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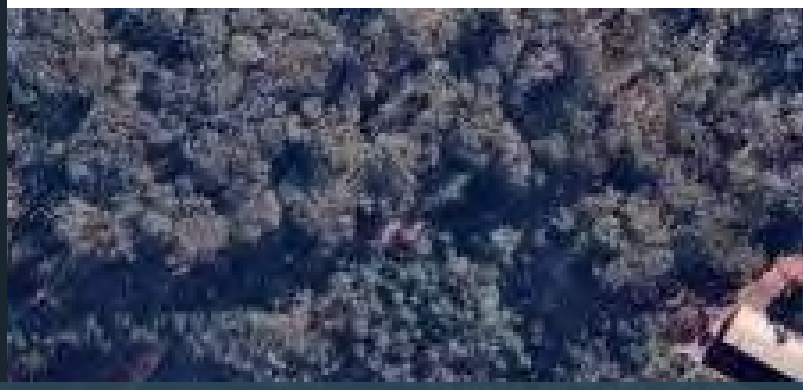

December 2022

Rehabilitation Management Plan for Canyonleigh Bauxite Mine PLL1236 (Act 1992)

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Summary Table	
Name of Mine	Canyonleigh Bauxite Mine
RMP Commencement Date	July 2022
Mining Authorisations	PLL1236
Mining Lease Expiry	15/05/2040
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	Joe Gauci (02) 9826 9964 jgauci@csr.com.au
Name and Contact Details of the Environmental Representative	Melanie Windust 0450 392 709 mwindust@csr.com.au
Name of the Representative of the Authorisation Holder	Joe Gauci
Signature of the Representative of the Authorisation Holder	
Date of Submission	12/12/2022

Revision Table

Date	Version	Author	Reviewed	Approved
28/06/2022	D0	SK	GT/	
12/12/2022	F0	SK	GT/JG	JG

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Appendices

1 Introduction to Mining Project

1.1 HISTORY OF OPERATIONS

The Canyonleigh Bauxite Pit was initially prospected by the Broken Hill Proprietary Co (BHP) prior to 1939. Subsequently that company held a number of leases over deposits south of the Canyonleigh Road and supplied aluminous laterite for use as flux in their open-hearth, steel making furnaces at Newcastle and Port Kembla. In May 1969 the then property owner, Mr G Prince was granted PLL1236 over PML8. This, the current Canyonleigh Bauxite Pit, has been the source of decorative and road gravels since that time.

In January 1980, Teddington Pty Ltd acquired the lease. When the nearby Hume Highway was being upgraded for freeway conditions, Southern Highlands Quarries had an agreement with the owner to supply material for Hoddles Crossing.

J & A Mulready acquired PLL1236 plus the land surface encompassing that lease in December 1990. They 'registered' the existing mine under State Environmental Planning Policy No.37- Continued Mines and Extractive Industries (SEPP37).

CSR extracted bauxite under contract from John Mulready for an inert brick filler material that provides a deep red colour. In 2014 PGH Bricks & Pavers Pty Ltd (the Operator) acquired the site to continue extraction operations.

Rehabilitation to date has included the preparation of two areas of the site for landform establishment in 2022.

The site is operated under Private Land Lease (PLL) 1236, to extract Group 2 and Group 5 minerals (Bauxite and Clay) and is valid until 15th May 2040. The development consent DA 08/0326 does not have a specified expiry date, conditions are included in *Appendix A*.

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES AND LICENCES

1.2.1 Regional NSW – Mining, Exploration and Geoscience

Table 1. Development Approvals

No.	Date Approved	Expires	Notes
DA 432/95	17/09/1996	N/A	.
DA 08/0326	12/06/2008	N/A	Continued operation of and extension to an existing bauxite quarry.

1.2.2 Regional NSW- Mining Exploration and Geoscience (MEG)

Table 2. Mining Authorisation

No.	Act	Company	Granted	Expires	Area (Ha)	Minerals
PLL1236	1924	PGH Bricks & Pavers Pty Ltd	15/05/1969	15/05/2040	7.49*	Bauxite, Clay/Shale, Kaolin, Structural Clay

*Minview Version 2022.1.11 area shows the PLL boundary covering an area of 6.618Ha. This varies from PLL boundary survey submitted to the then NSW Planning & Environment Resources Regulator, see reference OUT17/23863 and *Appendix D* for correspondence and a surveyors plan dated 27/11/2017. The surveyors plan shows the PLL boundary to cover 7.49Ha.

1.2.3 Environmental Protection Authority (EPA)

An Environmental Protection Licence EPL21501 was granted under the Protection of the Environment Operations Act (PoEOA) (see *Appendix C*).

1.3 LAND OWNERSHIP AND LAND USE

1.3.1 Land Ownership and Land Use

The site is located at 2748 Canyonleigh Road, Canyonleigh. *Table 3* lists the cadastral lots involve in the mine operations.

Table 3. Land Ownership and Land Use

Lot	DP	Ownership	Land Description
1	516824	PGH Bricks & Pavers Pty Ltd	Used in mine operations, contains PLL1236
3	516824	PGH Bricks & Pavers Pty Ltd	Contains access road to mine site, located to north of PLL1236
1	1179849	PGH Bricks & Pavers Pty Ltd	Contains entrance off Canyonleigh Road to the north of PLL1236.
2	516824	Freehold	Located to east of site entrance
22	618107	Freehold	Located to east of PLL1236
12	861916	Freehold	Located to south and west of PLL1236

The land on which the Canyonleigh Mine operates is now owned by PGH Bricks & Pavers Pty Ltd.

The surrounding land is sparsely populated and generally used as rural residential. The closest densely populated area is Bundanoon approximately 10km southeast of the site, see *Figure One*.

The site is located within the Wingecarribee Shire Council and operates under consent number 08/0326, the conditions of which are included in Appendix A. The property is within land which is zoned Zone C3, “Environmental Management” under the Wingecarribee Local Environmental Plan 2010, see *Figure Two.* Ref 3

An AHIMS Web Services search showed no recorded or declared Aboriginal sites or places in the vicinity of Lot 1 DP516824 with a 200m buffer applied.

Plan of:	**Rehabilitation Management Plan for Canyonleigh Bauxite Pit 2022 - Site Location**	**Location:**	Off Canyonleigh Road, Canyonleigh, NSW	**Source:**	Google Open Street Map & nearmap - Image Date 04/04/2021 Zone MGA 56	**Plan By:**	SK/JD
Figure:	**ONE**	**Council:**	Wingecarribee Shire Council	**Survey:**	Craven, Elliston & Hayes (Dapto) Pty Ltd 2016	**Project Manager:**	SK
Version/Date:	V0 15/06/2022	**Tenure:**	Not Applicable	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856	**Office:**	Thornton
Our Ref:	12406_CL_RMP2022_Q01_V0_F1	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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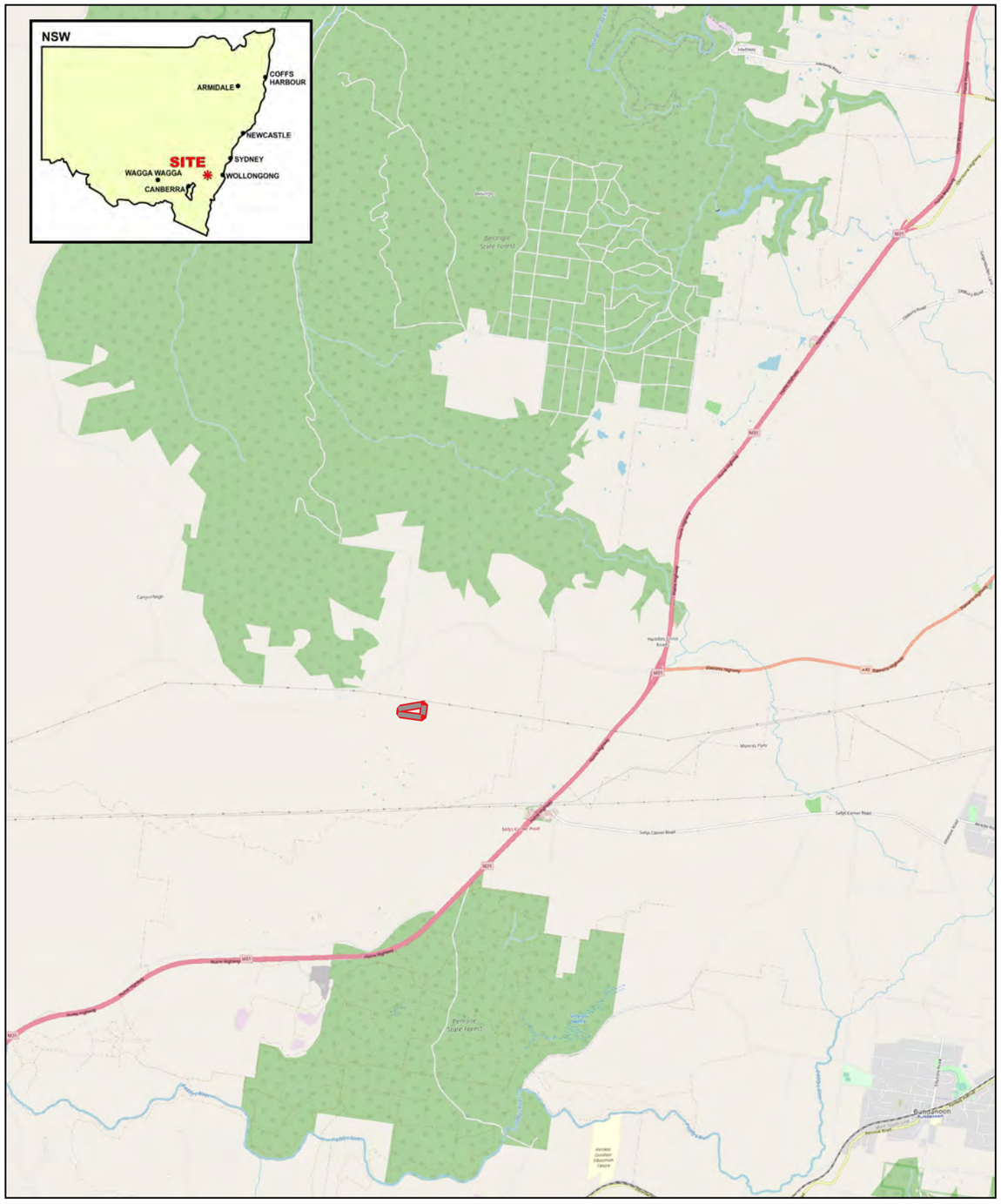

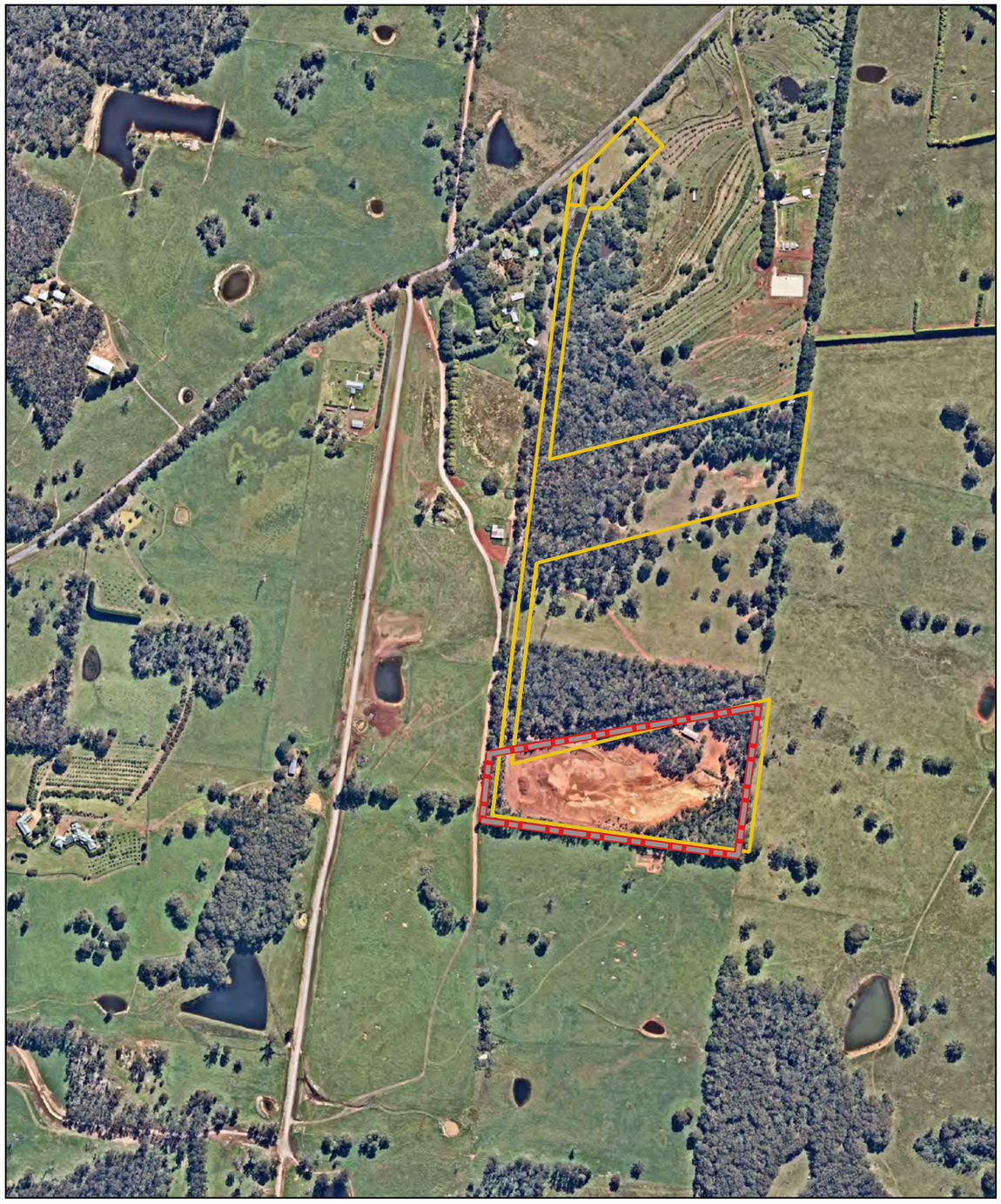

Plan of:	**Rehabilitation Management Plan 2022 for Canyonleigh Bauxite Pit - Land Ownership and Land Use**	**Location:**	2748 Canyonleigh Road, Canyonleigh, NSW	**Source:**	Nearmap 14/12/2021 and CEH aerial 08/02/2022. NSW Clip & Ship Cadastral.	**Plan By:**	SK		
Figure:	**Two**	**Council:**	Wingecarribee Shire Council	**Survey:**	Photomapping 2015 Veg Bound. PLL Boundary CEH 2018.	**Project Manager:**	SK		
Version/ Date:	V0 15/06/2022	**Tenure:**	PLL 1236	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856				
Our Ref:	12406_CL_RMP2022_Q02_V0_F2	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	N/A				

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0 50 100 150 200 m

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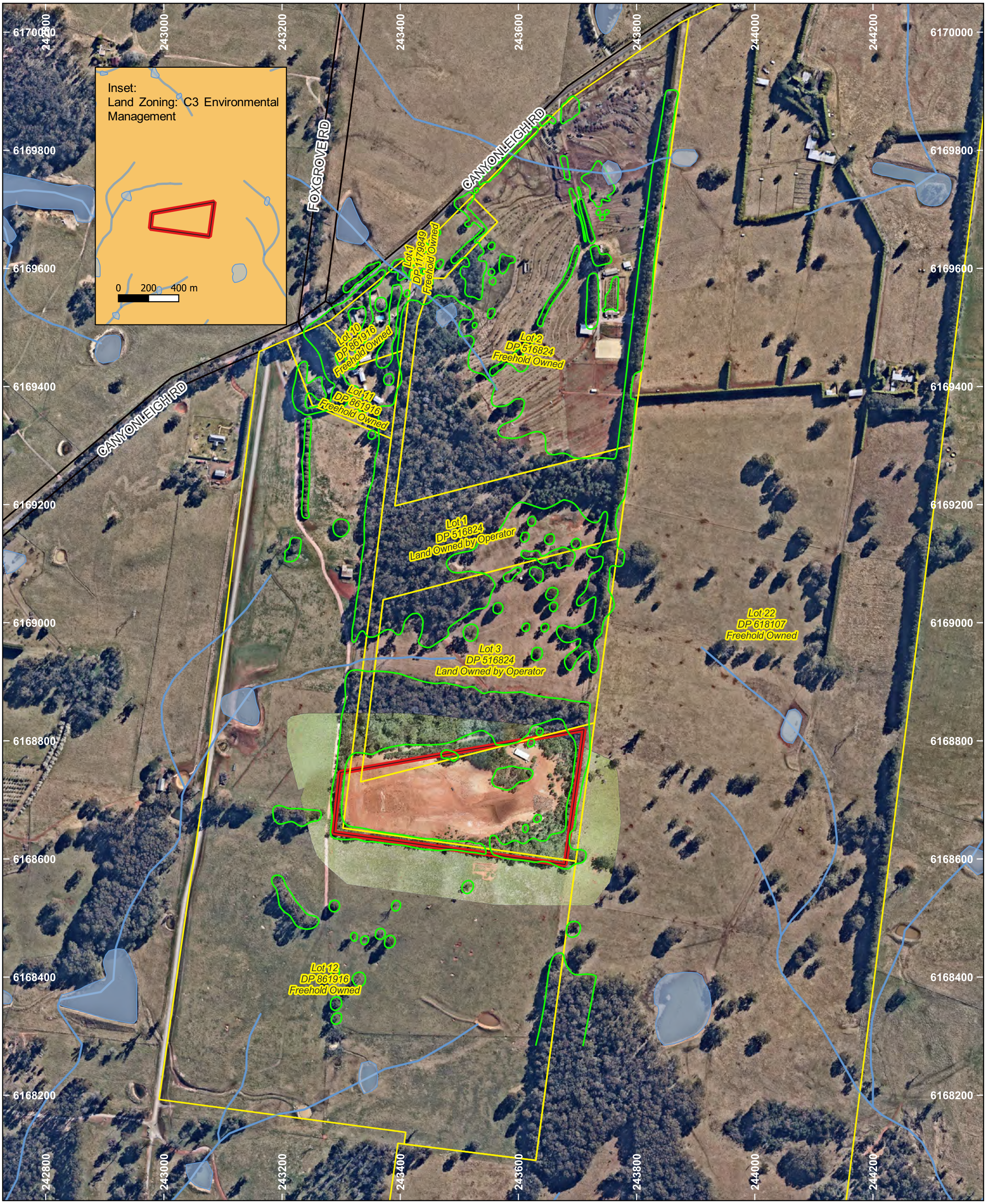
This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.



Legend

Lot (NSW Clip & Ship) | PLL 1236 (CEH 2018 Survey) | Dams (NSW Clip & Ship) | Drainage (NSW Clip & Ship) | Edge of Vegetation (2015)

2 Final Land Use

2.1 REGULATORY REQUIREMENTS FOR REHABILITATION

2.1.1 Consent Rehabilitation Requirements

Table 4. Consent Rehabilitation Plan Requirements

Consent Condition	Details	Where Addressed in this Report
DA08/0326 (DA432/95) **Condition 8**	The Applicant/site operator shall submit for the consideration and approval of Council's Quarries Officer within a period of six (6) months from the date of this consent notice an Environmental Management and Site Rehabilitation Plan. Such Plan shall include the requirements of the Department of Conservation and Land Management, Environment Protection Authority and Sydney Water and the following specific matters shall be incorporated in this document: - Peripheral site drainage, locations and detailed design of settlement dams and treatment of all run-off water - Staging of restoration - Soil erosion and sediment control measures to be implemented on site - Final site rehabilitation/land formation plan including details or proposed initial and ongoing landscape treatment - Details of noise suppression equipment to be installed on quarry equipment and haulage vehicles - Details of the manner in which petroleum products are to be stores on site if applicable - The manner in which stockpile sites are to be positioned and maintained on site - The manner in which regular maintenance of sediment and erosion control structures is to be programmed on site. .	The Environmental Management and Site Rehabilitation Plan cannot be located; as such the Forward Program and this Rehabilitation Management Plan will take the position of setting the requirements for rehabilitation.

2.1.2 MEG Rehabilitation Requirements

The prescribed standard conditions in the Mining Regulation 2016, Schedule 8A, Part 2 apply in addition to the conditions in Schedule 2 of the Mine Lease. Conditions in the Regulation that relate to rehabilitation in this report are reproduced below.

Table 5. Mine Lease Conditions from the Regulation

Mining Regulation Section	Details	Where Addressed in this Report
Division 1 Protection of the environment and rehabilitation		
4	**Must prevent or minimise harm to environment** (1) The holder of a mining lease must take all reasonable measures to prevent, or if that is not reasonably practicable, to minimise, harm to the environment caused by activities under the mining lease. (2) In this clause— *Harm* to the environment has the same meaning as in the Protection of the Environment Operations Act 1997.	This Report
5	**Rehabilitation to occur as soon as reasonably practicable after disturbance** The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.	Section 4 Section 6
6	**Rehabilitation must achieve final land use** (1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area.	This Report
	(2) The holder of the mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1).	Section 1.2
	(3) The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1). **Note—** Clause 7 requires a rehabilitation risk assessment to be conducted whenever a hazard is identified under this subclause.	Section 3 Section 10
	(4) In this clause— final land use for the mining area means the final landform and land uses to be achieved for the mining area— (a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and (b) for a large mine—as spatially depicted in the final landform and rehabilitation plan, and	Section 4 Section 5 Section 2

Mining Regulation Section	Details	Where Addressed in this Report
	(c) if the final land use for the mining area is required by a condition of development consent for activities under the mining lease—as stated in the condition. planning approval means— (a) a development consent within the meaning of the Environmental Planning and Assessment Act 1979, or (b) an approval under that Act, Division 5.1.	
Division 2 Risk assessment		
7	**Rehabilitation risk assessment** (1) The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that— (a) identifies, assesses and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease— (i) the rehabilitation objectives, (ii) the rehabilitation completion criteria, (iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan, and (b) identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks	Section 3
	(2) The holder of the mining lease must implement the measures identified.	This Report and annual reporting.
	(3) The holder of a mining lease must conduct a rehabilitation risk assessment— (a) for a large mine—before preparing a rehabilitation management plan, and (b) for a small mine—before preparing the rehabilitation outcome documents for the mine, and (c) whenever a hazard is identified under clause 6(3)—as soon as reasonably practicable after it is identified, and (d) whenever given a written direction to do so by the Secretary.	Section 3

Mining Regulation Section	Details	Where Addressed in this Report
Division 3 Rehabilitation documents		
10	(1) The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following—	
	(a) a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area,	This Report
	(b) a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation,	This Report
	(c) a summary of rehabilitation risk assessments conducted by the holder,	Section 3
	(d) the risk control measures identified in the rehabilitation risk assessments,	Section 3
	(e) the rehabilitation outcome documents for the mining lease,	Section 4, Section 5
	(f) a statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored	
12	**Rehabilitation outcome documents** (1) The holder of a mining lease must prepare the following documents (the rehabilitation outcome documents) for the mining lease and give them to the Secretary for approval—	Section 4, Section 5
	(a) the rehabilitation objectives statement, which sets out the rehabilitation objectives required to achieve the final land use for the mining area,	
	(b) the rehabilitation completion criteria statement, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives,	
	(c) for a large mine, the final landform and rehabilitation plan, showing a spatial depiction of the final land use.	
	(2) If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition	

2.2 FINAL LAND USE OPTIONS ASSESSMENT

An assessment of the final land use options has not been undertaken as the conceptual final landform has been in place since the 2015 MOP.

2.3 FINAL LAND USE STATEMENT

The conceptual post mining land uses have been defined as:

- The final landform will be an open bowl with slopes battered back to a slope of approximately 18^{o} down to a height of approximately 751m AHD. The conceptual final void is shown on FLRP Plan 2 in the Rehabilitation Portal. The slopes into the void will be vegetated with pasture grasses.
- The site will be used for agricultural and lifestyle purposes including grassland/cropping and recreation for the landowner.
- The whole site will be safe, stable and non-polluting.
- A water body (small lake) is to be retained in the pit void for stock water and recreational purposes.
- The shed and haul roads will remain on site.

2.4 FINAL LAND USE AND MINING DOMAINS

2.4.1 Final Land Use Domains

Table 6. Post Mining Land Use Domain Codes

Secondary Domains (Post Mining)	Description
Native Ecosystem	This Domain comprises the final void area and surrounds as well as infrastructure areas not retained at the completion of extraction activities.
Water Storage (Excluding Final Void)	This domain is limited to the In-Pit Sump.
Infrastructure	This domain incorporates the site access road and shed areas to be retained for future property access.

2.4.2 Mining Domains

Table 7. Operational Domain Codes

Primary Domains (Operational)	Description
Infrastructure Area	This domain includes the haul roads and hardstand areas.
Overburden Emplacement Area	This domain incorporates bunds surrounding the extraction area where overburden has been placed.
Active Mining Area (Open cut void)	This domain incorporates the active extraction area.

3 Rehabilitation Risk Assessment

Identification of hazards and a risk assessment and identification of risk controls has been undertaken and is summarised below.

Table 8. General Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Administrative failures.	Insufficient skills and experience of rehabilitation personnel.	Only experienced contractors will be engaged to conduct rehabilitation activities.	
	Lack of clearly defined responsibilities.	Responsibilities and roles for rehabilitation will be defined in the contractual arrangements with contractors and Proponent.	
	Insufficient funding for or prioritisation of rehabilitation activities.	Proponent will ensure that sufficient funds are available to conduct rehabilitation activities. Note, a rehabilitation bond is held over the site and will be reviewed annually for the life of the mine.	
Erosion	Harm to rehabilitation works.	Slopes to be reduced in out of pit areas.	Slopes to be reduced to a maximum of 3H:1V in out of pit areas.
		Reduce slope lengths out of Pit.	Slope Lengths shall not exceed 80 metres before being broken by earth banks or similar.
		Reduce track slopes.	Slopes of major tracks are to be <10 degrees or have cross drains/banks installed. Where unsuitable soils are present, tracks are to be stabilised with crushed bricks, concrete, gravel or similar.
		Roughen exposed surfaces.	Track walk or lightly rip exposed surfaces to encourage infiltration of rainwater.
		Achieve ground coverage factor of at least 0.05 (70%).	Coverage to be achieved via vegetation, mulch or similar within 30 days of completion of works.
		Topsoil stockpile management.	Slopes no greater than 18^{o}. Stockpile height no greater than 1.5 metres. No stockpiles to be constructed in areas of concentrated flows.
		Overburden stockpile management.	Slopes no greater than 18^{o}. Stockpile height no greater than 3 metres. No stockpiles to be constructed in areas of concentrated flows.
Sediment Entrainment	Entrained sediment harms downstream environments	Runoff from design storm to be contained in-site.	Sediment dams designed for 90th % 5-day storm event. Drains to be designed for 1 in 10-year design storm. Receiving capacity of sediment dams to be maintained by; • Reuse of water on-site for dust suppression; and • Water to be pumped to pit sump if capacity not sufficient to contain design storm prior to storm events. Pit maintained to have capacity to contain a volume greater than the design storm.
		Surface water captured on exposed surfaces to be directed to sediment dams.	Sediment dam to be constructed for each catchment in the disturbed area. Drains to be installed to direct dirty surface water to sediment dams.

Hazard	Risks	Risk Controls	Details
		Silt fences installed.	Installation of silt fences around disturbed area as appropriate. No silt fences to be constructed in areas of concentrated flows.
		Topsoil stockpile management	Slopes no greater than 18^{o}. Stockpile height no greater than 1.5 metres. No stockpiles to be constructed in areas of concentrated flows.
		Overburden stockpile management.	Slopes no greater than 18^{o}. Stockpile height no greater than 3 metres. No stockpiles to be constructed in areas of concentrated flows.
Surface Water Quality	Decrease in downstream water quality.	Monitoring.	Surface water monitoring has not been undertaken to date due to no requirement to discharge offsite. All future monitoring will be undertaken in accordance with Approved Methods for Sampling and Analysis of Water Pollutants in NSW (DEC 2004)
		Reuse dirty water on site.	Dirty water to be reused for dust suppression.
		Runoff from design storm to be contained in-site.	Sediment dams designed for 90th % 5-day storm event. Drains to be designed for 1 in 10-year design storm. Receiving capacity of sediment dams to be maintained by; • Reuse of water on-site for dust suppression; and • Water to be pumped to pit sump if capacity not sufficient to contain design storm prior to storm events. Pit maintained to have capacity to contain a volume greater than the design storm.
		Surface water captured on exposed surfaces to be directed to sediment dams.	Sediment dam to be constructed for each catchment in the disturbed area. Drains to be installed to direct dirty surface water to sediment dams.
		Separation of clean water and dirty water.	Upstream clean water to be diverted via diversion drains or bunds as far as possible.
Geotechnical Stability In-Pit	Failure of In-Pit Slopes	Reduce slopes In-Pit.	Batter slopes with overburden material.
		Batter designs validated by qualified engineer.	
Groundwater Quality and Flows	Decrease in groundwater quality and changes in flows	Groundwater interaction will be minimised.	Pit floor will not be deeper than 751mRL.
Wind Erosion	Rehabilitation areas impacted by wind erosion.	Air quality monitoring.	Air quality monitoring will be conducted in accordance with the Environmental Protection Licence (EPL).
		Dust suppression.	Water cart to be engaged during mining, hauling and rehabilitation activities. During adverse conditions:

Hazard	Risks	Risk Controls	Details
			• Cease mining or hauling activities in adverse wind conditions: and • Increase water cart frequency.
		Achieve groundcover factor of at least 0.05 (70% coverage) on areas of long-term inactivity.	Coverage to be achieved via vegetation, mulch or similar within 30 days of completion of works.
Heritage	Harm to heritage items	Protection of unexpected heritage items.	In the event that unexpected Aboriginal objects, sites or places are discovered, DPIE will be notified as soon as practicable after they are first identified.
		Protection of human skeletal remains	The immediate vicinity will be secured to protect the find. The police will be notified immediately.
Bushfire	Harm to rehabilitation areas.	Limit access for deliberately lit fires.	Appropriate fencing is to be repaired and maintained. Locked access gate outside of operating hours. Visitors to sign in at the office.
Bushfire	Harm to rehabilitation areas.	Maintain fire breaks.	
Waste	Harm to rehabilitation areas.	Control on-site waste storage and removal	Waste will be stored in small, designated waste storage area within the site entry area. Wastes will be stored in bins with a lid. Oily rags, filters, drums and waste batteries will be stored on a self-bunded pallet or similar. Wastes will be removed by licenced contractor.

Table 9. Active Mining Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Salvage of Biological Resources	Loss of biological resources.	Minimise loss of biological resources through suitable land clearing, salvage and handling practices.	Areas to be land cleared will be clearly marked to ensure only land to be cleared is disturbed. Land clearing is to be supervised by proponent's staff. Felled trees are to be salvaged and reused immediately by placing on rehabilitated land. If no suitable rehabilitation areas are available felled trees will be stored in windrows for reuse in future rehabilitation. Topsoil material to be stripped will be used immediately or stored in stockpiles no greater than 1.5 metres in height and be revegetated with temporary grass species or otherwise stabilised as described in the erosion risk controls above.
	Limited biological resources available on site.	Importation of topsoil/growth medium material.	If on-site topsoil/growth medium deficit is noted, material may be imported to assist in rehabilitation.
Weather Conditions	Adverse weather conditions during land clearing.	Land clearing activities will not be undertaken during adverse weather conditions.	Land clearing will not be undertaken during periods of prolonged rainfall where damage to soil structure and erosion impacts are greatest.
Geochemical/ Chemical soil conditions	Adverse geochemical/chemical composition of soil/ interburden / overburden materials.	Soil testing of soils / interburden and overburden material will be undertaken.	Materials stockpiled on site will be tested for suitability prior to re-use in rehabilitation. Ameliorants will be applied to the materials as required.

Table 10. Decommissioning Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Infrastructure	Retained roads and hardstands are not safe and stable.	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. Hardstand areas reduced to a size required for the final landuse. Slopes of major tracks are to be <10 degrees or have cross drains/banks installed. Where unsuitable soils are present, tracks are to be stabilised with crushed bricks, concrete, gravel or similar.
	Utility services present a safety hazard.	Services not required for final landuse are disconnected.	Relevant services disconnected by qualified contractors
Hazardous Materials	Harm to environment due to hazardous materials.	No hazardous materials remain	All hazardous material removed

Table 11. Landform Establishment Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Unstable landform	The final landform is unstable.	Continued monitoring of the landform establishment works by suitably qualified person/s.	Slopes to be reduced until all slopes meet the approved final landform. Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability.
Final landform unsuitable for final landuse.	Final landform does not conform to approved final landform.	Landform to be remediated to approved final landform.	Slopes to be reduced until all slopes meet the approved final landform. Survey plan to be prepared to show final slopes meet the approved final landform.
Landform not suitable for target plant species	Target plant species unable to establish.	Soil testing of soils / interburden and overburden material will be undertaken.	Materials stockpiled on site will be tested for suitability prior to re-use in rehabilitation. Ameliorants will be applied to the materials as required.

Table 12. Growth Medium Establishment Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Unsuitable physical and structural substrate	Substrate compacted	Substrates to be placed in such a way to maintain soil structure as far as possible.	Minimise vehicle movement over the emplaced substrates. Substrates to be lightly ripped to permit water infiltration and air penetration prior to topsoil placement.
Subsoil and topsoil deficit	Insufficient on-site material available for growth medium.	Available topsoils are stockpiled appropriately and reused on the site.	Records to include amounts of subsoil and topsoils stripped, locations and depths re-spread. If on-site topsoil/growth medium deficit is noted, material may be imported to assist in rehabilitation.
Substrate chemically unsuitable	Substrate inadequate to support revegetation or agricultural land capability.	Soil testing of soils / interburden and overburden material will be undertaken.	Materials stockpiled on site will be tested for suitability prior to re-use in rehabilitation. Ameliorants will be applied to the materials as required. Importation of more suitable materials to be investigated and undertaken if deemed necessary.

Table 13. Ecosystem and Land Use Establishment Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Poor seed viability and dormancy	Insufficient germination of seeds to provide groundcover.	Certified seed stock to be utilised as far as possible in rehabilitation.	
Ant and Insect predation	Seed stock depleted by predation.	Protect sown seeds as far as possible.	Seeds to be lightly covered by soil when spread. Apply liquid tackifier if required to bind seeds to the surface. Keep soil moist by mulching or application of water to deter ants.
Damage to seed through revegetation processes	Insufficient germination of seeds to provide groundcover.	Protect seeds from damage during rehabilitation.	Experienced contractors to be employed for rehabilitation works. Rehabilitation areas to be protected from vehicular traffic by fencing or similar barriers. Minimise handling of seeds during storage and use.
Weed Infestation	Weed number overwhelm revegetation.	Regular inspection and spraying for weeds will be undertaken.	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 vegetation not disturbed by mining activities.
Inappropriate rehabilitation techniques	Failure of rehabilitation.	Ensure approved rehabilitation plan is followed.	Experienced contractors to be employed for rehabilitation works. Rehabilitation to be undertaken in accordance with the Rehabilitation Plan approved by DPIE and this plan. Proponent to supervise rehabilitation works to ensure compliance with any approved plans and best practice techniques are utilised.
		Approved plans will be reviewed as required to ensure best practice techniques are employed.	
Adverse weather conditions	Failure of rehabilitation.	Revegetation will not be undertaken during periods of drought.	
		Rehabilitation works will not be undertaken during wet periods where soils and seed planting may be damaged.	
		A water cart may be employed to water rehabilitation areas during dry or windy periods until vegetation is established.	
Inappropriate Seasonal timing of revegetation	Failure of rehabilitation.	Revegetation will preferably be planted during the spring and autumn seasons to avoid hot and dry weather conditions and winter frost.	

Table 14. Ecosystem and Land Use Development Phase Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Weather and climatic influences	Failure of rehabilitation.	A water cart may be employed to water rehabilitation areas during dry or windy periods until vegetation is established.	
		Reseeding of failed areas may be undertaken as advised by ecologist or suitably qualified person/s	
Long term water quality and quantity issues	Decrease in downstream water quality.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method.	
Damage to rehabilitation	Deliberate vandalism of rehabilitation areas.	Rural fences and gates installed around disturbed area to prevent unauthorised access that may damage rehabilitation.	Monitoring indicates evidence of trespassing and/or damage to rehabilitation areas. Appropriate fencing, signage and bunding is to be repaired and maintained.
	Bushfire damages rehabilitation areas.	Where possible regular slashing/mowing of pasture areas will be undertaken.	
	Weed number overwhelm revegetation.	Regular inspection and spraying for weeds will be undertaken.	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 vegetation not disturbed by mining activities.
	Insect and plant disease overwhelm revegetation.	Regular inspections to be undertaken and spraying undertaken as appropriate.	
Insufficient establishment of target species and limited species diversity	Vegetation community does not become established on final landform affecting final land use and ecosystem.	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.	Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community. Use of seed and mulch mix or other application techniques. Soil amelioration works such as addition of fertiliser. Additional weed control activities (mechanical and/or chemical).
Erosion and failure of landform	Vegetation is unable to be established due to erosion.	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.
Erosion and failure of landform	Visual inspection indicates that the final landform is the source of unacceptable levels of sedimentation downstream.	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.

4 Rehabilitation Objectives and Rehabilitation Completion Criteria

4.1 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
Infrastructure (I)	**Infrastructure (1); Overburden Emplacement Area (4)**	**Removal of Infrastructure**	All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
				Tracks suitable for private access or pedestrian usage.	Slopes of major tracks <10° or have cross drains/banks installed. Where unsuitable soils are present, tracks to be stabilised with crushed bricks, concrete, gravel or similar	Survey on completion by registered surveyor.
				Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
				The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
				Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		Land Contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. All rubbish/ waste materials removed from site.	Statement provided and before/after photos.
				Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met, e.g. Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999). Excess sludge/material has been removed from surface water dams.	Contamination Remediation Report prepared by Land Contamination Consultant Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna. Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured - survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured – survey/monitoring of rehabilitated landform to specifically monitor settlement	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure.	Before and after photos, rehabilitation monitoring reports, as-constructed surveys, erosion surveys, and independent geotechnical reports (where required) that indicate long-term stability of rehabilitated landform. Stability will continue to be evaluated over 5 years.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
				(Subsidence) and/or material loss via erosion.	Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement (subsidence) and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Total projected foliage cover is greater than or equal to 70% (Blue Book C -factor equivalent of 0.05)	
		Agricultural Revegetation	The vegetation composition of the rehabilitation is recognisable as the target vegetation community (agricultural - cropping)	Routine Soil Test (bulked soil samples 0-10 cm) Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture.	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Pasture establishment is consistent with the range of species utilised within the region. Pasture establishment is in good health and provides adequate cover.	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Achievement of criteria to be evaluated over a period of 5 years.
				Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of cropping (grassland) lands.	Appropriate and reliable access to water for grassland maintenance. Resilience to drought and fire.	
				No further active weed control required beyond that considered necessary at analogue sites.	Monitoring confirms the non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.	
Agricultural-Cropping (C)	**Infrastructure Area (1); Overburden Emplacement Area (4); Active Mining Area-Open Cut void (5)**	**Removal of Infrastructure**	All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
				Tracks suitable for private access or pedestrian usage.	Slopes of major tracks <10° or have cross drains/banks installed. Where unsuitable soils are present, tracks to be stabilised with crushed bricks, concrete, gravel or similar	Survey on completion by registered surveyor.
				Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
				The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
				Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Formal acceptance from the subsequent landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	Formal acceptance from landowner.
		Land Contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. All rubbish/ waste materials removed from site.	Statement provided and before/after photos.
				Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met, e.g. Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999). Excess sludge/material has been removed from surface water dams.	Contamination Remediation Report prepared by Land Contamination Consultant Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		Landform Stability	The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna. Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.	Visual - indicators of erosion and land instability. Visual - indicators that surface water management structure are functioning as designed. Measured - survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured – survey/monitoring of rehabilitated landform to specifically monitor settlement (Subsidence) and/or material loss via erosion.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure. Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan. Survey verifies that settlement (subsidence) and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Total projected foliage cover is greater than or equal to 70% (Blue Book C -factor equivalent of 0.05)	Before and after photos, rehabilitation monitoring reports, as-constructed surveys, erosion surveys, and independent geotechnical reports (where required) that indicate long-term stability of rehabilitated landform. Stability will continue to be evaluated over 5 years.
		Agricultural Revegetation	The vegetation composition of the rehabilitation is recognisable as the target vegetation community (agricultural - cropping)	Routine Soil Test (bulked soil samples 0-10 cm) Includes: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable	Land and Soil Capability classification or Agricultural Land Classification criteria met. The re-established topsoil / subsoil substrate is capable of supporting the targeted pasture / cropping regime on a sustained basis. Pasture establishment is consistent with the range of species utilised within the region. Pasture establishment is in good health and	Rehabilitation monitoring reports, independent soil reports, environmental monitoring records, independent agronomist reports. Achievement of criteria to be evaluated over a period of 5 years.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
				(Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture.	provides adequate cover.	
				Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of cropping (grassland) lands.	Appropriate and reliable access to water for grassland maintenance. Resilience to drought and fire.	
				No further active weed control required beyond that considered necessary at analogue sites.	Monitoring confirms the non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.	
		Water Approvals	Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the Water Management Act 2000) and where required ensure sufficient licence shares are held in the water source(s) to account for water take.	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency.	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.

4.2 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA – STAKEHOLDER CONSULTATION

During the Development Application (DA 432/95) process consultation with various Government Authorities was undertaken. No other consultation has been undertaken other than with the landowners for the preparation of this report.

5 Final Landform and Rehabilitation Plan

5.1 FINAL LANDFORM AND REHABILITATION PLAN – ELECTRONIC COPY

Canyonleigh PLL1236 FLRP Plan 2: Final Landform Contours. Relinq Year 2040

Legend

- Final Landform Contours
- Project Approval Boundary
- Mine Operations Area
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations

206.7 0 103.33 206.7 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Submission IDs: 2108, 2109
Plan date: 20/07/2022

Canyonleigh PLL1236 FLRP Plan 1: Final Landform Features. Relinq Year 2040

Legend

- Final Landform Features
- Final Landuse
  - Agricultural – Cropping
  - Agricultural – Grazing
  - Rehabilitation Biodiversity Offset Ar
  - Final Void
  - Heritage Area
  - Industrial
  - Infrastructure
  - Native Ecosystem
  - Water Management Areas
  - Water Storage (Excluding Final Voi
  - Other
- Project Approval Boundary
- Mine Operations Area
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations

206.7 0 103.33 206.7 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Submission IDs: 2108, 2107
Plan date: 20/07/2022

6 Rehabilitation Implementation

6.1 LIFE OF MINE REHABILITATION SCHEDULE

It should be noted that the life of the mine is limited to the expiration of the Mining Lease on 15th May 2040.

Table 15. Life of Mine Rehabilitation Schedule

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
Active mining	Minimal topsoil to be generated for use in rehabilitation. Any topsoil generated will be stored in perimeter bunds as final surfaces no available. Any overburden generated will be stored in perimeter bunds or places onto final faces.	Up to 2038 (estimated)	Resource is not yet exhausted.
Removal of product stockpiles	Any remaining material stockpiles will be removed offsite. If stockpile material remains it will be utilised in battering slopes to achieve the final landform.	Up to 2038	Raw material exhausted from extraction area. Mining has ceased.
Water Management	If water is present in pit sump (rare) the volume will be reduced to permit access to pit for mining and rehabilitation.	Up to 2038	Resource is not yet exhausted. Rehabilitation on in-pit slopes commences.
Removal of Infrastructure	Removal of roads not required in the final landform for rehabilitation and maintenance. Removal of services not required in final landform.	Up to 2040	Mining has ceased. Infrastructure is no longer required for rehabilitation purposes.
Batter in-Pit Slopes	Overburden material will be utilised to assist in battering in pit slopes. Slopes will be lightly ripped where possible to key in overburden material.	Up to 2038	Mining has ceased. Water levels in the pit are lowered sufficiently to permit access to each final face.
Topsoil Emplacement	Topsoil material stored in bunds will be tested for suitability and ameliorated if required. Final slopes will be lightly ripped where possible to key in topsoil material. Topsoil bunds will be removed	2028 to 2038	Applicable when final slopes have been achieved. Final slopes have been ripped. Topsoil is suitable for target species.

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
	and reused on final surfaces.		
Establishment of Vegetation	Seeding/planting of pasture species is undertaken on finished surfaces Watering/Irrigation as required to assist establishment of vegetation.	2028 to 2038	Applicable where final slopes have been achieved. Suitable topsoil has been spread on final surfaces available to date. Watering/irrigation to occur after seeding/planting.
Monitoring and Maintenance of Rehabilitation	Monitor progress of rehabilitation areas. Continue weed management and pest management. Repair failed rehabilitation areas.	2038 to 2040	Completion of vegetation establishment.

Plan of:	**Rehabilitation Management Plan 2022 for Canyonleigh Bauxite Pit - Life of Mine Rehabilitation Schedule**	**Location:**	2748 Canyonleigh Road, Canyonleigh, NSW	**Source:**	Nearmap 14/12/2021 and CEH aerial 08/02/2022.	**Plan By:**	SK		
Figure:	**Five-A**	**Council:**	Wingecarribee Shire Council	**Survey:**	PLL Boundary CEH 2018.	**Project Manager:**	SK		
Version/ Date:	V0 12/12/2022	**Tenure:**	PLL 1236	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856				
Our Ref:	12406_CL_RMP2022_Q03_V0_F5A	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	N/A				

N

0 25 50 75 100 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

- Project Approval Boundary
- Active Mining
- Growth Medium Development
- Ecosystem and Land Use Development
- Landform Establishment
- Ecosystem and Land Use Establishment
- Rehabilitation Completion (Sign-off)

Plan of:	**Rehabilitation Management Plan 2022 for Canyonleigh Bauxite Pit - Life of Mine Rehabilitation Schedule**	**Location:**	2748 Canyonleigh Road, Canyonleigh, NSW	**Source:**	Nearmap 14/12/2021 and CEH aerial 08/02/2022.	**Plan By:**	SK		
Figure:	**Five-B**	**Council:**	Wingecarribee Shire Council	**Survey:**	PLL Boundary CEH 2018.	**Project Manager:**	SK		
Version/ Date:	V0 12/12/2022	**Tenure:**	PLL 1236	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856				
Our Ref:	12406_CL_RMP2022_Q04_V0_F5B	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	N/A				

N

0 25 50 75 100 m

vgt environmental compliance solutions and laboratories

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Legend

- Project Approval Boundary
- Active Mining
- Growth Medium Development
- Ecosystem and Land Use Development
- Landform Establishment
- Ecosystem and Land Use Establishment
- Rehabilitation Completion (Sign-off)

6.2 PHASES OF REHABILITATION AND GENERAL METHODOLOGIES

6.2.1 Active Mining Phase

6.2.1.1 Soils and Materials

Soil data has been obtained from the eSPADE online database from NSW Government Office of Environment & Heritage [Ref 7]. The sample site was located on Canyonleigh Road. The soil type was recorded as Haplic, Red Ferrosol (ASC) and Krasnozem (GSG). The sample location was at an elevation of 735 metres and a slope of 7%. The horizon soils were described as dark reddish brown light silty clay with moderate pedality. As the soils progress downwards the clay nature increases. The field pH ranged from 4.5 to 5.

6.2.1.1.1 Topsoils

Topsoil remains in undisturbed areas on the mining lease. Any further topsoil material stripped on site will be kept on site either in stockpiles less than 1.5 metres high and may be used for future rehabilitation. Topsoils and subsoils used are likely to require amelioration with lime to increase the soil pH, depending on the vegetation species selected. Soil testing would be undertaken prior to revegetation and advice form a suitably qualified specialist would be sought.

Stripping in the new extraction area in the southeast in the future will be required. Previously won topsoil is stored in the southern and western bund walls.

6.2.1.2 Flora

Woodlands Environmental Management conducted a flora survey at Lot 1 DP 516824 Canyonleigh Road, Canyonleigh in December 2008. As stated in their report the “excavated area of the quarry site is located within an ecotone of Robertson Tall Open Forest and Tableland Ridge Forest”. It was recommended for future rehabilitation works that the following species were utilised:

Table 16. Revegetation Species List

Overstorey	Understorey	Groundcover
Eucalyptus sieberi	Acacia decurrens	Lornandra longifolia
Eucalyptus radiata	Acacia falciformis	Dianella revolute
Eucalyptus elata	Persoonia linearis	Poa sieberiana
	Cassinia aculeate	
	Daviesia latifolia	
	Oxylobium ilicifolium	

It was recommended that overstorey species be planted at a 5m x 5m spacing, understorey at a 3m x 3m spacing and groundcover at 2m x 2m spacing. The conceptual final land use at the time of this report is a grassed void sloping towards a water body. Trees may not be utilised in the final landform.

6.2.1.3 Fauna

There has been no fauna survey on the site to date.

The mitigation measures to mitigate indirect impacts to the biodiversity values on site will include:

- a speed limit of 40 kilometres per hour (km/h) will apply on the sealed site access road and 20 km/h on unsealed internal roads; and
- roads will be regularly maintained by managing vegetation on the shoulder to main visibility to prevent vehicle strike.

6.2.1.4 Rock and Overburden Emplacement

Overburden not required for earth mound construction will be used within the site as cover material and to achieve the final landform profile. The cover material will be stockpiled adjacent to the void. It is not anticipated that there will be any surplus overburden material. Stockpiles will be no greater than 3 metres in height with slopes no greater than 3H:1V. Burden material from previous mining activities has been stored around the pit and a portion has been spread in the rehabilitation area located centre-east of the mine. The remaining inter-burden and any burden generated from future mining will also be processed to maximise the resource for use in brickmaking material. Any remaining inter-burden will be utilised to backfill the void.

6.2.1.5 Waste Management

6.2.1.5.1 General Waste

The mine will produce only produce minor quantities of waste during continued mine operations:

- general waste, including putrescible waste such as minimal food scraps;
- comingled recycling (from office activities and site employees); and
- oily rags, filters and drums.

A fully enclosed waste storage area will not be required.

6.2.1.6 Geology and Geochemistry

Basalts that were laid down approximately 65 million years ago as the continents started to split apart provide the source rock for the Bauxites and Laterites that are produced in the Southern Highlands region. These basalts overlie the older Liverpool Subgroup (Bringelly Shale), and which overlies the Hawkesbury Sandstone.

Graham Taylor and Tony Eggleton [Ref 6] argue that these deposits are picked up and transported to their final resting place, which could explain why the underlying material is clay and not a basaltic source material. They also state that the geochemistry of the bauxite, in this region is typically, 30 to 60% Al2O3, 20 to 50% Fe2O3 and 10% SiO2 and 0.5 to 4% TiO2. As such there is a considerable amount of iron present in this stratum.

Overall the site is a mixture of red clay, red cream clay, round balled red bauxite and angular iron oxide and magnetite.

The mine floor is approximately RL 755m according to February 2022 survey. The mine faces are dominated by limonite and red bauxite material to the south and west.

The soils and subsoils of the area are slightly acidic (pH approximately 5).

6.2.1.7 Material Prone to Spontaneous Combustion

There is no material on the site that is prone to spontaneous combustion.

6.2.1.8 Material Prone to Generating Acid Mine Drainage

There is no material on the site that is prone to generating acid mine drainage.

6.2.1.9 Ore Beneficiation Waste Management

There is no ore beneficiation waste produced on the site.

6.2.1.10 Erosion and Sediment Control

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

6.2.1.10.1 Constraints and Characteristics

Important site physical characteristics are identified in the table below.

Table 17. Constraints and Characteristics

Constraint/Opportunity	Value
Rainfall Erosivity (R factor)	2040 (from BOM IFD table for Canyonleigh)
Slope Gradients	7 %
Soil Erodibility	0.050 (assumed) High (from NSW Soil and Land Information System- Soil technical report)
Calculated Soil Loss	684 tonnes per Ha/yr
Soil Loss Class	4
Soil Hydrological Group	C
Runoff Coefficient (Cv)	0.58
Runoff Coefficient (C_{10}) for peak flow	0.83
Disturbed Site Area	4.8 ha

The Soil Hydrological Group for the soil materials is assumed to be C, moderate to high run-off potential. Water moves into and through these soils at slow to moderate rates when thoroughly wetted. They regularly shed run-off from moderate rainfall events.

Sediment retention basins are designed using the Type C Soils calculations. That is, the design storm event is taken to be the 3-month ARI flow and is approximately half the 1-year ARI flow.

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.

6.2.1.10.2 Catchments

Clean water is prevented from entering the disturbed area via perimeter bunds and is also assisted by the higher topography of the pit relative to the surrounding areas.

The site is divided into two dirty water catchments. Water captured over the haul road entrance area is directed to a small dam located in the southeast of the pit. Surface water captured within the main pit area is directed to the pit sump.

The following table summarises the Catchment volumes required by the *Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries*. Calculations were provided in the previous Mining Operations Plan.

Table 18. 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)
Road	0.44	15	69	**84**
Pit	4.37	237	531	**768**

Generally no discharges are required from the sediment ponds or the pit sump due to natural infiltration of the captured water.

Total Sediment Dam Volumes

Dam Identification/ Catchment	Dam Area (m^2)	Estimated Depth (m)	Estimated Volume (m^3)
Surface water storage area	149	1	149
Pit sump (before overtopping)	22,000	4 (average)	88,000
Total			

As can be seen from the tables above, the volume of water that could be held by the dams and pit sump exceeds the designed storm event and there is minimal risk of uncontrolled water leaving the site.

6.2.1.10.3 Management of Soil and Erosion

Generally the site is prone to moderate erosion, but these are limited to the exposed worked areas of the mine. Eroded soils and sediment are captured within the pit sump and do not leave the site. Slopes are kept moderate where possible in the pit to reduce the erosion hazard.

A number of topsoil stockpiles, stripped during clearing operations, form the perimeter bunds and are awaiting future use in rehabilitation. These appear to be well vegetated reducing the risk of erosion.

The following measure will be implemented as practicable;

- Soil erosion from the site will be minimised through progressive rehabilitation and the minimisation of disturbed areas.
- Pre-stripping will also be kept to a minimum.
- Vehicles are required to remain on the designated access tracks to prevent damage to the existing vegetation and minimise surface erosion.
- A water cart regularly sprays the roads and mine floor in order to prevent dust generation and minimise windblown soil loss.
- Vegetation will be established as soon as practicable on stored soil stockpiles as well as rehabilitated areas.
- Slopes on rehabilitated areas will be kept to a minimum to reduce erosion hazards.

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

6.2.1.11.1 Topsoil Management

Any further topsoil material to be stripped on site will be used immediately or kept on site in stockpiles for future rehabilitation. Stripping would be undertaken with care in order to maintain the integrity of the topsoil and seed bank stored within it. Stored topsoil stockpiles will not exceed 1.5m in height and will be revegetated with temporary ground cover species. Stockpile slopes will be no greater than 3H:1V and no stockpiles will be not constructed in areas of concentrated flows. All topsoil volumes stripped will recorded and reported annually in the Annual Rehabilitation Report (ARR). The topsoil stripping areas and stockpile locations also will be clearly marked on any plans submitted in the ARR.

Prior to reuse on rehabilitation areas, topsoil stockpiles will be tested for suitability and ameliorants applied as advised by an agronomists or similarly qualified person/s.

6.2.1.11.2 Methods of Propagation

Seeds may be collected from existing vegetated areas of the site for use in revegetation. Vegetation will consist of cropping species which will be suitable for groundcover and advice will be sought from a qualified agronomist or similar on the most appropriate species and methods of seeding during the landform establishment phase.

6.2.1.12 Mine Subsidence

There are no areas of mine subsidence that require management on the site.

6.2.1.13 Management of Potential Cultural and Heritage Issues

The following mitigation measures will be applied:

- The work will proceed with caution and the following actions will be taken in accordance with the Aboriginal Heritage Due Diligence recommendations:
    - In the event that unexpected Aboriginal objects, sites or places are discovered, DPIE will be notified as soon as practicable after they are first identified.
    - In the event that known or suspected human skeletal remains are encountered, the following procedure will be followed:
        - the immediate vicinity will be secured to protect the find and the find will be immediately reported to the work supervisor who will immediately advise the site supervisor or other nominated senior staff member;
        - the environmental manager or other nominated senior staff member will notify the police and the state coroner on the same day of the find (as required for all human remains discoveries);
        - the environmental manager or other nominated senior staff member will contact DPIE for advice on identification of the skeletal material as Aboriginal and if so, management of the material;
        - if it is determined that the skeletal material is ancestral Aboriginal remains, the Aboriginal community will be contacted, and consultative arrangements will be made to discuss ongoing care of the remains;
        - the site will be recorded in accordance with the NPW Act and DPIE guidelines; and
        - if the remains are historical and not of Aboriginal origin, the Heritage Division of DPIE will be notified for further instruction.

6.2.1.14 Exploration Activities

Exploration activities will be limited in nature and are likely to include costeaning within existing mining footprint and the south-eastern corner of the mining lease. There will be no rehabilitation of exploration activities in these areas as they will be subject to extraction activities prior to final site rehabilitation.

6.2.2 Decommissioning

6.2.2.1 Site Security

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.

Photoplate 1. Fence

Photoplate 2. Entrance Signage

6.2.2.2 Infrastructure to be Removed or Demolished

To date there is no requirement to remove or demolish any infrastructure present on site prior to end of mine life. Further information will be provided closer to the end of mine life.

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

A site shed and water tanks are present on site. To date there is no requirement to remove this infrastructure prior to end of mine life. Further information will be provided closer to the end of mine life.

6.2.2.4 Management of Carbonaceous/Contaminated Material

There is no carbonaceous or contaminated material remaining on site.

6.2.2.5 Hazardous Materials Management

Oils and lubricants and any other hazardous materials (e.g. cleaning products) will be stored in designated bunded areas in accordance with the following Australian Standards:

- Australian Standard 1940: 2004 The Storage and Handling of Flammable and Combustible Liquids; and
- Australian Standard 1596: 2008 The Storage and Handling of LP Gas.

Site management processes will periodically review conformance with these controls and standards.

6.2.2.6 Underground Infrastructure

There is no underground infrastructure on the mining lease.

6.2.3 Landform Establishment

6.2.3.1 Water Management Infrastructure

The void has been envisaged to remain and capture water in the form of a dam. A Water Access Licence will be sought for the remaining water body if required in the final landform closer to completion of mining.

If any sediment dams are constructed outside of the void these will be designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Any drains required will be designed for the 1 in 10 years design storm event and all spillways will be designed for the 1 in 100-year design storm event and do not re-entrain sediment.

6.2.3.2 Final Landform Construction: General Requirements

Out of pit areas will be shaped to have slopes no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 80 metres before being broken by earth banks or similar to reduce surface water velocity and erosion impacts.

Slopes of major tracks are to be graded to less than 10° or have cross drains/banks installed. Where unsuitable soils are present, tracks to be stabilised with crushed bricks, concrete, gravel or similar.

6.2.3.3 Final Landform Construction: Reject Emplacement Areas and Tailings Dams

There are no reject emplacement areas or tailing dams on the site.

6.2.3.4 Final Landform Construction: Final Voids, Highwalls and Low Walls

Slopes to the final water body will be assessed by a geotechnical engineer and appropriate treatment to be implemented as recommended. The pit is surrounded by an earth berm which will be retained to reduce the risk of vehicles and personnel accidentally falling into the void.

The surface of the final landform will be stabilised with soil stabilising polymers, temporary vegetation, or some other suitable means until the site is developed for future commercial/industrial land use.

Photoplate 3. In-Pit Slope Stability

6.2.3.5 Construction of Creek/ River Diversion Works

There are no creek or river diversion on the site.

6.2.4 Growth Medium Development

Once final rehabilitation faces become available, they 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 layers will then be placed over the overburden, in the original natural horizon order, in a similar manner up to a minimum depth of 5cm.

The existing topsoil and overburden are suitable for rehabilitation but may require some amelioration, 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.

Slopes will be kept to the minimum possible to reduce erosion impacts and sediment entrainment. Drainage will be established to direct surface water into the final water body. Surface water outside the void catchment will be diverted to neighbouring properties as currently occurs. Exposed surfaces may be roughened to minimise erosion and maximise rainfall infiltration. Where required, surfaces may be stabilised by spray emulsions whilst vegetation establishes such that 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%.

Establishment of the growth medium is preferable in late winter early spring to enable planting to occur during spring to give the vegetation the optimum growing conditions. Weed control measure will continue to be undertaken as required.

6.2.5 Ecosystem and Land Use Establishment

Reseeding of the final landform with suitable cropping (grassland) species will be undertaken by direct seeding where terrain permits or spray emulsion. Consideration will be given to short lived sterile grasses to establish ground cover and stabilising of soil whilst the target cropping species establish. Advice from an agronomist will be sought to determine the most suitable species. Watering of the rehabilitated areas may be undertaken via the use of a water

cart if required i.e. prolonged dry periods. Once established the cropping (grassland) species should not require continued watering. Regular monitoring and control for weeds will continue and should be of a similar frequency requirement to neighbouring pastures.

6.2.6 Ecosystem and Land Use Development

- Weed monitoring will continue and will confirm that after 2 years the non-target species (weeds) represents less than 20%of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities;
- Inspection of dams, drains and other water management structures will be undertaken monthly for the first six months then six monthly until completion criteria are achieved. Repairs will be undertaken as required;
- Inspections to identify any land instability such as mass movement to be undertaken and if identified, advice from geotechnical experts to be sought and repairs effected;
- No groundwater monitoring is planned at this stage;
- Vegetation will be monitored and areas where establishment has failed will be identified and assessed by an agronomist or similar. Remediation will be undertaken as advised. Remediation may include application of ameliorants, reseeding, mulching etc;
- Assessment of land capability will be undertaken to ensure the land meets the requirements of the final land use;
- Monitoring of soil parameters to determine continued suitability for developing ecosystem. Application of ameliorants to be undertaken, including fertilisation if required. Routine Soil Test (bulked soil sample 0-10 cm) includes but no limited to;
    - Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture;
- Inspection and repair of fencing as appropriate;
- Inspection and repair of access tracks as appropriate;
- Wildlife deterrents to be inspected and repaired/replaced as required; and
- Bushfire controls are to continue and monitored for effectiveness.

6.3 REHABILITATION OF AREAS AFFECTED BY SUBSIDENCE

There are no areas affected by subsidence on the site.

7 Rehabilitation Quality Assurance Process

Table 19. Rehabilitation Quality Assurance Process

Key Actions	Responsibilities	Records	Review
Active Mining (Land Clearing)			
Topsoil Stockpile Management • Slopes no greater than 3H:1V. • Topsoil stockpile height no greater than 1.5 metres. • No stockpiles to be constructed in areas of concentrated flows. • Record volumes and locations of topsoil stockpiles. • Volume of material, topsoil and subsoil required for application to current and future disturbance areas • Chronology of treatments (e.g. weed control, application of cover crop) undertaken on the stockpile. • Achieve groundcover factor of at least 0.05 (70% coverage) on stockpiles with long term inactivity. Estimate of the volume of suitable alternative material required to be imported onto site to supplement potential material, topsoil and subsoil deficits.	Mine Manager Surveyor	Survey data of topsoil stockpiles. GIS data and plans. Soil inventory. Reports from weed contractors. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Overburden Stockpile Management • Slopes no greater than 3H:1V. • Stockpile height no greater than 3 metres. • No stockpiles to be constructed in areas of concentrated flows. • Record volumes and locations of overburden stockpiles. • Volume of material, overburden required for application to current and future disturbance areas • Chronology of treatments (e.g. weed control, application of cover crop) undertaken on the stockpile. • Achieve groundcover factor of at least 0.05 (70% coverage) on stockpiles with long term inactivity. Estimate of the volume of suitable alternative material required to be imported onto site to supplement potential material deficits.	Mine Manager Surveyor	Survey data of overburden stockpiles. GIS data and plans. Soil inventory. Reports from weed contractors. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Flora and Fauna • Trees; are tapped with the bucket to alert fauna and then laid down with an ecologist on site to assist any injured wild life.	Mine Manager	Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Waste • Waste will be stored in a small, designated waste storage area within the site. • Wastes will be stored in bins with a lid. • Oily rags, filters, drums and waste batteries will be stored on a self-bunded pallet or similar. Wastes will be removed by licenced contractor.	Mine Manager	Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Erosion • Slopes to be reduced to a maximum of 3H:1V in out of pit areas. • Consider benched mining design on highwalls.	Mine Manager	Survey data. GIS data and plans. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11

Key Actions	Responsibilities	Records	Review
• Slope Lengths shall not exceed 80 metres before being broken by earth banks or similar in out of pit areas. • Slopes of major tracks are to be <10 degrees or have cross drains/banks installed. • Where unsuitable soils are present, tracks are to be stabilised with crushed bricks, concrete, gravel or similar. • Track walk or lightly rip exposed surfaces to encourage infiltration of rainwater. Achieve ground coverage factor of at least 0.05 (70%) via vegetation, mulch or similar within 30 days of completion of works.			
Sediment • Sediment dams designed for 90th % 5-day storm event. • Capacity of sediment dams to be monitored for available capacity. • Drains to be designed for 1 in 10-year design storm. • Spillways to be designed for 1 in 100-year design storm. • Receiving capacity of sediment dams to be maintained by; o Reuse of water on-site for dust suppression; and o Water to be pumped to pit sump if capacity not sufficient to contain design storm prior to storm events. • Pit maintained to have capacity to contain a volume greater than the design storm. • Drains to be installed to direct dirty surface water to sediment dams. • Installation of silt fences around disturbed area as appropriate. • No silt fences to be constructed in areas of concentrated flows. Upstream clean water to be diverted via diversion drains or bunds as far as possible.	Mine Manager	Survey data. GIS data and plans. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Wind Erosion • Water cart to be engaged during mining, hauling and rehabilitation activities. During adverse conditions: • Cease mining or hauling activities in adverse wind conditions: and Increase water cart frequency	Mine Manager	Weather data. Watercart usage/pumping volumes. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Water Quality • Water quality discharged 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 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).	Mine manager NATA Accredited laboratory	Water testing reports	Annual Rehabilitation Report Section 8.3 See Section 11

Key Actions	Responsibilities	Records	Review
Active Mining (Production)			
Topsoil Stockpile Management • Slopes no greater than 3H:1V. • Topsoil stockpile height no greater than 1.5 metres. • No stockpiles to be constructed in areas of concentrated flows. • Record volumes and locations of topsoil stockpiles. • Volume of material, topsoil and subsoil required for application to current and future disturbance areas • Chronology of treatments (e.g. weed control, application of cover crop) undertaken on the stockpile. • Achieve groundcover factor of at least 0.05 (70% coverage) on stockpiles with long term inactivity. • Estimate of the volume of suitable alternative material required to be imported onto site to supplement potential material, topsoil and subsoil deficits.	Mine Manager Surveyor	Survey data of topsoil stockpiles. GIS data and plans. Soil inventory. Reports from weed contractors. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Overburden Stockpile Management • Slopes no greater than 3H:1V. • Stockpile height no greater than 3 metres. • No stockpiles to be constructed in areas of concentrated flows. • Record volumes and locations of overburden stockpiles. • Volume of material, overburden required for application to current and future disturbance areas • Chronology of treatments (e.g. weed control, application of cover crop) undertaken on the stockpile. • Achieve groundcover factor of at least 0.05 (70% coverage) on stockpiles with long term inactivity. • Estimate of the volume of suitable alternative material required to be imported onto site to supplement potential material deficits.	Mine Manager Surveyor	Survey data of overburden stockpiles. GIS data and plans. Soil inventory. Reports from weed contractors. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Waste • Waste will be stored in a small, designated waste storage area within the site. • Wastes will be stored in bins with a lid. • Oily rags, filters, drums and waste batteries will be stored on a self-bunded pallet or similar. • Wastes will be removed by licenced contractor.	Mine Manager	Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Erosion • Slopes to be reduced to a maximum of 3H:1V in out of pit areas. • Consider benched mining design on highwalls. • Slope Lengths shall not exceed 80 metres before being broken by earth banks or similar in out of pit areas. • Slopes of major tracks are to be <10 degrees or have cross drains/banks installed. • Where unsuitable soils are present, tracks are to be stabilised with crushed bricks, concrete, gravel or similar. • Track walk or lightly rip exposed surfaces to encourage infiltration of rainwater. • Achieve ground coverage factor of at least 0.05 (70%) via vegetation, mulch or similar within 30 days of completion of works.	Mine Manager	Survey data. GIS data and plans. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11

Key Actions	Responsibilities	Records	Review
Sediment • Sediment dams designed for 90th % 5-day storm event. • Capacity of sediment dams to be monitored for available capacity. • Drains to be designed for 1 in 10-year design storm. • Spillways to be designed for 1 in 100-year design storm. • Receiving capacity of sediment dams to be maintained by; o Reuse of water on-site for dust suppression; and o Water to be pumped to pit sump if capacity not sufficient to contain design storm prior to storm events. • Pit maintained to have capacity to contain a volume greater than the design storm. • Drains to be installed to direct dirty surface water to sediment dams. • Installation of silt fences around disturbed area as appropriate. • No silt fences to be constructed in areas of concentrated flows. • Upstream clean water to be diverted via diversion drains or bunds as far as possible.	Mine Manager	Survey data. GIS data and plans. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Wind Erosion • Water cart to be engaged during mining, hauling and rehabilitation activities. During adverse conditions: • Cease mining or hauling activities in adverse wind conditions: and • Increase water cart frequency	Mine Manager	Weather data. Watercart usage/pumping volumes. Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Water Quality • Water quality discharged 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 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).	Mine manager NATA Accredited laboratory	Water testing reports	Annual Rehabilitation Report Section 8.3 See Section 11
Decommissioning			

Key Actions	Responsibilities	Records	Review
Infrastructure (Retained) • Damage to access tracks has been repaired and stabilised. • Slopes of major tracks <10° or have cross drains/banks installed. Where unsuitable soils are present, tracks to be stabilised with crushed bricks, concrete, gravel or similar. • Roads reduced in width to that suitable for final land use. • Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use. • The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	Mine Manager Structural Engineer Surveyor	Survey data. Structural reports Photography and site inspections reports.	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Infrastructure (Removed) • Removal of all services (power, water, communications) that have been connected on the site as part of the operation. • Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, and loading facilities, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples. • Removal of all water management infrastructure (including pumps, pipes and power).	Mine Manager	Utility service disconnection record / notification. Photography and site inspections reports.	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Overburden and Stockpile Areas • All overburden stockpiles are removed and or incorporated into the final landform.	Mine Manager	Survey data. Photography and site inspections reports.	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Waste • All rubbish/ waste materials removed from site. • Contamination will be appropriately remediated so that appropriate guidelines for land use are met, e.g. Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999). • Excess sludge/material has been removed from surface water dams.	Mine Manager Land Contamination Consultant EPA Accredited Auditor	Contamination Remediation Report Site Contamination Audit Report Site Audit Statement (where required) Photography and site inspections reports.	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Landform Establishment			

Key Actions	Responsibilities	Records	Review
• Slopes outside the final void are no greater than 3 horizontal to 1 vertical and slope lengths shall not exceed 80 metres before being broken by earth banks or similar. • Sediment dams designed for 90th % 5-day storm event. • Capacity of sediment dams to be monitored for available capacity. • Drains to be designed for 1 in 10-year design storm. • Spillways to be designed for 1 in 100-year design storm. • Drains to be installed to direct dirty surface water to sediment dams prior to vegetation establishment. • Installation of silt fences around disturbed area as appropriate. • No silt fences to be constructed in areas of concentrated flows. • High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design. • Final landform conforms to the approved final landform. • Overburden material stored on site has been utilised to achieve the final landform. • Water quality discharged from rehabilitated mining operation meet 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 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater) and/or Environment Protection Licence.	Mine Manager Earth moving contractor CPESC Surveyor NATA Accredited laboratory	Engineering drawings Survey data. Photography and site inspections reports. Topsoil and overburden material inventory Water testing results	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Growth Medium Development			

Key Actions	Responsibilities	Records	Review
• The re-established topsoil / subsoil substrate is capable of supporting the targeted cropping/grassland regime on a sustained basis. Analysis to determine suitability includes: o Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture. • Ameliorants to be applied to topsoil material if required as identified by testing. • A topsoil established of at least 100 millimetres thick and comprising clean soils, which can include compost to help with vegetation establishment and growth. • Imported topsoil (if required) conforms to consent conditions and is certified in accordance with EPA requirements. • Track walk or lightly rip exposed surfaces to encourage infiltration of rainwater.	Mine Manager Earth moving contractor NATA Accredited laboratory Agronomist or similar	Photography and site inspections reports. Topsoil and overburden material inventory Soil testing results	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Ecosystem and Landuse Establishment			
• Advice from an agronomist will be sought to determine the most suitable species. • Seeds for use in rehabilitation will be certified where possible. • Reseeding of the final landform with suitable cropping/grassland species will be undertaken by direct seeding where terrain permits or spray emulsion • Watering of the rehabilitated areas may be undertaken via the use of a water cart if required i.e. prolonged dry periods. • Regular monitoring and control for weeds will continue and should be of a similar frequency requirement to neighbouring pastures.	Mine Manager Agronomist or similar Weed/pest control contractor	Photography and site inspections reports. Water testing results Seed viability certificates Water cart volumes and frequency Weather data	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3
Ecosystem and Landuse Development			
• Total foliage cover is greater than or equal to 70%. • Monitoring confirms that after 2 years the non-target species (weeds) represents less than 20%of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities. • Rural fences and gates installed around disturbed area to protect rehabilitation areas. • Feral animal controls will be implemented if required. • Minimal erosion or land instability evident that would not require moderate to significant ongoing management and maintenance works. • Surface water management structures are functioning as designed. • Water quality discharged from rehabilitated mining operation meet 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 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater) and/or Environment Protection Licence.	Mine Manager NATA Accredited laboratory Agronomist or similar Weed/pest control contractor	Photography and site inspections reports. Water testing results	Annual Rehabilitation Report Decommissioning Report See Section 11 Section 8.3

8 Rehabilitation Monitoring Program

8.1 ANALOGUE SITE BASELINE MONITORING

Control analogue sites will be identified in consultation with a MEG 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 annual review.

8.2 REHABILITATION ESTABLISHMENT MONITORING

This section summarises monitoring to be undertaken during the commencement of Ecosystem and Landuse Establishment phase of rehabilitation.

Table 20. Rehabilitation Establishment Inspection Regime

Monitoring	Frequency	Records
Topsoil/Subsoil suitability testing for key parameters.	6 monthly for the first 12 months. Yearly for the next 2 years.	NATA laboratory results.
Topsoil/Subsoil depth measurements to ensure sufficient depth emplaced and maintained.	6 monthly for the first 12 months. Yearly for the next 2 years.	Photography and/or inspection checklist. Soil sampling reports.
Purchased seed viability certification.	Prior to purchase.	Seed viability certificate or similar.
Seed coverage on rehabilitated areas.	Post spreading on topsoil.	Photography and/or inspection report.
Soil moisture.	Weekly for the first month after seeds are spread. Monthly for the next 12 months whilst vegetation establishes. 3 monthly for the next 2 years.	Photography and/or inspection report.
Weed numbers.	6 monthly.	Photography and/or inspection checklist. Weed control contractor reports if spraying undertaken.
Access restrictions/fencing of rehabilitation areas.	6 monthly.	Photography and/or inspection checklist.
Evidence of Erosion.	Monthly for the first 12 months whilst vegetation establishes. 3 monthly for the next 2 years.	Photography and/or inspection checklist.
Surface water management structures.	Monthly for the first 12 months. 3 monthly for the next 2 years.	Photography and/or inspection checklist.

Monitoring	Frequency	Records
Surface water quality.	Monthly for the first 12 months. 3 monthly for the next 2 years.	NATA laboratory results. Trend data/graphs
Vegetation coverage	Monthly for the first 12 months whilst vegetation establishes. 3 monthly for the next 2 years.	Photography and/or inspection checklist.

8.3 MEASURING PERFORMANCE AGAINST REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

The performance of the site rehabilitation will be measured against the rehabilitation objectives and completion criteria outlined in *Section 4.*

Table 21. Rehabilitation Objectives and Completion Criteria Inspection Regime

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Decommissioning Phase					
Retention of infrastructure: All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community.	Inspection/s by suitably qualified engineer or similar.	At completion of decommissioning phase.	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography.	Not applicable.	Inspection indicates that not all hazards are isolated and secured.
Damage to access tracks has been repaired and stabilised.	Inspection/s by suitably qualified engineer or similar of repairs and stabilisation.	At completion of decommissioning phase.	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography.	Not applicable.	Inspection reveals that access track repairs have not been undertaken or have been ineffective.
Tracks suitable for private access or pedestrian usage.	Inspection/s by suitably qualified engineer or similar for grade of <10º, and suitable width of access track, cross drains /banks installed. Inspect for presence of erosion gullies or rills. Inspect for installation of suitable all-weather material on access tracks.	At completion of decommissioning phase.	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography. Survey by registered surveyor.	Not applicable.	Inspection reveals that the access tracks are not suitable for light vehicle access or pedestrians
The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	At completion of decommissioning phase.	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography. Survey by registered surveyor.	Not applicable.	Inspection by engineer finds the structural integrity of remaining infrastructure is not safe and suitable for the intended final land use.
Infrastructure is in a condition (e.g. structural, electrical, other hazards) that is suitable for the intended final land use.	Obtain evidence of acceptance from landowner that infrastructure is in a condition that is suitable for the intended final land use in accordance with formal agreement.	At completion of decommissioning phase	Site decommissioning inspection report. Formal acceptance from landowner.	Not applicable.	No acceptance of landowner obtained.
Removal of Infrastructure: Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	Inspection of site to confirm removal of all services (power, water, communications) that have been connected on the site as part of the operation.	At completion of decommissioning phase	Site decommissioning inspection report. Statement provided, utility service disconnection record / notification.	Not applicable.	Services to be removed are still connected.
Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities,	Inspection of the site to confirm all plant, equipment and associated infrastructure including, stockpile areas, loading facilities, office complex, portable offices, exploration core samples, camp facilities, storage	At completion of decommissioning phase	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar.	Not applicable.	Infrastructure not removed from the site.

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	racks, samples have been removed.		Photography. Survey by registered surveyor.		
Removal of all water management infrastructure (including pumps, pipes and power) not required for site rehabilitation works or retained in final landform.	Inspection of site confirms that water management infrastructure not required for site rehabilitation works or in the final landform is removed.	At completion of decommissioning phase	Site decommissioning inspection report. Photography.	Not applicable.	Water management infrastructure not removed from the site.
No waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. All rubbish/ waste materials removed from site.	At completion of decommissioning phase	Site decommissioning inspection report. Photography.	Not applicable.	Waste or potential contamination present on site.
Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Site inspection and risk assessment of site to determine potential contamination issues. If potential risks identified in risk assessment, then a contamination assessment is to be undertaken by suitably qualified person/s. Remediation measures, if required, to be assessed by Land Contamination Consultant or EPA Accredited Auditor.	At commencement of decommissioning phase.	Contamination Remediation Report prepared by Land Contamination Consultant Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).	Not applicable.	Soil testing indicates that sites does not meet Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Landform Establishment Phase					
Measured survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan.	Survey verifies final landform complies with final landform construction in accordance with Final Landform and Rehabilitation Plan.	On construction completion.	Survey data and plans. Photography.	Not applicable.	Slopes outside the final void are greater than 3 horizontal to 1 vertical Slope lengths exceed 80 metres before being broken by earth banks or similar.
	Verify high risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	On construction completion.	Survey data and plans	Not applicable.	High risk landforms (such as steep slopes, high walls) have not been constructed in accordance with geotechnical design.
	Verify overburden material stored on site has been utilised to achieve the final landform.	On construction completion.	Survey data and plans. Photography.	Not applicable.	Overburden stockpiles identified as remaining on the site.
	Verify material stockpiles have been removed from the site or utilised to achieve the final landform.	On construction completion.	Survey data and plans. Photography.	Not applicable.	Material stockpiles identified as remaining on the site.
Significant surface water management structures (e.g. spillways, drop structures, and major drains) have been constructed in accordance with Managing Urban Stormwater 'Blue Book' DECC 2008 requirements.	Verify sediment dams are designed for 90th % 5-day storm event. Monitor available capacity of sediment dams. Verify drains are designed for 1 in 10-year design storm. Verify spillways are designed for 1 in 100-year design storm. Verify drains installed to direct dirty surface water to sediment dams. Verify installation of silt fences around disturbed areas as appropriate.	On construction completion.	Assessment Report undertaken by a suitably qualified person. Survey	Not applicable.	Sediment dams not designed for 90th % 5-day storm event. Drains not designed for 1 in 10-year design storm. Spillways not designed for 1 in 100-year design storm.
Measured survey/monitoring of rehabilitated landform to specifically monitor settlement and/or material loss via erosion.	Survey verifies that settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement.	12 months after completion of construction.	Survey data and plans	Not applicable.	Settlement or material loss results in pooling of water, changes in surface water flow directions and velocities and function of water management structures.

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Growth Medium Development Phase					
Track walk or lightly rip/scarify exposed surfaces to encourage infiltration of rainwater	Visual inspection to confirm the surface to which topsoil is to be applied is roughened.	Prior to topsoil application	Photography. Site inspection reports/checklists.	No applicable.	Surface is noted to be compacted.
Growth medium/topsoil testing (bulked soil samples 0-10 cm) meets suitable criteria as determined by final landuse.	Routine Soil Test (bulked soil sample 0-10 cm). Includes but no limited to: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture.	Topsoil to be tested prior to spreading.	Soil testing reports.	Not applicable.	Soil testing indicates soil not within recommended criteria as advised by Soil Specialist/Agronomist.
Ameliorants applied to topsoil material if required as identified by testing.	Visual observation of ameliorant application, including photography, to ensure even application at specified rate.	Post topsoil spreading	Photography. Site inspection reports/checklists. Contractor invoices.	Not applicable.	Ameliorants not applied or applied evenly or applied at below the specified rate.
Topsoil established of at least 100 millimetres thick and comprising clean soils, which can include compost to assist with vegetation establishment and growth.	Test pits dug to confirm depth of topsoil application. Verify even application of topsoil and that no bare surfaces remain.	Post topsoil spreading	Photography. Site inspection reports/checklists	Not applicable.	Average depth of topsoil less than 50mm. Bare patches evident.
Imported topsoil or mulch (if required) conforms to consent conditions and is certified in accordance with EPA requirements.	Topsoil/mulch material is certified in accordance with any EPA waste exemption requirements.	Prior to receipt of topsoil/mulch	Topsoil/mulch certificate Haulage records/tonnage received.	Not applicable	No topsoil/mulch certificate provided by supplier

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Ecosystem and Land Use Establishment Phase					
Visual indicators of erosion and land instability.	Visual inspections for identification of erosion that would require moderate to significant ongoing management and maintenance works. Visual inspection for signs of land instability such as mass movement. Visual inspection for areas of active gully erosion. Visual inspection for evidence of tunnel erosion.	Weekly for the first month after landform establishment and then monthly for the next five years.	Photography. Erosion surveys- measurements of depths and numbers of rills, gullies, mass movements, tunnel erosion if present. Site inspection reports/checklists. Independent geotechnical reports (where required) Surveys	Compare photography and measurements to identify if erosion impacts are increasing.	Rills/gullies greater than 10cm in depth. Rills/gullies are showing an increasing trend in size for a period of at least 6 months. Any evidence of mass movement/slumping. Any evidence of tunnel erosion.
	Ground cover within plotted test quadrants. Vegetation size, survival rates and variety of species within plotted quadrants.	Monthly for the year after ecosystem and landform establishment and then 6 monthly for the next five years.	Photography. Reports on the estimates of ground coverage, vegetation size, survival rates and variety of species. Site inspection reports/checklists.	Compare photography and measurements of groundcover to determine if it is trending towards or away from a coverage factor of 70% (Blue Book C -factor equivalent of 0.05). Compare measurements of vegetation size, survival rates and variety of species to determine if on an increasing or decreasing trend and maturation rate.	Average loss of more than 20% of species within test quadrants. Ground coverage remains the same or is decreasing with regards to the final target of 70% over any 6-month period.
	Validate seeds for use in rehabilitation are certified where possible.	Prior to purchase	Certificates and purchase records.	Not applicable	No seed certification available.
	Visual observation of soil moisture of the rehabilitated areas to determine if watering is required i.e. prolonged dry periods.	Weekly for the first month after seeding and then monthly for the next 12 months.	Site inspection reports/checklists. Weather data	Review weather data and long-term outlooks for rainfall to determine if more frequent watering is required.	Failure of vegetation due to prolonged dry conditions.
	Visual – no evidence of active scour likely to compromise surface water management structures such as drains, spillways etc.	Monthly for the first 6 months after landform establishment and then 6 monthly for the next five years.	Photography. Site inspection reports/checklists.	Compare photography and site inspection reports to determine if scouring is occurring and increasing in impact.	Surface water management structures are the source of sediment entrainment.

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Soil testing (bulked soil samples 0-10 cm) meets suitable criteria as determined by final landuse.	Routine Soil Test (bulked soil samples 0-10 cm). Includes but no limited to: Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio; Bray I and II Phosphorus; Colwell Phosphorus; Available cations (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); pH and EC (1:5 water); Basic Colour, Basic Texture.	6 monthly after initial emplacement.	Soil testing reports.	Compare soil parameters to identify if soil fertility is decreasing or increasing.	Soil testing indicates soil fertility is decreasing according to criteria as advised by Soil Specialist/Agronomist.
Ecosystem and Land Use Development Phase					
Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes of pasture and cropping lands.	Ground cover within plotted test quadrants. Vegetation size, survival rates and variety of species within plotted quadrants.	6 monthly	Photography. Reports on the estimates of ground coverage, vegetation size, survival rates and variety of species. Site inspection reports/checklists.	Compare photography and measurements of groundcover to determine if it is trending towards or away from a coverage factor of 70% (Blue Book C -factor equivalent of 0.05). Compare measurements of vegetation size, survival rates and variety of species to determine if on an increasing or decreasing trend and maturation rate.	Average loss of more than 20% of species within test quadrants. Ground coverage remains the same or is decreasing with regards to the final target of 70% over any 6-month period.
All Phases					
No further active weed control required beyond that considered necessary at analogue sites.	Monitoring confirms the non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.	6 monthly	Site inspection reports/checklists Weed contractor reports/invoices	Comparison of weed inspection reports overtime to determine if weed numbers are increasing.	Non-target species (weeds) represent greater than 10% of foliage cover.
Soil inventory to be maintained to assess requirements to achieve the final landform.	Topsoil and overburden inventory to be maintained, included volumes stripped, stored in stockpiles and spread over rehabilitation areas.	Annually	Annual report to RR.	Identify possible deficits in future rehabilitation requirements	Projected topsoil volumes available for rehabilitation indicate less than 100mm depth over the entire rehabilitation area can be achieved.
Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	12 monthly	Slashing records. Liaison with NSW RFS. Photography.	Not applicable	Vegetation during periods of high fire danger at risk of bushfire.

9 Rehabilitation Research, Modelling and Trials

9.1 CURRENT REHABILITATION RESEARCH, MODELLING AND TRIALS

There are no current rehabilitation research, modelling or trials being undertaken.

9.2 FUTURE REHABILITATION RESEARCH, MODELLING AND TRIALS

Future rehabilitation research will likely involve selection of suitable species and when final surfaces become available, trials may be undertaken to determine the best approach to establishing revegetation. The results of any trial will be used to address any knowledge gaps in relation to:

- the control or management of risks identified in the rehabilitation risk assessment
- the development and further refinement of rehabilitation completion criteria and
- the achievement of rehabilitation objectives and rehabilitation completion criteria.

This report will be updated as the development of research, modelling and trials are investigated.

10 Intervention and Adaptive Management

Table 22. Trigger Action Response Plan

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
Infrastructure that is to remain as part of the final land use is not safe and poses a hazard to the community.	Inspection indicates that not all hazards are isolated and secured.	Suitably qualified professional or utilities provider to be engaged to isolate/remove hazards and render safe.	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography. Survey by registered surveyor. Statement provided, utility service disconnection record / notification. Formal acceptance from landowner.
	Inspection reveals that access track repairs have not been undertaken or have been ineffective.	Track repairs to be undertaken.	
	Inspection reveals that the access tracks are not suitable for light vehicle access or pedestrians	Tracks to be rendered suitable for light vehicle access or pedestrians.	
	Inspection by engineer finds the structural integrity of remaining infrastructure is not safe and suitable for the intended final land use.	Suitably qualified engineer or similar to be engaged to assess remaining infrastructure and advise on rectifying structural integrity.	
	Infrastructure not removed from the site.	Infrastructure to be removed from the site.	
	Water management infrastructure not removed from the site.	Water management infrastructure to be removed from the site.	
Harm to rehabilitation areas due to presence of contaminants of concern.	Soil testing indicates that sites does not meet Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Engage a contamination professional to assess the site and advise on remediation measures.	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report Site Audit Statement prepared by EPA Accredited Auditor (where required).
Waste material visible on-site surface.	Waste present on site.	Waste to be removed from the site.	Site decommissioning inspection report. Photography.
Harm to rehabilitation works due to erosion impacts.	Slopes outside the final void are greater than 3 horizontal to 1 vertical Slope lengths exceed 80 metres before being broken by earth banks or similar.	Suitably qualified professional to assess the landform to determine if erosion impacts evident and advise on mitigation measures, if required. Mitigation may include reshaping the landform or installing additional erosion controls.	Managing Urban Stormwater ‘Blue Book’ DECC 2008. Survey data and plans. Photography. Assessment Report undertaken by a suitably qualified person i.e. CPESC.
Harm to rehabilitation works due to erosion impacts. **Limited biological resources available on site for**	Overburden stockpiles identified as remaining on the site.	Overburden material is to be removed from the site or incorporated into the rehabilitation of the final landform.	Managing Urban Stormwater ‘Blue Book’ DECC 2008.

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
rehabilitation.	Material stockpiles identified as remaining on the site.	Stockpile material is to be removed from the site or incorporated into the rehabilitation of the final landform.	Survey data and plans. Photography.
	Sediment dams not designed for 90th % 5-day storm event. Drains not designed for 1 in 10-year design storm. Spillways not designed for 1 in 100-year design storm.	A suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.	Assessment Report undertaken by a suitably qualified person i.e. CPESC. Survey data and plans. Photography.
	Settlement or material loss results in pooling of water, changes in surface water flow directions and velocities and function of water management structures.	A suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.	Soil Inventory reported in AR.
	Rills/gullies greater than 10cm in depth. Rills/gullies are showing an increasing trend in size for a period of at least 6 months. Any evidence of mass movement/slumping. Any evidence of tunnel erosion.	A suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented. Mitigation may include reshaping the landform or installing additional erosion controls.	
	Ground coverage remains the same or is decreasing with regards to the final target of 70% over any 6-month period.	A suitably qualified professional in sediment and erosion control and/or ecologist will be engaged to prepare and assessment report and recommendations to be implemented. Mitigation may include reseeding exposed areas, applying mulch, applying soil binder, watering and fertilising etc	
	Evidence of erosion or bare patches in rehabilitated areas due to stock or feral animals.	Fencing to be inspected and repaired as required. Removal of stock from rehabilitation areas. Engagement of animal control professional to remove pests.	
	Evidence of rehabilitation areas impacted by wind erosion.	A suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented. Mitigation may include installing additional erosion controls.	
	On-site topsoil/growth medium deficit projected in achieving desired coverage (100mm) on the final landform is noted in annual reporting.	Investigate the use of overburden material, if sufficient volumes available, to replace the topsoil deficit. This may include soil analysis and application of ameliorants to manufacture suitable topsoil material. Investigate the importation of suitable topsoil material.	
Domain landform is not safe, stable and fit for the purpose of the intended final land use.	High risk landforms (such as steep slopes, high walls) have not been constructed in accordance with geotechnical design.	Suitably qualified geotechnical engineer to assess the landform to determine if the landform is stable or requires modification other structural repairs are required.	Survey data and plans. Photography. Geotechnical reports
Domain landform is not safe, stable and fit for the purpose of the intended final land use. **Failure to establish soil/growing medium suitable for**	Slopes required by the final landform are not obtained due to material deficits.	Suitably qualified geotechnical engineer to assess the landform to determine if the landform is stable or requires modification other structural repairs are required.	Survey data and plans. Photography.

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
establishment of vegetation community.	Surface is noted to be compacted.	Surface to be ripped to promote surface water and air infiltration and reseeding undertaken if required.	Geotechnical reports Photography. Site inspection reports/checklists. Contractor invoices. Soil testing reports.
Failure to establish soil/growing medium suitable for establishment of vegetation community. **Vegetation community establishment unsuccessful.**	Soil testing indicates soil not within recommended criteria as advised by Soil Specialist/Agronomist.	Ameliorants to be applied as advised by soil specialist/agronomist.	Photography. Site inspection reports/checklists. Contractor invoices. Soil testing reports. Reports on the estimates of ground coverage, vegetation size, survival rates and variety of species. Site inspection reports/checklists. Photography. Seed certificates and purchase records. Weather data Soil testing reports.
	Ameliorants not applied or applied evenly or applied at below the specified rate.	Advice to be sought from soil specialist/agronomist to determine whether reapplication required or other methods to be employed to ensure the growth medium is suitable.	
	Average depth of topsoil less than 50mm. Bare patches evident.	Advice to be sought from soil specialist/agronomist to determine whether reapplication required or if the topsoil depth is suitable for target species. This may include evidence from rehabilitation trials.	
	Average loss of more than 20% of species within vegetation test quadrants. Ground coverage remains the same or is decreasing with regards to the final target of 70% over any 6-month period.	Advice to be sought from agronomist/ecologist to determine the causes of the vegetation losses and possible remediation measures. Remediation measures may include reseeding, application of mulch, application of fertiliser or other ameliorants, watering etc.	
Vegetation community establishment unsuccessful. **Decrease in downstream water quality.**	No seed certification available.	Alternative seed supplier to be sought. If no other supplier available for target species, advice to be sought from agronomist/ecologist to determine suitability of the available seed or determine alternative species.	Reports on the estimates of ground coverage, vegetation size, survival rates and variety of species. Site inspection reports/checklists. Photography. Seed certificates and purchase records. Weather data Soil testing reports.
	Failure of vegetation due to prolonged dry conditions.	Review weather data and long-term outlooks for rainfall to determine if more frequent watering is required. Investigate installing/upgrading irrigation systems. If additional watering is not feasible, investigate alternative	

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
		means of stabilising the soil i.e. binders until conditions improve. Reseed bare areas once dry conditions have been alleviated.	Water Testing Reports ANZECC Guidelines. EPL
	Soil testing indicates soil fertility is decreasing according to criteria as advised by Soil Specialist/Agronomist.	Advice to be sought from agronomist/ecologist to determine why fertility is decreasing and determine remediation measures.	
	Non-target species (weeds) represent greater than 10% of foliage cover.	Weed control contractor to be engaged to spray or mechanically remove weeds. Selective herbicides should be used where possible to protect target species.	
	Continued exceedance of trigger values, over a 6-month period, for water quality, as defined in 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 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).	Source of the pollution to be investigated and remediated if the source of the pollution is on-site. This may include erosion and sediment controls in the case of elevated total suspended solids, spills and leaks of hydrocarbons to be investigated if detected etc. Management procedures to be reviewed and amended as required in accordance with the results of any investigations. Reports to be prepared and provided to EPA or DPIE as required in any consent or licence conditions.	
Harm to rehabilitation areas due to bushfire.	Excessive vegetation height during periods of high to extreme fire danger.	Fire breaks, where they exist, to be maintained by slashing. Reduce fuel loads in vegetated areas by slashing or grazing where vegetation is sufficiently established to support such activities.	Site inspection reports/checklists. Photography. Weather data.

11 Review, Revision and Implementation

11.1 REVIEW OF THE PLAN

Table 23. Triggers for Review of the Rehabilitation Management Plan

Triggers	Process	Timing	Responsibility	Implementation/ Records
Mining Regulation- Clause 11 of Schedule 8A The holder of a mining lease must amend the rehabilitation management plan for the mining lease as follows—				
(a) to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved,	The approved rehabilitation outcome document i.e. Rehabilitation Objective Statement, Rehabilitation Completion Criteria Statement or the Final Landform and Rehabilitation Plan (spatial data) will replace any proposed (and unapproved) documents. The Rehabilitation Management Plan (RMP) will be reviewed and amended to ensure it is consistent with the approved rehabilitation outcome document.	Within 30 days after the document is approved.	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.
(b) as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made,	The RMP will be reviewed and amended within 30 days if a rehabilitation outcome document is amended to ensure it is consistent with the approved rehabilitation outcome document.	Within 30 days after the amendment is made.	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.
(c) to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted,	The RMP will be reviewed and amended as soon as practicable if a rehabilitation risk assessment determines that risk control measures must be changed.	As soon as practicable	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.

Triggers	Process	Timing	Responsibility	Implementation/ Records
(d) whenever given a written direction to do so by the Secretary—in accordance with the direction.	The RMP will be reviewed and amended as soon as practicable if directed by the Secretary.	As soon as practicable	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.
Mining Regulation- Clause 13 of Schedule 8A- F**orward Program and** A**nnual Reporting**	The RMP will be reviewed and amended as soon as practicable if the Annual Review identifies changes to the processes, risks, mining progress etc that are inconsistent with the current RMP.	As soon as practicable	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.
Modification to Development Consent DA No. 08-0326	The RMP will be reviewed and amended as soon as practicable after the approval of any modification to the development consent and be consistent with and requirements under the amended consent.	As soon as practicable	Mine Manager/ Environmental Manager	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments.
A**mendment to the Rehabilitation Management Plan**	The amended RMP will be provided to staff and relevant contractors and acknowledgement of the changes from staff will be recorded.	As soon as practicable after document is amended.	Environmental Manager/ Site staff and contractors.	The amended RMP will be include a record of document versions, dates amended and a brief summary of the amendments. Records of staff training and inductions are to be updated to include the amended RMP.

12 References

Ref 1 DECC (2008) *Managing Urban Stormwater Soils and Construction V1*

Ref 2 DECC (2009) *Managing Urban Stormwater Soils and Construction V2E Mines and Quarries*

Ref 3 NSW DPE (2022) *Land Zoning WMS*

Ref 4 NSW Resource Regulator (2021) *Form and Way: Rehabilitation Management Plan for Large Mines*

Ref 5 NSW Resource Regulator (2021) *Guideline: Rehabilitation Risk Assessment*

Ref 6 G. Taylor, R.A. Eggleton (2015) *Bauxites of the NSW Southern Highlands, Australian Journal of Earth Sciences*

Ref 7 NSW Soil and Land Information System (2001)- Soil Technical Report- Canyonleigh Road (Canyonleigh)

Appendix A
DA No. 08/0326

WINGECARRIBEE SHIRE COUNCIL

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ABN 49 546 344 354

PM:SC

Form 4 - Environmental Planning and Assessment Act, 1979

NOTICE TO APPLICANT OF DETERMINATION OF A DEVELOPMENT APPLICATION

TO: J & A Mulready
Jarrabinda
Lot 3 Camaroo Lane
MOSS VALE NSW 2577

DATED: 17 September 1996
AMENDED: 12 June 2008

PLEASE QUOTE THE DEVELOPMENT APPLICATION NUMBER IN ALL CORRESPONDENCE AND UPON PAYMENT OF FEES, CHARGES & CONTRIBUTIONS

...ng the applicant in respect of Development Application No. DA 08/0326 (DA432/95)

Pursuant to Section 80 (1) (a) and 96 (1A)of the *Environmental Planning & Assessment Act 1979* notice is hereby given of the determination by the Council, as the consent authority, of the Development Application relating to the land described as follows:-

PROPERTY:	Lot 1 DP 516824 - Canyonleigh Road, Canyonleigh
ASSESS NO:	2523000004
OWNER:	EJ Mulready & MA Mulready

Purpose of Development: Continued Operation of and Extension to an Existing Bauxite Quarry.

The Development Application has been:

Approved under the provision of Wingecarribee Local Environmental Plan 1989, subject to the conditions specified in this notice.

The conditions of the consent and reasons for their imposition follow:

GENERAL – DEVELOPMENT CONSENT CONDITIONS

1. AMENDED 12/06/08
Compliance with the provisions of the submitted development application DA432/95, plans prepared by J Mulready and accompanying Statement of Environmental Effects prepared by Nolan & Associates Pty Ltd and dated 13 September 1995 and supplementary information except where modified by the following conditions.

2. The applicant/site operator is permitted from time to time as required to operate on the site portable screening plant and equipment. The plant and equipment shall be maintained to the satisfaction of Council's Quarries Officer.

3. The quarrying operations shall comply with the requirements of all relevant Departments, Statutory Bodies and Authorities having power to control or regulate the quarry. Such requirements are to be complied with during the life of the quarry. This is to include the issue of a licence from the Environment Protection Authority (where applicable) and compliance with licence conditions.

   (In accordance with Section 90 (1) (b) (h) and (n) of the Environmental Planning and Assessment Act 1979.)

4. The applicant and/or site operator shall ensure during the life of the quarry that it meets the specific requirements of the NSW Electricity Transmission Authority so as to ensure that damage or interference to the Yass-Dapto 330 KV Transmission Line which traverses part of Lot 1 DP 516824 is not caused from quarrying or related activities.

   In accordance with Section 90 (1) (b), (h) and (n) of the E P & A Act 1979.

5. The hours of operation shall be restricted to the following:-

   Quarry, Processing Area and Product Delivery:

   6.00 am to 6.00 pm Mondays to Fridays
   6.00 am to 12.00 noon Saturdays

   There is to be no quarrying or processing or transportation on Sundays or public holidays. Haulage vehicles shall not enter or leave the quarry or processing and loading areas outside the above hours.

   (In accordance with Section 90 (1) (b) (e) (h) (j) (q) and (r) of the Environmental Planning and Assessment Act 1979.)

6. Prior to the disturbance or removal of any vegetation in the identified expansion area the applicant shall undertake the following specific action as a means of conclusively identifying that the proposal will not adversely impact on any archaeological site or have an adverse effect on any endangered native fauna:-

   (a) An inspection and assessment of the site by the Regional Aboriginal Sites Officer of the NSW Parks and Wildlife Service.

   (b) A fauna assessment by a suitably qualified practitioner in the field.

   The result of the assessments undertaken in respect of (a) and (b) shall be submitted to Council's Quarries Officer for consideration prior to the undertaking of any construction works envisaged for the extended area.

   (In accordance with Section 90 (1) (c5) (n) and (r) of the E P & A Act 1979.)

7. All haulage vehicle loads are to be covered prior to leaving the quarry site.

   (In accordance with Section 90 (1) (b) (h) (j) and (r) of the Environmental Planning and Assessment Act 1979.)

8. The applicant/site operator shall submit for the consideration and approval of Council's Quarries Officer within a period of six (6) months from the date of this consent notice an Environmental Management and Site Rehabilitation Plan. Such Plan shall include the requirements of the Department of Conservation and Land Management, Environment Protection Authority and Sydney Water and the following specific matters shall be incorporated in this document.

   * Peripheral site drainage, location and detailed design of settlement dams and treatment of all run-off water.

   * Staging of restoration.

   * Soil erosion and sediment control measures to be implemented on site.

   * Final site rehabilitation/land formation plan including details of proposed initial and on going landscape treatment.

   * Details of noise suppression equipment to be installed on quarry equipment and haulage vehicles.

   * Details of the manner in which petroleum products are to be stored on site if applicable.

   * The manner in which stockpile sites are to be positioned and maintained on site.

   * The manner in which regular maintenance of sediment and erosion control structures is to be programmed on site.

   The applicant/operator shall comply with the provisions of the Environmental Management and Site Rehabilitation Plan to the satisfaction of Council.

   (In accordance with Section 90 (1) (b) (h) (n) (o) and (r) of the Environmental Planning and Assessment Act 1979.)

9. To guarantee compliance with the Environmental Management and Site Rehabilitation Plan and to ensure appropriate resources are available for any emergency works a bond or suitable bank guarantee and associated Deed of Agreement to an amount of $5,000 shall be lodged with Council within a period of six (6) months from the date of this consent. This amount shall be reviewed annually from the date of this consent and Council may at each subsequent review increase the contribution amount by the percentage increase in the All Groups Consumer Price Index for Sydney. The Deed of Agreement shall be to the satisfaction of Council's Solicitors and prepared at the applicant's cost.

   (In accordance with Section 90 (1) (b) (e) (f) (g) (h) (ml) (n) (o) and (r) of the Environmental Planning and Assessment Act 1979.)

10. The provision, by the applicant, at the applicant's expense, the following works and services in accordance with Council's Engineering Standards, to the satisfaction of the Director, Environment & Planning and Director Engineering. In exceptional circumstances an applicant may apply to Council to defer the required works and/or services, in which case Council may accept a bond or bank guarantee for their due completion in conjunction with the building works and prior to occupation of the development. Plans and specifications are to be submitted by the applicant and approved prior to the release of building approval.

(a) Rural vehicular entrance for access to the development to Standard Drawing No 110 off Canyonleigh Road.

(b) Provision of "Truck Entering" signs on both approaches to vehicle entrance along Canyonleigh Road.

(c) Installation of cattle grid or similar device just inside property to dislodge loose mud/silt from trucks before leaving the site.

(Section 90(1)(i)(j)(l)(o) and (r) of the E P & A Act, the Local Government Act, 1993 and Council's Subdivision and Development Code.)

11. The payment, by the applicant, of the following Council standard fees and charges with the submission of Engineering Plans for the development.

(Section 90(1) (l) of the E P & A Act and the Local Government Act, 1993.)

(a) Standard supervision fees for engineering works associated with the development amounting to $250.

12. For the purpose of employing a suitably qualified person for the express purpose of monitoring the applicants compliance with all the conditions of development consent the applicant shall make payment of a monetary contribution to the amount of $2500 per annum during the life of the quarry. The contribution shall be payable to Council each three (3) months from the date of this consent.

The contribution shall be reviewed annually from the date of this consent and Council may at each subsequent review increase the contribution amount by the percentage increase in the All Groups Consumers Price Index Number for Sydney.

(In accordance with Section 90 (1) (b) (h) (j) (n) (o) (p) (p1) (q) (r) and Section 94 of the Environmental Planning and Assessment Act 1979.)

13. A contribution shall be made by the applicant during the life of the quarry on the subject land towards the maintenance and repair of local and main roads within the Shire of Wingecarribee which shall be traversed by vehicles carrying quarry products. Contribution shall be payable to Council from the date of this consent notice at the rate of thirty (30c) cents per tonne per annum of material extracted from the subject land. The method of determining the amount payable pursuant to this condition shall be by reference to the annual returns required to be lodged by the applicant with the Department of Mineral Resources or sales tonnages recorded from the quarry on the subject land whichever amount is the greater. The contribution shall be payable annually within fourteen (14) days of the date of lodgement of the said returns by the applicant with the Department of Mineral Resources or within fourteen (14) days from each anniversary of this consent notice whichever is the later. The contribution may be reviewed annually by the Council and the Council may at each such review increase the rate provided the percentage rate shall not exceed the percentage increase in the All Groups Consumer Price Index Number for Sydney.

(In accordance with Section 90 (1) (b) (h) (l) (n) (o) (p) (q) and (r) and Section 94 of the Environmental Planning and Assessment Act 1979.)

Endorsement of Date of Consent: 17 September 1996

NOTES:

1. To ascertain the date upon which the consent becomes effective refer to Section 83 of the Act.

2. This consent will lapse unless the development subject of this consent is commenced within a period of two (2) years in accordance with Section 95 of the Environmental Planning and Assessment Act, 1979 except in the case of staged developments where the provisions of Section 95 (1)(b) of the *Environmental Planning and Assessment Act* apply.

3. Section 97 of the Act confers on an applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court exercisable within 12 months after receipt of this notice.

4. The approval granted by the Council does NOT consider nor negate or vary any private easement, covenant or restriction. The owner is advised to investigate any encumbrance or restriction that may be noted on the title to the land.

5. All conditions on this consent have been imposed having regard to all matters listed for consideration under Section 79C of the *Environmental Planning & Assessment Act 1979.*

6. An applicant may request pursuant to Section 82A of the *Environmental Planning & Assessment Act 1979* Council to review a determination of the application where that application is of a type referred to in that Section of the Act within twelve (12) months after receipt of this notice.

Date: 17 September 1996
Amended: 12 June 2008

Signed: .....

DELEGATE OF COUNCIL

Appendix B
Mine Lease Conditions

Instrument of Variation

Private Lands Lease 1236 (1924)

I, **JAMIE TRIPODI, Executive Director Assessments & Systems**, Mining Exploration and Geoscience in the 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 private lands lease **PLL 1236 (1924)** as described in Schedule A.

The conditions of **PLL 1236 (1924)**, as varied, are set out in Schedule B.

The variation takes effect on 17 October 2022.

JAMIE TRIPODI
Executive Director Assessments & Systems
As delegate for the Minister administering the *Mining Act 1992*
Delegation date: 14 May 2018

Dated: 14 August 2022

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	Wording amended to modernise the condition	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 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 2 (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 2.

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 has been assessed at **$133,000**.

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.

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
EPA Licence

Environment Protection Licence

Licence - 21501

Licence Details	
Number:	21501
Anniversary Date:	02-June

Licensee

PGH BRICKS & PAVERS PTY LIMITED

PO BOX LOCKED BAG 1345

NORTH RYDE NSW 2113

Premises

CANYONLEIGH QUARRY

CANYONLEIGH ROAD

CANYONLEIGH NSW 2577

Scheduled Activity

Mining for minerals

Fee Based Activity	Scale
Mining for minerals	0-30000 T annual production capacity

Contact Us

NSW EPA

4 Parramatta Square

12 Darcy Street

PARRAMATTA NSW 2150

Phone: 131 555

Email: info@epa.nsw.gov.au

Locked Bag 5022

PARRAMATTA NSW 2124

Environment Protection Licence

Licence - 21501

Environment Protection Licence

Licence - 21501

Environment Protection Licence

Licence - 21501

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 21501

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

PGH BRICKS & PAVERS PTY LIMITED
PO BOX LOCKED BAG 1345
NORTH RYDE NSW 2113

subject to the conditions which follow.

Environment Protection Licence

Licence - 21501

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Mining for minerals	Mining for minerals	0 - 30000 T annual production capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
CANYONLEIGH QUARRY
CANYONLEIGH ROAD
CANYONLEIGH
NSW 2577
LOT 1 DP 516824

A2.2 The premises location is shown on the map below.

Environment Protection Licence

Licence - 21501

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Environment Protection Licence

Licence - 21501

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Monitoring of dust deposition		Dust deposition monitoring point 1 located north west of quarry. Location shown on map located at DOC21/244935
2	Monitoring of dust deposition		Dust deposition monitoring point 2 located south west of quarry. Location shown on map located at DOC21/244935
3	Monitoring of dust deposition		Dust deposition monitoring point 3 located south east of quarry, near main shed. Location shown on map located at DOC21/244935
4	Monitoring of dust deposition		Dust deposition monitoring point 4 located at south east corner of quarry. Location shown on map located at DOC21/244935

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Air Concentration Limits

POINT 1,2,3,4

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Particulates - Deposited Matter	grams per square metre per month	4			Annual

L3 Hours of operation

L3.1 Hours of operation must be limited to between the hours of 6:00am to 6:00pm Monday to Friday and 6:00am to 12:00 noon on Saturdays.

Environment Protection Licence

Licence - 21501

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the

frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 1,2,3,4

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AS/NZS 3580.10.1:2016

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is

given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;

f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Environment Protection Licence

Licence - 21501

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 21501

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 21501

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Greg Newman

Environment Protection Authority

(By Delegation)

Date of this edition: 02-June-2021

End Notes

Appendix D
PLL Boundary History

Planning & Environment
Resources Regulator

PGH Bricks & Pavers Pty Ltd
Mr Lionel Helie
Level 5
Triniti 3, 39 Dehli Road
NORTH RYDE NSW 2113

Authorisation Number: PLL1236
Our Reference: ACES 0723 2016
OUT17/23863

Advisory Letter

The Resources Regulator is responsible for monitoring and enforcing compliance with the *Mining Act 1992* (Mining Act) and associated Regulations.

The Resources Regulator has recently considered allegations of breaches of Section 5 or Section 6 of the Mining Act by PGH Bricks & Pavers Pty Ltd at Private Lands Lease 1236 (Canyonleigh Quarry, NSW).

The investigation has determined, on the basis of the information available at this time, that there was no breach of either Section 5 or Section 6 of the Mining Act.

While on this occasion the Resources Regulator has decided not to take any further action, I remind you of your obligation to comply with all requirements of the above mining legislation. Further information is contained below for your assistance.

Information regarding your obligations is available at the Department's website at: http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers.

Please contact Investigator Kate Kelleher on (02) 4931 6751 or via email at kate.kelleher@industry.nsw.gov.au should you have any queries.

Nicholas Harrigan
Team Leader, Regulatory Investigations
Major Investigations and Emergency Response Unit
Resources Regulator
Department of Planning and Environment

Dated: 25 July 2017

M.G.A.

12
D.P. 861916

11
D.P. 861916

CANYONLEIGH ROAD

GIN IN POST FD.

6°41'44" 21.61

6° 104.27

A B PEG

C

53' 04" 423.118

6°

54' 455.71

34"

RM GIP FD. 230°42'34" 29.065
RM DHW FD. 233°46'04" 11.29

97°49'14" 80.390

PEG FD. G

12
D.P. 861916

12
D.P. 861916

PML 7
P8404

(PART)
LOT 1
D.P. 516824

PML 8
7.49ha
(surf. 7.49ha)

315.96
277° 41' 14"

260°

19' 417.464

04"

3
D.P. 516824

1
D.P. 516824

2
D.P. 516824

1
D.P. 1179849

F

PEG FD.
RM GIP FD.
8°46'19" 0.605

230.037
7°

E
44' PEG

20.644
D
34"

RM REF.
TREE FD.
91°48'29" 6.11

TO TS-12111
MOSS VALE [P]
71°39'46" 16123.551

TO TS-12268
PICTON [P]
35°57'31" 60482.777

2
D.P. 618107

REFER TO DIAGRAM A

REFER TO DIAGRAM A

TS 12111
'X'

24°38'56" 48,534.97 MGA.

TS 12268
'Y'

DIAGRAM A
N.T.S

MGA COORDINATES ZONE 56		
POINT	EASTING	NORTHING
A	243286.57	6168644.22
B	243289.09	6168665.66
C	243301.58	6168769.20
D	243713.10	6168839.41
E	243710.32	6168818.95
F	243679.33	6168591.01
G	243366.21	6168633.28

SCHEDULE OF SURVEY MARKS AS AT 28/10/2017
SURVEYING AND SPATIAL INFORMATION REGULATIONS 2017

MARK	EASTING	NORTHING	ZONE	CLASS	ORDER
TS 12111	258984.138	6173663.663	56	2A	0
TS 12268	279225.791	6217775.879	56	2A	0

SOURCE S.C.I.M.S
COMBINED SCALE FACTOR 1.000205

PLAN OF PORTION PML 8

(Boundary Redefinition)

PARISH: MURRIMBA

COUNTY: CAMDEN

MAP SHEET No. 8928-4-N-CANYONLEIGH

REDUCTION RATIO 1:4000

REDEFINITION OF PRIVATE LANDS LEASE No. 1236 (Act 1924)
MINING DIVISION: SYDNEY

APPLICANT: PGH BRICKS and PAVERS PTY LIMTED

APPLICATION DATE: N/A

STATUS:

METHOD: OPEN CUT

SURFACE EXCEPTION / DEPTH RESTRICTION

☐ Embraces the surface and soil below thereof to an unlimited depth.

NOTES:

This plan supersedes plan catalogue No. P8405

Azimuth: 'X' - 'Y'

Plans used in the course of this survey

DP861916, DP 1095888, DP 516824

Survey declared on this plan for lines A to F

I Matthew B. Smith
of CEH Consulting Pty Ltd.
a surveyor registered under the Surveying and Spatial Information Act 2002, hereby certify that the survey /compilation represented in this plan is accurate and has been completed in accordance with the Surveying and Spatial Information Regulation 2017 and the Surveyor General's Direction for Mining Surveys and was completed on 27/11/2017

FORM11

Signature : .....

BOSSI Identification No : 8175

Survey Calcs : .....
Plan Investigated : .....
Plan Approved : .....

Paper No : t88-0280

R14084050
D110099230

M27475

vgt environmental compliance solutions and laboratories

Beyond Compliance

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