. The risk of bushfire to the rehabilitated site will be similar to surrounding lands. PGH Bricks employ several measures such as fencing, signage and monitoring to dissuade trespassers from entering the site and deliberately lighting fires. Communication with the Rural Fire Service, emergency services and National Parks and Wildlife Service will be undertaken when necessary to assist them.

4.1.10 Public Safety

In the interest of public safety and reducing the incidence of trespassers, fences and signage have been maintained along the perimeter of the mine site. There is very little risk of trespassing due to the remote rural location.

5 Post Mining Land Use

5.1 REGULATORY REQUIREMENTS

The regulatory requirements specific to land use and rehabilitation of the site are reproduced below.

Table 18. Regulatory Requirements

Authority	Condition No	Requirement
ML1762	2	Rehabilitation- Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.
	3	Mine Operations Plan and Annual Rehabilitation Report a) The leaseholder 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 leaseholder 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 post mining land use and set out a detailed rehabilitation strategy which: i. Identifies area 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 Departments website at www.resources.nsw.gov.au/environment. 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 3e) would be a breach of condition 3a), were necessary to comply with lawful order or direction given under the Environmental Planning and Assessment Act 1979, the Protection for the Environmental Operations Act 1997, the Mine Health and Safety Act 2004/Coal mine health and Safety Act 2002 and Mine health and Safety Regulation 2007/ Cola Mine Health and Safety Regulation 2006 or Work Health and Safety Act 2011; and ii. The Minister has 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 measure 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 Departments website www.resources.nsw.gov.au/environment Note: the Rehabilitation Report replaces the Annual Environmental Management Report.

5.2 POST MINING LAND USE GOAL

5.2.1 Final Landform

The post mining land uses have been defined in the EIS (1990), as:

- *"Most likely… the site will be reinstated to provide a series of water storage facilities. Some excavated areas will be backfilled to eliminate long-term overburden dumps."*
- *"Slopes intended for permanent revegetation will be battered to 3 horizontal: 1 vertical."*
- *"Sedimentation control dams will be backfilled with overburden, topsoiled and sown to pasture".*

The land will be returned to agricultural purposes with water bodies remaining for stock water and irrigation. The slopes will be revegetated with pasture species and some trees indicative of the Flood Plain Transition Woodlands may be planted for stock shelter. The final landform options are shown in *Figure Five* and *Figure Six*.

The remaining Southern Dam will be retained and is currently licenced with the landowner.

5.2.2 Post Mining Land Use

Once the rehabilitation activities have been completed, the site would be returned to the landowner for grazing.

5.2.3 Rehabilitation Objectives

The aim of the rehabilitation is to establish within the excavated area of the mine a series of water bodies to be used for stock water with the surrounding slopes to be revegetated with pasture species suitable for grazing. Some over-storey of eucalyptus trees may be established to provide shelter for stock.

To achieve the nominated post mining land use goal, the rehabilitation activities objectives from the approved MOP [Ref 5] are presented in *Table 20.*

Table 19. Rehabilitation Objectives and Targets

Feature	Objective	Target
Land Use	Provide for a combination of water bodies and sustainable grazing land with some stands of trees.	Rehabilitate mine to provide: • A mixture of grassland and some woodland. • Suitable water bodies for stock grazing and watering. • Retain access road for inspection of water bodies and grazing stock.
Landform	Provide a geotechnical stable landform.	Geotechnical assessment based on site specific review and, if required, computer modelling determines that the retained slopes are not likely to actively erode or 'slip' to an extent requiring earthworks and profiling.
	Provide a non-polluting landform	Water quality monitoring results show that the landform is non-polluting within the meaning of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record total suspended solids <50mg/L of within 10% of 'upstream' levels (whichever is the greater).
Biodiversity	Revegetated areas provide a vegetation community with maintenance requirements no greater than adjoining vegetation not disturbed by mining activities.	Rehabilitation monitoring confirms that the established vegetation communities are self-sustaining.
	Revegetated areas contain species consistent with surrounding vegetation communities.	Rehabilitation monitoring confirms the non-native and non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.
Tenement Relinquishment	Allow for the relinquishment of the mining lease and the return of the security lodged over the Mining Lease within a reasonable time after the end of the mine life.	5 years after final rehabilitation.

6 Rehabilitation Planning and Management

6.1 DOMAIN SELECTION

The site has been divided into Primary Domains (Operational) as listed in *Table 21* and illustrated on *Figure Three* and Secondary Domains (Post Mining Land Use) as listed in *Table 22*. The Domains applicable to this mine are based on the ESG3 MOP Guidelines and are listed in the table below.

Table 20. Operational Domain Codes

Code	Primary Domains (Operational)
1	**Infrastructure Area**
3	**Water Management Area**
4	**Overburden Emplacement Area**
5	**Stockpiled Material**
6	**Active Mining Area (Open cut void)**

Table 21. Post Mining Land Use Domain Codes

Code	Secondary Domains (Post Mining)
A	**Infrastructure**
B	**Water Management Area**
D	**Rehabilitation Area- Pasture**
I	**Final Void**

6.1.1 Primary Domains

6.1.1.1 Domain 1 Infrastructure

This domain includes the haul roads and material stockpile area.

6.1.1.2 Domain 3 Water Management Area

This domain includes the Southern Dam and the North Pit sump and associated infrastructure such as drains.

6.1.1.3 Domain 4 Overburden Emplacement Area

This domain incorporates stockpiles/bunds surrounding the extraction area where overburden and topsoil has been placed.

6.1.1.4 Domain 5 Stockpiled Material

This domain incorporates the material stockpile area located to the west of the Southern Dam.

6.1.1.5 Domain 6 Void (Open Cut Void)

This domain incorporates the pit voids.

6.1.2 Secondary Domains

6.1.2.1 Domain A Infrastructure

This domain incorporates the site access road and haul roads to be retained for future property access.

6.1.2.2 Domain B Water Management Area

This domain incorporates any drains, spillways and wetlands retained in the final landform.

6.1.2.3 Domain D Rehabilitation Area- Pasture

This domain incorporates areas within the mine that were disturbed outside of final water bodies and remaining infrastructure. The pasture will incorporate some tree lots as appropriate, for stock shelter.

6.1.2.4 Domain I Final Void

This domain incorporates the Southern Dam that will remain as a water body in the final landform. The Dam is currently licenced with Water NSW.

6.2 DOMAIN REHABILITATION OBJECTIVES

Rehabilitation objectives for the MOP area are outlined in *Section 5.2.3.*

6.3 REHABILITATION PHASES

Rehabilitation will be completed at the end of this MOP period.

Table 22. Summary of Rehabilitation Phases Proposed and End of the MOP (by Domain)

Domain/ Rehabilitation Phase	Infrastructure/ Infrastructure (1A)	Infrastructure/ Rehabilitation Area- Pasture (1D)	Water Management/ Water Management (3B)	Overburden Emplacement/ Rehabilitation Area- Pasture (4D)	Void/ Final Void (6I)	Void/ Rehabilitation Area- Pasture (6D)
Active Mining Area	✓	✓	✓	✓	✓	✓
Decommissioning	✓	✓	✓	✓	✓	✓
Landform Establishment	✓	✓	✓	✓	✓	✓
Growth Medium Development	✓	✓	✓	✓	✓	✓
Ecosystem and Land Use Establishment	✓	✓	✓	✓	✓	✓
Ecosystem and Land Use Sustainability	✓	✓	✓	✓	✓	✓
Relinquished Lands	✓	✓	✓	✓	✓	✓

6.4 COMPLETION CRITERIA

Completion criteria have been identified and approved in the MOP (VGT 2018). The progress towards the completion criteria is shown below.

Table 23. Rehabilitation Objectives and Completion Criteria

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 1 - Decommissioning					
Domain 1 - Infrastructure					
All infrastructure and services not suitable for the final landuse will be removed.	Services not required for final landuse are disconnected.	Relevant services disconnected by qualified contractors	Not commenced/ Post extraction completion	Not commenced	Report from qualified contractors
	Infrastructure not required for final land use is removed	Relevant infrastructure removed.	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
All roads and hardstand areas to be retained for the final landuse will be reduced in width/size to that suitable for the final landuse.	Roads not required for final landuse are removed.	Roads removed unless specified to be retained	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
	Roads required for final landuse are reduced in width (if required)	Roads reduced in width to that suitable for final land use.	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
	Hardstand areas reduced to a size required for the final landuse	Hardstand areas reduced in size to that suitable for final landuse.	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
Sediment runoff to be contained	Sediment retained in water management structures	Sediment Dams will be designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. All drains will be designed for the 1 in 10 years design storm event. All spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment.	Not commenced/ Post extraction completion	Not commenced	Basins currently meet specifications. Inspection for capacity by mine manager.
Domain free from hazardous materials	No hazardous materials remain	All hazardous material removed	Not commenced/ Post extraction completion	Not commenced	Contamination report prepared by qualified person.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 1 – Decommissioning (continued)					
Domain 3 - Water Management					
Sediment dams to be retained in the final landform are converted to clean water dams.	No sediment laden water enters the remaining clean water dam system.	Dams have been desilted to increase capacity and minimise sediment entrainment in discharged water. The catchment areas for the remaining sediment dams are sufficiently rehabilitated so as to only contain clean water runoff.	Not commenced/ Post extraction completion	Not commenced	Basins currently meet specifications. Inspection for capacity by mine manager.
	Sediment dam discharge due to overtopping does not entrain sediment.	Sediment dams, spillways, energy dissipaters and drains are designed as per 'Blue Book' criteria and do not re-entrain sediment.	Not commenced/ Post extraction completion	Not commenced	
Water discharged from the site is consistent with the baseline ecological, hydrological and geomorphic conditions of the surrounding environment	Water quality monitoring results show that the landform is non-polluting.	Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record pH between 6.5 and 8.5, total suspended solids <50mg/L (or within 10% of 'upstream' levels- whichever is the greater).	Not commenced/ Post extraction completion	Not commenced	Downstream water to be monitored for pH and total suspended solids prior to discharge. NATA laboratory
Domain 4 – Overburden Emplacement Area					
No activities within this domain are required during this phase					
Domain 5 – Stockpiled Material					
All stockpiles will be removed and/or reused in the establishment of the final landform.	No remaining stockpiles	All stockpiles are removed.	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
Domain safe and free from hazardous materials.	No hazardous material remains	All hazardous material removed	Not commenced/ Post extraction completion	Not commenced	Relinquishment inspection and report
Sediment runoff to be contained.	Sediment retained in water management structures	Sediment Dams will be designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. All drains will be designed for the 1 in 10 years design storm event. All spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment.	Not commenced/ Post extraction completion	Not commenced	Basins currently meet specifications. Inspection for capacity by mine manager.
Domain 6 - Open Cut Void					
No activities within this domain are required during this phase					

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 2 - Landform Establishment					
Domain 1 – Infrastructure					
Domain landform is safe, stable and non-polluting, fit for the purpose of the intended final land use	Final landform contours similar to those indicated in the Final Landform Figure and blends into surrounding contours.	Slopes are no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 25m between catch drains for a 3 Horizontal: 1 Vertical batter. Slope lengths shall not exceed 35m between catch drains for a 4 Horizontal: 1 Vertical batter. Slope lengths shall not exceed 80m between catch drains for batters <4 Horizontal: 1 Vertical.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Survey on completion by registered surveyor. Geotechnical assessment report.
	Access roads retained to allow for the agreed landuse	Access Tracks will be reduced and width and maintained.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Geotechnical assessment based on site inspection to confirm that all tracks are safe and align with final landform plan.
	Suitable sediment and erosion controls in place	Sediment Dams will be designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. All drains will be designed for the 1 in 10 years design storm event. All spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Basins will be constructed to meet specifications. Mine Manager and Sediment and Erosion Control Specialist responsible.
Domain 3 - Water Management					
Ensure the final sediment dam/s has been shaped as per the final landform.	Sediment dam/s are sized according to the landowner's requirements and are safe and stable.	Sediment dam/s to be reshaped and designed to meet landowner's future needs. Spillway and dam walls have been designed to engineer's specification for safety and stability (to be determined).	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Basins will be constructed to meet specifications. Mine Manager and Sediment and Erosion Control Specialist responsible.
Domain landform is safe, stable and non-polluting, fit for the purpose of the intended final land use	Suitable sediment and erosion controls in place	All drains will be designed for the 1 in 10-year design storm event and do not re-entrain sediment. All spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	DECC- Managing Urban Stormwater MOP Mine Manager and Sediment and Erosion Control Specialist responsible.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Domain 4 - Overburden Emplacement Area					
All overburden (bundwalls) will be removed and reused in the establishment of the final landform.	No remaining overburden stockpiles or bundwalls	All overburden stockpiles or bundwalls are removed and or incorporated into the final landform.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Relinquishment inspection and report Mine Manager responsible
Domain safe and free from hazardous materials.	No hazardous material remains	All hazardous material removed	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Relinquishment inspection and report Mine Manager responsible
Sediment runoff to be contained	Sediment retained in water management structures	Sediment Dams will be designed to Best Practice according to the 'Blue Book' Criteria for a 5-day 90th percentile storm event. All drains will be designed for the 1 in 10-year design storm event and do not re-entrain sediment. All spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	DECC- Managing Urban Stormwater MOP Mine Manager and Sediment and Erosion Control Specialist responsible.
Domain 5 – Stockpiled Material					
Ensure the landform is safe, stable and non-polluting, fit for the purpose of the intended final land use.	Domain shaped to allow future vegetation establishment.	Slopes are generally no greater than 3m horizontal to 1m vertical where possible or will blend into the surrounding natural slopes. Slope lengths shall not exceed 25m between catch drains for a 3m Horizontal: 1m Vertical batter.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	MOP EIS DECC Managing Urban Stormwater. Geotechnical assessment based on site inspection to confirm that all batters are safe and align with final landform plan.
Ensure landform utilising any remaining stockpiled material is safe, stable and non-polluting, fit for the purpose of the intended final land use.	All remaining stockpiles utilised in final landform.	Slopes are generally no greater than 3m horizontal to 1m vertical where possible or will blend into the surrounding natural slopes. Slope lengths shall not exceed 25m between catch drains for a 3m Horizontal: 1m Vertical batter.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	MOP EIS DECC Managing Urban Stormwater. Geotechnical assessment based on site inspection to confirm that all batters are safe and align with final landform plan.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 2 - Landform Establishment (continued)					
Domain 6 - Open Cut Void					
Domain landform is safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s)	Final landform contours similar to those indicated in the Final Landform Figure and blends into surrounding contours.	Slopes are no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 25m between catch drains for a 3 Horizontal: 1 Vertical batter. Slope lengths shall not exceed 35m between catch drains for a 4 Horizontal: 1 Vertical batter. Slope lengths shall not exceed 80m between catch drains for batters <4 Horizontal: 1 Vertical.	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Survey on completion by registered surveyor. Geotechnical assessment report.
	Remaining voids to be transitioned to Water Management Areas Domain.	Sediment dam/s to be reshaped and designed to meet landowner's future needs. Spillway and dam walls have been designed to engineer's specification for safety and stability (to be determined).	Not commenced/ Post extraction completion	Not commenced/ Post extraction completion	Engineers report. MOP & DECC Managing Urban Stormwater Monitoring conducted by environmental manager, reported by qualified contractors/engineers.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 3 - Growth Medium Development					
Domain A - Infrastructure					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain B - Water Management					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain D - Rehabilitation Area – Grassland Pasture					
Establish soil/growing medium suitable for establishment of pasture.	Compacted surfaces deep ripped along contour.	Photographs of ripped areas	Not commenced/ Post landform establishment	Not commenced	Progress to reported by suitably qualified persons in AEMR or relinquishment report. Mine Manager and Suitable AEMR Consultant responsible.
	Minimum 100mm of topsoil spread unless rehabilitation trials indicate that an alternative thickness is acceptable.	Small ‘test pits’ dug and photographed to show final soil depth, report indicates required thicknesses achieved.	Not commenced/ Post landform establishment	Not commenced	Photographs of test pits reported through AEMR or relinquishment report. Mine Manager and Suitable AEMR Consultant responsible.
	Soil quality comparable to that in undisturbed areas	Analysis of soil samples record parameters suitable for pasture species. Parameters and soil amelioration trigger levels will be determined in consultation with soil expert/laboratory and will be included in future MOPs and ARRs.	Not commenced/ Post landform establishment	Not commenced	Soil analysis report included in AEMR or relinquishment report. Mine Manager, Soil Scientist and Laboratory responsible.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 4 - Ecosystem and Land use Establishment					
Domain A - Infrastructure					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain B - Water Management					
Ensure retained water management structures maintain the desired water quality	Water quality monitoring results show that the retained dams are non-polluting.	Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular, dam water quality monitoring will record pH between 6.5 and 8.5, total suspended solids <50mg/L (or within 10% of 'upstream' levels- whichever is the greater).	Not commenced/ Ongoing	Not commenced	Dam water to be monitored for pH and TSS prior to discharge. Mine Manager and NATA laboratory responsible.
Domain D - Rehabilitation Area – Pasture					
Re-establishment of Pasture with a similar composition to the surrounding farmland.	Pasture species mix applied as recommended by agronomist and landowner.	A target coverage factor of 70% will be subject to further refinement.	Not commenced/ Ongoing	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	Tree stand species established for stock shelter consistent with surrounding remnant forest vegetation (see Section 3.2.5).	Ecological survey determines that the species established are similar to remnant forest vegetation. 5 to 8 seedlings are contained within each tree lot of 15 to 20 metres square.	Not commenced/ Ongoing	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	The rehabilitated area does not constitute an erosion hazard.	Total projected foliage cover is greater than or equal to 70%.	Not commenced/ Ongoing	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	Weeds not preventing revegetation from establishing	Monitoring confirms that after 2 years the non-native/non-target species (weeds) represents less than 20%of projected foliage cover or equivalent to surrounding farmland not disturbed by mining activities.	Not commenced/ Ongoing	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	Grazing by native and domestic fauna not adversely impacting on ecosystem development	Rural fences and gates installed around disturbed area to allow controlled grazing of domestic stock. Feral animal controls will be implemented if required. Monitoring reports indicate the level of grazing is appropriate.	Not commenced/ Ongoing	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 5 - Ecosystem and Land use Sustainability					
Domain A - Infrastructure					
No activities are required during this phase.					
Domain B - Water Management					
No activities required during this phase.					
Domain D - Rehabilitation Area – Pasture					
Re-establishment of pasture with a similar composition to surrounding farmland.	Vegetation self-sustaining.	Monitoring confirms evidence of new growth of pasture species and groundcover equivalent to 70% coverage.	Not commenced/ Relinquishment of tenement	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	Landform is stable	No evidence of major erosion or rilling	Not commenced/ Relinquishment of tenement	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	No further active weed control required	Weed control is required yearly or less.	Not commenced/ Relinquishment of tenement	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.
	Trees stands established for stock shelter are showing progressing towards being self-sustaining	Tree seedlings planted have progressed to a height of at least 1 metre.	Not commenced/ Relinquishment of tenement	Not commenced	Monitoring including photography to be conducted by suitably qualified person and reported annually. Mine Manager and Ecologist responsible.

Objective	Performance Indicator	Completion Criteria	Progress at start of MOP and Expected Completion	Progress to Date	Completion Justification/Source Once Completed
Phase 6 - Relinquishment					
All Domains					
Relinquishment	Demonstrated compliance with all completion criteria	Outlined above	Not commenced/ Relinquishment of tenement	Not commenced	Relinquishment Report to be prepared by suitably qualified person describing compliance with all criteria

7 Rehabilitation Implementation

7.1 STATUS AT MOP COMMENCEMENT

The total Mine Lease Area is 11.28Ha of which the majority of which has been disturbed over the life of the mine.

7.1.1 Primary Domains (Operational)

7.1.1.1 Domain 1: Infrastructure Area

The infrastructure consists of the access tracks and haul roads which are in a fair condition. There is some evidence of erosion within the pit access track.

7.1.1.2 Domain 3: Water Management Areas

Water Management areas, not including water filled voids, comprises drains, spillways, swales, sediment dams and natural water courses on the site. The watercourse to the north of the site flows to the east of the north pit via a well vegetated constructed drainage line into the Southern Dam. Overflows from the Southern Dam cross the access track and meet the natural watercourse in the southwest which is also well vegetated. The discharge point of the Southern dam has eroded due to the recent heavy rainfalls. Erosion gullies have also developed on the Southern Dam inlet.

A smaller dam lies to the southwest of the Southern Dam. The water quality is unknown.

7.1.1.3 Domain 4: Overburden Emplacement Area

Overburden and topsoil are currently emplaced in bunds on the perimeter of the site. Temporary vegetation covers these bunds.

7.1.1.4 Domain 5 Stockpiled Material

There is a small volume of stockpiled material remaining which will be used to batter back slopes.

7.1.1.5 Domain 6: Void (Open Cut)

This domain consists of the current mine void in the North Pit. The North Pit void holds surface water which contains entrained sediment.

7.1.2 Secondary Domains (Post Mining Land Use)

7.1.2.1 Domain A: Infrastructure Area

There are no infrastructure areas that conform to secondary domains at present.

7.1.2.2 Domain B: Water Management Areas

There are no water management areas that conform to secondary domains at present.

7.1.2.3 Domain D: Rehabilitation Area- Pasture

Although temporary vegetation covers former void areas, topsoil and overburden bunds on the site, it will be disturbed on order to obtain the final landform.

7.1.2.4 Domain I: Final Void

The water filled former South Pit void known as the Southern Dam is currently used by the landowner for stock and domestic water supply. Previous testing has determined that the water is suitable for these purposes, and it is licenced with Water NSW. The former void is largely in its post mining land use form. Some works around the perimeter of the dam will be undertaken to make slopes safe and stable.

7.2 PROPOSED REHABILITATION ACTIVITIES DURING THE MOP TERM

Rehabilitation of the site will be completed at the end of the MOP period.

7.2.1 Domain 1 to Domain A

The infrastructure areas encompass the haul and access roads which will be retained in the final landform to allow the landowner access to the site.

7.2.2 Domain 1 and 5 to Domain D

The material stockpile area and roads that are not to be retained in the final landform will be revegetated to pasture as described in *Section 7.2.4.*

7.2.3 Domain 3 to Domain B

Changes to the water management during rehabilitation activities and in the final landform are described in *Section 3.3.11*. The North Pit will be decommissioned and backfilled. Drainage and chutes will be constructed to convey clean water from the neighbouring properties in the north, through the site and into the natural drainage line in the south.

7.2.4 Domain 4 to Domain D

The overburden located in stockpiles and bunds will be utilised to fill voids and batter slopes. The rehabilitation area will be Pasture (Domain D) with tree lots to be planted. Generally, rehabilitation would be undertaken as described below;

- The overburden will be relocated to assist in the filling of voids and batter slopes;
- Any compacted surfaces are deep ripped along the contours;
- Approximately 100mm of topsoil will be spread over the final contours;
- Soils will be treated will ameliorants if required to ensure they are comparable to undisturbed areas. Mulch may be placed over soil.
- Revegetation species mix applied; and
- Revegetation progress will be monitored and maintained as required.

7.2.5 Domain 6 to Domain D

Domain 6 consists of the mine void areas, excluding final water bodies. The rehabilitation area will be Pasture (Domain D).

The key rehabilitation elements are:

- The slopes will be battered back to slopes of at least 3:1 using existing material and revegetated with grasses. Slopes remaining will be safe and stable;
- The final landform will be a gently sloping bowl leading into a water body within the remaining void;
- Any compacted surfaces are deep ripped along the contours;
- A minimum of 100mm of topsoil will be spread over the final contours;
- Soils will be treated will ameliorants if required to ensure they are comparable to undisturbed areas;
- Revegetation species mix applied;
- Vegetation will be established so that at least 70% coverage is achieved; and
- Revegetation progress will be monitored and maintained as required.

7.2.6 Domain 6 to Domain I

This domain comprises the mine voids that will remain water filled voids in the final landform i.e. the Southern Dam.

7.3 SUMMARY OF REHABILITATION AREA DURING THE MOP TERM

Rehabilitation is expected to be complete by the end of the MOP period therefore all Primary Domains will transition to Secondary Domains.

7.3.1 Domain 1- Infrastructure to Domain A- Infrastructure Progress

Table 24. Domain 1 to Domain A Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Infrastructure (1)	Infrastructure(A)	1A	Active	0.1	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	Nil	Nil
			Landuse Sustainability	Nil	Nil
			Relinquished Lands	Nil	0.1
			Total	0.1	0.1

7.3.2 Domain 1 and 5- Infrastructure and Stockpiled Material to Domain D- Pasture Progress

Table 25. Domain 1 & 5 to Domain D Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Infrastructure (1) Stockpiled Material (5)	Rehabilitation Area (Pasture)(D)	1D 5D	Active	0.8	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	Nil	Nil
			Landuse Sustainability	Nil	Nil
			Relinquished Lands	Nil	0.8
			Total	0.8	0.8

7.3.3 Domain 3- Water Management Area to Domain B- Water Management Progress

Table 26. Domain 3 to Domain B Water Management Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Water Management Area (3)	Water Management Area (Storage*) (B)	3B	Active	0.1	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	Nil	Nil
			Landuse Sustainability	Nil	Nil
			Relinquished Lands	Nil	0.3
			Total	0.1	0.3

7.3.4 Domain 4- Overburden Emplacement to Domain D- Pasture Progress

Table 27. Domain 4 Overburden Emplacement to Domain D Pasture Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Overburden Emplacement Area (4)	Rehabilitation Area (Pasture)(D)	4D	Active	2.7	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	Nil	Nil
			Landuse Sustainability	Nil	Nil
			Relinquished Lands	Nil	2.7
			Total	2.7	2.7

7.3.5 Domain 6- Void (Open Cut Void) to Domain D- Pasture Progress

Table 28. Domain 6 Void (Open Cut Void) to Domain D Pasture Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Open Cut Void (6)	Rehabilitation Area (Pasture) (D)	6D	Active	2.3	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	6.1	Nil
			Landuse Sustainability	Nil	Nil
			Relinquished Lands	Nil	8.4
			Total	2.3	8.4

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7.3.6 Domain 6- Void (Open Cut Void) to Domain I- Void Progress

Table 29. Domain 6 Void (Open Cut Void) to Domain I- Void Progress

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area (Ha) at start of MOP	Area (Ha) End of MOP
Open Cut Void (6)	Void (Final Water Body) (I)	6I	Active	Nil	Nil
			Decommissioning	Nil	Nil
			Landform Establishment	Nil	Nil
			Growth Medium Establishment	Nil	Nil
			Ecosystem Establishment	Nil	Nil
			Landuse Sustainability	1.0	Nil
			Relinquished Lands	Nil	1.0
			Total	1.0	1.0

7.4 RELINQUISHMENT PHASE ACHIEVED DURING MOP PERIOD

PGH anticipates that the relinquishment phase will be achieved within the term of the MOP.

8 Rehabilitation Monitoring and Research

8.1 REHABILITATION MONITORING

The success of the rehabilitation activities described in *Section 6* will be monitored by measuring the progress towards the objectives and completion criteria outlined in *Table 24* in *Section 6.4.* Monitoring methods, frequency and responsibility has been included in that table. The progress towards these objectives and criteria will be reported annually in the Annual Rehabilitation Report (ARR).

8.2 USE OF ANALOGUE SITES

Control analogue sites will be identified in consultation with a RR representative and person(s) suitably qualified in flora and landform assessment. It is expected that these sites will be used as a comparison to assist in determining whether the objectives relating to slope stability and vegetation coverage have been achieved. Progress towards identifying these sites will be reported in the ARR.

9 Intervention and Adaptive Management

9.1 THREATS TO REHABILITATION

A summary of hazards or threats identified for the rehabilitation objectives is given below, along with a risk assessment. For risks deemed higher than acceptable (namely I to III in *Table 31*), a Trigger Action Response Plan (TARP) has been developed. A TARP identifies proposed contingency strategies in the event of unexpected variations in rehabilitation outcomes. These risks have been determined on the assumption that procedures and mitigation measures outlined in this report and other standard procedures that could be reasonably expected have been undertaken.

Table 30. Analysis of Rehabilitation Threats

Rehabilitation Threat	Potential Adverse Outcome	Likelihood	Consequence	Risk
Failure to remove infrastructure and services not suitable for the final landuse.	Unable to complete rehabilitation or establish the identified final landuse.	Rare	Insignificant	V
Failure to remove all roads and hardstand areas to be retained for the final landuse and reduce the width/size to that suitable for the final landuse.	Unable to complete rehabilitation or establish the identified final landuse.	Rare	Insignificant	V
Domain is not free from hazardous materials.	Unable to complete rehabilitation or establish the identified final landuse.	Rare	Moderate	IV
Water discharged from the site is not consistent with the baseline ecological, hydrological and geomorphic conditions of the surrounding environment.	The final landform is a source of pollution.	Unlikely	Minor	IV
Final landform does not conform to approved final landform	Unable to complete rehabilitation or establish the identified final landuse.	Possible	Moderate	III
Domain landform is not safe, stable and secure, fit for the purpose of the intended final land use.	Geotechnical instability of the final open cut void.	Unlikely	Moderate	III
Domain landform is not properly protected from erosion.	The final landform is a source of pollution.	Rare	Moderate	IV
	Vegetation is unable to be established due to erosion.	Rare	Major	III
Access tracks to be retained are not retained.	Unable to complete rehabilitation or establish the identified final landuse.	Rare	Insignificant	V

Rehabilitation Threat	Potential Adverse Outcome	Likelihood	Consequence	Risk
Incorrect species established on final landform	Vegetation community does not become established on final landform affecting final land use and ecosystem	Unlikely	Moderate	III
Failure to establish soil/growing medium suitable for establishment of grassland or woodland vegetation community	Insufficient soil available for rehabilitation.	Possible	Moderate	III
	Inadequate soil thickness applied to final landform	Possible	Moderate	III
	Soil not capable of sustaining vegetation community	Possible	Moderate	III
Weed or pest management fails	Weeds and pests become established and require significant resources to manage	Possible	Minor	IV
Vegetation community is not self-sustaining	Final landform requires significantly more management than analogue sites.	Possible	Moderate	III
Vegetation community not receiving adequate rainfall to establish/self-sustain	Failure of vegetation community	Possible	Moderate	III
Public access to open cut void possible	Damage to rehabilitation areas	Possible	Moderate	III

9.2 TRIGGER ACTION RESPONSE PLAN

Table 31. Trigger Action Response Plan

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
1	Final landform does not conform to approved final landform	Stockpiles not removed/used in the establishment of the final landform.	Inventory indicates stockpiles are not removed/reused. Slopes required by the final landform are not obtained due to material deficits.	Stockpile material is to be removed from the site or incorporated into the rehabilitation of the final landform.	Survey plan
		Overburden not used in the establishment of the final landform	Inventory indicates stockpiles are not removed/reused. Slopes required by the final landform are not obtained due to material deficits.	Overburden material is to be removed from the site or incorporated into the rehabilitation of the final landform.	Survey plan
		Slopes too steep to be rehabilitated as planned	Field slope measurements taken during land forming activities indicate slope do not meet the completion criteria.	Slopes to be reduced until all slopes meet approved final landform unless final landform considered stable by geotechnical review and vegetation establishment success meets completion criteria- subject to approval by RR.	Survey plan prepared by surveyor indicates that final slopes meet approved final landform.
2	Domain landform is not safe, stable and fit for the purpose of the intended final land use.	Geotechnical instability of the final open cut void.	Monitoring or final closure geotechnical assessment identities instability/unacceptable movement (actual or potential) in final face of open cut void.	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability Recommendation to be implemented in consultation with the RR.	Geotechnical Report

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
3	Domain landform is not properly protected from erosion.	Vegetation is unable to be established due to erosion.	Projected total foliage cover is less than 70%	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method. If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.	Managing Urban Stormwater 'Blue Book' 2004 CPESC Report

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
		Final landform is a source of pollution.	Surface water monitoring records indicate that water quality levels are outside the completion criteria. Visual inspection indicates that the final landform is the source of unacceptable levels of sedimentation or is actively eroding.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method. If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.	Managing Urban Stormwater 'Blue Book' 2004 CPESC Report

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
4	Incorrect species established on final landform	Vegetation community does not become established on final landform affecting final land use and ecosystem.	Monitoring indicates that endemic species represent less than 80% of the total species number and projected foliage cover.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for divergence of failure of endemic species establishment and recommend actions to ensure that the final vegetation community corresponds as closely as possible to the approved community. Additional actions may include: Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community; Use of Tubestock, seed and mulch mix or other application techniques; Soil amelioration works such as addition of fertiliser; and Additional weed control activities (mechanical and/or chemical).	Ecologist Report

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
5	Failure to establish soil/growing medium suitable for establishment of grassland or woodland vegetation community.	Insufficient soil available for rehabilitation.	Soil inventory prior to rehabilitation (particularly stockpile volumes) indicates a deficit of soil material.	Suitable sources of additional soil material to be identified, including the need for importation of soils from off-site. Investigation into measures that may be implemented to ameliorate other materials to make them suitable for use as a growth medium.	MOP
		Inadequate soil thickness applied to final landform	Test pits following placement of soil material identifies placed soil thickness not consistent with final approved soil thickness	Additional soil material spread on the final landform.	MOP
		Soil not capable of sustaining vegetation community	Topsoil parameters not within the identified criteria (see *Table 23*).	Suitably qualified agronomist or soil scientist engaged to prepare a report including a range of recommendations to ensure that the identified criteria are achieved/soil is suitable for sustaining the vegetation community.	Soil analysis reports and interpretation by qualified specialist.

TARP Ref No	Rehabilitation Threat	Potential Adverse Outcome	Trigger level	Actions to be implemented	Evidence / Reference
6	Vegetation community is not self-sustaining	Final landform requires significantly more management than analogue sites.	Monitoring indicates that: Established vegetation is not replacing itself through successive generations; or Weed growth is increasing above a projected foliage cover of 10%	Suitably qualified ecologist or revegetation expert engaged to assess reasons for additional management requirements and recommend actions to align management required with that of the analogue sites. Additional actions (to be undertaken in targeted areas) may include: Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community; Use of Tubestock, seed and mulch mix or other application techniques; Soil amelioration works such as addition of fertiliser; and Additional weed control activities (mechanical and/or chemical) and/or pest management as required (especially of rabbits).	Ecologist Report
7	Vegetation community not receiving adequate rainfall to establish/self-sustain	Failure of vegetation community	Rainfall below the lowest 10% of records for greater than 3 months	Water cart to be utilised over revegetated areas.	BOM website
8	Public access to open cut void possible	Damage to rehabilitation areas	Monitoring indicates evidence of trespassing and/or damage to rehabilitation areas.	Appropriate fencing, signage and bunding is to be repaired and maintained.	MOP

10 Reporting

The rehabilitation works on the site will be reviewed in the Annual Rehabilitation Report (ARR) to be submitted to the RR until the Mining Lease has been relinquished. These reviews will report on the progress towards objectives and completion criteria as outlined in *Table 24.*. Where an action response has been implemented, details of the action and any results obtained will be included in the ARR.

11 Review and Implementation of the MOP

11.1 REVIEW OF THE MOP

The operations outlined within this document will be reviewed annually. Should activities differ significantly from those outlined, an amended or updated MOP will be submitted and tracked. It should be noted that rehabilitation activities are expected to be completed before the Mining Act reforms for small mines commence in July 2023.

11.2 IMPLEMENTATION

The person responsible for individual monitoring components of the objectives and closure criteria has been included in *Table 24.*. Additional roles and responsibilities are given below.

Table 32. Roles and Responsibilities for MOP Implementation

Role	Responsibility
Mine Manager	Accountable for all operations, outcomes and performance criteria. Ensure that employees are competent through training and awareness programs.
Environmental Officer	Ensure that monitoring and review are implemented as given in *Table 23*. Review monitoring against trigger levels and implement action plans as required.
Site Contractor and all employees	Undertake operations according to the plan. Report any significant deviations immediately to the Mine Manager

12 Calculation of Security Deposit

A new security calculation was prepared during the preparation of the 2018 approved MOP using the Rehabilitation Cost Estimate (RCE) Tool published by the DRE on the 1st of June 2017. The scenario used for the calculation was to mine the south pit as this involved the greatest disturbance.

The following describes the RCE as accepted by the Department of Planning, Infrastructure and Environment (DPIE) in 2018. There have been no changes to the site since that time, and given the imminent rehabilitation of the site, it is proposed that the RCE remain the same and is described below.

12.1 DOMAIN 1: INFRASTRUCTURE

Infrastructure includes the roads and hardstand areas on the site. The access roads and haul road will remain in the final landform to allow the landowner access to the site. The hardstand area will be ripped and rehabilitated using topsoil stored on site. This domain also includes those areas that are currently rehabilitated that would require maintenance.

The security for this domain has been estimated at $2,481.

12.2 DOMAIN 2: TAILINGS AND REJECTS EMPLACEMENT

There are no tailings or rejects generated by this operation therefore the security deposit has been calculated as zero.

12.3 DOMAIN 3: OVERBURDEN AND WASTE ROCK DUMPS

The overburden emplacement areas and bunds remaining at the end of the MOP will be required to fill the remaining voids and battering back slopes. There is approximately 78,000 cubic metres of overburden stored on site that is required to be incorporated into the final landform.

The security for this domain has been estimated at $90,507.

12.4 DOMAIN 4: ACTIVE MINES, VOIDS AND SURFACE DISTURBANCES

Within the void expected at the end of the MOP there will some high walls that will require battering back and reshaping prior to topsoiling and reseeding. The whole void area at the end of the MOP is expected to cover a little over 6Ha. Two water bodies will remain in the final landform and allowance for minor earthworks to make them safe after mining has been included.

The security for this domain has been estimated at $99,994.

12.5 MANAGEMENT ACTIVITIES

This includes allowance for pest management on non-disturbed and rehabilitated areas as well as land management on undisturbed areas. Sundry items rates that include the development of an unplanned closure plan and DPIE tender preparation etc have been reduced due small scale of the project. Mobilisation of equipment rates has not been adjusted due to the distance of the site from suitable contractors.

The security for this domain has been estimated at $70,726.

12.6 CONTINGENCIES, POST CLOSURE ADDITIONAL REPORTING

Contingencies, post closure environmental monitoring, and project management and surveying were estimated to total $79,113.

Therefore, the total Rehabilitation Cost Calculation is estimated to be $342,821

13 References

Ref 1 Bartlett Associates Pty Ltd (1990) Environmental Impact Statement Kaolin Mine Near Lockhart for Boral Bricks (NSW) Pty Ltd

Ref 2 New South Wales Department of Trade & Investment – Resources and Energy (September 2013) ESG3: Mining Operations Plan (MOP) Guidelines

Ref 3 DECC (2004) Managing Urban Stormwater Soils and Construction V1

Ref 4 DECC (2009) Managing Urban Stormwater Soils and Construction V2E Mines and Quarries

Ref 5 VGT Environmental Compliance Solutions Pty Ltd (2018) Mine Operations Plan for Lockhart Clay Mine

Ref 6 VGT Environmental Compliance Solutions Pty Ltd (2016) Rehabilitation and Site Management Plan for Lockhart Clay Mine DA 42/90

Appendix A
Consent Conditions

Lockhart Shire Council

NOTICE OF DETERMINATION OF A MODIFICATION OF A DEVELOPMENT CONSENT

issued under the *Environmental Planning and Assessment Act 1979*, Section 96(2).

YOUR APPLICATION IS APPROVED BY COUNCIL, SUBJECT TO STRICT COMPLIANCE WITH CONDITIONS LISTED BELOW.

DEVELOPMENT CONSENT NO 42/90 - MODIFIED

MODIFICATION APPLICATION

Applicant Name:	Boral CSR Bricks Pty Ltd
Applicant Address:	59-67 Cecil Road CECIL PARK NSW 2178
Owner: **Owners Address:**	Mr James Morgan 'Cooinda' 404 Hollies Road LOCKHART NSW 2656
Land to be developed:	Lot 1 DP1153001 270 Krauses Lane LOCKHART NSW 2656
Zone:	RU1 Primary Production
Proposed Modification:	Alignment of consent boundary and continued use of existing mine for the excavation of clay/shale.

DETERMINATION

Made on:	27 September 2016
Consent to operate from:	27 September 2016
Consent to lapse on:	27 September 2021

Determination: consent granted subject to conditions as originally approved on 22 January 1991 under Development Consent DA42/90, and as follows:

All communications to be addressed to: THE GENERAL MANAGER
65 Green Street, PO Box 21, Lockhart NSW 2656
Telephone: (02) 6920 5305 Facsimile: (02) 6920 5247 Email: mail@lockhart.nsw.gov.au
www.lockhart.nsw.gov.au

1) MINING OPERATIONS PLAN

The applicant must prepare and implement a Mining Operation Plan to the satisfaction of the Department of Industry, Skills and Regional Development. The Mining Operations Plan must:

a. Be prepared in accordance with the Division of Resources and Energy guidelines;
b. Be submitted and approved by the Department of Industry, Skills and Regional Development prior to the commencement of activities;
c. Address all aspects of rehabilitation and mine closure, including post mining land use assessment, rehabilitation objectives, completion criteria and rehabilitation monitoring;
d. Include a final landform design that is consistent with the surrounding topography of the area and considers natural drainage design and relief patterns and principles.
e. Provide a copy of the Plan to Lockhart Shire Council prior to the commencement of activities.

2) SITE MANAGEMENT

In addition to the site operation and management objectives of the Environmental Impact Statement (dated 7 August 1990), the applicant shall install and maintain erosion and sediment control measures until such time that the site is declared rehabilitated, to the satisfaction of Lockhart Shire Council and the NSW Department of Primary Industries – Soil Conservation Service.

SIGNED
on behalf of the consent authority

Signature _____ Date: 27 September 2016
David Webb
Director of Engineering & Environmental Services
For the **GENERAL MANAGER**

Documents Attached:

- Development Consent
- Approved modified plans and other documents as follows:

Project/Plan No.	Title	Prepared by	Date of Issue
	Environmental Impact Statement, Kaolin Slay Mine near Lockhart for Boral Bricks (NSW) Pty Ltd	Bartlett Associates Pty Limited	7 August 1990
2390_BL_CR_R1.doc	Lockhart Clay Mine – Summary of Works for: Lockhart Shire Council	VGT Pty Ltd	29 February 2016
3042_BL_RSMP2016_V3.doc	Rehabilitation and Site Management Plan for: Lockhart Clay Mine DA42/90	VGT Pty Ltd	27 July 2016

RIGHT OF APPEAL

If you are dissatisfied with the decision section 97 of the *Environmental Planning and Assessment Act 1979* gives you the right to appeal to the Land and Environment Court within 12 months after the date on which you receive this notice.

**section 97 of the Environmental Planning and Assessment Act 1979 does not apply to the determination of a development application for State significant development or local designated development that has been the subject of a Commission of Inquiry.*

NOTES ACCOMPANYING DEVELOPMENT CONSENT

(Please read these notes carefully to ensure you are fully conversant with the conditions under which this consent is granted.)

Note 1 *Where the consent is subject to a condition that the consent is not to operate until the applicant satisfies a particular condition the date should not be endorsed until that condition has been satisfied.*

Note 2 *Clause 69A of the Regulation contains additional particulars to be included in a notice of determination where a condition under section 94 of the Environmental Planning and Assessment Act 1979 has been imposed.*

Note 3 *The development consent applies to the land described in the consent notice and does not apply to any other land. It is able to be lawfully used by any person or group who has legal right to make use of the land described;*

Note 4 *Commencement of the land use, work or activity proposed in this consent implies your acceptance of all the conditions imposed by Council. It is therefore important that, prior to proceeding, you satisfy yourself that you are able to comply with any condition imposed;*

Note 5 *Granting of this consent by Council does not relieve any obligation on the part of the applicant or other party to obtain any other approval required under any other Act;*

Note 6 *This consent shall be effective and operate from the date shown on the consent. However, should an appeal be lodged against Council's determination of the application, the consent shall cease to be, or shall not become operative until that appeal is determined;*

Note 7 *For information about the following matters refer to Section 99 of the Environmental Planning & Assessment Act, 1979:*

a) *circumstances in which this consent may lapse; and*

b) *circumstances where Council may require the completion of the development approved under this consent.*

Note 8 *Any person who contravenes this notice of determination of the abovementioned application shall be guilty of a breach of the Environmental Planning & Assessment Act, 1979 and shall be liable to monetary penalty and for a restraining order which may be imposed by the Land and Environment Court;*

Note 9 *Granting of this consent does not confer a right to commence any building or structural work. A formal construction certificate application must be submitted to Council or an appropriate accredited certifier and be approved in a manner consistent with the development consent before any structural work is carried out.*

Note 10 *Council cannot guarantee to undertake any improvements to the roads and/or lanes providing access to this property except at the expense of the applicant.*

Appendix B
Mine Lease Conditions

Instrument of Variation

Mining Lease 1762 (Act 1992)

I, **CORINNE SHIELDS**, **Director Strategic Assessments, Mining Exploration and Geoscience, Department of Regional NSW**, with the delegated authority of the Minister under section 261B and clause 12 of Schedule 1B of the *Mining Act 1992* (the Act), **vary** the conditions of **Mining Lease (ML) 1762 (Act 1992)** as described in **Schedule A**.

The conditions of **ML 1762 (Act 1992)**, as varied, are set out in **Schedule B**.

The variation takes effect on **2 July 2023**.

CORINNE SHIELDS
Director Strategic Assessments
Mining, Exploration and Geoscience
Regional NSW
As delegate for the Minister administering the *Mining Act 1992*
Delegation date: 28 February 2023

Dated: 13 April 2023

Schedule A

Condition		Variation	New Condition
	Definitions	Definitions of 'Department', 'Environment' 'Environmental incident notifications and reports' and 'Harm to the environment' omitted as no longer used.	N/A
1	Notice to Landholders	Condition amended to modernise the wording.	1. Notice to Landholders – see Schedule B
2	Rehabilitation	Condition omitted	N/A
3	Mining Operations Plan and Annual Rehabilitation Report	Condition omitted	N/A
4	Non-Compliance Reporting	Condition omitted	N/A
5	Environmental Incident Report	Condition omitted	N/A
6	Resource Recovery	Condition omitted	N/A
7	Security	Condition amended to modernise the wording. Condition has been re-numbered due to omission of other conditions.	2. Security– see Schedule B
8	Cooperation Agreement	Condition amended to modernise the wording. Condition has been re-numbered due to omission of other conditions.	3. Cooperation Agreement – see Schedule B
N/A		New condition attached	4. Assessable Prospecting Operations– see Schedule B
SPECIAL CONDITIONS			

Nil

Schedule B

Mining Lease Conditions

(Version 1.1 as at February 2022)

Definitions

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

Term	Definition
Act	means the *Mining Act 1992.*
Landholder	for the purposes of these conditions: • does not include a secondary landholder • includes, in the case of exempted areas, the controlling body for the exempted area.
Minister	means the Minister administering the Act.

Note:

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

MINING LEASE CONDITIONS

Standard conditions

See Mining Regulation 2016, Schedule 8A, Part 2.

NOTE TO HOLDERS: The prescribed standard conditions in the Mining Regulation 2016, Schedule 8A, Part 2 apply in addition to the conditions in this Schedule B (but have not been replicated in this mining lease). The conditions imposed by the Mining Regulation 2016 prevail to the extent of any inconsistency with the conditions in this Schedule B.

General conditions

1. Notice to Landholders

(a) Within 90 days from the date of grant or renewal of this mining lease, the lease holder must give each landholder notice in writing:

(i) that this mining lease has been granted or renewed; and

(ii) whether the lease includes the surface.

The notice must include a plan identifying the lease area and each landholder and individual land parcel within the lease area.

(b) If there are ten or more landholders to which notice must be given, the lease holder will be taken to have complied with condition 1(a) if a notice complying with condition 1(a) is published in a newspaper circulating in the region where the lease area is situated.

2. Security

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

The amount of the security deposit to be provided and maintained is **$343,000**.

3. Cooperation Agreement

The lease holder must make every reasonable attempt and be able to demonstrate its attempts to the satisfaction of the Secretary, to enter into a cooperation agreement with the holder(s) of any overlapping authorisations issued under the *Mining Act 1992* and petroleum titles issued under the *Petroleum (Onshore) Act 1991*. The cooperation agreement should address but not be limited to:

- access arrangements
- operational interaction procedures
- dispute resolution
- information exchange
- well location
- timing of drilling

- potential resource extraction conflicts; and
- rehabilitation issues.

4. Assessable Prospecting Operations

(a) The lease holder must not carry out any assessable prospecting operation on land over which this lease has been granted unless:

(i) it is carried out in accordance with any necessary development consent; or

(ii) if development consent is not required, the prior written approval of the Minister has been obtained.

(b) The Minister may require the lease holder to provide such information as required to assist the Minister to consider an application for approval.

(c) An approval granted by the Minister under this condition may be granted subject to terms.

(d) The lease holder must comply with the approval granted to the holder under this condition.

Special conditions

Nil

Exploration Reporting

Note: Exploration Reports (Geological and Geophysical)

The lease holder must lodge reports in accordance with the requirements in section 163C of the *Mining Act 1992* and clauses 59, 60 and 61 of the Mining Regulation 2016 as well as any further requirements issued by the Secretary under clause 62 of the Mining Regulation 2016.

Guidelines for the structure, content and data format requirements for reports are set out in the *Exploration Reporting: A guide for reporting on exploration and prospecting in New South Wales*.

Appendix C
Water Licence

Department of Planning and Environment

NSW GOVERNMENT

399 - 1/14

016 004606C4/399

James Gordon Morgan
Cooinda
404 Hollies Rd
LOCKHART NSW 2656

Our ref: OUT22/16279
Date: 07/10/2022

Customer Reference Number: 756770

Subject: Notification of new metering conditions in the Murrumbidgee Unregulated River Water Sources

Dear Approval / Licence Holder

We wrote to you in May 2022 to provide details about the non-urban metering rules that were introduced in 2018 and are being rolled out in stages until December 2023.

Metering rules

This letter is to notify you that from 1 December 2022, the metering rules apply to water supply works in southern inland NSW surface water sources and groundwater sources.

This means that by 1 December 2022, for water supply works on your approval that are required to have metering equipment, you must:

- have a compliant meter installed, unless an exemption applies
- follow the updated recording and reporting rules.

Updated approval conditions

Your approval conditions have been updated based on the metering rules and include a new metering equipment condition, and related recording and reporting conditions, which apply from 1 December 2022. These new and updated conditions are listed at the end of this letter.

Your updated *Statement of Approval* is enclosed. It includes your new metering conditions, and related recording and reporting conditions. The condition reference number for the new metering conditions all start with 'MR', for example MR6927-00001.

Taking water in contravention of your approval conditions is an offence under the *Water Management Act 2000* and significant penalties may apply.

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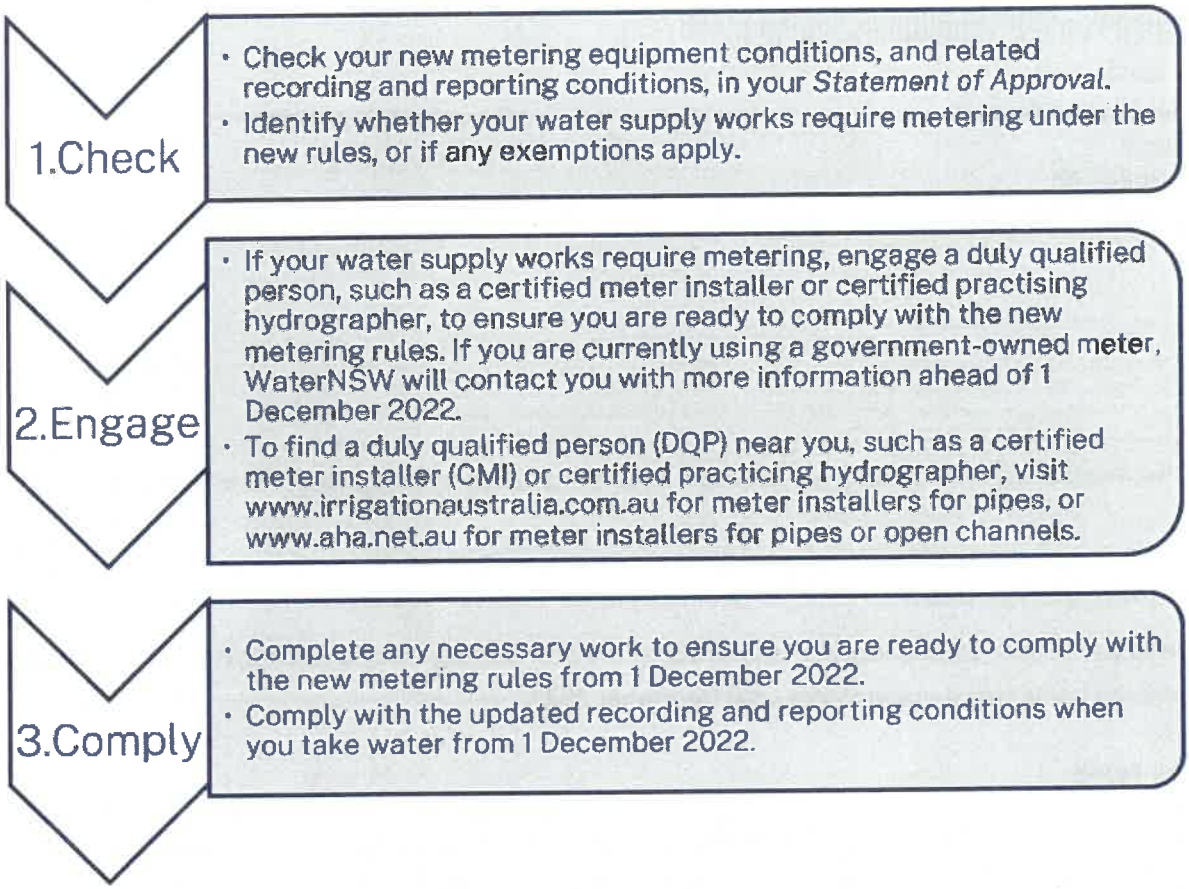
What you need to do



Exemptions

There are a range of exemptions from the metering equipment condition, including exemptions based on the authorised work size and exemptions for inactive works, which may mean your water supply works do not require metering.

Comply with the updated recording and reporting requirements from 1 December 2022

You need to comply with the updated recording and reporting conditions when you take water from 1 December 2022. These requirements vary depending on whether the work requires metering, if compliant metering equipment is installed, and if compliant telemetry is installed.

Water sharing plan conditions in the Murrumbidgee Unregulated River Water Sources

The new metering equipment condition, and related recording and reporting conditions, will replace your existing conditions from the water sharing plan about metering and logbooks.

Your conditions have been updated to include:

1. when the existing metering conditions and logbook conditions from the water sharing plan no longer apply and are replaced by the new conditions.

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Other conditions

Water management works

DS2349-00001 The approval holder must make all reasonable efforts not to allow any used water to discharge, by any means including surface or subsurface drains or pipes, into or onto:
A. any adjoining public or crown road;
B. any other person's land;
C. any Crown land;
D. any river, creek or watercourse or aquifer.

DK0158-00009 The location of the dam(s), shown on a plan held in the relevant licensor, Leeton Office, must not be altered.

DK0184-00086 The dam must have a volume capacity not exceeding 47 ML.

DK0888-00001 Any water supply work authorised by this approval used for the purpose of conveying, diverting or storing water must be constructed or installed to allow free passage of floodwaters flowing into or from a river or lake.

DK0896-00001 The water supply work authorised by this approval must only be used to take water for the purposes of domestic consumption and stock watering.

DK0878-00001 A. The construction, installation or use of the water supply work authorised by this approval must not cause or increase erosion to the channel or bank of the watercourse.
B. If erosion is observed, the area must be stabilised with grass cover, stone pitching or any other material that will prevent any further occurrence of erosion.

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Glossary

cease to take - Cease to take conditions means any condition on this approval, or on the access licence under which water is proposed to be taken, that prohibits the taking of water in a particular circumstance.

domestic consumption - Domestic consumption is the use of water for normal household purposes in domestic premises situated on the land.

licensor - WaterNSW or DPI Water, depending on which organisation administers your licences and/or approvals

logbook - A logbook is a document, electronic or hard copy, that records specific required information.

stock watering - Stock watering is the use of water for stock animals being raised on the land. It does not include the use of water for the raising of stock animals on an intensive commercial basis (kept in feedlots or buildings for all, or a substantial part, of the period during which the stock animals are being raised).

visual inspection or internet search - Visual inspection means to physically inspect the gauge (or reference point) and confirm flow rate or water level by eye. Internet search means to confirm the flow rate or water level at the appropriate gauge by checking the correct website.

water meter - A water meter is a device that measures the volume of water extracted over a known period of time. Examples of a water meter include a mechanical meter, electromagnetic meter, channel meter with mobile phone, or an authorised meter equivalent.

General Notes

All conditions on an approval require compliance. An appeal to the Land and Environment Court against a decision to impose certain conditions on an approval can be made within 28 days after the date the decision is made. Conditions identified with the first letter "D" are those that can be appealed during the appeal period.

The words in this approval have the same meaning as in the *Water Management Act 2000*

Note: The words in this approval have the same meaning as in the WMA

END OF STATEMENT

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WaterNSW

Statement of Approval

Water Management Act 2000

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Approval details

Approval number	40WA418367
Status	CURRENT*
Approval kind	Water Supply Works
Water sharing plan	MURRUMBIDGEE UNREGULATED RIVER WATER SOURCES 2012
Date of effect	11/Jun/2021
Expiry date	10/Jun/2031
Approval holder(s)	Schedule 1
Water supply works	Schedule 2
Conditions	Schedule 3

Contact for service of documents

Name	MORGAN, JAMES GORDON
Address	Cooinda 404 Hollies Rd Lockhart NSW 2656

* **Note: An approval has effect for such period as is specified in the approval, or if the period is extended under section 105, that extended period. If an application for extension of an approval is lodged before the approval expires, the term of the expiring approval is extended until either the date of the final decision on the application, or a date fixed by the Minister for the approval, whichever is the later date. An approval which has expired can be the subject of an application to extend it but it needs to be accompanied by a statutory declaration of the reasons for the delay in making the application. If the Minister accepts these reasons the term of the approval is taken to have been extended, and the application may be dealt with, as if the application had been made before the approval expired.**

It is an offence under the Water Management Act 2000 to breach a term or condition of the approval or to construct and use works to which the approval does not relate. It is also an offence to use works the subject of an approval if the approval has expired, been surrendered or cancelled.

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Schedule 1 - Approval holders

The holders of this approval are:

Approval holder(s)	ACN (if applicable)
JAMES GORDON MORGAN	

Important notice - change of landholder or contact

Please advise the Office in the event of any of the following, as soon as practicable:

- If there is a change in the ownership or occupation of the land benefited by this approval (see Schedule 2). Under the Water Management Act 2000, an approval is typically held by the owner or lawful occupier of the benefited land. Consequently, a change in occupation may cause a change in your legal obligations as an approval holder.*
- If there is a change to the contact person. You will be required to lodge a written statement signed by all the holders.*
- If there is a change to the mailing address for the nominated contact person. This should be done by the contact person in writing.

** An updated Statement of Approval will be issued free of charge*

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Schedule 3 - Conditions

The approval is subject to the following conditions:

Plan conditions

Water sharing plan

Murrumbidgee Unregulated River Water Sources 2012

Take of water

MW0655-00001

Any water supply work authorised by this approval must take water in compliance with the conditions of the access licence under which water is being taken.

Water management works

MW0491-00001

When a water supply work authorised by this approval is to be abandoned or replaced, the approval holder must contact the relevant licensor in writing to verify whether the work must be decommissioned.

The work is to be decommissioned, unless the approval holder receives notice from the Minister not to do so.

Within sixty (60) days of decommissioning, the approval holder must notify the relevant licensor in writing that the work has been decommissioned.

MR6927-00001

A. Under section 101A of the Water Management Act 2000, metering equipment must be installed, used and properly maintained in connection with all water supply works, except those works to which an exemption applies as described in clauses 230, 231, 232 or 233 of the Water Management (General) Regulation 2018.

B. Metering equipment standards are set out in the Water Management (General) Regulation 2018. An approval holder must comply with the standards set out in the Regulation.

Note. More information on how to comply with this condition is available on the Department's website.

Monitoring and recording

MW0482-00001

Where a water meter is installed on a water supply work authorised by this approval, the meter reading must be recorded in the logbook before taking water. This reading must be recorded every time water is to be taken.

This condition ceases to apply to a work on the day that the recording and reporting requirements apply to that work under the Water Management (General) Regulation 2018.

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Schedule 2 - Water supply works

Part A: Authorised water supply works

Subject to the conditions of this approval, in relation to each numbered work in the table, the holders of this approval are authorised to construct and use a water supply work of the type shown at the location specified:

Work 1

Specified work	BYWASH DAM
Specified location	1//1153001 Whole Lot
Management zone (if applicable)	
Water source	URANA WATER SOURCE
Water sharing plan	MURRUMBIDGEE UNREGULATED RIVER WATER SOURCES 2012

MR7739-00002

A. The approval holder must comply with the recording and reporting requirements set out in clause 250 of the Water Management (General) Regulation 2018 from 1 December 2022.

B. This condition does not apply:
i. to works which are subject to the mandatory metering equipment condition under section 101A of the Water Management Act 2000, or
ii. if metering equipment that complies with the metering equipment standards in the Water Management (General) Regulation 2018 is installed and used in relation to the work, and the approval holder complies with the requirements of clause 244, and the requirements of clause 244A or the telemetry specifications set out in the approved data logging and telemetry specifications, so that data regarding water taken is transmitted in accordance with those specifications.

Note. Information about this condition, including the approved form and manner for recording and reporting is available on the Department's website.

MR7738-00002

A. The approval holder must comply with the reporting requirements set out in clause 244A of the Water Management (General) Regulation 2018 from 1 December 2022.

B. This condition does not apply:
i. if telemetry is installed and used in relation to the work used to take water, and that complies with the data logging and telemetry specifications, or
ii. to works to which an exemption from the mandatory metering equipment condition applies as described in clause 231, 232 or 233 of the Water Management (General) Regulation 2018.

Note. Information about this condition, including the approved form and manner for reporting is available on the Department's website.

Reporting

MR7736-00001

A. Under clause 238 of the Water Management (General) Regulation 2018, the approval holder must give a copy of a certificate provided under clause 237(1) and (2) to the Minister within 28 days of receiving the certificate.

B. This condition does not apply to works to which an exemption from the mandatory metering equipment condition applies as described in clauses 230, 231, 232 or 233 of the Water Management (General) Regulation 2018.

Note. More information on how to comply with this condition is available on the Department's website.

MW6983-00021

A. Once the approval holder becomes aware of a breach of any condition on this approval, the approval holder must notify the Minister as soon as practicable.
B. If the initial notification was not in writing, written notice must be provided within seven days of becoming aware of the breach by:
i. email: nrar.enquiries@nrar.nsw.gov.au, or
ii. mail: NSW Department of Planning and Environment - Water, Private Mail Bag, Yanco NSW 2703.

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MW2336-00001

The purpose or purposes for which water is taken, as well as details of the type of crop, area cropped, and dates of planting and harvesting, must be recorded in the logbook each time water is taken.

This condition ceases to apply to a work on the day that the recording and reporting requirements apply to that work under the Water Management (General) Regulation 2018.

MW2337-00001

The following information must be recorded in the logbook for each period of time that water is taken:
A. date, volume of water, start and end time when water was taken as well as the pump capacity per unit of time, and
B. the access licence number under which the water is taken, and
C. the approval number under which the water is taken, and
D. the volume of water taken for domestic consumption and/or stock watering.

This condition ceases to apply to a work on the day that the recording and reporting requirements apply to that work under the Water Management (General) Regulation 2018.

MW7006-00001

A. Before water is taken through the water supply work authorised by this approval, the approval holder must confirm that cease to take conditions do not apply and water may be taken.
B. Where the approval holder is required to keep a logbook, the approval holder must record that confirmation and the means of confirmation (such as visual inspection or internet search) in the logbook.

MW6612-00001

A logbook used to record water take information must be retained for five (5) years from the last date recorded in the logbook.

MR7737-00002

A. The approval holder must comply with the recording and reporting requirements set out in clause 244 of the Water Management (General) Regulation 2018 from 1 December 2022.

B. This condition does not apply to works to which an exemption from the mandatory metering equipment condition applies as described in clause 231, 232 or 233 of the Water Management (General) Regulation 2018.

Note. Information about this condition, including the approved form and manner for recording and reporting is available on the Department's website.

Appendix D
Blue Book Calculations

1. Erosion Hazard and Sediment Basins

Site Name: Lockhart

Site Location:

Precinct/Stage:

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	Whole	North	South	SW			
Total catchment area (ha)	11.28	4.4	4.5	1.1			
Disturbed catchment area (ha)	11.28	4.4	4.5	1.1			

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	D	D	D	D			From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	D	D	D	D			Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5	5	5			See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	90	90	90	90			
x-day, y-percentile rainfall event (mm)	29.4	29.4	29.4	29.4			
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	5.68	5.68	5.68	5.68			

RUSLE Factors

Rainfall erosivity (*R* -factor)	950	950	950	950			Auto-filled from above
Soil erodibility (*K* -factor)	0.05	0.05	0.05	0.05			
Slope length (m)	200	200	200	200			
Slope gradient (%)	3	3	3	3			RUSLE LS factor calculated for a high rill/interrill ratio.
Length/gradient (*LS* -factor)	1.01	1.01	1.01	1.01			
Erosion control practice (*P* -factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C* -factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2	2	2	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.56	0.56	0.56	0.56			See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	62	62	62	62			
Soil Loss Class	1	1	1	1			See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	48	48	48	48			Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	90	35	36	9			See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	1857	724	741	181			See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	1947	759	777	190			

NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required).

Appendix E
Landowner Signed Schedule of Works

Plan of:	Lockhart Closure Plan 2023 - Lockhart Schedule of Works.	**Location:**	Off Krause Lane, Lockhart, NSW	**Source:**	Google Satellite Zone MGA 55	**Plan By:**	SK/JD
Figure:	FS12	**Council:**	Lockhart Shire Council	**Survey:**	Photomapping 03/09/2015	**Project Manager:**	GT
Version/ Date:	V6 20/06/2023	**Tenure:**	Development Consent 42/90, ML 1762	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12391_BL_CP2023_Q012_V6_FS12	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

0 10 20 30 40 50 m

Wetlands in North Pit.

NORTH PIT

SOUTH PIT

Southern Dam not to be touched as owner has it registered with WNSW.

Solar Pump Not to be Touched, as advised by Landowner

South Pit not to be Touched as, advised by Landowner.

Lot 1 DP170779

Lot 1 DP1153001

Signature Approval of Schedule of Works:

Jim Morgan James Morgan

Date: 20/6/2023

Inset

Lot 1 DP1163001

Lot 2 DP1163001

KRAUSES LANE

Lot 25 DP756417

0 25 50 m

Continued on Inset

6108500 6108400 6108300 6108200 6108100 6108000

482200 482300 482400 482500 482600

Legend

- Lot Boundary
- Property Boundary
- Authority Boundary (ML1762)
- Power Pole
- 10m Buffer for Power Easement
- 11kv Powerline Easement
- 1m Contour
- 5m Contour
- Excavate Material
- Stockpile Material to be Used if not Enough Material
- Filled
- Shaped to RL182m
- RL182m
- Clean Water Diversion
- Pit Drainage
- Solar Pump
- Wetlands
- Stabilised Spillway
- Rehabilitation Outside Mining Lease

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Beyond Compliance

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