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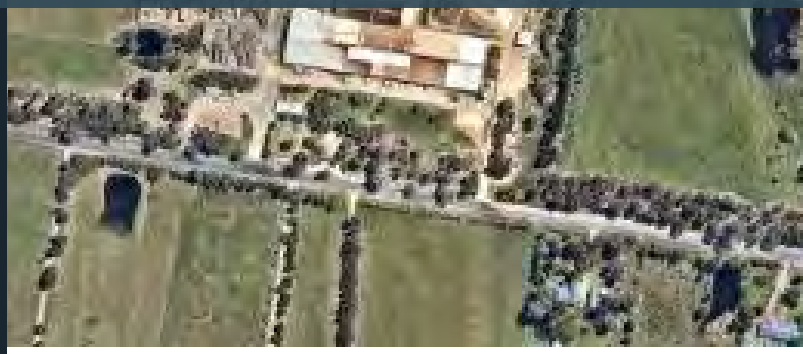
December 2022

Rehabilitation Management Plan for Jindera Clay Mine ML1730 (Act 1992)



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Summary Table	
Name of Mine	Jindera Clay Mine
RMP Commencement Date	July 2022
Mining Authorisations	ML1730
Mining Lease Expiry	12/02/2037
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 3964 jgauci@csr.com.au
Name and Contact Details of the Environmental Representative	Melanie Windust 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	14/12/2022

Revision Table

Date	Version	Author	Reviewed	Approved
30/09/2022	D0	TO	JG	JG
14/12/2022	F0	TO	JG	JG

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Tables

Appendices

1 Introduction to Mining Project

1.1 HISTORY OF OPERATIONS

The site was granted development consent No. 10.2014.30 on the 31st of March 2015 for the continuation of clay extraction from extractive operations that began in 1976. The planning consent for the mine expires on the 31st of March 2035 and therefore, will require a development consent variation in order to secure the remaining clay resources on site. The site is operated under Mining Lease (ML) 1730, to extract Group 5 mineral (Structural clay) and is valid until 12th February 2037.

The site is utilised for extraction activities as well has brick production within the factory located on site. The factory is not located within the mine lease. Material won from the site and imported for brickmaking is largely stored adjacent to the factory and off the mine lease, although some clay material stockpiling may occur on the mine lease when required. Costeaning has been the primary exploration technique employed in advance of mining.

Very little rehabilitation has been undertaken on the site to date due to the requirement to obtain differing clay materials to blend for brick making.

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES AND LICENCES

1.2.1 Regional NSW – Mining, Exploration and Geoscience

Consent conditions are included in *Appendix A* and summary included in *Table 1.*

Table 1. Development Approvals

No.	Date Approved	Expires	Notes
DA 10/2014/30	31/03/2015	31/03/2035	Industrial – Continuation of existing use operations in movement of the extraction area.

1.2.2 Regional NSW- Mining Exploration and Geoscience (MEG)

Mining lease conditions are included in *Appendix B* and summary included in *Table 2*.

Table 2. Mining Authorisation

No.	Act	Company	Granted	Expires	Area (Ha)	Minerals
ML1730	1992	PGH Bricks & Pavers Pty Ltd	12/02/2016	12/02/2037	23.19	Structural Clay

1.2.3 Environmental Protection Authority (EPA)

An Environmental Protection Licence EPL1515 was issued March 2003. The EPL is 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 80 Hueske Road, Jindera. *Table 3* lists the cadastral lots involve in the mine operations.

Table 3. Land Ownership and Land Use

Lot	DP	Ownership	Land Description
4	581243	PGH Bricks & Pavers Pty Ltd	Used in mine operations, contains ML1730

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

The surrounding land is sparsely populated and generally used as rural residential. The closest populated area is Jindera township approximately 2.5km north of the site, see *Figure One*.

The site is located within the Greater Hume Shire Council and. The property is within land which is zoned "RU4 Primary Production – Small Lots", under the Greater Hume Local Environmental Plan 2012, see *Figure Two.* Ref 5

During the application for modification to the development consent, an Aboriginal Heritage Information Managements System (AHIMS) search was conducted and identified no Aboriginal sites or places in the mine vicinity. A new search was conducted in 2022 during the preparation of this report, no new sites or places have been located in the vicinity with a 200m buffer applied.

Plan of:	**Rehabilitation Management Plan for Jindera Clay Mine June 2022 - Site Location**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Google Maps & nearmap - Image Date 20/05/2022	**Plan By:**	SK/JD
Figure:	**ONE**	**Council:**	Greater Hume Shire Council	**Survey:**	Not Applicable	**Project Manager:**	TO
Version/ Date:	V0 23/06/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855	**Office:**	Thornton
Our Ref:	12408_BJ_RMP2022_Q001_V0_F1	**Client:**	PGH Bricks and Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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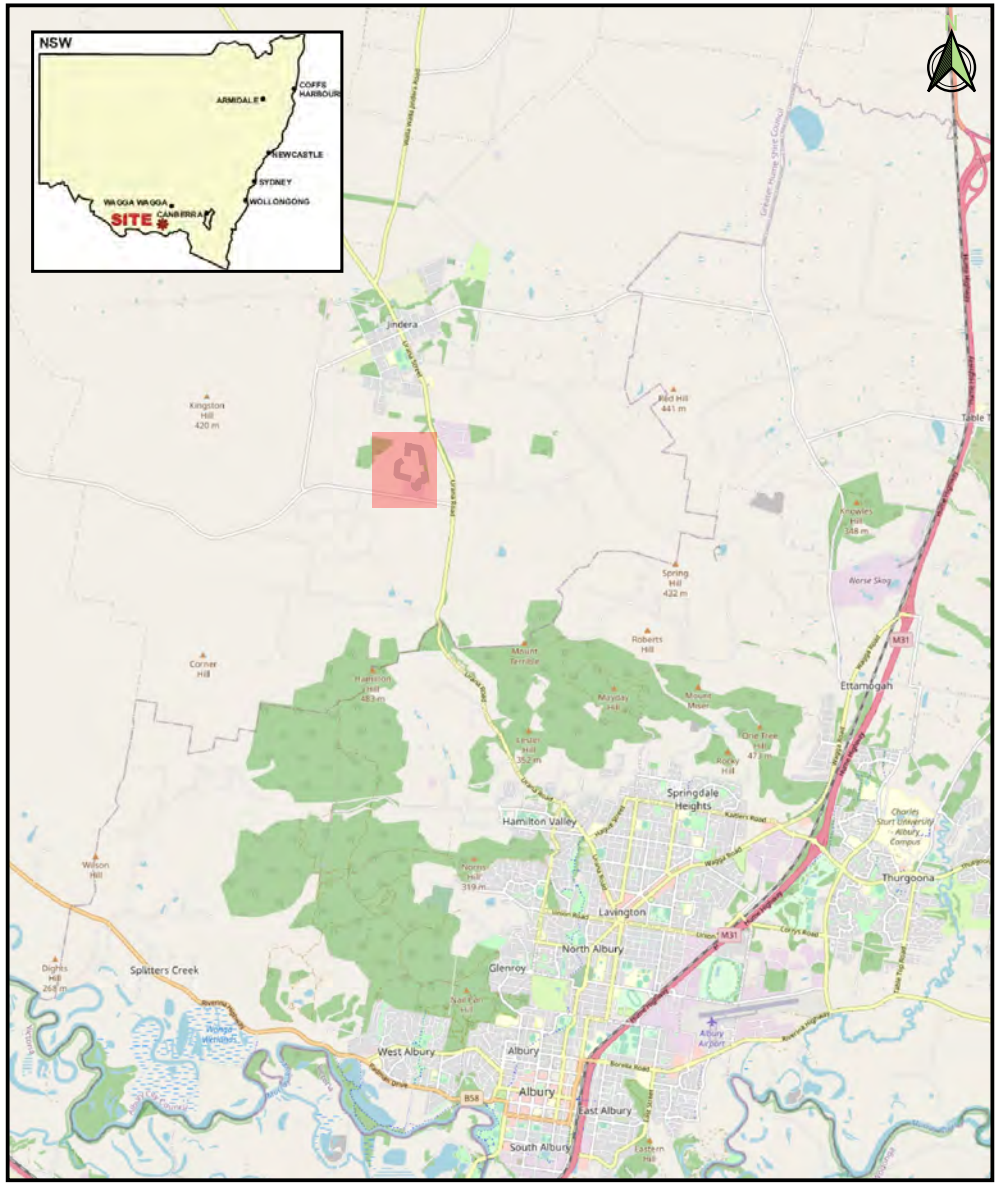

Legend

Authority Boundary (ML1730) | Property Boundary | Lot Boundary

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Land Ownership and Landuse**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**TWO**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	GVT
Version/ Date:	V0 24/06/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q002_V0_F2	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

N

0 50 100 150 200 m

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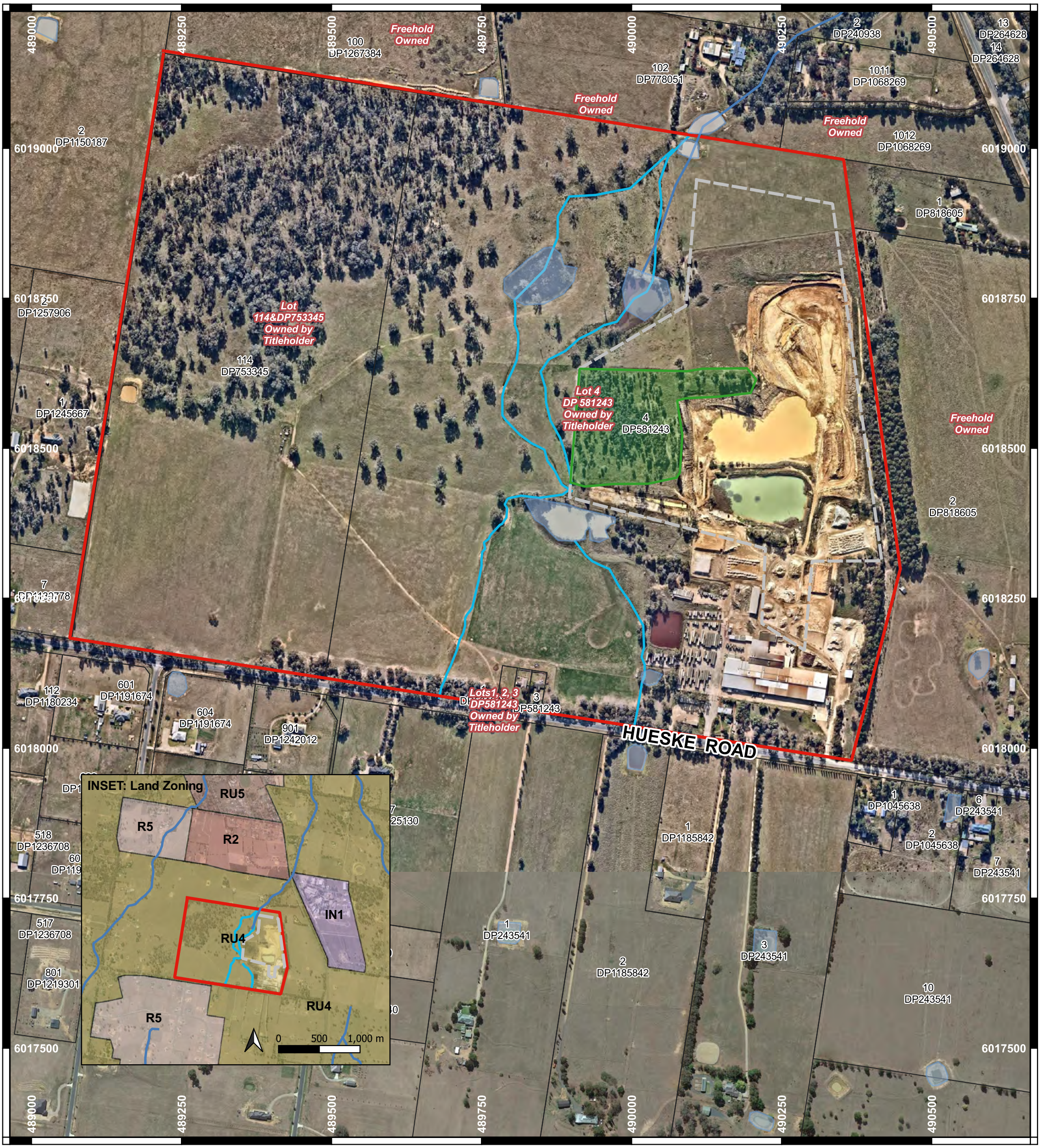
This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.



Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- River/Major Drainage Line
- 1m Contour
- 5m Contour
- Tree Areas
- Dam

Zoning (NSW Zoning WMS Data)

- IN1
- RU4
- RU5
- R2
- R5

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
DA10/2014/20 **Condition 12**	The Applicant shall at the expiry of this consent or at completion of the development rehabilitate the site in accordance with the Remedial Works Program that have been SEE or in accordance with a subsequent plan approved by the NSW Government Department of Trade and Investment – Resources and Energy *(Now Resources Regulator)*	This plan provides the rehabilitation methodology.

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

Mining Regulation Section	Details	Where Addressed in 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 (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.	Section 2 Section 4 Section 5
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

Mining Regulation Section	Details	Where Addressed in this Report
	(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
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	

Mining Regulation Section	Details	Where Addressed in this Report
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— (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	Section 4, Section 5

2.2 FINAL LAND USE OPTIONS ASSESSMENT

An assessment of the final land use options has not been undertaken as the conceptual final landform was defined within the approved 2016 MOP.

2.3 FINAL LAND USE STATEMENT

The conceptual post-mining rehabilitation plan is shown on the FLRP Plan in the Rehabilitation Portal.

Key features of the proposed final landform as outlined below will allow flexibility for further stakeholder consultation.

- The landform will include battering all benches back to no greater than 3 in 1 slope*;*
- A lake with gentle slopes to a maximum 30 metres below the natural surface;
- Native grasses and shrubs on the final void slopes surrounding the sediment dam/s on pit floor;
- The landform will be a shape that may allow access for low level grazing with permanent dam/s for stock;
- The haul roads will be removed or re-designed as relevant to allow access;
- The whole site will be safe, stable and non-polluting;

The final land use may change course throughout the lifetime of the mine depending economic or community factors. The land might become more useful as landfill, industrial, rural residential or native forest. PGH will use grassland indicative of the neighbouring properties as a rehabilitation goal.

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
Agriculture- Grazing	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 permanent water body in the final landform.
Industrial	This domain incorporates the portion of the site to the south adjacent the existing brickworks.

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.
Water Management Area	This domain incorporates the existing two water bodies within the mining lease.

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.	Slopes to be reduced to a maximum of 3H:1V within the void.
		Reduce slope lengths.	Slope Lengths shall not exceed 80 metres before being broken by earth banks or similar for batter slopes of <4H:1V. Slope Lengths shall not exceed 35 metres before being broken by earth banks or similar for batter slopes of 4H:1V. Slope Lengths shall not exceed 25 metres before being broken by earth banks or similar for batter slopes of 3H:1V.
		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} (3H:1V). Stockpile height no greater than 2 metres. No stockpiles to be constructed in areas of concentrated flows.
		Overburden stockpile management.	Slopes no greater than 18^{o} (3H:1V). Stockpile height no greater than 3 metres. No stockpiles to be constructed in areas of concentrated flows.

Hazard	Risks	Risk Controls	Details
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.
		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 2 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 as there is no requirement or permission to discharge offsite. All future monitoring, if undertaken, will be undertaken in accordance with Approved Methods for Sampling and Analysis of Water Pollutants in NSW (DEC 2004) and any EPL requirements.
		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.	

Hazard	Risks	Risk Controls	Details
Groundwater Quality and Flows	Decrease in groundwater quality and changes in flows	Groundwater interaction will be minimised.	Pit floor will not be deeper than 30m below surface. The EIS determined that the clay layer is an aquitard and considers that it is unlikely that groundwater will be encountered.
Wind Erosion	Rehabilitation areas impacted by wind erosion.	Air quality monitoring.	Air quality monitoring will be conducted in accordance with Consent Condition 14 and any EPL conditions. Results will be reviewed annually and submitted to the EPA in the annual return as per Consent Condition 15.
		Dust suppression.	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.
		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 2 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 or similar 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
Lack of target seed availability and quality	Seeds unable to be sourced for rehabilitation.	Egologist or other suitably qualified persons to be engaged to investigate suitable alternatives.	
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.	
	Groundwater seepage increases salinity in remaining water bodies.	Engage hydrologist and/or geotechnical engineer to assess impacts and remediation measures if required.	
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 Tubestock, 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 **(A)**	Infrastructure (1)	**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.	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.	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.
Water Storage **(G)**	**Active Mining Area (Open Cut Void)** **(5)**	**Surface Water**	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record pH between 6.5 and 8.5 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).	Downstream water to be monitored for pH and TSS and comply with required criteria.	Water quality monitoring reports.
		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.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
Agriculture-Grazing **(B)**	**Infrastructure** **(1)** **Overburden Emplacement** **(4)** **Active Mining Area (Open cut void)** **(5)**	**Removal of Infrastructure**	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification.
				Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, loading facilities, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos, decommissioning reports etc
				Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.
		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).

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
		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.	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 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 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.
					Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with Managing Urban Stormwater ‘Blue Book’ DECC 2008 requirements.	An engineering assessment undertaken by a suitably qualified person concludes that 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.
					High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	An engineering assessment undertaken by a suitably qualified person concludes that high risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.
		Surface Water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular, ‘downstream’ water quality monitoring will record pH between 6.5 and 8.5 and total suspended solids <50mg/L or within 10% of ‘upstream’ levels (whichever is the greater).	Downstream water to be monitored for pH and TSS and meets the proposed criteria.	Water quality monitoring reports.
		Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
		Agricultural Revegetation	The vegetation composition of the rehabilitation is recognisable as the target vegetation community (agricultural-grazing)	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.	

4.2 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA – STAKEHOLDER CONSULTATION

Consultation undertaken to date is summarised below.

Table 1. Stakeholder Consultation

Stakeholder	Consultation Activities	Matters Subject to Consultation	Actions
NSW Resources Regulator	Approved Mine Operations Plans Annual Rehabilitation Reports	Nil	Nil
Grater Hume Shire Council	Annual Rehabilitation Reports	Nil	Nil
EPA	Approval of EPL 20938 in 2017. Variation of licence in 2021.	Nil	Nil
Residential Neighbours	Nil	Nil	Nil

5 Final Landform and Rehabilitation Plan

5.1 FINAL LANDFORM AND REHABILITATION PLAN – ELECTRONIC COPY

Jindera ML1730 FLRP Plan 1: Final Landform Features. Relinq Year 2037

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

Notes

Submission IDs: 2115, 2114
Plan date: 20/07/2022

543.2 0 271.58 543.2 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

Jindera ML1730 FLRP Plan 1: Final Landform Contours. Relinq Year 2037

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

Notes

Submission IDs: 2115, 2116
Plan date: 20/07/2022

543.2 0 271.58 543.2 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

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 2. Life of Mine Rehabilitation Schedule

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
Active mining	Any topsoil generated will be stored in perimeter bunds if final surfaces not available. Any overburden generated will be stored in perimeter bunds or places onto final faces.	Up to 2037 (estimated)	Topsoil stripping is anticipated to be complete prior to 2032, when mining is expected to be completed. Overburden generation is also anticipated to be complete prior to 2032, when mining is expected to be completed.
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 2037	Raw material exhausted from extraction area. Mining has ceased.
Water Management	If water is present in pit sump, the volume will be reduced to permit access to pit for mining and then rehabilitation. Water collected in the pit sump will be discharged, if required, when EPL criteria is met, until the final landform has a coverage of at least 70% and is not prone to sediment entrainment. Clean water will be diverted around the disturbed area.	Up to 2037	Water management will continue until mining has ceased and the void has ground coverage of at least 70%.
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 2042	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 2042	Mining has ceased in target areas. Water levels in the pit are lowered sufficiently to permit access to each final face.

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
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 and reused on final surfaces.	2023- Stored topsoil testing. 2022 to 2042	Applicable when final slopes have been achieved. Final slopes have been ripped. Topsoil is suitable for target species.
Establishment of Vegetation	Seeding/planting of pasture species is undertaken on finished surfaces Watering/Irrigation as required to assist establishment of vegetation.	2027 to 2047	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.	2027 to 2052	Completion of vegetation establishment.

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Current Rehabilitation 2022**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**FIVE**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q005_V0_F5	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam
- River/Major Drainage Line

Rehabilitation Phase

- Active Mining

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation 2022 - 2027**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**SIX**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q006_V0_F6	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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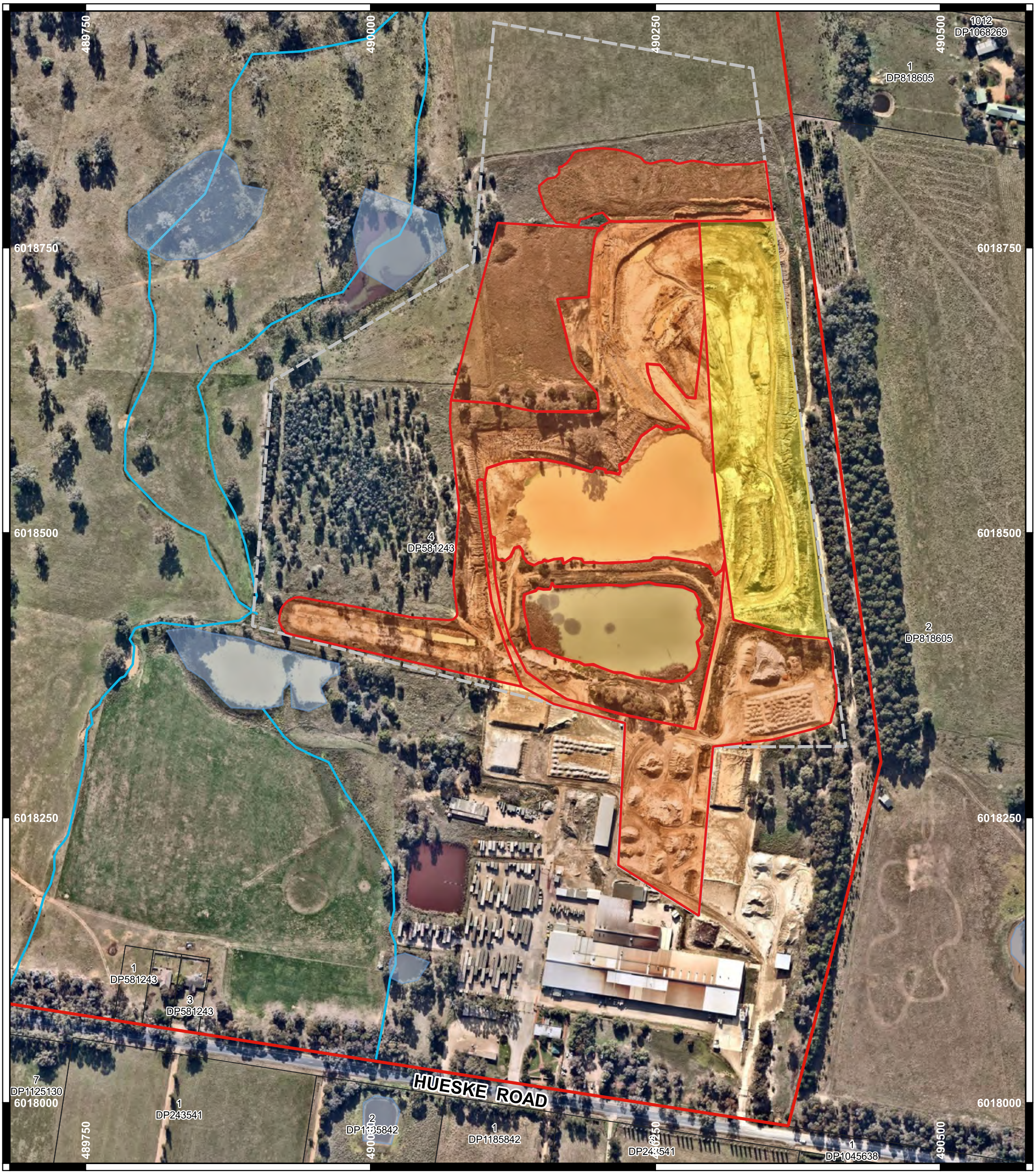

Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- River/Major Drainage Line
- Dam

Rehabilitation Phase

- Landform Establishment
- Active Mining

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation 2027 - 2032**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**SEVEN**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q007_V0_F7	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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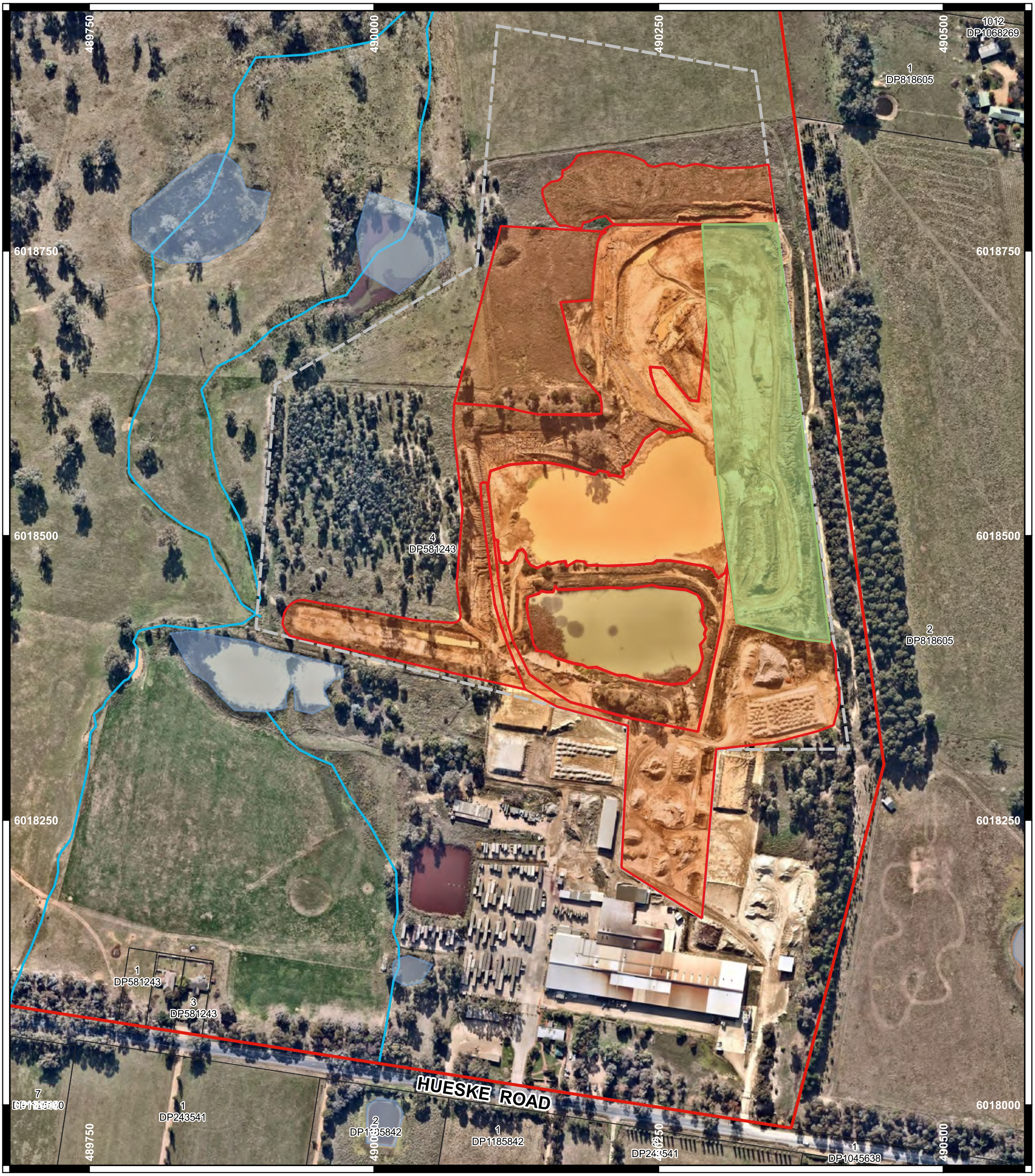

Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam
- River/Major Drainage Line

Rehabilitation Phase

- Ecosystem & Land Use Establishment
- Active Mining

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation 2032 - 2037**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD	vgt environmental compliance solutions and laboratories	
Figure:	**EIGHT**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO		
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855				
Our Ref:	12408_BJ_RMP2022_Q008_V0_F8	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m				

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Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- River/Major Drainage Line
- Dam

Rehabilitation Phase

- Ecosystem & Land Use Development
- Active Mining

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation 2037 - 2042**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**NINE**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q009_V0_F9	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam
- River/Major Drainage Line

Rehabilitation Phase

- Landform Establishment
- Ecosystem & Land Use Establishment
- Ecosystem & Land Use Development

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation 2042 - 2047**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD	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.
Figure:	**TEN**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO		
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855				
Our Ref:	12408_BJ_RMP2022_Q010_V0_F10	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m				

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Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam
- River/Major Drainage Line

Rehabilitation Phase

- Ecosystem & Land Use Establishment
- Ecosystem & Land Use Development

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Proposed Rehabilitation Completion**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD		
Figure:	**ELEVEN**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO		
Version/ Date:	V0 16/08/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855				
Our Ref:	12408_BJ_RMP2022_Q011_V0_F11	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m				

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Legend

Feature/Domain

- Property Boundary
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- Lot Boundary
- River/Major Drainage Line
- Dam

Rehabilitation Phase

- Ecosystem & Land Use Development

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 6, Ref 7). The sample site was located approximately 3.7km northwest of the Jindera pit. The horizon soil type was recorded as fine sandy clay loam, with the profile becoming increasingly more clay down to 1.4 metres where it was described as brownish yellow heavy clay. The slope of the sampling area was estimated as 1%. The field pH tests were slightly acidic to neutral to the depth of 1.4 metres, ranging from 5.5 to 7. The soil hydrology was described as being imperfectly drained, no salting was evident, and the land use was improved pasture.

6.2.1.1.1 Topsoil Stripping and Storage

Land clearing will be undertaken in future years to the north and west of the site as mining progresses to the full extent of the extraction area. The removal of trees impeding the progress of the mine will be required in the west. Felled trees will be placed in rehabilitation areas perpendicular to the slope to reduce erosion impacts, trap seeds and nutrients as to provide habitat for fauna. Trees not used immediately will be stored in windrows around the perimeter of the site until suitable rehabilitation areas become available.

Prior to stripping all water management features will be constructed which include earth banks (Stormwater Collection Drains) to divert as much clean water as possible and capture the dirty water within the pit sump. Prior to stripping the vegetation should be sprayed for weeds to assist in reducing the weed content in topsoil that may be transferred to new rehabilitation areas.

Stripping should not occur when in either and excessively dry or wet condition. Grading or pushing soil into windrows with graders or dozers for later collection for loading into rear dump trucks by front-end loaders are examples of preferential less aggressive soil handling systems. This minimises compression effects of the heavy equipment that is often necessary for economical transport of soil material.

Where immediate reuse of the topsoil is not possible it will be stored appropriately on the perimeter of the site. That is, stockpiles of topsoil to be located at least five metres from areas of likely concentrated or high velocity flows, especially drainage lines and access roads. The surface of soil stockpiles should be left in as coarsely structured a condition as possible in order to promote infiltration and minimise erosion until vegetation is established, and to prevent anaerobic zones forming.

Topsoil stockpiles are not to exceed 2m in height, overburden stockpiles are kept less than 3 metres in height and are to be seeded with a temporary vegetation cover if stockpiles are to remain longer than 12 months. If necessary, earth banks or drains will be constructed to divert localised run-on.

Topsoil to a depth of 10 to 15cm will be stripped first with the subsoils, if found, to a depth of a further 20 to 30cm stripped and stored separately. The actual depth of stripping of each layer will be recorded and a total volume of topsoil and subsoils estimated, and an inventory kept. Each stockpile location will be logged. Barrier fencing will be installed to limit access to rehabilitated areas or the stockpiles. Management practices will be carried out to minimise areas being affected by wind and water erosion.

To date, topsoil and overburden not for immediate use in earth mound construction or rehabilitation has been stockpiled in the northern portion of the mine. It is planned to store any topsoil and overburden won from the land clearing in separate bunds around the perimeter of the site to provide a visual and acoustic screen.

An inventory of soils management will be developed by PGH and reported in future Annual Reviews.

6.2.1.2 Flora

The site is generally cleared with a few isolated regrowth trees and has been used for agricultural activities for many years. The pasture is in poor condition with some improved pasture, native grasses and weeds. The SoEE [Ref 2] states that there are no Threatened Ecological Communities on the site although there is potential for remnants to exist within the surrounding agricultural land. There are no Wetlands of International Importance on the site, although there are some associated with the Murray Darling Drainage Basin that are in the vicinity of the site.

To date there has not been a flora and fauna survey on site.

There are trees present on planned future extraction area on the site which will require removal. These are regrowth from previous clearing. The Murray LLS was contacted regarding the removal of the trees and determined that no further action from them is required, see *Appendix E*.

A portion on the northwest corner of the property (see *Figure Twelve*) is covered by the Terrestrial Biodiversity provision of the Greater Hume Local Environmental Plan 2012, aiming to achieve the following:

- Maintain terrestrial biodiversity;
- Protect native fauna and flora;
- Protect ecological processes, and
- Encourage the conservation and recovery of native fauna and flora and their habitats.

Mining in the western portion of the mine lease will be within this Terrestrial Biodiversity area. When mining is necessary, trees will be moved but kept on site for future rehabilitation and erosion minimisation.

Weed eradication and control will be undertaken; if noxious weeds are identified a qualified weed contractor will spray these. Council conducts inspections of the site and follow-up reports are sent to PGH if treatment is required. A weed Management Program has been developed by PGH (see *Appendix F)*

Vegetation species that will be established on the site will be consistent with local pasture species. Planting of vegetation is likely to be a combination of direct seeding and planting with tubestock as appropriate. The newly planted vegetation will be watered, if required, in order to assist in establishment. Tree guards may also be employed to protect seedlings from adverse weather and vermin.

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Greater Hume Council LEP Terrestrial Biodiversity Area**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps, nearmap Dated 20/05/2022 Zone MGA 55 & Greater Hume Council LEP.	**Plan By:**	TO/JD
Figure:	**TWELVE**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 10/09/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q012_V0_F12	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

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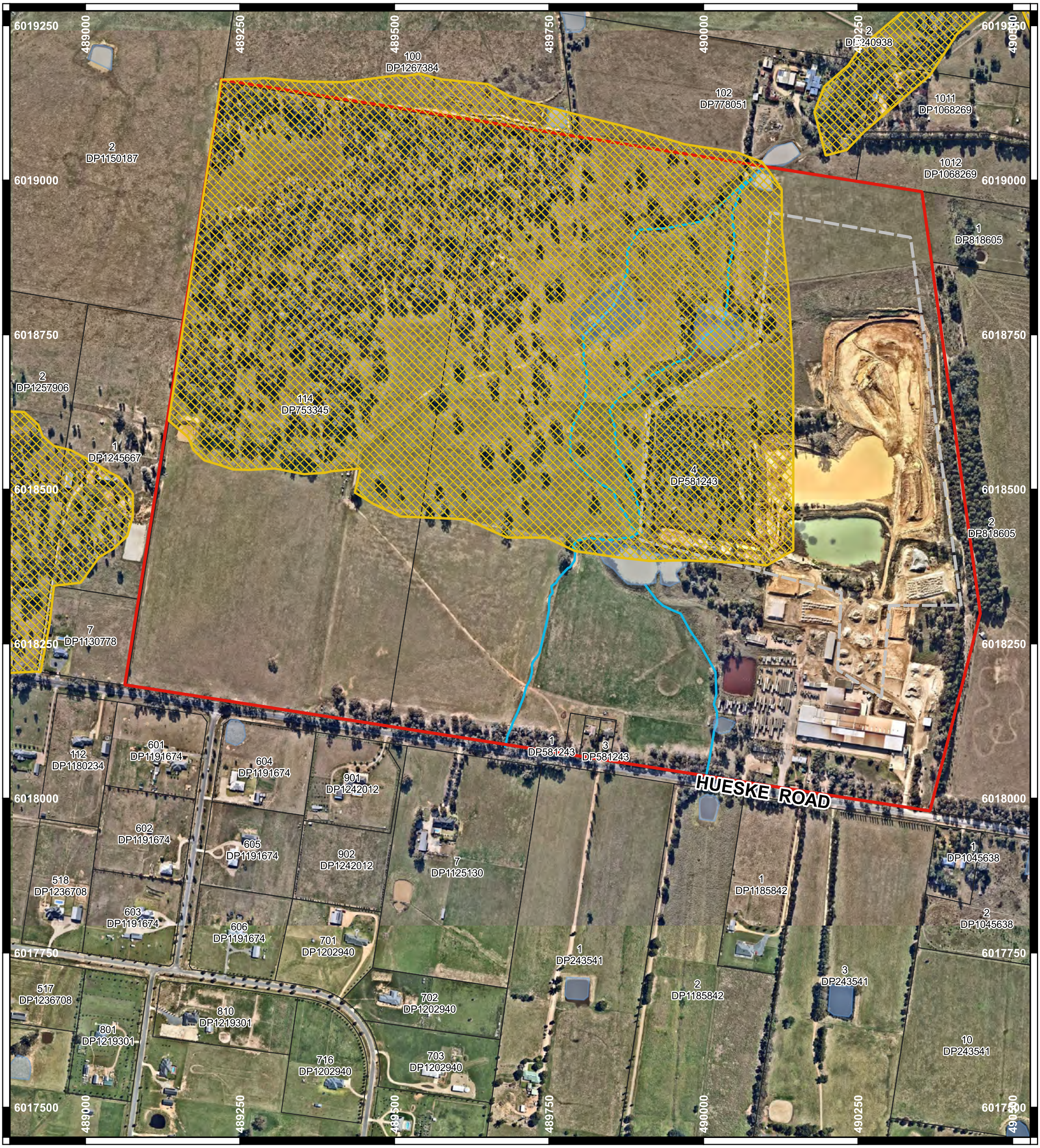

Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam
- River/Major Drainage Line

Greater Hume Council LEP

- Terrestrial Biodiversity Area

6.2.1.3 Fauna

There has been no fauna survey on the site to date. Due to the highly disturbed nature of the site, it is unlikely that rare or endangered fauna are present on site within the ML boundary.

The mitigation measures to mitigate indirect impacts to the fauna 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 to main visibility to prevent vehicle strike.
- The site is fenced with rural fencing to prevent incursions by livestock. Fencing will be maintained throughout the life of the project and rehabilitation activities.
- If evidence of feral animal impacts on revegetation is noted, control measures such as rabbit proof fencing will be investigated. A baiting program may also be investigated with the appropriate authorities if required.

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, where it cannot be used immediately, 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.

The 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 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);
- oily rags, filters and drums.

General domestic waste is collected in rubbish bins and disposed of via a licensed waste disposal facility.

6.2.1.6 Geology and Geochemistry

The Jindera Clay Mine is located within the Shepperton Formation of the Cainozoic era. The Shepparton Formation is found throughout the Riverina between the Murray and Lachlan rivers and consists of poorly consolidated clay, silt, sand and gravel.

The Murray Basin was formed by massive land subsidence during the Tertiary period and began to fill with sediments. The dominant sediments in the area were deposited by an older river system ('prior stream' system) in the Quaternary period (from approximately 1.6 million years ago to recent geological times). These deposits are called the Shepparton Formation on geological maps and are mainly derived from rivers and streams but also include aeolian (i.e. windblown) deposits. These aeolian deposits consists of fine calcareous soil material which spread over much of Northern Victoria during drier climatic periods. The Shepparton Formation deposits cover the older alluvial (Tertiary) and marine (Ordovician) sediments.

The clay used in brick manufacture is a mixture of silica, aluminium oxide, iron oxide, magnesium oxide, lime and various trace minerals. The basic chemical structure is a hydrous aluminium phyllosilicate commonly formed from the weathering of feldspar found in fine grained sedimentary rocks such as mudstone, siltstone and shales. The colour of the bricks depends on the mineral content, that is, the colour of the original clay material used as well as additives and kiln temperature.

The soils and subsoils of the area are slightly acidic to neutral (pH approximately 6.0 to 7.3) according to eSpade website data. The risk of acid mine drainage is therefore considered to be low. There is very low risk of spontaneous combustion due to the absence of carbonaceous material at the site.

The geochemistry is not expected to present any difficulties with regard to overburden and topsoil management. The soils are somewhat dispersive and will be stored appropriately to minimise erosion if they cannot be immediately utilised.

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 mine lease. Any waste bricks from the brickworks are stockpiled west of the clay storage area, which is located outside the ML boundary. Green waste is stored onsite then re-used to create “common” bricks.

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 3. Constraints and Characteristics

Constraint/Opportunity	Value
IFD:2-year, 6-hour storm	5.88 (from BOM IFD data)
Slope Gradients	2-4% Average (in pit slopes may be higher)
Soil Erodibility	0.050 (Assumed) High (from NSW Soil and Land Information System- Soil technical report)
Calculated Soil Loss	Up to 119 tonnes per ha Per year depending on internal slopes.
Soil Loss Class	1
Soil Hydrological Group	D
Runoff Coefficient (Cv)	0.64
Runoff Coefficient (C_{10}) for peak flow	20 Ha
Disturbed Site Area	2-4% Average (in pit slopes may be higher)

The Soil Hydrological Group for the soil materials is assumed to be D, very high run-off potential. Water moves into and through these soils very slowly when thoroughly wetted. They shed run-off from most rainfall events. Sediment retention basins have been designed using the Type D Soils calculations.

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. Slope lengths were assumed for the calculations to be maximum of 300 metres.

6.2.1.10.2 Catchments

Clean water is prevented from entering the disturbed area via perimeter bunds.

The site is divided into three dirty water catchments. Water captured factory area is directed to a dam in the west and water retained is reused in the factory. Dam 1 captures surface water collected over the stockpile area and 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* (see calculations in Appendix D)

Table 4. Catchment Volumes Required

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)
Dam 1	10.9	90	349	**439**
Pit Sump Dam	8.5	129	272	**401**
Pit Sump Dam at Completion of Mining	16.6	167	531	**698**
Brickworks	5.0	28	160	**188**

The estimated capacity of the dams is shown below.

Table 5. Estimated Sediment Dam Capacities

Dam Identification/ Catchment	Dam Area (m^2)	Estimated Depth (m)	Estimated Volume (m^3)
Dam 1	11,300	2.0	22,600
Pit Sump Dam	12,400	1.5	18,600
Brickworks	3,300	2.0	6,600

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.

Plan of:	**Rehabililtation Management Plan for Jindera Clay Mine 2022 - Water Management**	**Location:**	Off Hueske & Urana Road, Jindera, NSW	**Source:**	Six Maps & nearmap Dated 20/05/2022 Zone MGA 55	**Plan By:**	TO/JD
Figure:	**THIRTEEN**	**Council:**	Greater Hume Shire Council	**Survey:**	Outer Pit - Photomapping 31/03/2015 Inner Pit - Landair 08/02/2017	**Project Manager:**	TO
Version/ Date:	V0 02/09/2022	**Tenure:**	ML 1730	**Projection:**	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	12408_BJ_RMP2022_Q013_V0_F13	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	1m		

N

0 50 100 150 200 m

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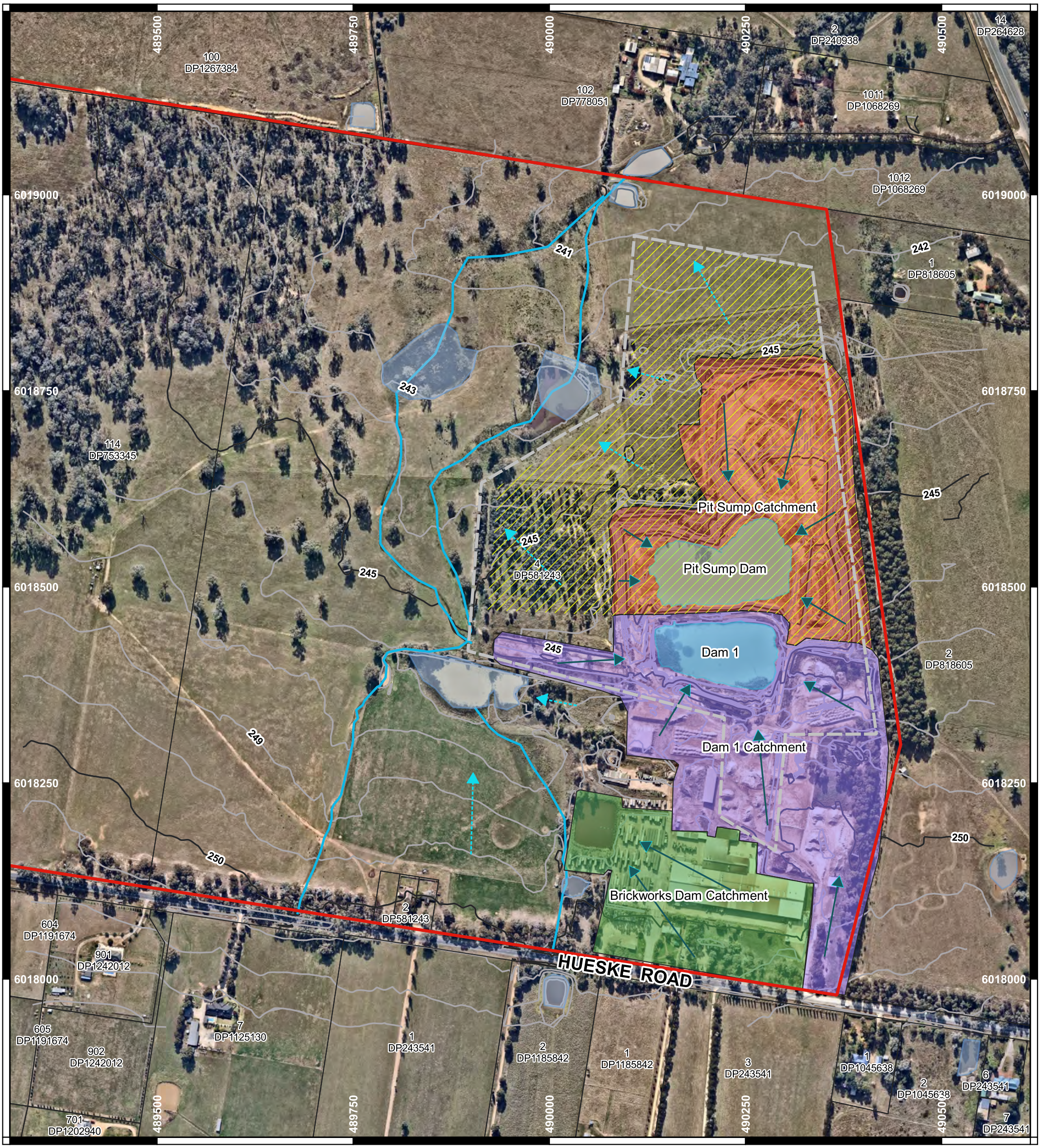

Legend

Feature/Domain

- Property Boundary
- Authority Boundary (ML1730)
- Lot Boundary
- Dam Area
- River/Major Drainage Line
- 1m Contour
- 5m Contour

Catchments

- Clean Water Flow Direction
- Dirty Water Flow Direction
- Sediment Dam
- Dam 1 Catchment
- Brickworks Dam Catchment
- Pit Sump Catchment
- Pit Sump Catchment (End of Mining)

6.2.1.10.3 Management of Soil and Erosion

Generally, the site has a moderate risk of rilling and mild gully erosion on sloped areas erosion, but this is limited to the exposed worked areas of the mine.

Minor eroded soils and sediment are captured within Dam 1 and the Pit Sump which acts as a water catchment depending on rainfall volume. Slopes will be kept moderate where possible in the pit to reduce erosion hazard and benches will be installed when appropriate depths are extracted to.

Since the mine has a self-contained water management system, specific erosion or sediment controls are not generally required for normal mining operations. The disturbed mine area drains into the mine extraction area, and no dirty runoff passes off site.

The following general measures 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 quarry floor 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.

6.2.1.10.4 Works Sequence

All works are to be undertaken following the approved Forward Plan in the following sequence:

- Topsoil in new areas will be surveyed, mapped and the texture, thickness and quality described prior to stripping. Topsoil and overburden not for immediate use will be stockpiled in appropriate areas and limited to 2 metres in height and revegetated with temporary ground cover species, mulching or chemical stabilisers or binders if they are to remain in place for more than 30 days. A minimum of 70 percent cover is required for both mulch and vegetative covers;
- Construct earth banks (Stormwater Collection Drains) to divert as much clean water as possible and capture the dirty water in the extraction area;
- Undertake extraction activities in the new area;
- Rehabilitate lands in exhausted areas with topsoil and overburden and revegetate;
- Install barrier fencing to limit access to rehabilitated areas; and
- Ensure management practices are carried out to minimise areas being affected by wind and water erosion.

6.2.1.10.5 Erosion Control Instructions

The soil erosion hazard on the site will be kept as low as practicable by minimising disturbance. Some ways of doing this are outlined in *Table 6.* Extraction will take place within a defined work area. Entry to land not involved directly in the extraction process will be prohibited and will be managed as natural grassland or woodland as appropriate. Vehicular access to the site will be limited to that essential for extraction or rehabilitation.

Table 6. Limitations to Access

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

Rehabilitation means:

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

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

While C-factors are likely to rise to 1.0 during the work's program, they should not exceed those given in Table 15 within the specified times.

Table 7. Maximum acceptable C-factors at nominated times during works

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

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

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

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

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

A suggested listing of suitable plant species is shown in *Table 8.* Before sowing, additional tests should be undertaken to assess the requirements of ameliorants such as lime to help plant growth.

Table 8. Plant Species for Temporary Cover

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

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

Lands planted recently with grass species will be watered regularly until an effective cover has properly established and plants are growing vigorously. Follow-up seed and fertiliser will be applied as necessary in areas of minor soil erosion and/or inadequate vegetative protection. Where practicable, foot and vehicular traffic will be kept away from all recently stabilised areas.

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

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

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

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

6.2.1.11.1 Topsoil Management

Topsoil stripping and storage management is discussed in *Section 6.2.1.1*. Topsoil will be analysed prior to respreading to determine if amelioration measures are required such as lime, fertilisers or other nutrients to make the soil suitable for the species to be planted.

Prior to re-spreading stockpiled topsoil onto reshaped overburden, an assessment of weed infestation on stockpiles should be undertaken to determine if individual stockpiles require herbicide application and / or "scalping" of weed species prior to topsoil spreading. If insufficient on-site topsoil material is available, VENM may be imported to meet the shortfall.

6.2.1.11.2 Methods of Propagation

Vegetation will consist of grazing 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. It is most likely that seed will be required to be purchased.

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. Access is gained via the gatehouse maintained by the brickworks.

Visitors onto the site must report to the site supervisor. All visitors must be always accompanied by PGH personnel.

6.2.2.2 Infrastructure to be Removed or Demolished

There is no infrastructure to remove or demolish present on the mine lease at the end of the mine life.

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

There are no buildings, structures or fixed plan to remain on the mine lease at the end of the 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

There are no hazardous materials stored on the mine lease. During mining, hauling and rehabilitation activities, contractors may bring fuel or oils onto the site via mobile equipment. Mobile vehicles are required to carry spill kits and a spill kit is located at the site office.

Oils and lubricants and any other hazardous materials (e.g. cleaning products) will be stored on the factory site (off mine lease) 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

Final landform within the pit will, for the most part, consist of slopes 3 horizontal to 1 vertical, with slope lengths generally 25m or less as required. Slopes greater than 25 metres will be broken by catch drains to convey the surface water to the sediment dam to reduce erosion effects. Other slopes shall have lengths that shall not exceed 35m for a 4H: 1V batter and 80m for slopes less than 4H: 1V batter.

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 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.

Battering of the eastern highwall is expected to commence from 2027 to 2032. As mining progresses to the north and west, land forming will follow. The pit floor will be the last area to be land formed.

Overburden won from the extension of the active mining areas will be utilised to assist in the battering of the highwalls.

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. Where topsoil resources allow, topsoil should be spread to a nominal depth of 100 mm (unless studies indicate an alternative depth) on all re-graded subsoils. Subsoils will be emplaced first over the battered overburden material used to create the final landform. The depth of subsoils should aim to replicate that of the original soil profile.

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. Topsoil should be spread, treated with fertiliser and seeded in one consecutive operation, to reduce the potential for topsoil loss to wind and water erosion.

Thorough seedbed preparation should be undertaken to ensure optimum establishment and growth of vegetation. All topsoiled areas should be lightly contour ripped (after topsoil spreading) to create a "key" between the soil and the spoil. Ripping should be undertaken on the contour. Best results will be obtained by ripping when soil is moist and when undertaken immediately prior to sowing. The respread topsoil surface should be scarified prior to, or during seeding, to reduce run-off and increase infiltration. This can be undertaken by contour tilling with a fine-tyned plough or disc harrow.

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

Sowing methods may be via hand casting if the area is sufficiently small or direct drilling. Seedlings will be directly planted. 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.

Plant guards may be considered if necessary to ensure the establishment of some tubestock and will be erected at the time of planting. These will be regularly inspected to ensure that they are providing sufficient protection for the juvenile plants and replaced when necessary

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 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;
- 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 9. 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 2 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 wildlife.	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 off the mine lease but 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 off the mine lease but within the site. • Wastes will be removed by licenced contractor.	Mine Manager	Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11

Key Actions	Responsibilities	Records	Review
Erosion • Slopes to be reduced to a maximum of 3H:1V in pit areas. • Slopes of 3H:1V shall not be greater than 25 metres and will be broken by catch drains to convey the surface water to the sediment dam to reduce erosion effects. Other slopes will have lengths not exceeding 35m for a 4H: 1V batter and 80m for slopes less than 4H: 1V batter. • 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
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 2 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 off the mine lease but 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 off the mine lease but within the site. • 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 pit areas. • Slopes of 3H:1V shall not be greater than 25 metres and will be broken by catch drains to convey the surface water to the sediment dam to reduce erosion effects. Other slopes will have lengths not exceeding 35m for a 4H: 1V batter and 80m for slopes less than 4H: 1V batter. • 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

Key Actions	Responsibilities	Records	Review
Decommissioning			
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

Key Actions	Responsibilities	Records	Review
Landform Establishment			
• 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

Key Actions	Responsibilities	Records	Review
Growth Medium Development			
• 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 grassland species will be undertaken by direct seeding where terrain permits, spray emulsion or hand casting in smaller areas. • 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 10. 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 11. 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					
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.
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 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.

Performance Indices	Monitoring	Frequency	Records	Assessment of Trends	Trigger Thresholds to Identify Emerging Risks to Achieving Final Land Use
Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, underground hydrocarbon storage tanks, office complex, portable offices, exploration core samples, camp facilities, storage racks, samples.	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 racks, samples have been removed.	At completion of decommissioning phase	Site decommissioning inspection report. Statement provided by suitably qualified engineer or similar. Photography. Survey by registered surveyor.	Not applicable.	Infrastructure not removed from the site.
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.
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.
Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record pH between 6.5 and 8.5 and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).	Downstream water to be monitored for pH and TSS and comply with required criteria. 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.

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 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 12. 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.
	Inspection reveals that access track repairs have not been undertaken or have been ineffective.	Track repairs to be undertaken.	Photography. Survey by registered surveyor.
	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.	Statement provided, utility service disconnection record / notification.
	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.	Formal acceptance from landowner.
	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 within the final void are greater than 3 horizontal to 1 vertical Slopes of 3H:1V greater than 25 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.

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
Harm to rehabilitation works due to erosion impacts. **Limited biological resources available on site for rehabilitation.**	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. Survey data and plans. Photography. Assessment Report undertaken by a suitably qualified person i.e. CPESC. Survey data and plans. Photography. Soil Inventory reported in AR.
	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.	
	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.	
	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.	
	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

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
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 establishment of vegetation community.**	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. Geotechnical reports Photography. Site inspection reports/checklists. Contractor invoices. Soil testing reports.
	Surface is noted to be compacted.	Surface to be ripped to promote surface water and air infiltration and reseeding undertaken if required.	
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. Water Testing Reports. ANZECC Guidelines. EPL.
	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 means of stabilising the soil i.e. binders until conditions improve. Reseed bare areas once dry conditions have been alleviated.	
	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.	

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
	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 13. 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- **Forward Program and Annual 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.
Amendment 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 Boral CSR Bricks Pty Ltd (June 2015) Mining Lease Application Supporting Information

Ref 2 Boral Bricks Pty Ltd (2014) Jindera Quarry Continued Operations Statement of Environmental Effects

Ref 3 DECC (2008) *Managing Urban Stormwater Soils and Construction V1*

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

Ref 5 NSW DPE (2022) *Land Zoning WMS*

Ref 6 NSW Office of Environment & Heritage (Sampled 1983) eSPADE Soil Essentials Report 1000191

Ref 7 NSW Office of Environment & Heritage (Sampled 1983) eSPADE Soil Profile Report 1000191

Ref 8 NSW Resource Regulator (2021) *Form and Way: Rehabilitation Management Plan for Large Mines*

Ref 9 NSW Resource Regulator (2021) *Guideline: Rehabilitation Risk Assessment*

Appendix A
DA No. 10.2014.30

Greater Hume Shire

simply greater

Our Ref: CJK:SLG:P10018422

Greater Hume Shire
ABN 44 970 341 154
39 Young Street (PO Box 99)
Holbrook NSW 2644
P: 02 6036 0100 or 1300 653 538
F: 02 6036 2683

Culcairn Office
40 Balfour Street Culcairn NSW 2660
P: 02 6029 8588 F: 02 6029 8607

Customer Service Centres
Henty RTC/Library
32 Sladen Street, Henty NSW 2658
Jindera
Shops 8 & 9 Jindera Plaza
Jindera NSW 2642
Walla Walla RTC/WAW Credit Union
Commercial Street,
Walla Walla NSW 2659

E: mail@greaterhume.nsw.gov.au
www.greaterhume.nsw.gov.au

Boral Bricks Pty Ltd
PO Box 42
WENTWORTHVILLE NSW 2145

Subject land:

Property Title	Lot: PT4 DP: 581243
Address:	80 Hueske Road JINDERA

Development Consent No.10.2014.30

Notice of determination of a development application pursuant to section 81(1)(a) of the *Environmental Planning and Assessment Act 1979* (the Act). The development application has been determined by the granting of consent subject to the attached conditions.

Endorsed date of consent: 31 March 2015

Description of development: Industrial - Continuation of Existing Use Operations in Movement of the Extraction Area

Attached:
1 Conditions
2 Endorsed plans

Pursuant to section 81(1)(a) of the Act this Consent becomes effective and operates from the endorsed date of consent.

Pursuant to section 95 of the Act this Consent shall lapse if building, engineering, or construction work relating to the building, subdivision, or work is not physically commenced on the subject land within five (5) years from the endorsed date of consent.

Colin Kane
Director Environment & Planning
Accreditation No. BPB0878
GREATER HUME SHIRE COUNCIL

31 March 2015

Right of Review:
Pursuant to clause 100(1)(c1) of the *Environmental Planning and Assessment Regulation 2000* and section 82A(2A)(a) of the Act it is advised that if you are dissatisfied with this determination you may request a review of this determination under section 82A of the Act within 6 months after the date on which you received this notice.

Right of Appeal:
Pursuant to section 97(1)(a) of the Act it is advised that if you are dissatisfied with this determination you may appeal to the Land and Environment Court within 6 months after the date on which you received this notice.

Conditions of Development Consent No. 10.2014.30

1 Obligation to Minimise Harm

The Applicant shall implement all practical measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development (development).

2 Terms of Approval

The Applicant shall carry out the development generally in accordance with the:

(a) Statement of Environmental Effects, and additional information submitted by international environmental consultants
(b) Approved Site Plan;
(c) Conditions of this development consent.

If there is any inconsistency between the above, the conditions of this consent shall prevail to the extent of the inconsistency.

The Applicant shall comply with any reasonable requirement/s of the Greater Hume Shire Council arising from the Council's assessment of:

(a) the endorsed Statement of Environmental Effects, Planning Considerations and Remedial Works Program.
(b) The implementation of any actions or measures contained in these reports, plans or correspondence.

3 Prior to the operation of the development the Applicant is required to obtain any approvals that are required from the NSW Government Department of Trade and Investment- Resources and Energy.

4 Limits of Approval

This consent will lapse 20 years after the date of this Development Consent.

The development is limited to an extraction rate that must not exceed more than 70, 000 cubic metres of extractive material per year. By September 30 each year the applicant is required to provide to Council a report on the level of extraction undertaken within the preceding 12 months.

5 Identification of Boundaries

Within 2 months of the date of this consent, the Applicant shall:

(a) Mark out the boundaries of the approved limits of extraction;

(b) Ensure that these boundaries are clearly marked at all times in a permanent manner that allows operating staff and inspecting officers to clearly identify these limits

Environmental Conditions

6 Operation of Plant and Equipment

The applicant shall ensure that all plant and equipment at the site or used in connection with the development, are:

(a) Maintained in a proper and efficient condition; and

(b) Operated in a proper and efficient manner.

7 Native Vegetation

Prior to the commencement of quarrying activities the applicant is contact the Murray Local Land Service for advice concerning the removal of any native vegetation.

8 Aboriginal Heritage

Should any items of Aboriginal heritage be discovered in the course of undertaking the approved activity then all works should cease until guidance on the protection of the item is obtained from the NSW Office of Environment and Heritage.

9 Safety

The applicant shall secure the development to ensure public safety to the satisfaction of Council.

10 Emergency Management

The applicant shall ensure that the development is suitably equipped to respond to any fire on-site.

11 Dangerous Goods

No dangerous goods or fuels are to be stored at the site of the development.

12 Rehabilitation

The Applicant shall at the expiry of this consent or at completion of the development rehabilitate the site in accordance with the Remedial Works Program that have been SEE or in accordance with a subsequent plan approved by the NSW Government Department of Trade and Investment- Resources and Energy.

NSW EPA GENERAL TERMS OF APPROVAL

13 Limit conditions

Noise

Noise from the clay extraction activities must not exceed an L_{Aeq} (15 minute) noise emission criterion of 43 dB(A), except as expressly provided by this licence.

Hours of operation: Clay extraction

Extraction of clay from the onsite pit at the premises may only be conducted between 7am and 6pm Monday to Friday and between 7am and 12 noon Saturdays and at no time on Sundays and public holidays.

14 Monitoring Conditions

Dust Deposition

The licensee must monitor and record deposited particulate matter in accordance with Australian

Standard 3580.10.1 (1991) at each monitoring site (the number and location of monitoring sites is be finalised in consultation between the EPA and Boral).

15 Reporting Conditions:

Dust Deposition

A dust deposition report must be submitted to the EPA annually as part of the Annual Return. This dust deposition report must contain:

(a) The results for all dust deposition monitoring sites. This information must be presented as tabulated data for each of the constituents of the deposited dust for each site for the 12 month period covered by the Annual Return;

(b) Graphical presentation of the monitoring data for the previous 5 years (as the data becomes available); and

(c) Where the average monthly insoluble solid level is greater than 4 g/m2/month an assessment as to the likely reasons and source for the elevated dust deposition level, and details of proposed mitigation actions.

Conditions have been placed on the consent for the following reasons:

1 To ensure the compliance with the terms of the Environmental Planning Instruments.

2 Having regard to Council's duties of consideration under Section 79C of the Environmental Planning and Assessment Act 1979, as well as Section 80A which authorises the imposing of consent conditions.

3 Having regard to the comments made by referral authorities and submissions received from the public

4 Having regard to the circumstances of the case and the public interest.

Appendix B
Mine Lease Conditions

Instrument of Variation

Mining Lease 1730 (1992)

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 mining lease **ML 1730 (1992)** as described in Schedule A.

The conditions of **ML 1730 (1992)**, 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
7	Resource Recovery	Condition omitted	N/A
8	Security	Condition amended to modernise the wording. Condition has been re-numbered due to omission of other conditions.	2. Security– see Schedule B
9	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 **$238,000**.

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 - 1515

Licence Details	
Number:	1515
Anniversary Date:	15-December

Licensee

PGH BRICKS & PAVERS PTY LIMITED

LOCKED BAG 1345

NORTH RYDE NSW 1670

Premises

JINDERA

80 HUESKE ROAD

JINDERA NSW 2642

Scheduled Activity

Ceramic works

Crushing, grinding or separating

Mining for minerals

Fee Based Activity	Scale
Ceramics production	> 50000-200000 T annual production capacity
Crushing, grinding or separating	> 30000-100000 T annual processing capacity
Mining for minerals	> 50000-100000 T annual production capacity

Region

Regional West - Griffith

Suites 7-8, Level 1 Griffith City Plaza, 130-140 Banna Avenue
GRIFFITH NSW 2680

Phone: (02) 6969 0700

Fax: (02) 6969 0710

PO Box 397

GRIFFITH NSW 2680

Environment Protection Licence

Licence - 1515

Environment Protection Licence

Licence - 1515

Environment Protection Licence

Licence - 1515

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 - 1515

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
LOCKED BAG 1345
NORTH RYDE NSW 1670

subject to the conditions which follow.

Environment Protection Licence

Licence - 1515

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
Ceramic works	Ceramics production	> 50000 - 200000 T annual production capacity
Crushing, grinding or separating	Crushing, grinding or separating	> 30000 - 100000 T annual processing capacity
Mining for minerals	Mining for minerals	> 50000 - 100000 T annual production capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
JINDERA
80 HUESKE ROAD
JINDERA
NSW 2642
LOT 4 DP 581243

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.

Environment Protection Licence

Licence - 1515

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.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	• Discharge to Air • Air Emissions	• Discharge to Air • Air Emissions	Monitoring Point 1 located at Kiln Stack, South East corner of Site, as per Jindera Site Plan dated 27 Feb 20 (X-Ref DOC19/1073388-5).

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 Load limits

L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

Assessable Pollutant	Load limit (kg)
Coarse Particulates (Air)	6000.00
Fine Particulates (Air)	4000.00
Fluoride (Air)	13500.00
Nitrogen Oxides (Air)	28000.00
Sulfur Oxides (Air)	33000.00

L3 Concentration limits

L3.1 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.

L3.2 Air Concentration Limits

POINT 1

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Nitrogen Oxides	milligrams per cubic metre	2000			
Fluoride	milligrams per cubic metre	50			

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 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.

Environment Protection Licence

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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

Pollutant	Units of measure	Frequency	Sampling Method
Coarse Particulates	milligrams per cubic metre	Yearly	OM-9
Fine Particulates	milligrams per cubic metre	Yearly	OM-5
Fluoride	milligrams per cubic metre	Yearly	TM-9
Hydrogen chloride	milligrams per cubic metre	Yearly	TM-8
Nitrogen Oxides	milligrams per cubic metre	Yearly	TM-11
Sulfur dioxide	milligrams per cubic metre	Yearly	TM-4
Sulphur trioxide	milligrams per cubic metre	Yearly	TM-3

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 Testing methods - load limits

Note: Division 3 of the *Protection of the Environment Operations (General) Regulation 2009* requires that monitoring of actual loads of assessable pollutants listed in L2.2 must be carried out in accordance with the relevant load calculation protocol set out for the fee-based activity classification listed in the Administrative Conditions of this licence.

M5 Recording of pollution complaints

M5.1 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.

M5.2 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.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 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.

M6.2 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.

M6.3 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 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:
a) the assessable pollutants for which the actual load could not be calculated; and
b) the relevant circumstances that were beyond the control of the licensee.

R1.7 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.

R1.8 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

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.

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

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 - 1515

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

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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*.

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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 Tim Gilbert

Environment Protection Authority

(By Delegation)

Date of this edition: 10-March-2000

Environment Protection Licence

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End Notes

1	Licence varied by notice 1008754, issued on 28-Mar-2003, which came into effect on 16-Apr-2003.
2	Licence varied by correction to EPA LGA data record, issued on 07-Mar-2005, which came into effect on 07-Mar-2005.
3	Licence varied by notice 1088684, issued on 24-Jun-2008, which came into effect on 24-Jun-2008.
4	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
5	Licence varied by notice 1508995 issued on 02-Nov-2012
6	Licence varied by notice 1519828 issued on 26-Mar-2014
7	Licence varied by notice 1523638 issued on 14-Aug-2014
8	Licence transferred through application 1530236 approved on 04-May-2015 , which came into effect on 04-May-2015
9	Licence varied by notice 1532537 issued on 30-Jul-2015
10	Licence varied by notice 1535206 issued on 02-Nov-2015
11	Licence varied by notice 1550313 issued on 29-Mar-2017
12	Licence varied by notice 1592084 issued on 21-Apr-2020
13	Licence varied by notice 1600553 issued on 03-Nov-2020

Appendix D
Blue Book Calculations

1. Erosion Hazard and Sediment Basins

Site Name: Jindera

Site Location: Brick Works

Precinct/Stage: Existing

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	Dam 1	Pit		Brick			
Total catchment area (ha)	10.9	8.5		5			
Disturbed catchment area (ha)	10.9	8.5		5			

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

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

Rainfall data

Design rainfall depth (no of days)	35.2	35.2		35.2			See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	90	90		90			
x-day, y-percentile rainfall event (mm)	5	5		5			
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	5.88	5.88		5.88			

RUSLE Factors

Rainfall erosivity (*R*-factor)	990	990		990			Auto-filled from above
Soil erodibility (*K*-factor)	0.05	0.05		0.05			
Slope length (m)	200	300		290			
Slope gradient (%)	3	4		2			RUSLE LS factor calculated for a high rill/interrill ratio.
Length/gradient (*LS*-factor)	1.01	1.84		0.67			
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

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

Storage (soil) zone design (no of months)	2	2	2	2	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.64	0.64		0.64			See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	65	119		43			
Soil Loss Class	1	1		1			See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	50	91		33			Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	90	129		28			See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	349	272		160			See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	439	401		188			

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

1. Erosion Hazard and Sediment Basins

Site Name: Jindera

Site Location: Brick Works

Precinct/Stage: Completion of Mining

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	Dam 1	Pit		Brick			
Total catchment area (ha)	10.9	16.6		5			
Disturbed catchment area (ha)	10.9	16.6		5			

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

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

Rainfall data

Design rainfall depth (no of days)	35.2	35.2		35.2	35.2		See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	90	90		90	90		
x-day, y-percentile rainfall event (mm)	5	5		5	5		
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	5.88	5.88		5.88	5.88		

RUSLE Factors

Rainfall erosivity (*R*-factor)	990	990		990	990		Auto-filled from above
Soil erodibility (*K*-factor)	0.05	0.05		0.05			RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)	200	300		290			
Slope gradient (%)	3	3		2			
Length/gradient (*LS*-factor)	1.01	1.22		0.67			
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

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

Storage (soil) zone design (no of months)	2	2		2			Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.64	0.64		0.64			See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	65	78		43			
Soil Loss Class	1	1		1			See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	50	60		33			Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	90	167		28			See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	349	531		160			See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	439	698		188			

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

Appendix E
Murray LLS Correspondence

From: Troy Hitchon
To: Sinead Kelly
Subject: Re: FW: Jindera Clay Mine
Date: Friday, 1 July 2016 1:18:10 PM
Attachments: image001.jpg

Thanks, i've read over the complete SEE noting various points of interest for LLS:

- There is currently limited native vegetation remaining in the immediate vicinity... there is evidence of some past cultivation and pasture improvement... some weed infestation... and regrowth present on site, and isolated mature trees outside the future quarry boundary.
- A small patch of open forest occurs on the north west corner of the property but this area will not be affected by the quarry operation.
- It is considered that the ongoing operation of the quarry will have a low potential to impact on native fauna or their habitat and will have no measurable impact on ecological endangered communities.

Consistent with previous email advice, nothing further is required from our end. Thanks again for checking with Murray LLS.

Regards

On 1 July 2016 at 09:03, Sinead Kelly <Sinead@vgt.com.au> wrote:

> Hi Troy,
>
> In Boral's SEE (attached) the rehabilitation activities are outlined in section 3.5.3., any further guidance would be appreciated but I believe the aim of the document at the time was to cover the whole site management not just the clay extraction.
>
> Regards,
>
> Sinead Kelly (0419 092 885)
>
> Environmental Consultant
>
> *BEnvScMgt*
>
> ***Have your say! Click here and fill in a short survey so we can improve for you!***

email footer wh

From: Troy Hitchon [mailto:troy.hitchon@lls.nsw.gov.au]
Sent: Thursday, 30 June 2016 4:54 PM
To: Sinead Kelly
Subject: Re: FW: Jindera Clay Mine

Great, thanks Sinead.

As you've detailed, given the operation is designated development, subject to a SEE and the vegetation on-site is believed to be regrowth (as defined under the NVA) then you are not likely to require an approval from Murray LLS.

The main clarification is that the SEE identifies and makes provision for vegetation loss for the quarry operation and adequately addresses with, if any, actions to mitigate loss and/or remediate the site in the long-term. I've seen just the first two pages as sent, and cant determine if the SEE relates only to the clay extraction or the site management as a whole. Are you able to clarify?

I am based in Albury and available for a quick site visit if requested. Otherwise, if works are consistent with exclusions that apply under the NVA then LLS has nothing further to add.

Please feel free to contact me any time.

Regards

On 30 June 2016 at 15:27, Sinead Kelly <Sinead@vgt.com.au> wrote:

Attached is an excerpt from the Statement of Environmental Effects and location of trees for your records as well Troy.

Regards,

Sinead Kelly (0419 092 885)

Environmental Consultant

BEnvScMgt

Have your say! Click here and fill in a short survey so we can improve for you!

email footer wh

From: Sinead Kelly
Sent: Friday, 17 June 2016 11:10 AM
To: 'Steven.Hoare@lls.nsw.gov.au'
Cc: Greg Thomson; Tara O'Brien
Subject: FW: Jindera Clay Mine

Hi Steven,

I have attached the excerpt of the Statement of Environmental Effects submitted in 2014 for the Jindera site as requested. Also attached is a plan with the area outlined where tree removal is planned.

If any further information is needed please let me know.

Regards,

Sinead Kelly (0419 092 885)

Environmental Consultant

BEnvScMgt

Have your say! Click here and fill in a short survey so we can improve for you!

email footer wh

From: Sinead Kelly
Sent: Wednesday, 15 June 2016 4:06 PM
To: 'Steven.Hoare@lls.nsw.gov.au'
Cc: Greg Thomson; Tara O'Brien
Subject: Jindera Clay Mine

Hi Steven,

I just had a chat to the Deniliquin office and they have given me your details due to a not-so-great phone line, hope that is okay!

Our client Boral CSR Bricks owns and operates the Jindera Clay Mine and brickworks off Hueske Rd, Jindera. The mine was originally owned by Boral Bricks Pty Ltd prior to a joint venture with CSR Limited. Mine lease No. 1730 has recently been granted on the site, with the boundary as shown on the figure attached. Development Consent 10.2014.30 was granted by Greater Hume Shire Council on the site 31 March 2015, condition 7 of which relates to vegetation "*Prior to the commencement of quarrying activities the applicant is to contact the Murray Local Land Service for advice concerning the removal of any native vegetation*."

Until presently, no trees have been encountered since Boral CSR Bricks have been managing the site. They are looking to expand the extraction void which will require the removal or relocation of some trees, believed to be mostly regrowth.

What would be the best way forward to receive confirmation from the MLLS that there are no issues with this expansion?

If any further information is needed please let me know, I can give you a ring tomorrow if that suits as well.

Regards,

Sinead Kelly (0419 092 885)

Environmental Consultant

BEnvScMgt

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Appendix F
Weed Management Plan

Environmental Management Plan – Weed & Pest Management

PURPOSE

This is a management plan for the control of weeds and pests at the PGH Albury operations. The site is a quarry as well as a brick processing facility.

This management plan identifies the weed and pest issues associated with the site and provides a planned program of control where necessary.

The most effective way to manage the weeds at the site is to undertake primary control, followed up with ongoing control in subsequent years or seasons to deplete the plant's ability to reproduce. In some cases, weed seeds can be viable in the soil for long periods of time, well beyond a decade in same cases. In order to break the weed cycle ongoing timely annual or seasonal control is necessary.

Controlling pests on site is more reactive and only requires attention if large numbers are seen or suspected on the premises. A comprehensive list of pests is attached however the more common pests to the Thomastown site are kangaroos, goats, rabbits and hares which generally originate from the grasslands to the north and east.

This plan takes into consideration all these factors and provides a holistic approach to management of weeds and pests on the site.

SCOPE

This management plan covers the PGH Albury brick site. Via a site inspection with Ben King (NSW Raw Materials Supervisor) and Richard Mason (PGH Environmental Manager) the following weeds have been identified as the most common found on site:

1 - Pattersons Curse (Echium plantagineum) 	***2 - Artichoke Thistle (Cynara cardunculus)*** 
3 - Spear Thistle (Cirsium vulgare) 	***4 - Horehound (Marrubium vulgare)*** 
5 - Prickly Pear (Opuntia) 	***6 - Sweet Briar (Rosa rubiginosa)*** 

7 - Boxthorn (Lycium ferocissimum)	***8 - Blackberry (****Rubus fruticosus*****)***
	

KEY STAKEHOLDERS

DPIE – NSW government
Greater Hume Council – Responsible for the local weed management
Local Residents – Any significant increase in vermin levels could impact the local residents
Employees – All employees have responsibilities for preventing the introduction of weeds on site
Contractors – All contractors have responsibilities for preventing the introduction of weeds on site and the transfer of weeds on/off site through transportation of plant and equipment

PROCEDURE

Management

This section of the plan outlines the program for primary and follow up management at the site ongoing until a change is required for any reason. The schedule has been developed based on the types of weeds on the site and the best time of the year to poison the weeds for the best result. For best results weed management at any site should be ongoing. Sustained management which keeps weeds under control will also reduce the financial burden over the long term.

Timing – The correct timing of weeding measures is important to ensure the best possible result. Some species have quite restricted times for control due to their growth patterns and habits, whereas others have broader timeframes for treatment. In many cases different control methods are applied to suit the timing of control.
The weeding program is performed twice per annum. Once in Autumn (March/April) when the weeds are sprouting from seeds, spraying at this time will kill the weed in its infancy. The second spraying will be performed in late spring or early summer (November/December) when the weeds are in full growth but have not yet flowered so cannot spread their seeds.

Method – There are many methods used for weeding. The methods recommended below are based on varying factors. These include the weed type, location, level of infestation and control options, efficiency and effectiveness.

The primary methods of control to be employed in this management program include:

High Volume spraying – is generally a vehicle mounted spray unit with a large tank (400- 600L) with hose reels. This technique is generally used to treat large weed populations which can be foliar sprayed. It is used in situations where the UAV can't access or is not economical to use. It is also suited to more scattered weed populations.
Basal Bark spraying – This technique is generally used on particular woody stemmed weeds to chemically ring bark them. This method is best suited to specific species and application on isolated plants or plants that can't be foliar sprayed with herbicide.
Direct Application (Cut and Paint, Stem injection) – This involves cutting woody weeds down at the base or drilling into or scraping the stem at the base and then applying high concentration herbicide. This technique may be used where the risk is too high or when foliar application may not be effective. This technique may be used in similar circumstances to basal bark spraying.
Mechanical – involves the use of machinery such as slashers, scrub mulchers, dozers and the like, to remove the above ground biomass of the plant, and in some cases the roots as well. This is best used where there is a large monoculture of one species, such as African olive, to remove large sections of biomass as well as to create access through these areas for other weeding works.

As the Thomastown site does not have large areas of infestation the main method of spraying will be high volume spraying in localised areas of weed growth.

Action Plan 2020-2022:

Due to the low risk and low quantity of weeds on the premises, an annual weeding program to address all areas of the site has been adopted. A weeding contractor is to be engaged to spray all areas and all species of weeds twice per year to prevent spread and re-growth of weeds.

Requirements

All landowners have legal obligations regarding the management of declared noxious weeds and pest animals on their land. Specifically, landowners must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of - and as far as possible eradicate - established pest animals on their land.
Any plants brought onto site must be in a healthy condition and free from disease

All machinery, their implements or any other equipment must be thoroughly cleaned (ie. removing soil, organic matter and/or weed seeds or growing parts) prior to coming onto the site and must be similarly cleaned before moving to new locations.

All quarry machinery must be washed/cleaned down before moving on or off site.

MONITORING & REPORTING

Internal reporting is to be completed at the end of each weed management activity. This reporting is to include the following details:

- Date/s of works;
- Weeds treated and method. Daily pesticide application records to be included;
- Area (Management Unit) where works have been undertaken;
- Notes and comments on the weeding activities;
- Details of the next stage of works to be undertaken.

Monitoring is essential for the ongoing effective management of the weeds on site. Monitoring will determine the effectiveness of works completed, as well as inform that which is to come, including primary and follow up works. This procedure and action plan is to be reviewed every 3 years.

FACTORY PROCESSES

- All mobile plant transferred on and off site is be washed thoroughly before transported to remove all dirt which could contain seeds or weeds and spread weeds to another site
- No weed products to be brought onto site for disposal via waste bins by employees or contractors
- Review of the weeding plan annually to assess progress of weed eradication
- Observations during inspections are made to assess if pests are present on the property. If seen in numbers a pest control specialist is called to eradicate the pests

DEFINITIONS

Noxious weed	noxious weed means— (a) a State prohibited weed; or (b) a regionally prohibited weed; or (c) a regionally controlled weed; or (d) a restricted weed;
Land	land includes soil, water, vegetation and fauna on land but excludes a mineral within the meaning of the Mineral Resources (Sustainable Development) Act 1990
Land Owner	land owner means— (a) the registered proprietor of an estate in fee simple in land under the Transfer of Land Act 1958

REFERENCES

Compliance Guide SHE-071-CG Ecosystem Protection, Biodiversity and Biosecurity
Compliance Guide SHE-075-CG Environmental Aspects and Impacts

DOCUMENTATION

- Workplace Inspection Roster – Schedules housekeeping inspections
- Environmental Inspection Checklist – Inspections of all environmental related items
- Site Improvement Plan
- Spray records
- Pest eradication records

ROLES AND RESPONSIBILITIES

1. The Operations Manager is responsible for ensuring the weed management plan is updated and implemented.
2. All employees are responsible for reporting pests observed on the property.

REVIEW AND EVALUATION

This procedure, including records and associated attachments will be reviewed through the audit process to ensure relevance and compliance to WHSE system requirements.

Relevant WHSE system documentation shall be reviewed if they are associated with an incident, change in legislation, standards, codes of practice and the like or when the revision date is reached.

This procedure will be reviewed annually, or earlier if required.

APPENDICES

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