NSW GOVERNMENT

NSW Resources Regulator

FWP0001294

MULLION CREEK QUARRY FORWARD PROGRAM

Tuesday 19 November 2024 to Thursday 18 November 2027

Contents

Summary

DETAIL	
Mine	Mullion Creek Quarry
Reference	FWP0001294
Forward program commencement date	Tuesday 19 November 2024
Forward program end date	Thursday 18 November 2027
Forward program revision (if applicable)	
Contact	Sinead Kelly
Mining leases	ML 1235 (1973)
Project location	CSR BUILDING PRODUCTS LIMITED
Date of submission	Wednesday 28 February 2024

Important

The department may make the information in your program and any supporting information available for inspection by members of the public, including by publication on its website or by displaying the information at any of its offices. If you consider any part of your program to be confidential, please communicate this to the department via the message function on this submission within the NSW Resources Regulator Portal.

Three-year forecast – surface disturbance activities

Project description

PGH Bricks & Pavers Pty Ltd operates Mullion Creek Clay Mine, an open cut mine located approximately 13km north of Orange and is zoned RU1-Primary Production. No further extraction of clay is proposed for the mining lease. The mine was previously under care and maintenance, and rehabilitation works commenced in 2023 towards final landform. CSR Building Products (trading as PGH Bricks & Pavers Pty Ltd) was granted Development Application DA 2009/153 on 20/06/2010. This is the most recent consent documentation and does not list an expiry date. Consultation with the Landowner on the closure plan was undertaken and an agreement was signed in 2023, prior to commencing rehabilitation of the landform previously under care and maintenance. PGH intends to relinquish the mining lease once the final landform is rehabilitated to the Regulator's and Landowner's specifications.

Description of surface disturbance activities

Exploration activities

No exploration is proposed.

Construction activities

Summary below of recent rehabilitation works: - Removal of vegetation from western overburden stockpile, that had established since the stockpile was constructed. Trees were then carefully removed, stockpiled and some mulched. Any soil developed on top of the stockpile was be carefully moved and stockpiled for later use. - The western stockpile was relocated to the pit slopes and the landform reshaped to create a free draining bowl with slopes no steeper than 4 horizontal : 1 vertical. As part of the reshaping works, the Dam 1, was be drained and filled with overburden. Construction of a temporary sediment pond was undertaken. -Similar to the removal of the western stockpile, trees will then be carefully removed, stockpiled and some mulched after inspection by an ecologist. -A rock drain from the adjoining the eastern neighbour was created, which will feed surface water from the neighbouring eastern catchment into a drain running north to south into Dam 4. -Topsoil was spread on disturbed areas. -Mulched trees and any stockpiled vegetation was spread over final contours to assist with increasing organic matter in growth medium. Indigenous trees may be planted in lots. Native pasture grasses have been sown, with reseeding proposed for more favourable conditions for germination in Autumn 2024.

Mining schedule

Mining development method and sequencing and general mine features.

No further mining is proposed for the site.

Areas identified for emplacements, the sequencing of emplacements, construction, and management.

See construction activities.

Processing infrastructure activities and the location of tailings facilities and schedule for emplacement.

No processing infrastructure activities are present on the site.

Waste disposal and materials handling operations.

No waste will be generated during the rehabilitation operations. Overburden material will be used to batter the pit slopes and backfill Dam 1. Vegetation will be mulched and reused on site. Any domestic waste generated by contractors will be removed by them at the end of each day.

Key production milestones

MATERIAL	UNIT	YEAR 1	YEAR 2	YEAR 3
Stripped topsoil (if applicable)	(m^3)	0	0	0
Rock/overburden	(m^3)	0	0	0
Ore	(Mt)	0	0	0
Reject material[1]	(Mt)	0	0	0
Product	(Mt)	0	0	0

[1] This includes coarse rejects, tailings and any other wastes resulting from beneficiation.

Three-year rehabilitation forecast

Rehabilitation maintenance and corrective actions

Rehabilitation commenced late 2023 and landform establishment is ongoing at the time of this report. Proposed works for Autumn 2024 include the repair of a drain and weed spraying. No other performance issues and/or knowledge gaps have been identified to date. Any updates will be provided within the next ARR.

Rehabilitation schedule

The Landform Establishment and Ecosystem and Landuse Sustainability phases proposed in this FWP will be completed within the next 12 months.

Progressive mining and rehabilitation statistics

Three-yearly forecast cumulative disturbance and rehabilitation progression

	FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
A	**Total surface disturbance footprint**	(ha)	5.86	5.86	5.86
B	**Total active disturbance**	(ha)	0.45	0.45	0.45
P	**Total new area of land proposed for active rehabilitation**	(ha)	5.43	0	0

Attachment 1 – Reporting Definitions

REPORTING CATEGORY		DEFINITION
A	Total disturbance footprint – surface disturbance	All areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to surface disturbance activities. The total disturbance footprint is the sum of the total active disturbance, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use development and rehabilitation completion (see definitions below). Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.
B	Total active disturbance	Includes on-lease exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste rock emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped) and temporary stabilised areas (e.g. areas sown with temporary cover crops for dust mitigation and temporary rehabilitation).
C	Rehabilitation – land preparation	Includes the sum of all disturbed land within a mining lease that have commenced any, or all, of the following phases of rehabilitation – decommissioning, landform establishment and growth medium development. Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.
D	Ecosystem and land use establishment	Includes the area which has been seeded/planted with the target vegetation species for the intended final land use. However, vegetation has not matured to a stage where it can be demonstrated that it will be sustainable for the long term and or require only a maintenance regime consistent with target reference/analogue sites. Typically, rehabilitation areas would be in this phase for at least two years (and usually more) before rehabilitation can be classified as being in the ecosystem and land use development phase. This phase does not apply to infrastructure areas that are being retained as part of final land use for the site.

Attachment 2 – Definitions

WORD	DEFINITION
Active	In the context of rehabilitation, land associated with mining domains is considered 'active' for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
Analogue site	In the context of rehabilitation, an analogue site is a 'reference site' that represents an example of the defining characteristics (such as vegetation composition and structure or agricultural productivity) of the final land use. Characteristics of analogue sites can be assessed to develop the rehabilitation objectives and completion criteria for final land use domains.
Annual rehabilitation report and forward program	As described in the Mining Regulation 2016.
Annual reporting period	As defined in the Mining Regulation 2016.
Closure	A whole-of-mine-life process, which typically culminates in the relinquishment of the mining lease. It includes decommissioning and rehabilitation to achieve the approved final land use(s).
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning Phase of Rehabilitation	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or 'fit for purpose' built infrastructure to be retained for future use(s) following lease relinquishment.

WORD	DEFINITION
Department	The Department of Regional NSW.
Disturbance	See Surface Disturbance.
Disturbance area	An area that has been disturbed and that requires rehabilitation. This may include areas such as on-licence exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (i.e. managed to minimise dust generation and/or erosion).
Domain	An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.
Ecosystem and Land Use Development	This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved rehabilitation objectives and completion criteria. For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile. This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.
Ecosystem and Land Use Establishment	This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform. For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.
Exploration	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

WORD	DEFINITION
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Form and way	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department's website.
Growth Medium Development	This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species. This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.
Habitat	Has the same meaning as that term under the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994* (as relevant).
Indicator	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (i.e. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
Land	As defined in the *Mining Act 1992.*
Landform Establishment	This phase of rehabilitation consists of the processes and activities required to construct the final landform. In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.

WORD	DEFINITION
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mine rehabilitation portal	Means the NSW Resources Regulator's online portal that lease holders must use (via a registered account) to: ■ upload rehabilitation geographical information system (GIS) spatial data ■ develop rehabilitation GIS spatial data (using online tracing functions) ■ generate rehabilitation plans and rehabilitation statistics using the map viewer and Rehabilitation Key Performance Indicator functionalities. Data submitted to the mine rehabilitation portal is collated in a centralised geodatabase for use by the NSW Resources Regulator to regulate rehabilitation performance of lease holders.
Mining area	As defined in the *Mining Act 1992*.
Mining domain	A land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
Mining land	As defined in the *Mining Act 1992.*
Native vegetation	Has the same meaning as that term under section 60B of the *Local Land Services Act 2013.*
Overburden	Material overlying coal or a mineral deposit.
Performance indicator	An attribute of the biophysical environment (for example pH, slope, topsoil depth, biomass) that can be used to demonstrate achievement of a rehabilitation objective. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion, that is, a defined end point. It may be aligned to an established protocol and used to evaluate changes in a system.

WORD	DEFINITION
Phases of rehabilitation	The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are: ■ active mining ■ decommissioning ■ landform Establishment ■ growth medium development ■ ecosystem and land use establishment ■ ecosystem and land use development.
Progressive rehabilitation	The progress of rehabilitation towards achieving the approved rehabilitation completion criteria. This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.
Rehabilitation Completion	The final phase of rehabilitation when a rehabilitation area has achieved the approved rehabilitation objectives and rehabilitation completion criteria for the final land use. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that the relevant rehabilitation obligations have been fulfilled following submission of *Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate* application by the lease holder.
Rehabilitation Completion criteria	As defined in the Mining Regulation 2016.
Rehabilitation cost estimate	As defined in the Mining Regulation 2016.
Rehabilitation management plan	As defined in the Mining Regulation 2016.
Rehabilitation objectives	As defined in the Mining Regulation 2016.
Rehabilitation risk assessment	As defined in the Mining Regulation 2016.
Rehabilitation schedule	The defined timeframes for progressive rehabilitation set out in the forward program.

WORD	DEFINITION
Relevant stakeholders	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes: ■ the relevant development consent authority ■ the local council ■ the relevant landholder(s) ■ community consultative committee (if required under the development consent) or equivalent consultative group ■ affected land holder(s) ■ government agencies relevant to the final land use ■ affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities) ■ local Aboriginal communities, and ■ any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
Secretary	The Secretary of the Department.
Security deposit	An amount that a mining lease holder is required to provide and maintain under a mining lease condition, to secure funding for the fulfilment of obligations under the lease (including obligations that may arise in the future).
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
Tailings	A combination of the fine-grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water[2].
Waste	Has the same meaning as that term under the *Protection of the Environment Operations Act 1997*.

[2] Commonwealth of Australia (DITR), 2007. *Tailings Management*.

Site Registration

Date April 2024

Complete the following fields prior to calculating the Security Deposit.

Mine Name:	Mullion Creek		
Lease(s):	ML1235		
Title Holder:	CSR Building Products Limited		
Mine Operator:	PGH Bricks & Pavers Pty Ltd		
Term of RCE:	Until end of Forward Program 18/11/2027		
Current Security:	$133,500	**Date of last Security Deposit review**	5/12/2014
Mine Contact:	Joe Gauci		
Position:	National Raw Materials Manager		
Address:	59-67 Cecil Road Cecil Park, NSW, 2178		
Phone:	0417 683 526	**Email:**	jgauci@csr.com.au

Site Description

The following site specific information is requested to provide background information in the context of calculating the Security Deposit.

Summary of Mine Activities

Total annual production (tonnes):	0
Mine lease area (ha):	25.78
Area of extraction (ha):	0.7
Area of disturbance (ha):	5.86
Rehabilitation in progress (ha):	1.2
Rehabilitation complete (ha): Achieved ecosystem sustainability	0
Forward Program/MOP Utilised: Reference no. version and date	FWP0001294
Forward Program/MOP Plan Utilised: Reference Plan no. version and date	1
	2
☑ Plan(s) attached	3

NOTE:
Ensure rehabilitation cost estimation reflects all environmental issues affecting the lease. Contingencies should be allocated where costs have not been incorporated elswhere in the estimation.

Environmental Sensitivities

Surrounding land use (tick all that apply):

- ☑ Cropping
- ☑ Pasture
- ☑ Forest
- ☐ Undisturbed habitat
- ☐ Urban

Environmental Issues affecting site (tick all that apply)

- ☐ Threatened flora
- ☐ Threatened fauna
- ☐ Cultural heritage items
- ☐ Natural heritage features
- ☐ Mine subsidence
- ☐ Surface water pollution
- ☐ Ground water pollution
- ☐ Hydrocarbon contamination
- ☐ Methane drainage/venting
- ☐ Spontaneous combustion
- ☐ Acid Mine Drainage
- ☐ Within drinking water catchment
- ☐ Other (describe below)

Open Cut Summary Rehabilitation Cost Estimation

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

Mine Name:	Mullion Creek
Lease(s):	ML1235
Authorisation Owner:	CSR Building Products Limited
Mine Operator:	PGH Bricks & Pavers Pty Ltd
Term of RCE:	Until end of Forward Program 18/11/2027
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Mine Contact:	Joe Gauci
Position:	National Raw Materials Manager
Address:	59-67 Cecil Road Cecil Park, NSW, 2178
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Email:	jgauci@csr.com.au

Domain		Security Deposit
Domain 1: Infrastructure		$39,896
Domain 2: Tailings & Rejects		
Domain 3: Overburden & Waste		$23,375
Domain 4: Active Mine & Voids		$20,278
Domain 5: Management Activities		$15,056
Subtotal (Domains and Sundry Items)		**$98,604**
Contingency	**10%**	$9,860
Post Closure Environmental Monitoring	**10%**	$9,860
Project Management and Surveying	**10%**	$9,860
Total Security Deposit for the Mining Project (excl. of GST)		**$128,186**

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

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

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

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

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

Joe Gauci
Company Respresentative's Name

09/04/2024
Date

National Raw Materials Manager
Company Representative's Role / Responsibility

Signature

Open Cut Operations

Domain 1a: Infrastructure

Total Cost for Infrastructure Domain $39,896

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

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

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
						Termination of Services and Demolition Works Subtotal	**$0**		
						Rail Infrastructure Subtotal	**$0**		
						Contaminated Materials Subtotal	**$0**		
						Vents, Shafts and Boreholes Subtotal	**$0**		
						Roads and Tracks Subtotal	**$0**		
Earthworks / Structural Works (Landform Establishment)	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	**Y**	1.15	ha	**$1,130.00**		**$1,300**		Undertaken using D10 dozer and 16M grader.
						Earthworks / Structural Works (Landform Establishment) Subtotal	**$1,300**		
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)	Source, cart and spread growth media - haul distance <1 km	**Y**	11500	m3	**$3.26**		**$37,447**	**< =1km**	Undertaken with 623 scraper and 14 M grader.
	Spoil amelioration (adding lime / gypsum etc.)	**Y**	1.15	ha	**$1,000.00**		**$1,150**		Assumes 2.5 t / ha as an average application rate.
						Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal	**$38,597**		
						Water Management Subtotal	**$0**		
						Maintenance of Rehabilitated Areas Subtotal	**$0**		
						Additional Items Subtotal	**$0**		
						Total Cost for Infrastructure Domain	**$39,896**		

Open Cut Operations

Domain 2a: Tailings & Rejects

Total Cost for Tailings & Rejects Domain $0

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

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

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Contaminated Materials Subtotal							$0		
Earthworks / Structural Works (Landform Establishment) Subtotal							$0		
Earthworks / Structural Works (Landform Establishment) Subtotal							$0		
Mine Waste Subtotal							$0		
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal							$0		
Water Management Subtotal							$0		
Maintenance of Rehabilitated Areas Subtotal							$0		
Additional Items Subtotal							$0		
Total Cost for Tailings & Rejects Domain							**$0**		

Open Cut Operations

Domain 3a: Overburden & Waste

Total Cost for Overburden & Waste Domain $23,375

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

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

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
						Contaminated Materials Subtotal	**$0**		
						Roads and Tracks Subtotal	**$0**		
Earthworks / Structural Works (Landform Establishment)	Minor reshaping and pushing	**Y**	0.75	ha	**$3,900**		**$2,925**		D10 Dozer @ $400 per hour and 16 H grader @ $230 per hour (50% utilisation).
	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	**Y**	0.75	ha	**$1,130.00**		**$848**		Undertaken using D10 dozer and 16M grader.
						Earthworks / Structural Works (Landform Establishment) Subtotal	**$3,773**		
						Mine Waste Subtotal	**$0**		
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)	Source, cart and spread growth media - haul distance <1 km	**Y**	2350	m3	**$3.26**		**$7,652**	**< =1km**	Undertaken with 623 scraper and 14 M grader.
	Direct seeding / fertiliser (tree or native grass species)	**Y**	0.75	ha	**$4,135**		**$3,101**		Includes treating, weighing, mixing with fertiliser + spreading by tractor or helicopter (aerial seeding).
	Single application of fertiliser (pasture)	**Y**	0.75	ha	**$420.00**		**$315**		Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	**Y**	0.24	ha	**$1,000**		**$240**		Assumes 2.5 t / ha as an average application rate.
						Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal	**$11,308**		
Water Management	Clean water dams to be retained after decommissioning – make safe and minor earthworks	**Y**	2	allow	**$2,500**		**$5,000**		Provisional sum for earthworks and revegetation required to rehabilitate dam batters etc suitable for re-use by an alternate land-user - D6 Dozer (or similar) @ ~$200 per hour and pasture grass.
						Water Management Subtotal	**$5,000**		
Maintenance of Rehabilitated Areas	Maintenance of areas that have been shaped and seeded and revegetation has been 'successful'	**Y**	1.55	ha	**$925**		**$1,434**		Rehabilitation maintenance might include re-seeding, watering, fertilising, minor re-shaping, erosion control, inspections/audits - does not include major repair works.
	Existing rehabilitation repair - minor	**Y**	1.55	ha	**$1,200**		**$1,860**		Areas requiring minor repair - rills, minor growth media replacement.
						Maintenance of Rehabilitated Areas Subtotal	**$3,294**		
						Additional Items Subtotal	**$0**		
Total Cost for Overburden & Waste Domain							**$23,375**		

Open Cut Operations

Domain 4a: Active Mine & Voids

Total Cost for Active Mine & Voids Domain $20,278

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

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

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
						Open Cut Subtotal	**$0**		
Earthworks / Structural Works (Landform Establishment)	Trim, rock rake & deep rip (includes levelling / landscaping and rip in 1 direction)	**Y**	0.55	ha	**$1,130.00**		**$622**		Undertaken using D10 dozer and 16M grader.
						Earthworks / Structural Works (Landform Establishment) Subtotal	**$622**		
Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment)	Source, cart and spread growth media - haul distance <1 km	**Y**	5480	m3	**$3.26**		**$17,844**	**< =1km**	Undertaken with 623 scraper and 14 M grader.
	Direct seeding / fertiliser (pasture grass species)	**Y**	0.55	ha	**$1,875**		**$1,031**		Includes treating, weighing, mixing with fertiliser + spreading by tractor or helicopter (aerial seeding).
	Single application of fertiliser (pasture)	**Y**	0.55	ha	**$420.00**		**$231**		Assumes 250 kg / ha. These rates have fluctuated over the last few years however in light of current conditions (lower fuel prices, reduced demand etc) this is a suitable standard rate.
	Spoil amelioration (adding lime / gypsum etc.)	**Y**	0.55	ha	**$1,000.00**		**$550**		Assumes 2.5 t / ha as an average application rate.
						Land Preparation and Revegetation (Growth Media Development and Ecosystem Establishment) Subtotal	**$19,656**		
						Water Management Subtotal	**$0**		
						Maintenance of Rehabilitated Areas Subtotal	**$0**		
						Additional Items Subtotal	**$0**		
						Total Cost for Active Mine & Voids Domain	**$20,278**		

Open Cut Operations

Domain 5a: Management Activities

Total Cost for Management Activities $15,056

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

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

Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate	Alternative Unit Rate	Total Cost	Basis for Costs Estimation and Additional Relevant Information	Description / Notes:
Water Management	On-site treatment of contaminated water due to high salt (includes removal of metals etc, brine disposal and cost of mobile water treatment unit)	**N**		ML	**$3,600**				Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
	On-site treatment of contaminated water due to low pH (incudes removal of metals etc, neutralisation treatments and cost of mobile water treatment unit	**N**		ML	**$1,500**				Rate can fluctuate depending on treatment type however this is a suitable standard rate for current programs at mining operations.
						Water Management Subtotal	**$0**		
Creek Diversions	Repairs and/or stabilisation of new or compromised water course diversion	**N**		m	**$2,500**				Assumes material is suitable for revegetating and has a reasonable chance of stabilising.
	Long term maintenance of water course diversion – Channel constructed through backfilled material	**N**		m	**$1,500**				Assumes maintenance has been kept up and significant works are not required.
	Long term maintenance of water course diversion – Channel constructed through competent material	**N**		m	**$750.00**				Assumes maintenance has been kept up and significant works are not required.
	Installation of rock armouring	**N**		m2	**$6.00**				Assumes competent material is locally available - multiply costs by 2 for sourcing and transporting from offsite location.
						Creek Diversions Subtotal	**$0**		
Maintenance of Rehabilitated Areas	Pest management on buffer lands, non-disturbed, and rehabilitated areas	**Y**	21.92	ha	**$150.00**		**$3,288**		Feral animal baiting programs if required and waste materials required to be removed.
	Land management of undisturbed areas (rehabilitation, weeds, ferals, erosion and sediment control works)	**Y**	21.92	ha	**$400.00**		**$8,768**		Undisturbed areas within the lease boundary that require land management activities.
						Maintenance of Rehabilitated Areas Subtotal	**$12,056**		
Heritage Items	The restoration and care and maintenance of items that have heritage significance	**N**		allow	**Use alternate rate cell**				Item for the redistribution of Aboriginal artefacts, preservation of European heritage items or a combination of activities.
						Heritage Items Subtotal	**$0**		
Sundry Items	Development of an 'Unplanned' Project Closure Plan - State Significant Development with closure planning well progressed i.e. preferred cover design, closure environment modelled e.g. groundwater /subsidence / pit lakes, preliminary seal designs, etc. and only finalisation of detailed engineering deigns required	**N**		allow	**$100,000**				Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities. Assumes outcomes of studies readily available including modelling, landform design, geochemistry, demolition, etc. Costs to finalise options by domain and finalise designs for construction. Assume a simple site e.g. single open cut, no legacy operations historic in the area, little social dependence, etc. Depending on site size, complexity, final land use requirements and knowledge base investigations can range from ~$75k to >$1 M. Sites with more than 1 pit to add $50,000 to rate.
	Development of an 'Unplanned' Project Closure Plan - Non State Significant Development with at least ≥2 of the following aspects requiring closure planning, but no significant issues realised at this time: previous subsidence, medium or higher geochemistry risk and/or spontaneous combustion propensity, known/ likely contamination, tailings / rejects, final void	**N**		allow	**$90,000**				Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities. Estimated cost for developing closure plan including studies - basic to satisfy risks and decisions - includes risk assessment, options analysis, Closure Plan. Sites with more than 1 pit to add $50,000 to rate.
	Development of an 'Unplanned' Project Closure Plan - Non State Significant Development with no EPL and/or only one of the following relevant aspects: previous subsidence, low to medium geochemistry risk and/or spontaneous combustion propensity, known limited contamination, small approved final void	**Y**	0	allow	**$15,000**		**$0**	**Closure MOP signed and underway commenced 2023.**	Assumes sediment control is the key concern for rehabilitation e.g. small mines, exploration operations. Includes risk assessment, sampling and analyses on <5 samples, one study and Closure Plan.

	Development of an 'Unplanned' Project Closure Plan - State Significant Development with only preliminary to conceptual closure planning in place	**N**		allow	**$300,000**				Includes costs for key investigations and studies including designs e.g. geochemistry, Contamination Remediation Action Plan, subsidence risk, cover/capping and final landform, site wide surface water, etc. Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities. Assume at least 15 types of studies required ranging from geotechnical to ecology and social, development of a closure plan including address of obligations. Assume a simple site e.g. single open cut, no legacy operations historic in the area, little social dependence, etc. Depending on site size, complexity, final land use requirements and knowledge base investigations can range to >$3 M. Sites with more than 1 pit to add $50,000 to rate.
	Development of an 'Unplanned' Project Closure Plan - Non State Significant Development with at least ≥2 of the following aspects resulting in significant issues requiring remediation: previous subsidence, medium or higher geochemistry risk and/or spontaneous combustion propensity, known/ likely contamination, tailings / rejects, final void	**N**		allow	**$125,000**				Includes costs for key investigations and studies including economic treatments and designs e.g. geochemistry, Contamination Remediation Action Plan, subsidence risk, cover/capping and final landform, site wide surface water, etc. Provisional sum to be used to refine the conceptual closure plan into a detailed closure plan with execution strategies for rehabilitation activities.
	Develop a Review of Environmental Factors (REF) to facilitate rehabilitation including contamination works.	**N**		allow	**$27,950**				Based on experience for a REF after completion of a detailed closure study (e.g. contamination investigation) costs could range from $10,000 to $100,000 ex GST. Note this does not apply to a Statement of Environmental Effects or Environmental Impact Statement.
	Site security during closure	**N**		yr.	**$75,000**				Provisional sum for site security measures required during closure. This includes nightly patrols and first response in the event of an out of hours incident.
	Choose type of HAZMAT Clean-up required - cleaning and decontaminating plant and equipment, chemical storage locations, oil and grease traps, tanks, vessels, and pipe work etc	**N**		allow	**$0**			**Select type of HAZMAT Clean-up Required**	Type of HAZMAT Clean-up required - cleaning and decontaminating plant and equipment, chemical storage locations, oil and grease traps, tanks, vessels, and pipe work etc
	Removal and disposal of radiation devices	**N**		each	**$31,630**				Provisional sum for removal and disposal of monitoring devices on conveyors using a radiation source (i.e., Americium – 241, Plutonium – 238, Caesium - 137 etc). Source Isotope type, quantity, strength, weight, source holder type, source holder weight, pick-up location (among others) will directly affect pricing.
	Additional fees for accessing State, Crown or other public lands for rehabilitation/remediation activities	**N**		allow	**Use alternate rate cell**				Provisional sum.
							Sundry Items Subtotal	**$0**	
Mobilisation and Demobilisation	Mobilisation & Demobilisation for small mine or quarry - small fleet	**Y**	0.25	Item	**$12,000**		**$3,000**	**Reduced due to small scale of mine**	May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation for small mine or quarry - medium to large fleet	**N**		Item	**$35,000**				May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation (Distance to site <150 km)	**N**		item	**$100,000**				May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation (Distance to site >150 km but <500 km)	**N**		item	**$150,000**				May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation (Distance to site >500 km but <1000 km)	**N**		item	**$300,000**				May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
	Mobilisation & Demobilisation (Distance to site >1000 km)	**N**		item	**$500,000**				May include specialist demolition equipment and/or suitable plant to execute bulk earthworks as required.
							Mobilisation and Demobilisation Subtotal	**$3,000**	
Additional Items	Other 1 <insert>	**N**			**This is**				This item includes **<<to be added by the operator>>**
	Other 2 <insert>	**N**			**deliberately**				This item includes **<<to be added by the operator>>**
	Other 3 <insert>	**N**			**left blank**				This item includes **<<to be added by the operator>>**
							Additional Items Subtotal	**$0**	
Total Cost for Management Activities								**$15,056**	

Assumptions and rehabilitation requirements

List or record any assumptions made when completing this tool:

With assistance from Resources Regulator PGH are proposing to not change the existing RCE calc from the 2014 calculation. The figures in this 2024 submission were created to match the previous calculation.
In approximately 12 months when more rehabilitation data is available PGH will apply for a decrease in the RCE bond held.