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2023

Rehabilitation Management Plan for Bringelly Clay / Shale Mine ML1731 (Act 1992)

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Summary Table	
Name of Mine	Bringelly Clay Shale Mine
RMP Commencement Date	July 2022
Mining Authorisations	ML1731
Mining Lease Expiry	9th March 2037
Name of Lease Holder	PGH Bricks and Pavers Pty Ltd
Name of Mine Operator (s)	PGH Bricks and 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	Mykel King myking@csr.com.au
Name of the Representative of the Authorisation Holder	Joe Gauci (02) 9826 3964 jgauci@csr.com.au
Signature of the Representative of the Authorisation Holder	
Date of Submission	04/08/2023

Revision Table

Date	Version	Author	Reviewed	Approved
06/04/2023	D0	TO	BK	BK
04/08/2023	F0 – ROBJs updated as per Rehabilitation Portal Resubmissions requested by NSW-RR	SK		

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1 Introduction to Mining Project

1.1 HISTORY OF OPERATIONS

The Bringelly Mine is located at Lot 100, DP 1203966, Parish of Cook, County of Cumberland and operates under Mining Lease (ML) 1731 to extract clay and shale. The ML covers 37.25 hectares and is located on Lot 100 DP 1203966 owned by the Proponent under freehold title. The mine lease is valid until 2037.

The Bringelly brick making plant and quarry on Greendale Road was commissioned in 1968 to manufacture standard textured clay bricks for the housing market. The site is currently used for quarrying, brick production and associated activities. The brickmaking facility consists of various administration buildings, a finished bricks storage yard, staff car park and internal road network is generally contained within the northern part of the project site and is set back approximately 200 metres from Greendale Road. The quarrying operations generally occupy the western portions of the site.

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES AND LICENCES

1.2.1 NSW Department of Planning and Environment

Table 1. Development Approvals

No.	Date Approved	Expires	Notes
SSD_5684	3rd March 2015	1st March 2045	Increase in production at the Bringelly Brickworks and continued extraction of the Quarry.
SSD_5684 Mod 1	October 2016	1st March 2045	Modification to increase the raw material importation to the site.

1.2.2 Regional NSW- Mining Exploration and Geoscience (MEG)

Table 2. Mining Authorisation

No.	Act	Company	Granted	Expires	Area (Ha)	Minerals
ML1731	1992	PGH Bricks and Pavers Pty Ltd	9/03/2016	9/03/2037	37.25	Clay/Shale

1.2.3 Environmental Protection Authority (EPA)

An Environmental Protection Licence EPL1808 was granted under the Protection of the Environment Operations Act (PoEOA) (see *Appendix C*).

1.3 LAND OWNERSHIP AND LAND USE

1.3.1 Land Ownership and Land Use

The site is located at 60-80 Greendale Road, Bringelly. *Table 3* lists the cadastral lots involve in the mine operations.

Table 3. Land Ownership and Land Use

Lot	DP	Ownership	Land Description
Lot 100	DP 1203966	PGH Bricks and Pavers Pty Ltd	The brickworks and mine operations are contained wholly within this Lot. A concrete batch plant is located adjacent to Greendale Road, to the west of the brickworks and mine. The concrete plant is not operated by PGH.

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

The surrounding area is characterised by agricultural land and fragmented rural residential development. Open grazing land interspersed with woodland is located to the west and south of the project site, with rural residential development located to the north (on the other side of Greendale Road) and east of the site, extending towards The Northern Road.

In addition, the following land uses are within close proximity to the site:

- Sydney University Farms campus is approximately five kilometres west of the site along Greendale Road, which is used for teaching and research.
- Bringelly Public School, which is approximately 500 metres to the east on the corner of The Northern Road and Greendale Road.
- Small retail shops approximately 500 metres to the east on the corner of The Northern Road and Greendale Road.
- Bringelly Community Centre, approximately 200 metres to the east, located at 5 Greendale Road.
- Bringelly Park (used by Bringelly Sports Club) borders the western boundary of the Bringelly Community Centre.

According to the *Camden Local Environmental Plan 2010* (the Camden LEP), the project site is zoned as RU1 Primary Production. This zone permits a range of development including agriculture, dwellings, rural industries and extractive industries. Development that is not identified in the Camden LEP as permitted with or without consent is deemed to be prohibited within the RU1 Zone.

The existing development on the Bringelly Brickworks site was approved in 1991 by Camden Council.

Extractive industries are permissible with consent in the RU1 zone, yet the industrial activities are prohibited in the RU1 zone. As such, the development project is partially prohibited according to the Camden LEP 2010.

Whilst the brickmaking facility component is defined as prohibited, it forms an integral part of the approved development, and the use has been able to continue to apply through the gazettal of a number of environmental planning instruments that have applied to the land over time. It is therefore considered likely that the brickmaking facility would benefit from existing use rights as defined under Section 106 of the EP&A Act. In addition, Section 89E (3) specifies that development consent may be granted despite the development being partly prohibited by an environmental planning instrument.

Four Aboriginal sites were identified in the *Aboriginal Archaeological Assessment* (Artefact Heritage, 2013) for the EIS. Three of the sites are located within the project site of the Bringelly Brickworks Extension Project, with one site (BB OS3) located immediately outside the southern boundary of the project site.

During a test excavation of BB OS2, several artefacts were salvaged and were proposed to be reburied at a nearby location within the study area that won't be impacted. Consultation regarding this was conducted as part of the Aboriginal stakeholder review of the *Aboriginal Cultural Heritage Assessment Report* (Artefact Heritage, 2013). The salvaged artefacts from BB OS2 were subsequently reburied, and an Aboriginal Site Impact Recording Form was forwarded to the OEH AHIMS Registrar. No additional management measures were proposed for BB OS1, BB OS2 and BB OS4.

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Site Location**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	Google OpenStreet Map & nearmap Dated 09/01/2023 Zone MGA 56	**Plan By:**	JD
Figure:	**ONE**	**Council:**	Camden Council	**Survey:**	Not Applicable	**Project Manager:**	TO
Version/Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856	**Office:**	Thornton
Our Ref:	12405_BR_RR_RMP_2023_Q001_V0_F1	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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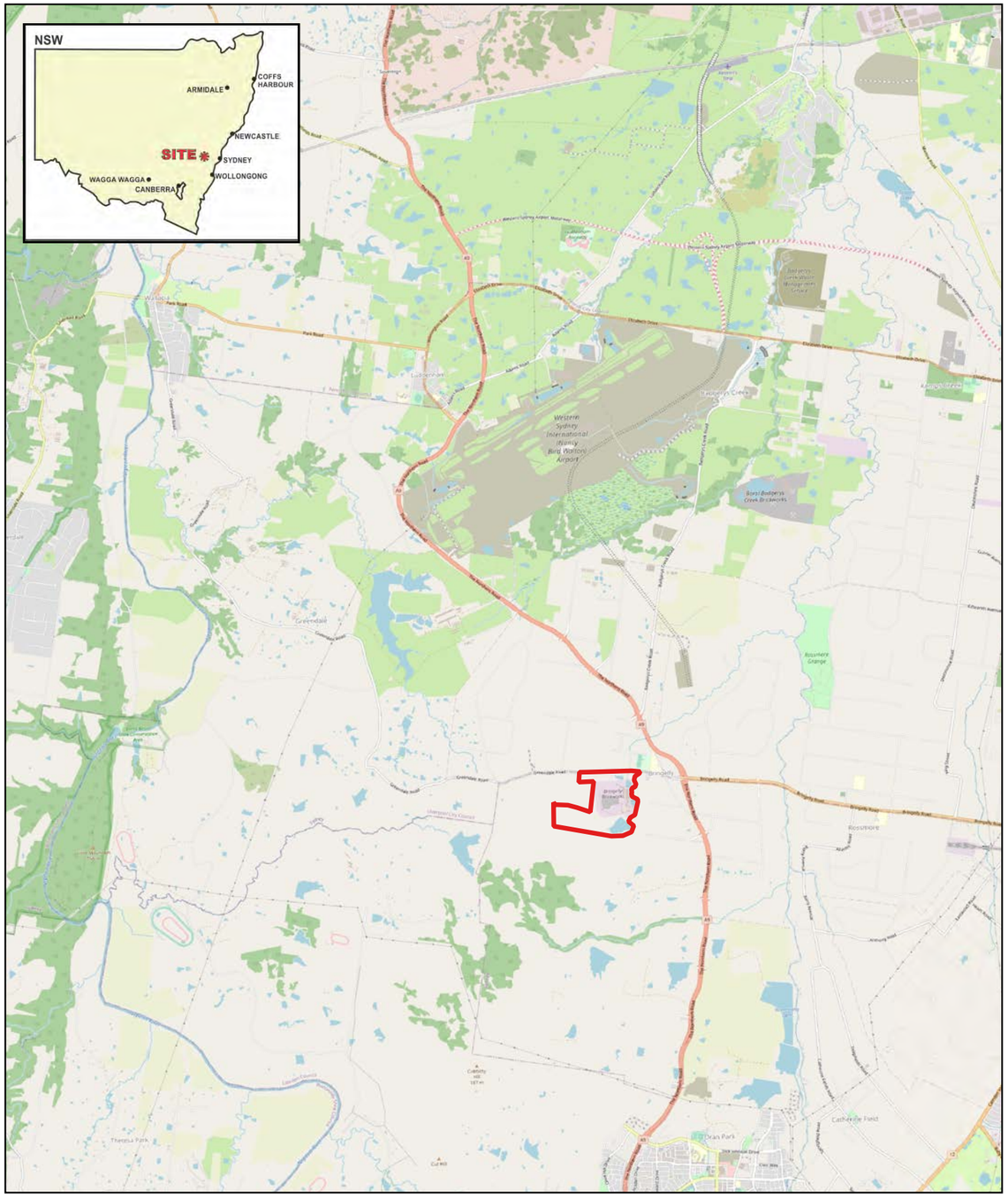

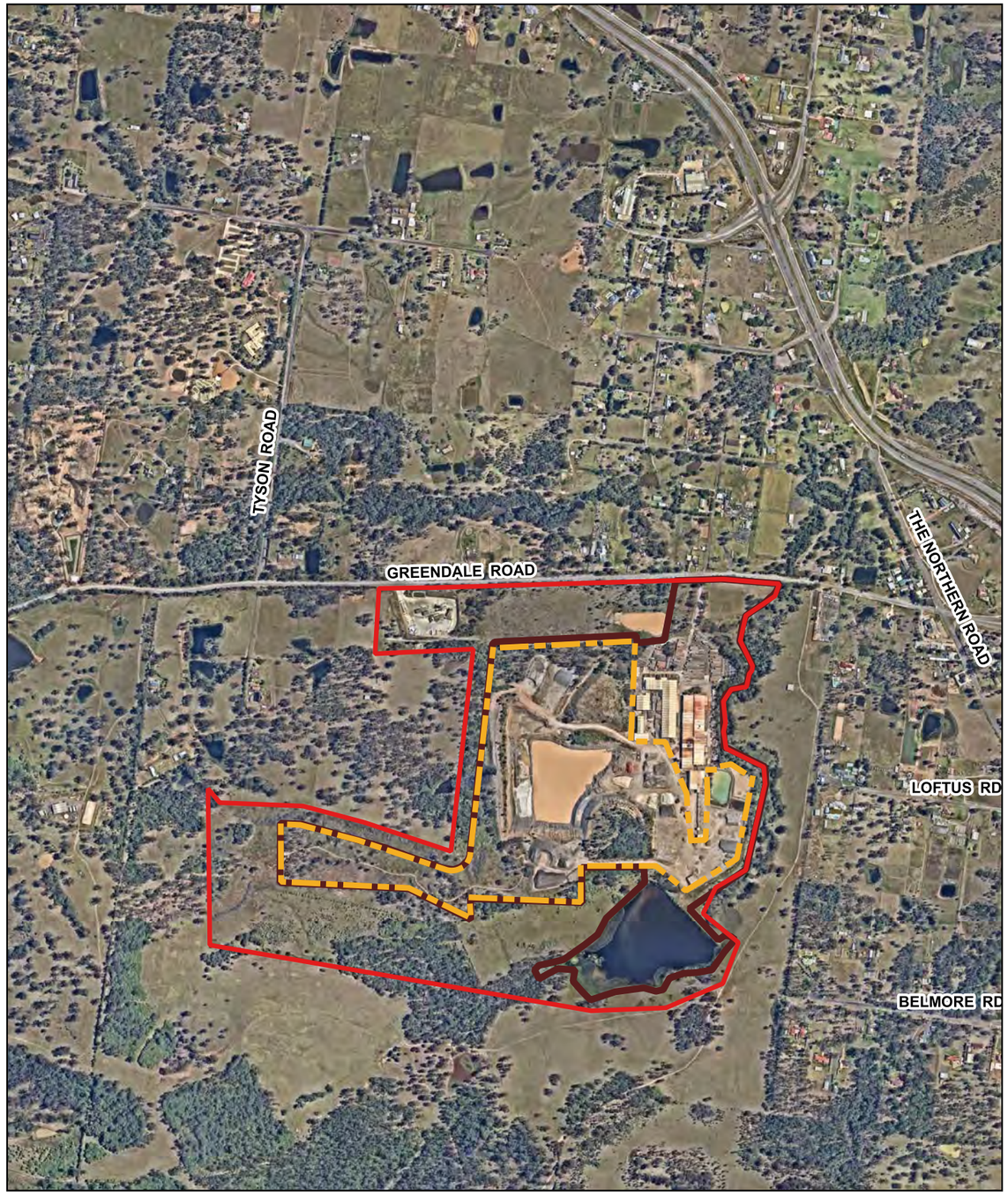

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Land Ownership & Landuse**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**TWO**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 06/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q002_V0_F2	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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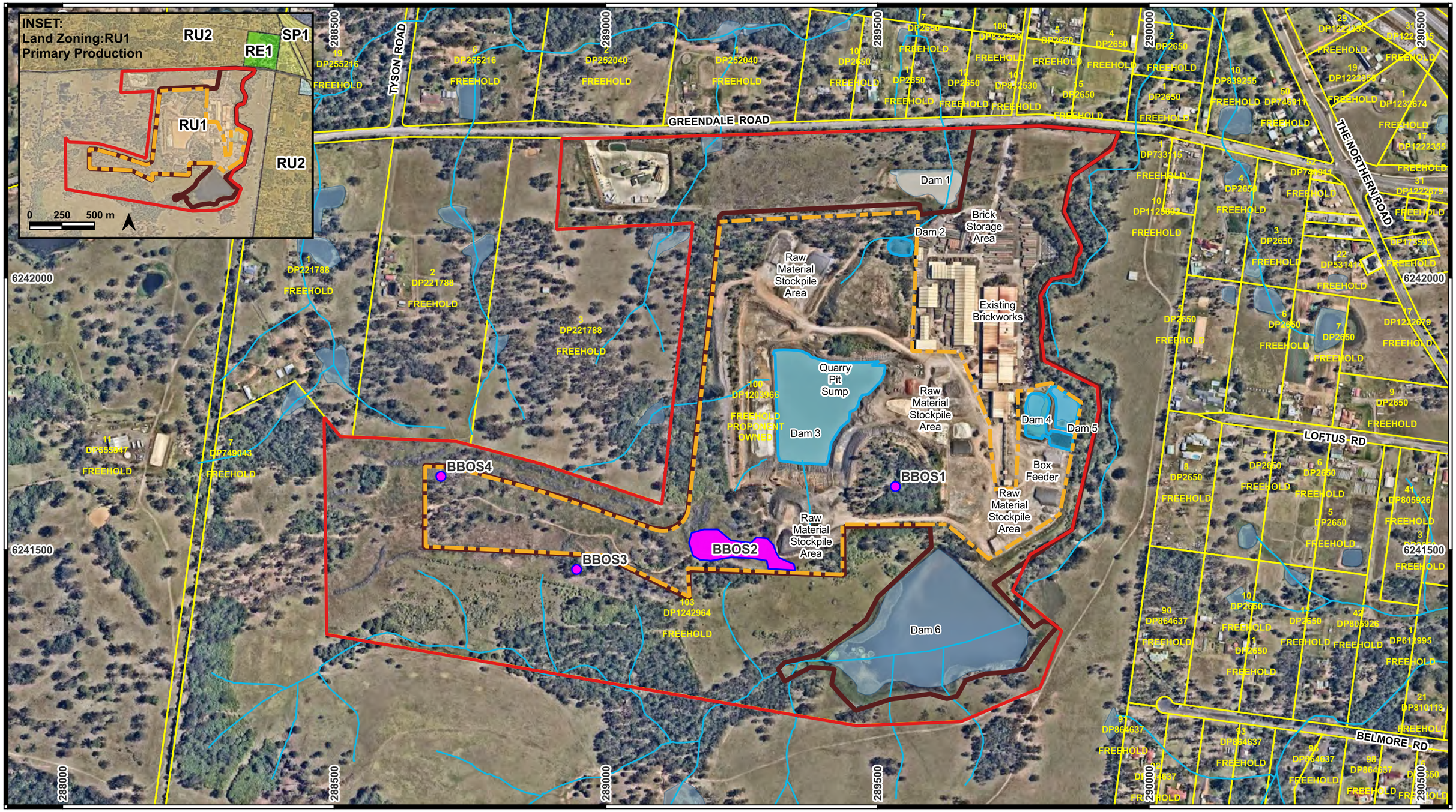

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Water Management Area
- Dam
- Lot Boundary (Cadastral)
- Recorded Aboriginal Site (Artefact Heritage 2013)

Mine Lease Feature

- Authority Boundary (ML 1731)

Zoning (NSW Zoning WMS Data)

- RU1 - Primary Production
- RU2 - Rural Landscape
- RE1 - Public Recreation
- SP1 - Special Uses

2 Final Land Use

2.1 REGULATORY REQUIREMENTS FOR REHABILITATION

2.1.1 Consent Rehabilitation Requirements

Table 4. SSD- 5684 Mod 1 Consent Rehabilitation Plan Requirements

Consent Condition	Details		Where Addressed in this Report
Schedule 3 **Condition 23**	**Rehabilitation** **Rehabilitation Objectives** The Applicant must rehabilitate the site to the satisfaction of the Secretary. Rehabilitation must: a. comply with the objectives in Table 8; and *b.* be generally consistent with the proposed rehabilitation strategy in the EIS, and the final land form shown conceptually in Appendix 4 (unless modified by the Final Land Use Options Plan, prepared in accordance with condition 25 of this consent). *Table 8 Rehabilitation Objectives*		Section 4 Appendix D Appendix E Appendix F
	Feature	*Objective*	
	Site (as a whole)	• Safe, stable and non-polluting • Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat	Section 6
	Surface Infrastructure	• To be decommissioned and removed (unless the Secretary agrees otherwise)	Section 6
	Final Void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void	Section 6
	Quarry pit floor	• Landscaped and revegetated using native flora species, above the anticipated final void water level	Section 6
	Community	• Ensure public safety	Section 6

Consent Condition	Details	Where Addressed in this Report
Schedule 3 **Condition 24**	**Progressive Rehabilitation** The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.	Section 6
Schedule 3 **Condition 25**	**Final Land Use Options Plan** 25. The Applicant must prepare a Final Land Use Options Plan for the site to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with DRE and Camden Council;	Section 5 Appendix F
	(b) be submitted to the Secretary for approval within 2 years of the date of notifying the Department of commencement of development (see condition 8 of Schedule 2), unless the Secretary agrees otherwise;	Section 5 Appendix F
	(c) provide details of the conceptual final landform and associated final land uses for the site;	Section 5 Appendix F
	(d) ensure that the conceptual final land form is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre;	Section 5 Appendix F
	(e) inform the Rehabilitation Management Plan (prepared in accordance with condition 26 of this consent); and	Section 5 Appendix F
	(f) be reviewed every 7 years to account for applicable land use priorities, and if necessary updated.	Section 11

Consent Condition	Details	Where Addressed in this Report
Schedule 3 **Condition 26**	**Rehabilitation Management Plan** The Applicant must prepare a Rehabilitation Management Plan for the development to the satisfaction of the Secretary.	Appendix D This report.
	This plan must: (a) be prepared in consultation with OEH, DRE, DPI Water and Camden Council;	Section 5 Appendix F
	(b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;	Appendix D
	(c) provide details of the conceptual final landform and associated land uses for the site (which must be consistent with the Final Land Use Options Plan under condition 25 of this consent);	Appendix D Appendix F Section 2
	(d) describe the short, medium and long term measures that would be implemented to: • manage remnant vegetation and habitat on site; and • ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;	Appendix D
	(e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any necessary remedial action;	Section 4 Appendix E Appendix F
	(f) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and	Appendix D Section 8 Section 11
	(g) include details of who would be responsible for monitoring, reviewing, and implementing the plan. The Applicant must implement the approved management plan as approved from time to time by the Secretary. *Note: The Rehabilitation Management Plan must be reviewed, and if necessary updated, following any update of the Final Land Use Options Plan.*	Appendix D Section 11

Consent Condition	Details	Where Addressed in this Report
Schedule 5 **Condition 1**	**Environmental Management Strategy** 1. If the Secretary requires, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary.	See Approved EMS http://www.pghbrick.com.au/-nsw-environmental-reporting
	This strategy must: (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Applicant;	-
	(b) provide the strategic framework for environmental management of the development;	-
	(c) identify the statutory approvals that apply to the development;	-
	(d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;	-
	(e) describe the procedures that would be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance; • respond to emergencies; and	-
	(f) include: • copies of any strategies, plans and programs approved under the conditions of this consent; and • a clear plan depicting all the monitoring required to be carried out under the conditions of this consent. The Applicant must implement any Environmental Management Strategy as approved from time to time by the Secretary.	-

Consent Condition	Details	Where Addressed in this Report
Schedule 5 **Condition 2**	**Adaptive Management** 2. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.	Appendix D Section 8 Section 10

Consent Condition	Details	Where Addressed in this Report
Schedule 5 **Condition 3**	**Management Plan Requirements** The Applicant must ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data;	Background or baseline data is included in each relevant sub-management plan included in the appendices of this report and can be found on the PGH website: http://www.pghbricks.com.au/-nsw-environmental-reporting
	(b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; and • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	-
	(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	-
	(d) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of any management measures (see (c) above);	-
	(e) a contingency plan to manage any unpredicted impacts and their consequences;	-
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	-
	(g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and	-
	(h) a protocol for periodic review of the plan. Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	-

Consent Condition	Details	Where Addressed in this Report
Schedule 5 **Condition 4**	**Annual Review** 4. By the end of September each year, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary.	Section 11
	This review must: (a) describe the development (including rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;	-
	(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against: • the relevant statutory requirements, limits or performance measures/criteria; • the monitoring results of previous years; and • the relevant predictions in the documents in condition 2(a) of Schedule 2;	-
	(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	-
	(d) identify any trends in the monitoring data over the life of the development;	-
	(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	-
	(f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.	-

Consent Condition	Details	Where Addressed in this Report
Schedule 5 **Condition 5**	**Revision of Strategies, Plans and Programs** Within 3 months of the submission of an: (a) Annual Review under condition 4 above; (b) incident report under condition 7 below; (c) audit report under condition 9 below; and (d) any modifications to this consent, the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary. *Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.*	Section 11
Schedule 5 **Condition 7**	**Incident Reporting** The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Section 11
Schedule 5 **Condition 8**	**Regular Reporting** The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	Section 11

2.1.2 MEG Rehabilitation Requirements

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

Table 5. Mine Lease Conditions from the Regulation

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

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

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

2.2 FINAL LAND USE OPTIONS ASSESSMENT

A Final Landuse Options Plan (FLUOP) is required to be prepared in accordance with the consent conditions (Schedule 3 Condition 25). The FLUOP has been approved by DPIE and can be found on the company website (http://www.pghbrick.com.au/-nsw-environmental-reporting) and Appendix D.

The final land use will be as approved in the FLUOP (or as modified) and is shown in *Figure Three* and *Figure Four*.

The final landuse may change course throughout the lifetime of the mine depending economic or community factors. As a guide the PGH will use agricultural uses indicative of the neighbouring properties as a rehabilitation goal. A final decision on preferred scenario will be made by the key stakeholders, Camden City Council and the landowner.

2.3 FINAL LAND USE STATEMENT

The conceptual final land use and landform as approved in the FLUOP is described as follows:

- One central water management storage area, following the completion of mining activities.;
- One void (mine pit), comprised of cells from the approved mining lease and MOP;
- Brickmaking facility (roofed) and other associated hardstand areas, including carpark, brick storage areas and internal roads, located outside of the ML area; and
- Rehabilitated non-hardstand areas (areas not under roof or covered with asphalt and/or buildings) including the raw material stockpile area, noise bunds located directly to the east and north of the brickmaking facility and final stormwater management structures.

2.4 FINAL LAND USE AND MINING DOMAINS

2.4.1 Final Land Use Domains

Table 6. Post Mining Land Use Domain Codes

Secondary Domains (Post Mining)	Description
Native Ecosystem	This Domain comprises the final void area and surrounds as well as infrastructure areas not retained at the completion of extraction activities.
Final Void	This domain includes the void remaining at the end of mining which is not free draining and will include retained water as a feature of the final landform.
Water Management Areas	This domain includes water management infrastructure to remain on the site including sediment dams for use in the factory, drains etc excluding the water body remaining in the final void.
Infrastructure	This domain incorporates the site access road and temporary office areas to be retained for future property access.

2.4.2 Mining Domains

Table 7. Operational Domain Codes

Primary Domains (Operational)	Description
Infrastructure Area	This domain includes the haul roads and hardstand areas.
Water Management Area	This includes the In-Pit sump and other water management features.
Overburden Emplacement Area	This domain incorporates topsoil/overburden stockpiles and bunds surrounding the extraction area where material has been placed.
Active Mining Area (Open cut void)	This domain incorporates the active extraction area.

3 Rehabilitation Risk Assessment

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

Table 8. General Rehabilitation Risk Assessment

Hazard	Risks	Risk Controls	Details
Administrative failures.	Insufficient skills and experience of rehabilitation personnel.	Only experienced contractors will be engaged to conduct rehabilitation activities.	
	Lack of clearly defined responsibilities.	Responsibilities and roles for rehabilitation will be defined in the contractual arrangements with contractors and Proponent.	
	Insufficient funding for or prioritisation of rehabilitation activities.	Proponent will ensure that sufficient funds are available to conduct rehabilitation activities. Note, a rehabilitation bond is held over the site and will be reviewed annually for the life of the mine.	
Erosion	Harm to rehabilitation works.	In-pit slopes to be reduced.	Slopes to be reduced to a maximum of 3H:1V within the void.
		Reduce slope lengths in-pit.	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 18º. Stockpile height no greater than 2 metres. No stockpiles to be constructed in areas of concentrated flows.
		Overburden stockpile management.	Slopes no greater than 18º. Stockpile height no greater than 4.5 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 18º. Stockpile height no greater than 2 metres. No stockpiles to be constructed in areas of concentrated flows.
		Overburden stockpile management.	Slopes no greater than 18º. Stockpile height no greater than 4.5 metres. No stockpiles to be constructed in areas of concentrated flows.
Surface Water Quality	Decrease in downstream water quality.	Monitoring.	Surface water monitoring has been undertaken on water to be discharged offsite. All future monitoring will be undertaken in accordance with Approved Methods for Sampling and Analysis of Water Pollutants in NSW (DEC 2004)
		Reuse dirty water on site.	Dirty water to be reused for dust suppression.
		Runoff from design storm to be contained in-site.	Sediment dams designed for 90th % 5-day storm event. Drains to be designed for 1 in 10-year design storm. Receiving capacity of sediment dams to be maintained by; • Reuse of water on-site for dust suppression; and • Water to be pumped to pit sump if capacity not sufficient to contain design storm prior to storm events. • Pit maintained to have capacity to contain a volume greater than the design storm.
		Surface water captured on exposed surfaces to be directed to sediment dams.	Sediment dam to be constructed for each catchment in the disturbed area. Drains to be installed to direct dirty surface water to sediment dams.
		Separation of clean water and dirty water.	Upstream clean water to be diverted via diversion drains or bunds as far as possible.
Geotechnical Stability In-Pit	Failure of In-Pit Slopes	Reduce slopes In-Pit.	Batter slopes with overburden material.
		Batter designs validated by qualified engineer.	

Hazard	Risks	Risk Controls	Details
Groundwater Quality and Flows	Decrease in groundwater quality and changes in flows	Groundwater interaction will be minimised.	Base of extraction limited to 46mAHD by consent conditions. Groundwater modelling in EIS suggests that the impacts from the pit deepening are likely to be sufficiently small as to be unnoticeable.
Wind Erosion	Rehabilitation areas impacted by wind erosion.	Air quality monitoring.	Visual observation for the presence of nuisance dust will be undertaken during mining, hauling and rehabilitation operations. Depositional dust gauges and High Volume Air Samplers (HVAS) have been installed on the site and monitoring is undertaken in accordance with EPA approved methods.
		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, works will cease, the immediate vicinity will be secured to protect the find and 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	Wastes will be stored in bins with a lid. 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
Poor seed viability and dormancy	Insufficient germination of seeds to provide groundcover.	Certified seed stock to be utilised as far as possible in rehabilitation.	
Ant and Insect predation	Seed stock depleted by predation.	Protect sown seeds as far as possible.	Seeds to be lightly covered by soil when spread. Apply liquid tackifier if required to bind seeds to the surface. Keep soil moist by mulching or application of water to deter ants.
Damage to seed through revegetation processes	Insufficient germination of seeds to provide groundcover.	Protect seeds from damage during rehabilitation.	Experienced contractors to be employed for rehabilitation works. Rehabilitation areas to be protected from vehicular traffic by fencing or similar barriers. Minimise handling of seeds during storage and use.
Weed Infestation	Weed number overwhelm revegetation.	Regular inspection and spraying for weeds will be undertaken.	Monitoring confirms that after 2 years the non-native/non-target species (weeds) represents less than 20% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.
Inappropriate rehabilitation techniques	Failure of rehabilitation.	Ensure approved rehabilitation plan is followed.	Experienced contractors to be employed for rehabilitation works. Rehabilitation to be undertaken in accordance with the Rehabilitation Plan approved by DPIE and this plan. Proponent to supervise rehabilitation works to ensure compliance with any approved plans and best practice techniques are utilised.
		Approved plans will be reviewed as required to ensure best practice techniques are employed.	
Adverse weather conditions	Failure of rehabilitation.	Revegetation will not be undertaken during periods of drought.	
		Rehabilitation works will not be undertaken during wet periods where soils and seed planting may be damaged.	
		A water cart may be employed to water rehabilitation areas during dry or windy periods until vegetation is established.	
Inappropriate Seasonal timing of revegetation	Failure of rehabilitation.	Revegetation will preferably be planted during the spring and autumn seasons to avoid hot and dry weather conditions and winter frost.	

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

Hazard	Risks	Risk Controls	Details
Weather and climatic influences	Failure of rehabilitation.	A water cart may be employed to water rehabilitation areas during dry or windy periods until vegetation is established.	
		Reseeding of failed areas may be undertaken as advised by ecologist or suitably qualified person/s	
Long term water quality and quantity issues	Decrease in downstream water quality.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method.	
Damage to rehabilitation	Deliberate vandalism of rehabilitation areas.	Rural fences and gates installed around disturbed area to prevent unauthorised access that may damage rehabilitation.	Monitoring indicates evidence of trespassing and/or damage to rehabilitation areas. Appropriate fencing, signage and bunding is to be repaired and maintained.
	Bushfire damages rehabilitation areas.	Where possible regular slashing/mowing of pasture areas will be undertaken.	
	Weed number overwhelm revegetation.	Regular inspection and spraying for weeds will be undertaken.	Monitoring confirms that after 2 years the non-native/non-target species (weeds) represents less than 20% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.
	Insect and plant disease overwhelm revegetation.	Regular inspections to be undertaken and spraying undertaken as appropriate.	
Insufficient establishment of target species and limited species diversity	Vegetation community does not become established on final landform affecting final land use and ecosystem.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for divergence of failure of endemic species establishment and recommend actions to ensure that the final vegetation community corresponds as closely as possible to the approved community.	Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community. Use of seed and mulch mix or other application techniques. Soil amelioration works such as addition of fertiliser. Additional weed control activities (mechanical and/or chemical).
Erosion and failure of landform	Vegetation is unable to be established due to erosion.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method.	If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.
Erosion and failure of landform	Visual inspection indicates that the final landform is the source of unacceptable levels of sedimentation downstream.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method.	If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.

4 Rehabilitation Objectives and Rehabilitation Completion Criteria

Rehabilitation Objectives and Completion Criteria have been included in the RMP (2021) (see *Appendix D*) previously approved by the DPE on 18/12/2022. Since that time, the reforms to the Mining Act requires that the Rehabilitation Objectives are approved by the Resources Regulator. The updated 'ROBJs' are included in *Appendix E.* These objectives remain 'proposed' until approved by the Regulator and may vary over the course of time.

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
A - Native Ecosystem	1 - Infrastructure Area	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community.	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
				Damage to access tracks has been repaired and stabilised.	Repairs complete	As-constructed final landform plan, photos etc.
				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.
				If any underground pipelines or other infrastructure are to remain in situ, they do not pose a hazard for the intended final land use.	The location of the infrastructure has been marked on a plan and registered with the relevant local authority (e.g. local Council) and Dial Before You Dig. Formal acceptance from the subsequent landowner that underground infrastructure has been left in a condition that is suitable for the intended final land use in accordance with formal agreement.	Surveyed and marked on the as-constructed final landform plan. Copy of notification to local Council and Dial Before You Dig Formal acceptance from landowner. Identified on an appropriate legal instrument associated with the land title.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
				The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment report validating modes of failure have been addressed to minimise risks to public safety and the environment etc.
F - Water Management Area	3 - Water Management Area	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.	Native plant species recorded from 0.04 hectare fixed monitoring plots are characteristic of the target vegetation community Cumberland Plains Woodland and Grassland.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
			The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.	Cover and abundance of plant growth forms recorded from 0.04 hectare fixed monitoring plots are characteristic of the target vegetation community Cumberland Plains Woodland and Grassland, or an ongoing trend toward becoming characteristic is evident from the monitoring data	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
			Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable.	Indicators of nutrient cycling are suitable for sustaining the target vegetation community Cumberland Plains Woodland and Grassland	Litter cover is within 10th-90th percentile variation range of reference sites/data	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
				Evidence of plant regeneration from 0.04 hectare fixed monitoring plots or a walk over of the ecological rehabilitation area	Second generation individuals of trees are within the 10th-90th percentile variation range of reference sites/data approved by the consent authority	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
				Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes	Resilience to drought and fire.	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform.
				Threats to rehabilitation.	Vertebrate pest species – presence and damage is recorded at a level that does not cause significant risk to rehabilitation.	Rehabilitation 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
		Groundwater Quality	Groundwater quality is similar to, or better than the pre-disturbance water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or Environment Protection Licence (further guidance available on the NSW Environment Protection Authority website).	Water quality discharged from rehabilitated mining operation meet specifications in Environment Protection Licence and or ANZECC guidelines for specific environment.	Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
		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.
		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.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years (e.g. 5 years).
				Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	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. Erosion rate monitoring verifies that erosion levels are within the range of target	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological 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.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
					analogue sites representative of final land use. Significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design. High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		Management of waste and process materials	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.	Visual –capping material placement, type across emplacement. Visual – indication of capping performance on final landform – vegetation health. Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems). Visual – no areas of unexpected seepage.	Photos, rehabilitation monitoring reports, as constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports.
				Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc. Measured- surface and groundwater levels to verify water balance modelling and capping function. Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: Capping depth – X metres Capping material type • Capillary breaks • Seepage control.	The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
					Groundwater and surface monitoring verify capping function e.g. ‘store and release’ and design performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	
		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. All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community	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.
		Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured	Statement provided by suitably qualified engineer.
		Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or Environment Protection Licence (further guidance available on NSW Environment Protection Authority website).	Water quality discharged from rehabilitated mining operation meet specifications in Environment Protection Licence and or ANZECC guidelines for specific environment.	Water quality monitoring reports. Environment Protection Licence relinquished by Environment Protection Authority. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
		Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	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.
I - Infrastructure	1 - Infrastructure Area	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community.	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured	Statement provided by suitably qualified engineer.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
J - Final Void	1- Infrastructure Area, 3 - Water Management Area, 4 - Overburden Emplacement Area and 5 - Active Mining (Open Cut Void)	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.
		Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.	Native plant species recorded from 0.04 hectare fixed monitoring plots are characteristic of the target vegetation community (e.g. target PCT)	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
			The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.	Cover and abundance of plant growth forms recorded from 0.04 hectare fixed monitoring plots are characteristic of the target vegetation community Cumberland Plains Woodland and Grassland, or an ongoing trend toward becoming characteristic is evident from the monitoring data	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
			Levels of ecosystem function have been established that demonstrate the rehabilitation is self-sustainable.	Indicators of nutrient cycling are suitable for sustaining the target vegetation community Cumberland Plains Woodland and Grassland	Litter cover is within 10th-90th percentile variation range of reference sites/data	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
				Evidence of plant regeneration from 0.04 hectare fixed monitoring plots or a walk over of the ecological rehabilitation area	Second generation individuals of trees are within the 10th-90th percentile variation range of reference sites/data approved by the consent authority	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
				Resilience demonstrated by the effects of drought and fire on composition, structure and other function attributes	Resilience to drought and fire.	Rehabilitation monitoring reports, independent soil reports (where required) that demonstrate long-term function of rehabilitated landform.
		Groundwater	Groundwater quality is similar to, or better than the pre-disturbance water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and	Water quality discharged from rehabilitated mining operation meet specifications in Environment Protection	Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
				or Environment Protection Licence (further guidance available on the NSW Environment Protection Authority website).	Licence and or ANZECC guidelines for specific environment.	criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
		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.
		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.	Visual- minimal erosion that would not require moderate to significant ongoing management and maintenance works. Visual – no signs of land instability such as mass movement. Visual - no areas of active gully erosion. Visual - no evidence of tunnel erosion. Visual – no evidence of active scour likely to compromise surface water management structure.	Before and after photos, rehabilitation monitoring reports, as constructed surveys, erosion surveys, independent geotechnical reports (where required) and or erosion modelling reports (where required) that indicate long-term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years (e.g. 5 years).
				Measured – erosion rates from field trials and or surveys on both target analogue sites (representative of final land use) and rehabilitated profiles (tonnes / ha). Measured - Survey of rehabilitated landform to verify final landform construction in accordance with Final Landform and Rehabilitation Plan. Measured - survey of rehabilitated landform to specifically monitor settlement and/or material loss via erosion. Modelled – long term erosional stability (e.g. Landform Evolution Modelling) to verify the long-term stability of rehabilitated landform. Modelled – long term geotechnical stability (e.g. stability analysis) to verify the long-term stability of rehabilitated landform.	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. Erosion rate monitoring verifies that erosion levels are within the range of target analogue sites representative of final land use. Significant surface water management structures (e.g.	An engineering assessment undertaken by a suitably qualified person concludes that significant surface water management structures (e.g. spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological 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.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
					spillways, drop structures, major drains and creek diversions) have been constructed in accordance with hydrological design. High risk landforms (such as steep slopes, high walls) have been constructed in accordance with geotechnical design.	
		Management of waste and process materials	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.	Visual –capping material placement, type across emplacement. Visual – indication of capping performance on final landform – vegetation health. Visual – emplacement seepage and other indicators of groundwater issues – wet spots etc.	Visual – verification that capping, type and placement consistent with design. Visual – no signs of compromised capping performance indicated by vegetation health – such as tree death (deeper root systems). Visual – no areas of unexpected seepage.	Photos, rehabilitation monitoring reports, as constructed surveys, quality assurance records for construction, erosion surveys, independent geotechnical reports (where required), groundwater/surface water monitoring reports.
				Measured - survey of emplacement capping to verify construction and to monitor settlement. Quality assurance records for the construction of the emplacement material including (where relevant) capping material, liner system, seepage control etc. Measured- surface and groundwater levels to verify water balance modelling and capping function. Measured – contamination levels in surface and groundwater surrounding emplacement for contaminants of concern associated with waste material emplaced.	Survey verifies that capping placement consistent with design and settlement and/or material loss is within predicted limits and will not compromise final landform drainage via differential settlement. Quality assurance records verify capping constructed and in accordance with design specifications relevant to site risks and target final land use. For example: Capping depth – X metres Capping material type • Capillary breaks • Seepage control. Groundwater and surface monitoring verify capping function e.g. ‘store and release’ and design	The structural integrity of the infrastructure and capping has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and water material adequately contained.

Final Land Use	Mining Domain	Rehabilitation Objective Category	Proposed Rehabilitation Objectives	Indicator	Proposed Completion Criteria	Validation Method, Monitoring or Record
					performance permeability/seepage. Groundwater and surface water monitoring verify adequate containment of waste materials and seepage/leachate is not contributing to land/groundwater contamination.	
		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.
		Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured	Statement provided by suitably qualified engineer.
		Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.	Water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 and or Environment Protection Licence (further guidance available on NSW Environment Protection Authority website).	Water quality discharged from rehabilitated mining operation meet specifications in Environment Protection Licence and or ANZECC guidelines for specific environment.	Water quality monitoring reports. Environment Protection Licence relinquished by Environment Protection Authority. Independent hydrological assessment report. Depending on the nature, scale and risks associated with a specific site, achievement of criteria may need to be evaluated over a number of years (e.g. 5 years to 15+ years).
		Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)	Final landform considers advice from relevant Government Agency whether sufficient licence shares are available in the water source to account for water stored in voids and dams in the proposed final landform	Water approvals / licences are granted by relevant NSW Government Agency.	Confirmation from relevant Government Agency that relevant water approvals / licences are able to be granted.

4.2 REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA – STAKEHOLDER CONSULTATION

Consultation undertaken to date is summarised below.

Table 15. Stakeholder Consultation

Stakeholder	Consultation Activities	Matters Subject to Consultation	Actions
NSW Resources Regulator	Approved Mine Operations Plans (now superseded) Annual Rehabilitation Reports	Nil	Nil
	Draft RMP submitted 23/8/2016	• Plan to be updated with any updates to the FLUOP. • Specific design of final void will require much greater level of detail in future versions of RMP. • *Section 7.1.2- Monitoring* *DRE [RR] considers the 'Safety' and 'Landform Stability' visual inspection frequency of 6 months to be too long. A greater frequency should be proposed.*	FLUOP has been updated and approved by DPE.
Liverpool City Council	Annual Rehabilitation Reports	Nil	Nil
	Draft RMP submitted 23/8/2016	No comment received.	Nil
Camden Council	Draft RMP submitted 23/8/2016	No comment received.	Nil
OEH (Conservation Planning)	Draft RMP submitted 23/8/2016	OEH had no comment of the draft plan.	

DPIE Water	Draft RMP submitted 23/8/2016	• Minor changes to cadastral descriptions • Areas not impacted through construction activities are indicated on all plans and signposted to prevent damage.	RMP amended and approved
EPA	Approval of EPL 20938 in 2017. Variation of licence in 2021.	Nil	Nil
	Draft RMP submitted 23/8/2016	OEH had no comment of the draft plan.	Nil
Transport for NSW	Draft RMP submitted 23/8/2016	No comment received.	Nil
Bringelly Public School	Draft RMP submitted 23/8/2016	No comment received.	Nil
Residential Neighbours	Nil	Nil	Nil

5 Final Landform and Rehabilitation Plan

5.1 FINAL LANDFORM AND REHABILITATION PLAN – ELECTRONIC COPY

Brignelly Clay Mine (ML1731) Final Landform Features Plan 1

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

543.2 0 271.58 543.2 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

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

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Plan Number: 12405_BR_FLRP_Plan 1_V3
PLan Date: 19/07/2023
Data Theme Submission IDs: 5570, 3929

Bringelly Clay Mine FLRP Plan 2: Final Landform Contours ML1731

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

Plan date 13/07/2022
Plan ID no.s: 1646, 1561.

413.3 0 206.67 413.3 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

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

THIS MAP IS NOT TO BE USED FOR NAVIGATION

6 Rehabilitation Implementation

6.1 LIFE OF MINE REHABILITATION SCHEDULE

It should be noted that the life of the mine is greater than the term of the Mining Lease, which expires on the 9th March 2037, and is likely to be renewed.

Table 16. 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 2047 (estimated)	Topsoil stripping is anticipated to be complete prior to 2047, when mining is expected to be completed. Overburden generation is also anticipated to be complete prior to 2047, when mining is expected to be completed.
Removal of product stockpiles	Any remaining material stockpiles will be moved to the infrastructure domain adjacent to the brickworks for use in the factory. Unwanted stockpile material will be utilised in battering slopes to achieve the final landform.	Up to 2047	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 2057	Water management will continue until mining has ceased and the void has ground coverage of at least 70%.

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
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 2052	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.	2032-Western and eastern highwall area of main pit. 2037- Northern portion of pit. 2042- Southern portion of the main pit. 2047-South western portion of pit	Mining has ceased in target areas. Water levels in the pit are lowered sufficiently to permit access to each final face.
Topsoil Emplacement	Topsoil material stored in bunds will be tested for suitability and ameliorated if required. Final slopes will be lightly ripped where possible to key in topsoil material. Topsoil bunds will be removed and reused on final surfaces.	2023 to 2047	Applicable when final slopes have been achieved. Final slopes have been ripped. Topsoil is suitable for target species.
Establishment of Vegetation	Seeding/planting of native species is undertaken on finished surfaces. Watering/Irrigation as required to assist establishment of vegetation.	2023 to 2057	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.

Rehabilitation Activity		Timing	Assumptions and Principles (Milestones)
Monitoring and Maintenance of Rehabilitation	Monitor progress of rehabilitation areas. Continue weed management and pest management. Repair failed rehabilitation areas.	2023 to 2067	Completion of vegetation establishment.

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Current Rehabilitation 2022**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**FIVE**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q005_V0_F5	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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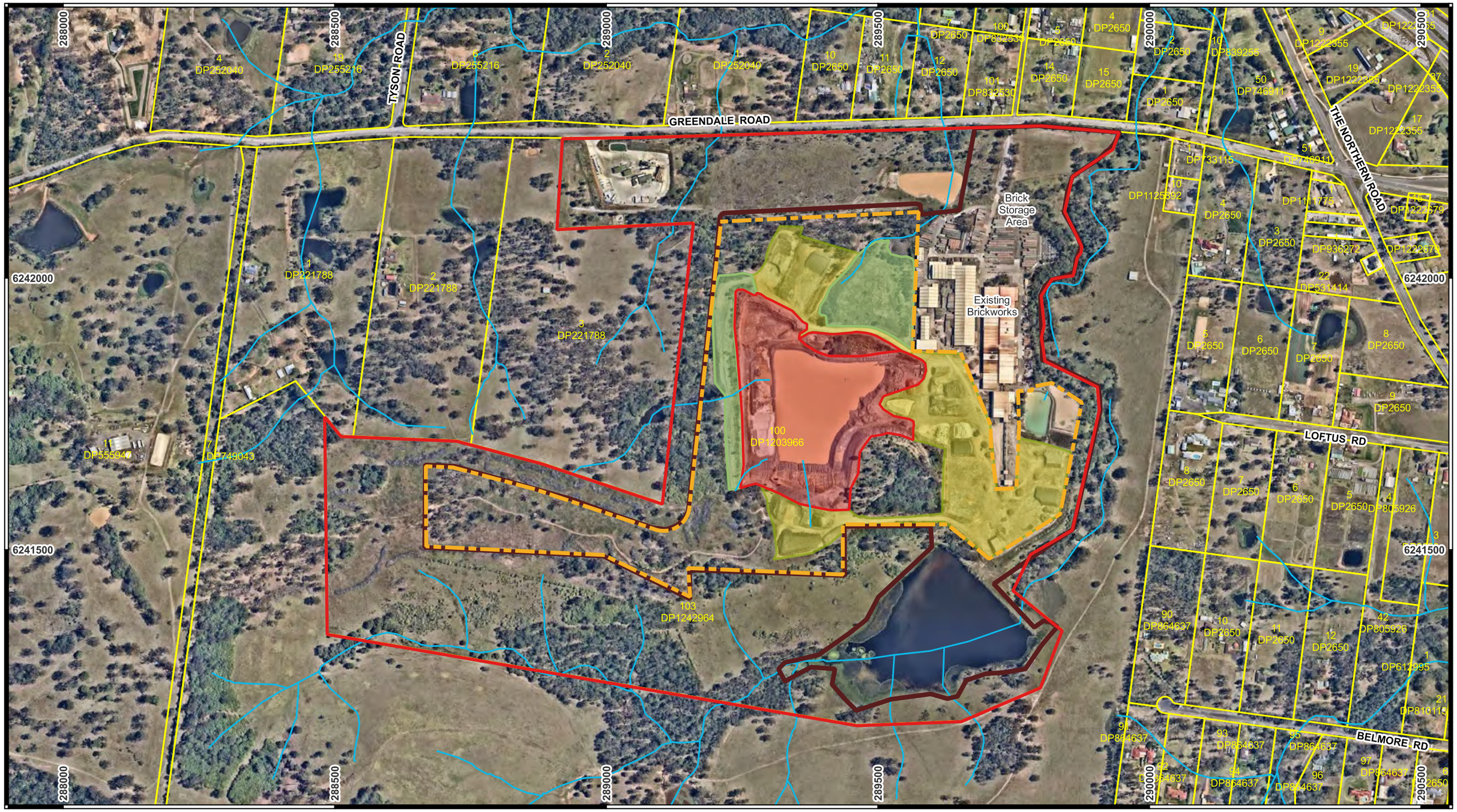

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Current Rehabilitation Phase

- Infrastructure Area
- Rehabilitation
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2022 to 2027**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**SIX**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q006_V0_F6	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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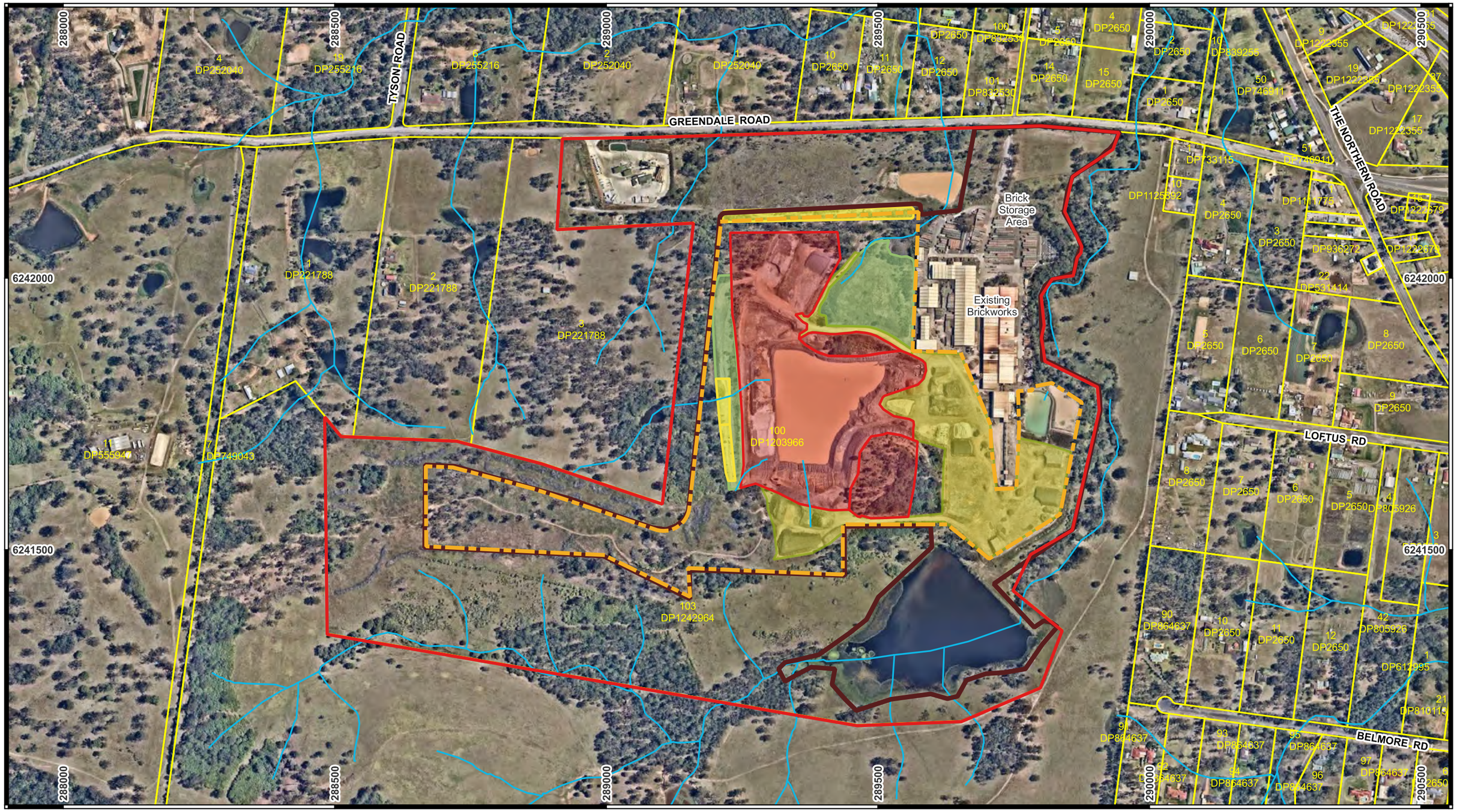

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Landform Establishment
- Ecosystem & Landuse Establishment
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2027 to 2032**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**SEVEN**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q007_V0_F7	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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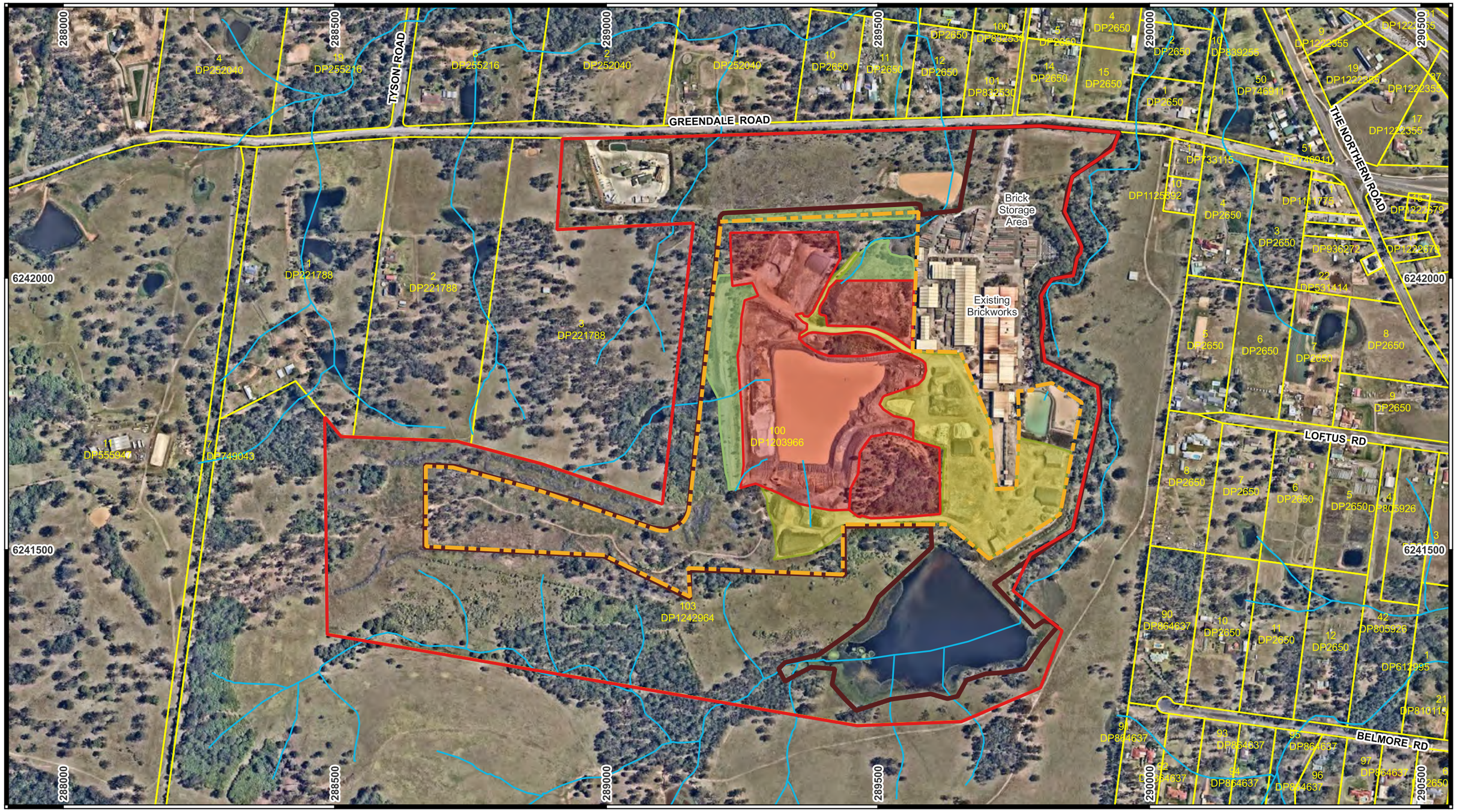

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Ecosystem & Landuse Establishment
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2032 to 2037**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**EIGHT**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q008_V0_F8	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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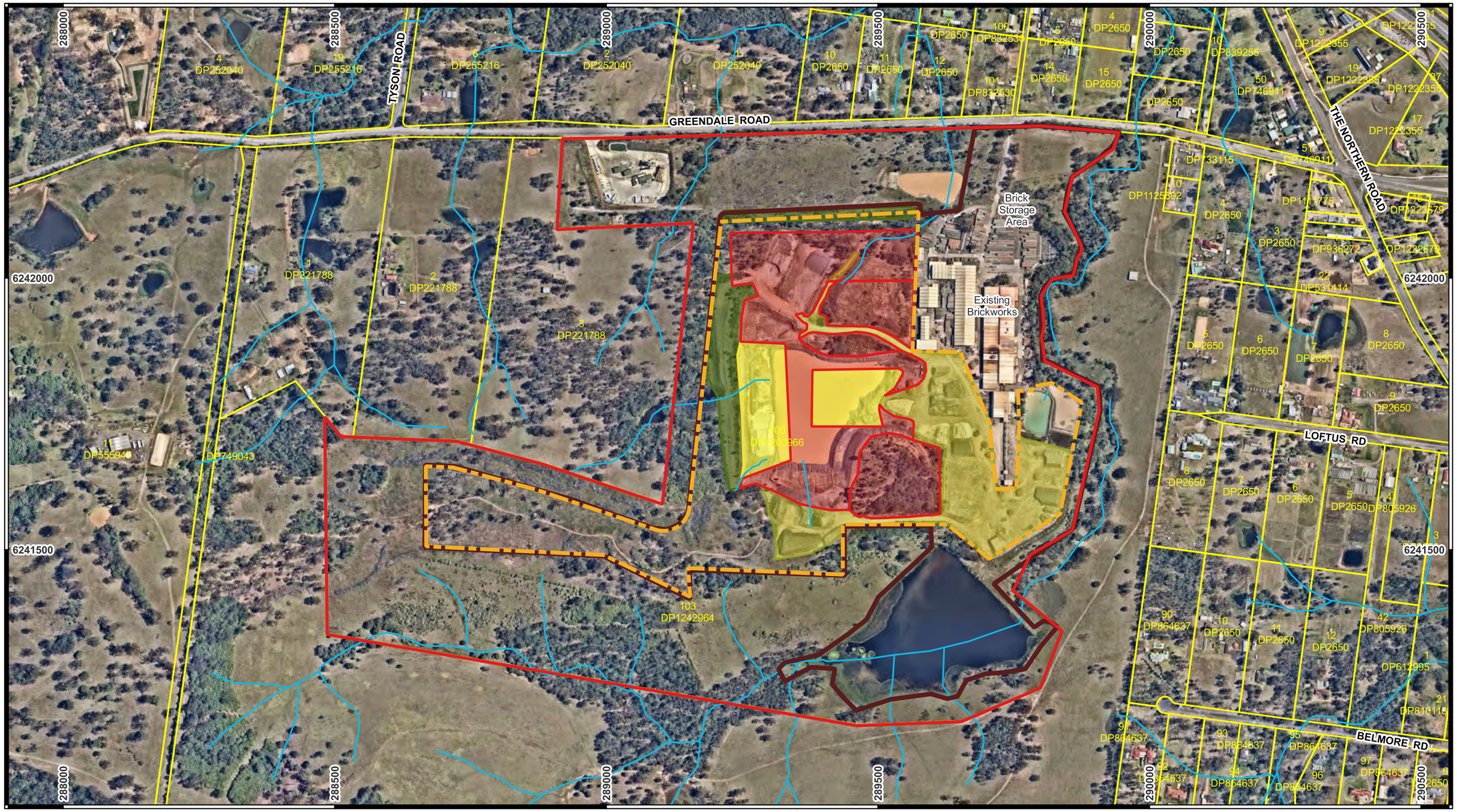

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Landform Establishment
- Ecosystem & Landuse Establishment
- Ecosystem & Landuse Development
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2037 to 2042**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**NINE**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 02/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q009_V0_F9	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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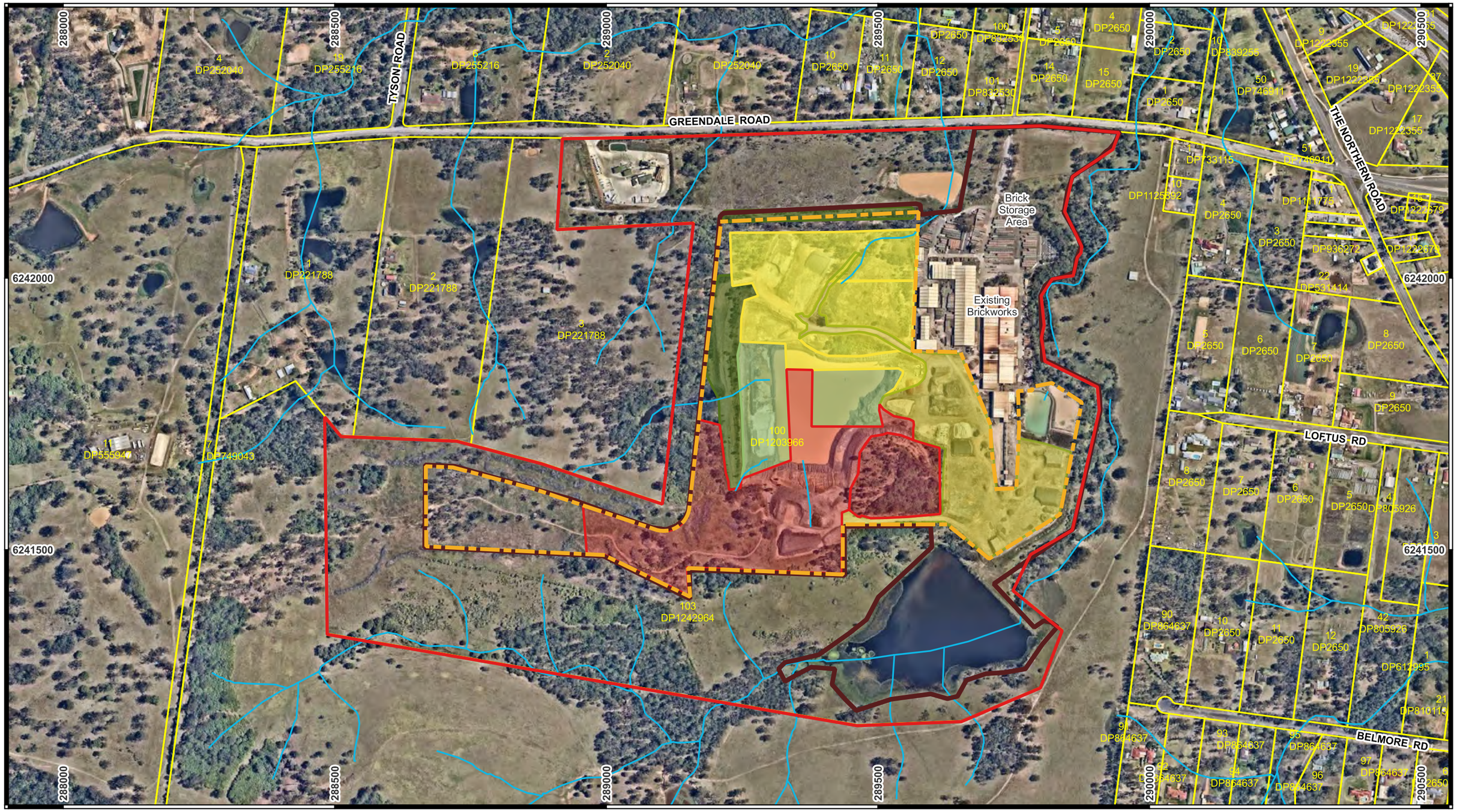

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Landform Establishment
- Ecosystem & Landuse Establishment
- Ecosystem & Landuse Development
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2042 to 2047**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**TEN**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 07/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q010_V0_F10	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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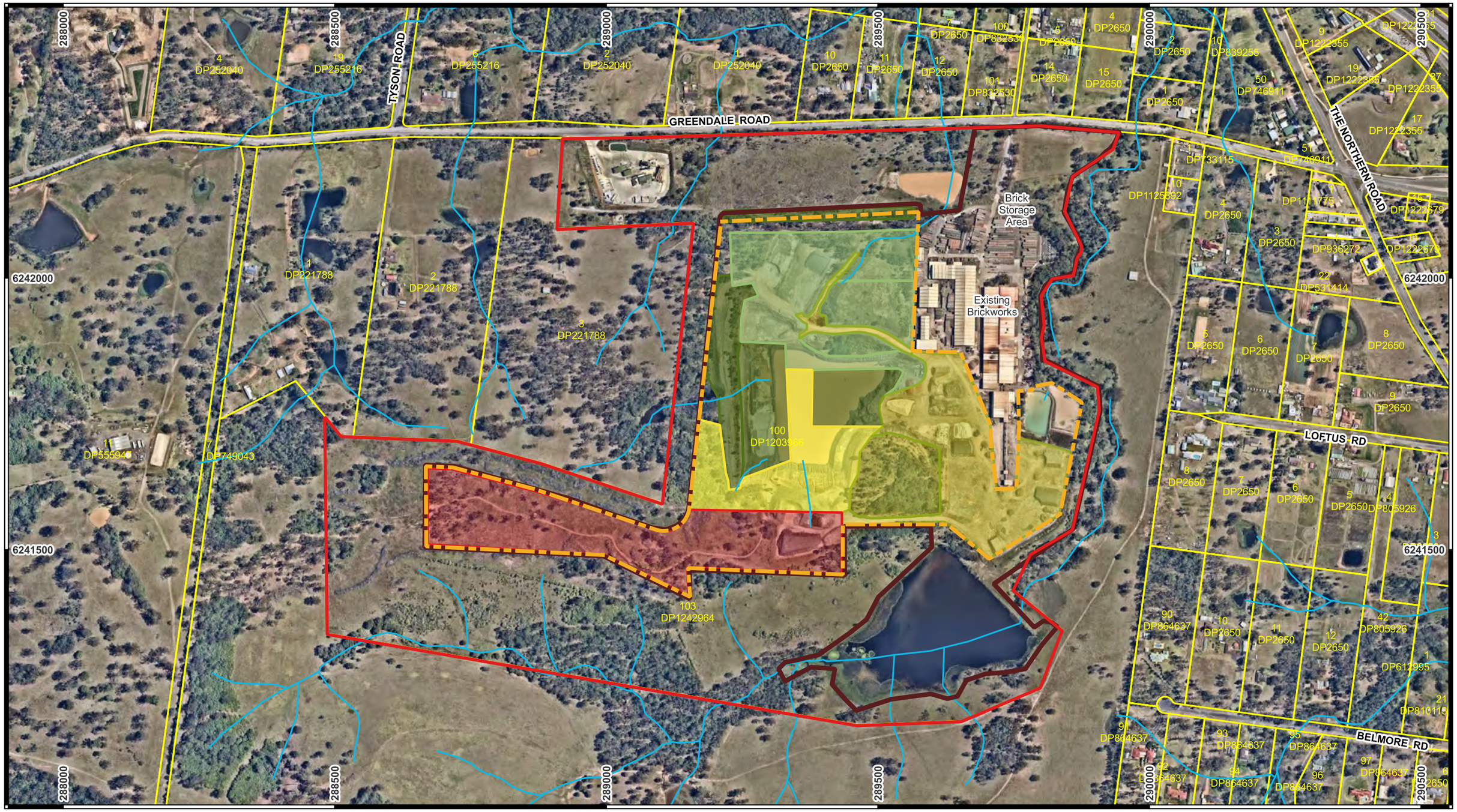

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Landform Establishment
- Ecosystem & Landuse Establishment
- Ecosystem & Landuse Development
- Active Mining

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2047 to 2052**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**ELEVEN**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 07/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q011_V0_F11	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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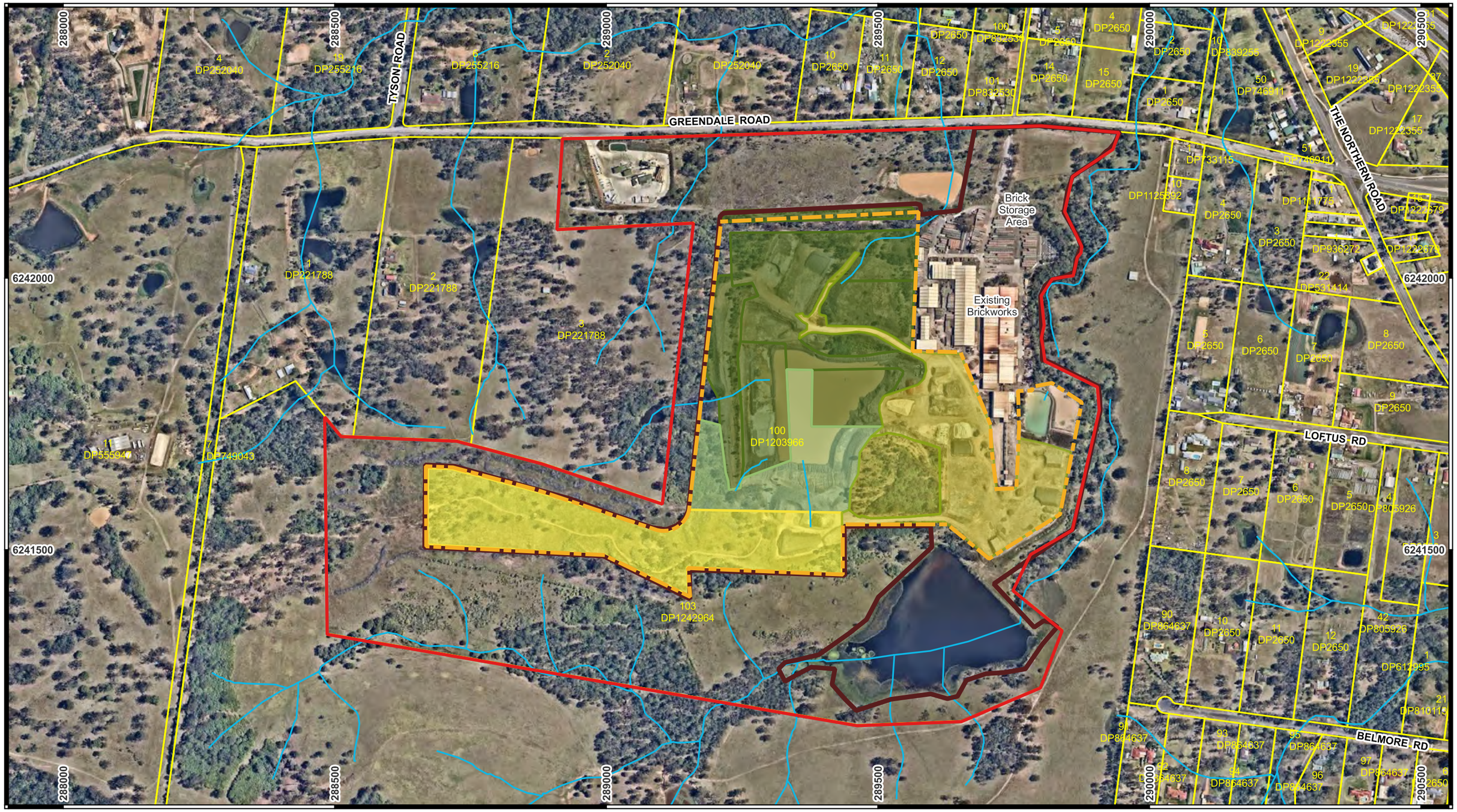

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Landform Establishment
- Ecosystem & Landuse Establishment
- Ecosystem & Landuse Development

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2052 to 2057**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**TWELVE**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 07/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q012_V0_F12	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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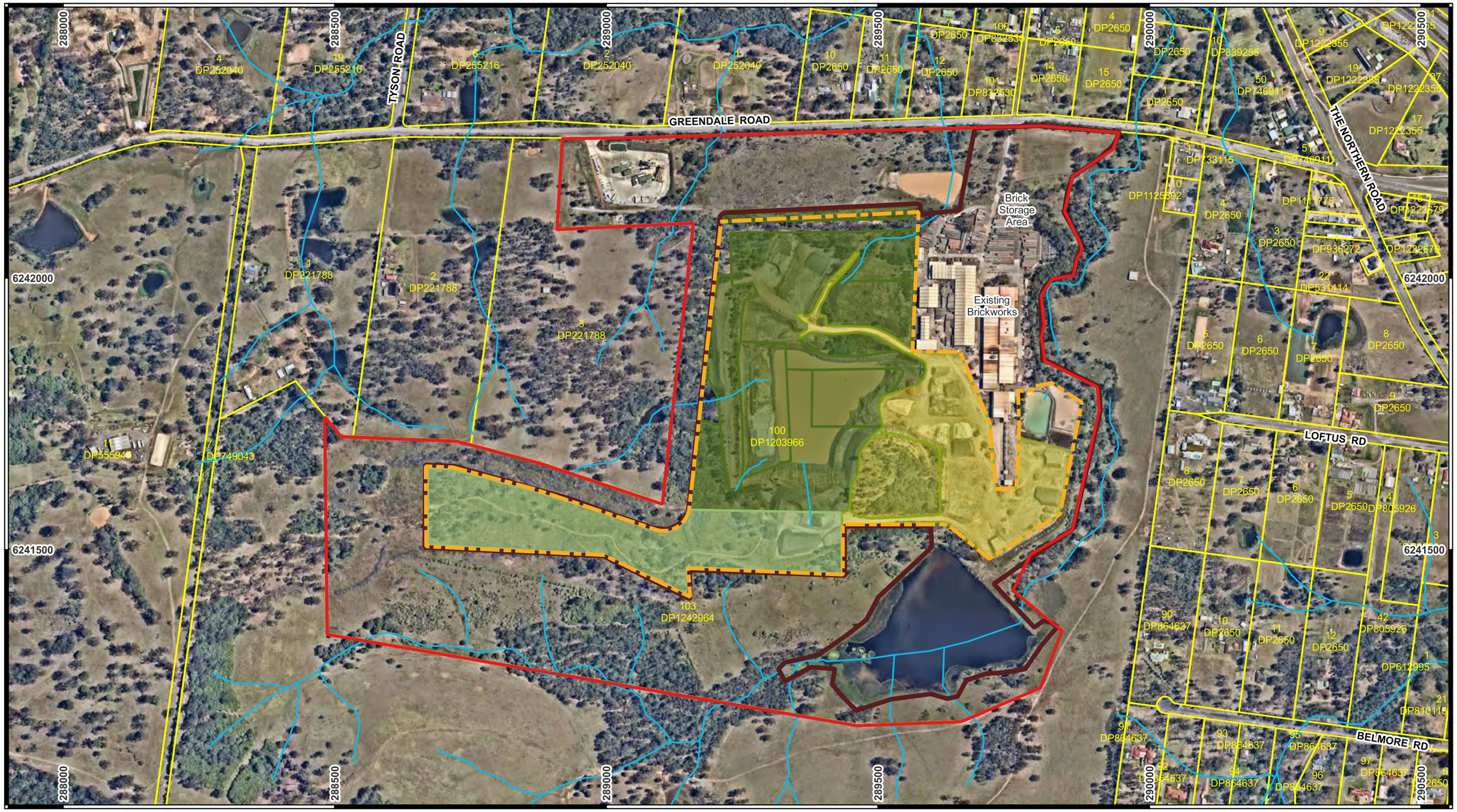

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Ecosystem & Landuse Establishment
- Ecosystem & Landuse Development

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation 2057 to 2062**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**THIRTEEN**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 07/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q013_V0_F13	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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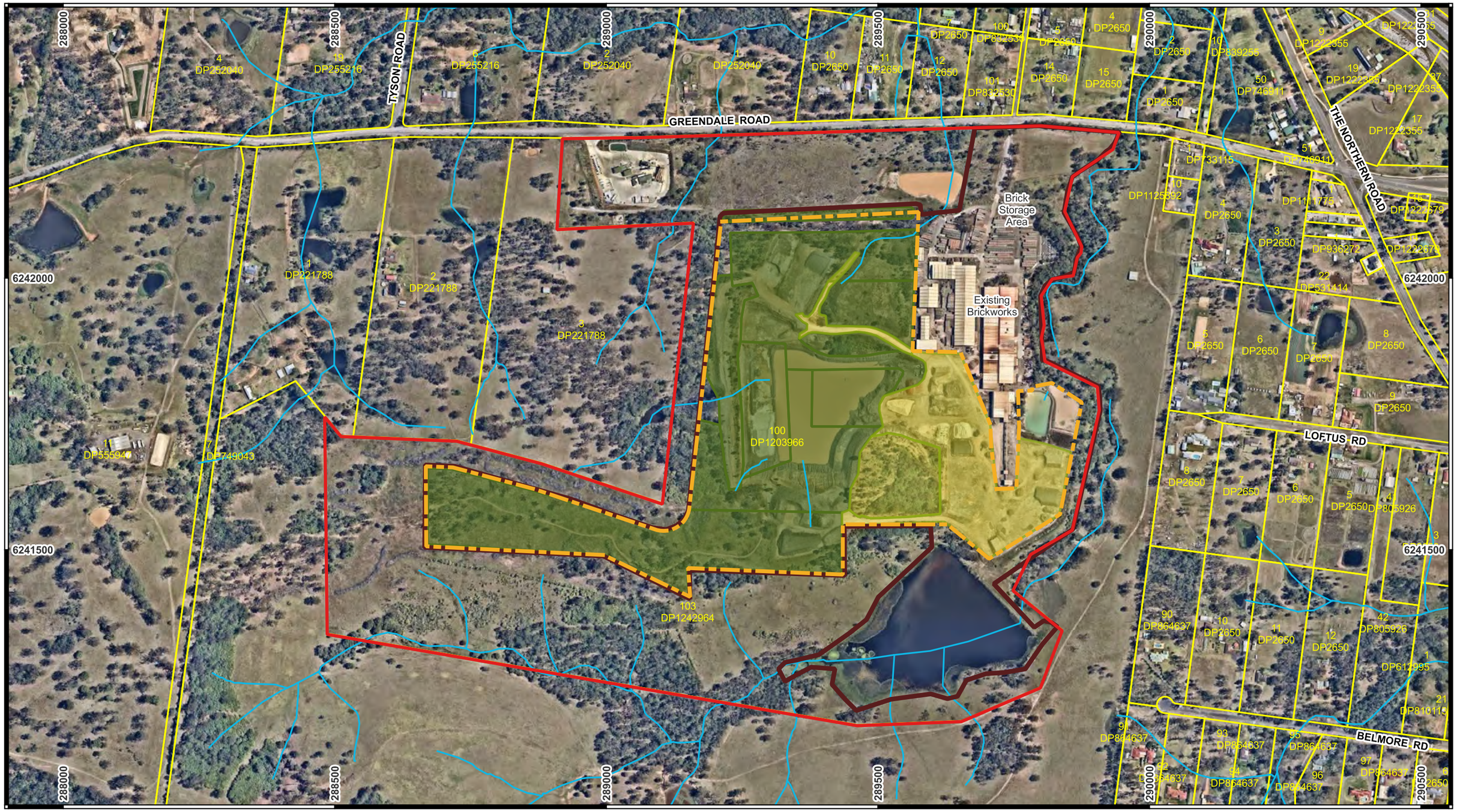

Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Infrastructure Area
- Ecosystem & Landuse Development

Plan of:	**Rehabilitation Management Plan for Bringelly Clay/Shale Mine January 2023 - Proposed Rehabilitation Completion 2062 to 2067**	**Location:**	Bringelly Clay/Shale Mine off Greendale Road, Bringelly, NSW	**Source:**	nearmap Imagery Dated 09/01/2023 GDA2020 MGA Zone 56, NSW Government Spatial Services July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Plan By:**	SK/JD
Figure:	**FOURTEEN**	**Council:**	Camden Council	**Survey:**	GDA2020 MGA Zone 56, NSW Government Spatial Services, July 2019 Survey, Accessed Through ELVIS & Property Boundary from NSW Clip & Ship	**Project Manager:**	TO
Version/ Date:	V0 07/02/2023	**Tenure:**	ML 1731	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12405_BR_RR_RMP_2023_Q0014_V0_F14	**Client:**	PGH Bricks & Pavers Pty Ltd	**Contour Interval:**	Not Applicable		

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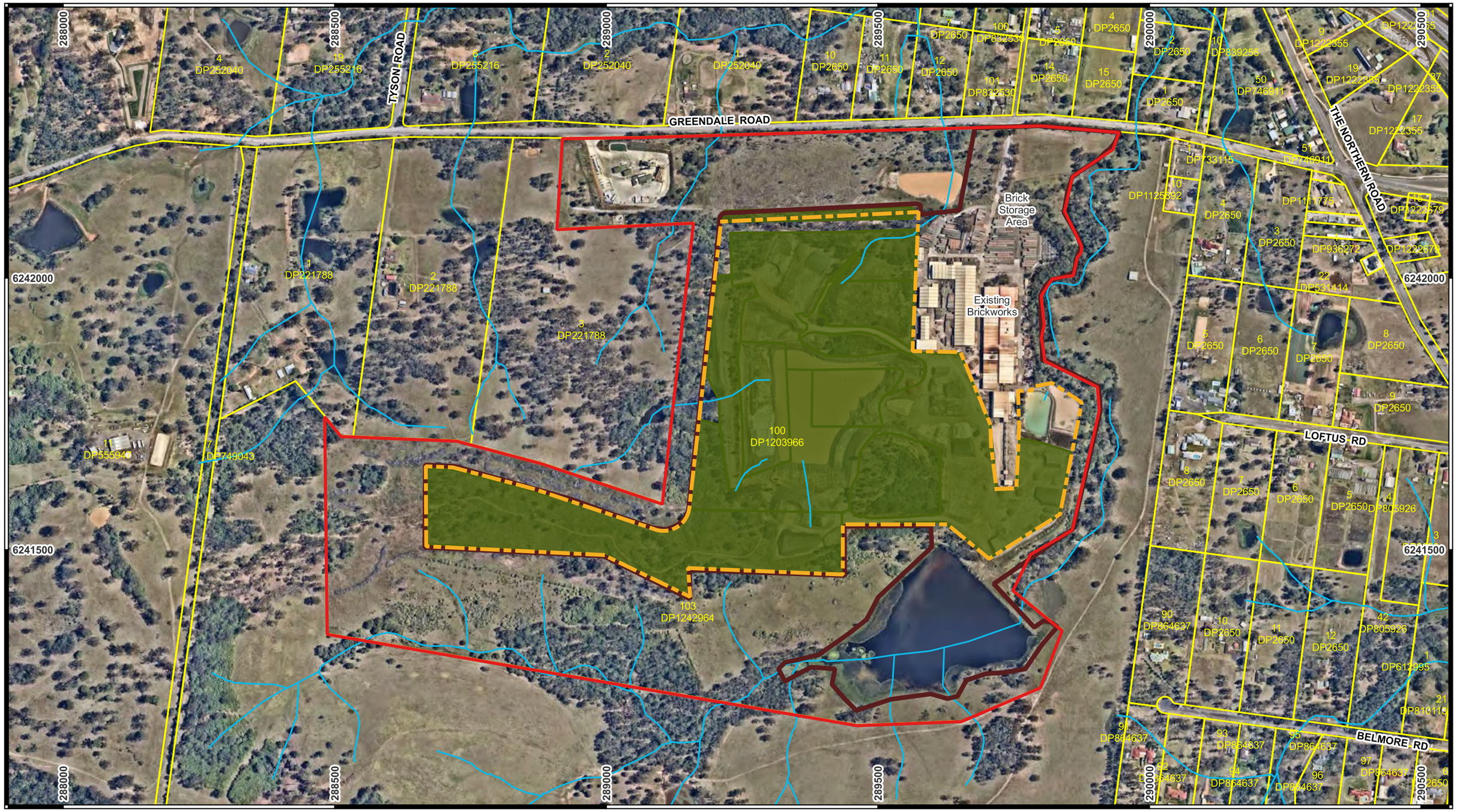
vgt environmental compliance solutions and laboratories

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



Legend

Site Feature

- Property Boundary
- Project Approval Boundary
- Major Drainage Line/Creek (NSW Clip & Ship)
- Lot Boundary (Cadastral)

Mine Lease Feature

- Authority Boundary (ML 1731)

Rehabilitation Phase

- Rehabilitation Completion

6.2 PHASES OF REHABILITATION AND GENERAL METHODOLOGIES

6.2.1 Active Mining Phase

6.2.1.1 Soils and Materials

6.2.1.1.1 Topsoils

Topsoil (organic horizon) on the site is generally within the first 5cm of the soil profile. There are no topsoil stockpiles remaining on site. Any further topsoil material stripped on site will be used immediately or kept on site in stockpiles for future rehabilitation. Stripping would be undertaken with care in order to maintain the integrity of the topsoil and seed bank stored within it. Stored topsoil stockpiles will not exceed 2m in height and will be revegetated with temporary ground cover species.

Luddenham soils are considered to have low to moderate fertility whilst Blacktown soil is considered to have low fertility.

6.2.1.1.2 Overburden (A and B Horizons)

The A and B soil horizons are generally of a depth of 10 to 20 cm on the site. They comprise of some organic material such as root matter and are not considered desirable for the brickmaking process. Material removed and not able to be reused in rehabilitation activities immediately will be stored in separate stockpiles to the topsoil.

According to the OEH, soils in the area generally consist of Red, Brown and Yellow Podzolic on the undulating shale hills and rises, with mainly Red and Brown Podzolic Soils on the Upper Slopes, and Yellow Podzolic soils on lower slopes. The plains include stagnant ponded areas, with mainly Yellow Podzolics on the foot-slopes, and Soloths on the plains. Structured Plastic Clays or Structured Loams form on the flat to gently sloping alluvial plains in and immediately adjacent to drainage lines. Red and Yellow Podzolic soils are most common on terraces with small areas of Structured Grey Clays, Leached Clay and Yellow Solodic soils (OEH, 2012).

The yellow and red podsols, which are highly acidic, contain low phosphorus and are resistant to nitrogen fixation. The soils also have a moderate to very high erosion potential.

6.2.1.1.3 Overburden (C Horizon)

The overburden from the C horizon (>20cm depth) will be minimal as this material is suitable for brickmaking. It has similar fertility to the A and B horizons. Material not used in brickmaking will be mixed with the A and B horizon material and treated as described in the above section.

6.2.1.2 Flora

Refer to Section 8.2.7 of the DPE RMP (*Appendix D and* https://www.pghbricks.com.au/-nsw-environmental-reporting) for salvage of soil and vegetative resources.

Refer to Section 7.3.9 of the DPE RMP (*Appendix D and* https://www.pghbricks.com.au/-nsw-environmental-reporting) for species.

Weed management will be undertaken in accordance with the Weed Management Plan (see *Appendix H*).

6.2.1.3 Fauna

Refer to Section 8.2.8 of the DPE RMP (Appendix D and https://www.pghbricks.com.au/-nsw-environmental-reporting) for minimising impacts of clearing on fauna.

6.2.1.4 Rock and Overburden Emplacement

Refer to Section 7.3.12 of the DPE RMP (Appendix D and https://www.pghbricks.com.au/-nsw-environmental-reporting) for rock and overburden management.

6.2.1.5 Waste Management

6.2.1.5.1 General Waste

The waste generated on site can be grouped as construction and operational waste.

The construction of the new driveway alignment, extensions to the brickmaking facility, clay preparation building construction of two recycled water storage tanks will be the main contributors to construction waste. Vegetation cleared for construction or the driveway will be mulched and stockpiled for future use in noise bunding or rehabilitation. Typical construction waste materials include excavated materials, bricks, pallets, timber, concrete, plasterboard, metals, packaging and glass. These wastes will be collected in bins and removed by licenced waste collection operators.

A "Standard Operating Procedure for Waste Management" (2009 and as amended) is followed by staff to manage the operational wastes produced such as cardboard, timber, recycling of metals and oil, brick making by-products. The aim of the procedure is to reduce the amount of waste to be placed in landfill, and to ensure waste generated on site is managed in a way that complies with relevant legislative requirements. The following extract from the EIS outlines the measures that will be undertaken.

Table 17. Waste Management from EIS

Table 7-54 Current operational waste and management measures

Waste material and description	Volume/ weight per annum	Management method
Clean brick waste (non-fired) Clay and water-based material not containing metals and has not been fired.	6240 tonnes	Placed in green bins provided on the project site. Green bins are emptied in the Clean Waste Storage Area. Waste is crushed for reuse in the brickmaking process.
Waste Bricks	20,000 tonnes	Clean green bricks with inclusions or imperfections. This is disposed into extracted pits and voids on-site through a landfilling operation.
Fired brick waste Fired bricks, bricks spoiled with foreign bodies and rejected bricks.	15,900 tonnes	Fired waste brick is placed in the red steel bins provided on the project site. These red bins are emptied in the Waste Storage Area. 15,000 tonnes are disposed into extracted pits and voids on-site through a landfilling operation. 900 tonnes of this waste is collected by Boral Recycling and recycled into products at their recycling facility.
Waste oil Oils used in maintenance of equipment.	2400 litres per month	Waste oil is collected by Eclipse Environmental Services for recycling at No Fuss Liquids, Emu Plains who are a licensed waste oil recycler.
General waste Includes strapping, plastic wrapping, raw material bags, solid building waste, oily rags, gloves, wood and waste from lunchroom and office.	1690 tonnes based on a weekly generation of 36 cubic metres[1]	Placed in green or blue wheelie bins, which are subsequently loaded into blue Veolia bins. This waste is collected by Veolia and sent to Woodlawn, Goulburn for disposal.
Timber	48 tonnes, based on a monthly generation of 8 cubic metres[2]	This waste is collected by Veolia recycling and sent to Woodlawn, Goulburn for recycling.
Cardboard	7.2 tonnes, based on a weekly generation of 3 cubic metres[3]	This waste is collected by VISY recycling and sent to Woodlawn, Goulburn for recycling.
Scrap metal Scrap steel from used tooling, off-cuts and redundant equipment.	52 tonnes	This waste is sorted into steel, copper wire and electric motors. Copper wire and electric motors are separated, stacked and stored separately. The scrap metal waste is collected and recycled by SIM's Metal Management.

Empty oil drums Metal containers used to store oil.	48 drums	Empty oil drums are purged to ensure residual oil is removed and to prevent content seepage. The drums are crushed then placed into the scrap metal bins for recycling.

[1] Density of typical industrial waste (mixed scrap) 899kg/m^3
[2] Density of typical mixed wood waste 498kg/m^3
[3] Density of typical cardboard 50.4kg/m^3

Six skip bins are located on site and are collected twice a week.

Waste avoidance and reduction will continue to be the top priority, with disposal to landfill being the unfavourable option and used only when necessary.

6.2.1.6 Geology and Geochemistry

Geology in the region is comprised of a mix of Triassic and Quaternary age deposits. The project site is underlain by the lower 75 to 150 metres of the Bringelly Shale which comprises claystone, siltstone, laminate and sandstone. The base of the sequence in this area is defined by the Cobbitty Claystone, a thin (maximum six centimetres) persistent layer of weathered tuff. Alluvial sands and gravels derived from surrounding rocks are present along streams such as Thompsons Creek and Bardwell Gully.

Section 6.2.1.1 provides further detail on the soil type in the area. The soils and subsoils of the area are slightly acidic (pH approximately 4-5).

The soil on the project site is classified generally as having moderate salinity potential, apart from the Thompsons Creek zone which is classified as having high salinity potential.

6.2.1.7 Material Prone to Spontaneous Combustion

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

6.2.1.8 Material Prone to Generating Acid Mine Drainage

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

6.2.1.9 Ore Beneficiation Waste Management

There is no ore beneficiation waste produced on the site.

6.2.1.10 Erosion and Sediment Control

Refer to Section 7.1.2, 7.3.6, 7.3.7, 7.3.8 and 8.2.6 of the DPE RMP (Appendix D and https://www.pghbricks.com.au/-nsw-environmental-reporting) for erosion and sediment control measures.

Also refer to the approved *Water Management Plan* found on the PGH Environmental website.

https://www.pghbricks.com.au/-nsw-environmental-reporting

6.2.1.11 Ongoing Management of Biological Resources for Use in Rehabilitation

6.2.1.11.1 Topsoil Management

Refer to Section 7.3.3, 7.3.4 & 7.3.5 of the DPE RMP (*Appendix D and* https://www.pghbricks.com.au/-nsw-environmental-reporting) for topsoil stripping, storage, respreading and seedbed preparation management.

An inventory of soils management will be developed by PGH and will be included in the annual report.

6.2.1.11.2 Methods of Propagation

Refer to Section 7.3.8 & 7.3.9 of the DPE RMP (*Appendix D and* https://www.pghbricks.com.au/-nsw-environmental-reporting) for revegetation techniques and species.

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

Refer to the *Heritage Management Plan* on the PGH website.

https://www.pghbricks.com.au/-nsw-environmental-reporting

6.2.1.14 Exploration Activities

Exploration activities will be limited in nature and are likely to include costeaning and drilling. There will be no rehabilitation of exploration activities in the mine footprint 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 a locked gate at the entrance.

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 are minimal services such as electricity or water to be removed from the mine lease area. A portable shed used as an office is present on site. It will be removed when mining and rehabilitation activities are completed, including any associated electricity or water infrastructure.

The In-Pit Sediment Dam that is used for water management during the extraction operations will be retained in the final landform.

6.2.2.3 Buildings, Structures and Fixed Plant to be Retained

No buildings or structures will be retained in the final landform within the mine lease area.

6.2.2.4 Management of Carbonaceous/Contaminated Material

There is no carbonaceous or contaminated material remaining on the mine lease.

6.2.2.5 Hazardous Materials Management

There are no hazardous materials stored on the 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.

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 in the final landform and capture water in the form of a dam. Dams 4 and 5 to the south east of the brickworks may remain if required by the brickworks operations.

A Water Access Licence will be sought for the remaining water body if required in the final landform closer to completion of mining. It is noted that a Water Access Licence is held by PGH for the Dam to the south of the brickworks that lies outside of the mine lease.

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 80m or less as required. Slopes greater than 25 metres will be broken by catch drains to reduce erosion effects.

The final landform will contain a water body in the mine void, with shaped slopes and revegetation with species consistent with the Cumberland Plan Woodlands.

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

Refer to the *Rehabilitation Strategy*, *Rehabilitation Management Plan* for DPE and the *Final land Use Options Plan* on the PGH website.

https://www.pghbricks.com.au/-nsw-environmental-reporting

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

Refer to the Rehabilitation Strategy, Rehabilitation Management Plan for DPE and the Final land Use Options Plan on the PGH website.

https://www.pghbricks.com.au/-nsw-environmental-reporting

6.2.5 Ecosystem and Land Use Establishment

Refer to the Rehabilitation Strategy, Rehabilitation Management Plan for DPE and the Final land Use Options Plan on the PGH website.

https://www.pghbricks.com.au/-nsw-environmental-reporting

6.2.6 Ecosystem and Land Use Development

Refer to the Rehabilitation Strategy and Rehabilitation Management Plan for DPE on the PGH website for further details on monitoring and inspection of rehabilitated lands.

https://www.pghbricks.com.au/-nsw-environmental-reporting

Monitoring aims and inspection aims to ensure the site is meeting completion criteria requirements and on a trajectory towards the final landuse.

6.3 REHABILITATION OF AREAS AFFECTED BY SUBSIDENCE

There are no areas affected by subsidence on the site.

7 Rehabilitation Quality Assurance Process

Table 18. 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 wild life.	Mine Manager	Photography and site inspections reports.	Annual Rehabilitation Report Section 8.3 See Section 11
Waste • Domestic type wastes will be stored in a small, designated waste storage area 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 • Consider benched mining design on highwalls. • 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 on rehabilitated areas.	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 reuse of water on-site for dust suppression and discharge when required in accordance with EPL conditions. • 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 and EPL 20938 conditions. In particular Monitoring Point 4 and 5 will record: o pH between 6.5 and 8.5: o turbidity < 150 NTU; o Oil & Grease < 10mg/L; and o total suspended solids <50mg/L • or within 10% of 'upstream' levels (whichever is the greater). Point 4 conductivity will also be <700µS/cm.	Mine manager NATA Accredited laboratory	Water testing reports. EPL annual returns	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 • Domestic type wastes will be stored in a small, designated waste storage area 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 • Consider benched mining design on highwalls. • 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 on rehabilitated areas.	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 reuse of water on-site for dust suppression and discharge when required in accordance with EPL conditions. • 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 and EPL 20938 conditions. In particular Monitoring Point 4 and 5 will record: o pH between 6.5 and 8.5: o turbidity < 150 NTU; o Oil & Grease < 10mg/L; and o total suspended solids <50mg/L • or within 10% of 'upstream' levels (whichever is the greater). Point 4 conductivity will also be <700µS/cm.	Mine manager NATA Accredited laboratory	Water testing reports. EPL annual returns	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 in the final void are no greater than 3 horizontal to 1 vertical. • Slope Lengths shall not exceed 80 metres before being broken by earth banks or similar where slopes are <4H:1V. • Slope Lengths shall not exceed 35 metres before being broken by earth banks or similar where slopes are 4H:1V. • Slope Lengths shall not exceed 25 metres before being broken by earth banks or similar where slopes are 3H:1V • 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 meets the objective of Section 120 of the Protection of the Environment Operations Act 1997 and EPL 20938 conditions. In particular Monitoring Point 4 and 5 will record: o pH between 6.5 and 8.5: o turbidity < 150 NTU; o Oil & Grease < 10mg/L; and o total suspended solids <50mg/L • or within 10% of 'upstream' levels (whichever is the greater). Point 4 conductivity will also be <700µS/cm.	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 may include: 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 50 millimetres thick, in accordance with the consent, (unless studies determine otherwise) 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 or spray emulsion • Watering of the rehabilitated areas may be undertaken via the use of a water cart or irrigation system 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 meets the objective of Section 120 of the Protection of the Environment Operations Act 1997 and EPL 20938 conditions. In particular Monitoring Point 4 and 5 will record: o pH between 6.5 and 8.5: o turbidity < 150 NTU; o Oil & Grease < 10mg/L; and o total suspended solids <50mg/L • or within 10% of 'upstream' levels (whichever is the greater). Point 4 conductivity will also be <700µS/cm.	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 19. 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 20. Rehabilitation Objectives and Completion Criteria Inspection Regime

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

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

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

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

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

9 Rehabilitation Research, Modelling and Trials

9.1 CURRENT REHABILITATION RESEARCH, MODELLING AND TRIALS

There are no rehabilitation trials undertaken at this time. Visual monitoring and photography will be utilised to assess the success of vegetation planted in previous years. Results will be reported in the Annual Review.

9.2 FUTURE REHABILITATION RESEARCH, MODELLING AND TRIALS

Future rehabilitation research will likely involve the review of the water management system to reduce clean water flows into the main pit.

As final landform surfaces become available, selection of suitable species 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 21. Trigger Action Response Plan

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

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 (50mm) 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.	

Rehabilitation Threat	Trigger levels	Actions to be implemented	Evidence / Reference
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.	
	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 and EPL 20938 conditions.	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 22. 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 DECC (2008) *Managing Urban Stormwater Soils and Construction V1*

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

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

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

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

Ref 6 VGT Environmental Compliance Solutions Pty Ltd (2021) *Mine Operations Plan for Bringelly Clay/Shale Mine*

Ref 7 VGT Environmental Compliance Solutions Pty Ltd (2022) *Annual Rehabilitation Report for Bringelly Clay/Shale Mine*

Appendix A
Consent Conditions

Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, I approve the development application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

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

David Kitto
Executive Director
Resource Assessments and Business Systems

Sydney 2015

SCHEDULE 1

Application Number:	SSD_5684
Applicant:	Boral Bricks Pty Ltd
Consent Authority:	Minister for Planning
Land:	Lot 100 in DP 1203966
Development:	Bringelly Brickworks Extension Project

Modification 1 (October 2016 shown in blue text)

TABLE OF CONTENTS

DEFINITIONS

AHD	Australian Height Datum
Annual Review	The review required by condition 4 of schedule 5
Applicant	Boral Bricks Pty Ltd, or any other person or persons who rely on this consent to carry out the development that is subject to this consent
BCA	Building Code of Australia
Biodiversity offset strategy	The conservation and enhancement strategy described in the EIS, and shown conceptually in Appendix 4
Brick making operations	Includes the receipt, handling, processing, storage and transportation of raw materials on site, brick making on site and transportation of finished bricks on site
CCC	Community Consultative Committee
Conditions of consent	Conditions contained in schedules 1 to 5 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
CPI	Australian Bureau of Statistics Consumer Price Index
Date of commencement	The date notified to the Department by the Applicant under condition 8 of Schedule 2
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Environment
Development	The development described in the documents of condition 2(a) of Schedule 2
Development area	All land to which the development application applies, as listed under "Land" in schedule 1 and shown in Appendix 1
DPI Water	Department of Primary Industries - Water
DRE	Division of Resources and Energy, within the NSW Department of Industry
EEC	Endangered Ecological Community, as defined under the *Threatened Species Conservation Act 1995*
EIS	Environmental Impact Statement titled *Bringelly Brickworks and Quarry Expansion* (2 volumes), dated September 2013, as modified by the Response to Submissions titled, *Bringelly Brickworks and Quarry Expansion, Response to Submissions* dated February 2014 and the letter entitled *Bringelly Brickworks – Biodiversity Offsets*, dated 2 June 2014
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Extension area	The area outside of the existing quarry footprint (i.e. cells D, E, F, G, H and I, as shown conceptually in Appendix 2)
Feasible	Feasible relates to engineering considerations and what is practical to build
GDE	Groundwater Dependent Ecosystem
GPS	Global Positioning System
Growth Centres SEPP	*State Environmental Planning Policy (Sydney Regional Growth Centres) 2006*
Ha	Hectare
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in schedules 3 and 4 of this consent

	where it is defined to mean the whole of a lot, or contiguous lots, owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
m	Metres
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the development
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NP&W Act	*National Parks and Wildlife Act 1974*
OEH	NSW Office of Environment and Heritage
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or the Applicant (or its subsidiary)
Quarrying operations	Includes the removal of overburden and extraction, handling, storage and transportation of extractive materials on site
Raw materials	Raw materials imported for use in brick making including clay/shale and additives (such as manganese and iron oxides)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The restoration of land disturbed by the development to a good condition, ensuring that it is safe, stable and non-polluting and appropriately revegetated
RMS	Roads and Maritime Services
Secretary	Secretary of the Department, or nominee
SEE (Mod 1)	Statement of Environmental Effects titled *'Section 96(1A) Modification Supporting Information'* dated August 2016 and prepared by Element Environment, including the Response to Submissions document dated September 2016
Site	The land listed under "Land" in schedule 1
Shoulder	The period between 6am to 7am on Monday to Saturday
South West Growth Centre	An area of land identified under the Growth Centres SEPP

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

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

TERMS OF CONSENT

2. The Applicant must:
   (a) carry out the development generally in accordance with the EIS and SEE (Mod 1); and
   (b) the conditions of this consent.

   Note: The general layout of the development is shown in Appendix 2.

3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Applicant must comply with any reasonable requirement/s of the Secretary arising the Department's assessment of:
   (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent;
   (b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; or
   (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Quarrying and Brick Making Operations

5. The Applicant may carry out quarrying operations and brick making operations from the date of commencement of development under this consent until 1 March 2045.

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

Production Limits

6. The Applicant must not:
   (a) extract more than 200,000 tonnes of clay/shale from the site in any calendar year;
   (b) produce more than 263,500 tonnes of bricks at the site in any calendar year;
   (c) carry out quarrying operations beyond 46 m AHD; and
   (d) receive more than 321,000 tonnes of raw materials required for brick making to the site in any calendar year.

Transportation Limits

7. The Applicant must not:
   (a) transport more than 263,500 tonnes of bricks from the site in a calendar year;
   (b) receive more than 90 trucks to the site per day or more than 18 trucks per hour; and
   (c) dispatch more than 90 trucks from the site per day or more than 18 trucks per hour.

NOTIFICATION OF COMMENCEMENT

8. Prior to commencing development under this consent, the Applicant must notify the Department in writing of the date on which it will commence development permitted under this consent.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

9. Within 4 months of commencing development under this consent, the Applicant must surrender the development consent (DA 91/1194) for existing operations on the site in accordance with Section 104A of the EP&A Act.

   Following the commencement of development under this consent, the conditions of this consent (including any notes) shall prevail to the extent of any inconsistency with the conditions of the existing development consent (DA 91/1194).

STRUCTURAL ADEQUACY

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

    Notes:
    - *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*

DEMOLITION

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

PROTECTION OF PUBLIC INFRASTRUCTURE

12. The Applicant must:
    (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

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

OPERATION OF PLANT AND EQUIPMENT

13. The Applicant must ensure that all plant and equipment used on site or any monitoring equipment used off site for monitoring the performance of the development is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

UPDATING AND STAGING STRATEGIES, PLANS OR PROGRAMS

14. With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.

    To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval.

    With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.

    Notes:
    - *While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times.*
    - *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

15. Until they are replaced by an equivalent strategy, plan or program approved under this consent, the Applicant must implement the existing strategies, plans or programs for the site that have been approved under DA 91/1194.

IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION

16. Prior to undertaking quarrying operations in the extension area, the Applicant must:
    (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the development area; and
    (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.

17. While quarrying operations are being carried out, the Applicant must ensure that these boundaries are clearly marked at all times to allow operating staff and inspecting officers to clearly identify the approved limits of extraction.

PRODUCTION DATA

18. The Applicant must:
    (a) provide annual quarry production data to DRE using the standard form for that purpose; and
    (b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).

DEVELOPER CONTRIBUTIONS

19. The Applicant must pay Camden Council road maintenance contributions of $0.0811 for every tonne of material transported to and from the site, indexed to CPI. Each payment must be:
    (a) paid to Council at the end of each calendar year; and
    (b) based on weighbridge records of all supplementary brick making materials transported to the site and bricks and spoil transported from the site.

    Note: If the parties are not able to agree on any aspect of the maintenance contributions, either party may refer the matter to the Secretary for resolution.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

HOURS OF OPERATION

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

Table 1: Operating Hours

Activity	***Operating Hours***
• Quarrying operations • Deliveries • Dispatch of finished bricks	6am to 6pm, Monday to Friday 6am to 1pm, Saturday No activities on Sundays or Public Holidays
Brick making operations (except dispatch of finished bricks)	24 hours a day, 7 days a week
Construction activities	7am to 6pm, Monday to Friday 8am to 1pm, Saturday No construction to be undertaken on Sundays or Public Holidays

NOISE

Noise Criteria

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

Table 2: Noise criteria dB(A)

Activity	***Receiver***	***Day/Evening/Shoulder***	***Night***	
		$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(max)}$
Brick making and quarrying	R1, R2	47	Not Applicable	
	R3, R4, R14	46		
	R15, R17	45		
	All other receivers	44		
Brick making	All receivers	44	43	53

Notes:
- *To locate the receivers referred to in Table 2 refer to Appendix 3.*
- *After the first review on any EPL granted for this development under Section 78 of the POEO Act, nothing in this consent prevents the EPA from imposing stricter noise limits on the quarrying operations on site under the EPL.*

Appendix 5 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner/s to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

Construction Noise

3. The Applicant must manage noise generated during the construction of the new site access road and associated road alignment works, and the noise bund adjacent to Greendale Road, in accordance with the guidelines specified in Table 2 of the *Interim Construction Noise Guideline*.

Note: Management guidelines are applicable to receivers 3 and 4, shown in Appendix 3.

Noise Bunds

4. The Applicant must ensure that the noise bund adjacent to the northern boundary of the extraction area is constructed prior to the commencement of quarrying operations in the extension area.

4A. The Applicant must ensure that the noise bund adjacent to Greendale Road is constructed prior to the commencement of brick making operations.

Operating Conditions

5. The Applicant must:
   (a) implement all reasonable and feasible mitigation measures to minimise construction, operational and road noise of the development;
   (b) implement periods of respite during the construction of the new site access road and associated road alignment works, and the noise bund adjacent to Greendale Road;
   (c) regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this consent;
   (d) maintain the effectiveness of noise suppression equipment on plant and equipment on site;
   (e) minimise the noise impacts of the development during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 5); and
   (f) carry out regular noise monitoring to determine whether the development is complying with the relevant conditions of this consent,

   to the satisfaction of the Secretary.

Noise Management Plan

6. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA;
   (b) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless the Secretary agrees otherwise;
   (c) describe the reasonable and feasible mitigation measures that would be implemented to ensure:
      - construction noise is minimise;
      - compliance with the relevant noise criteria and operating conditions in this consent;
      - best management practice is being employed; and
      - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply;
   (d) describe the proposed noise management system on site; and
   (e) include a quarterly (or as otherwise agreed with the Secretary) noise monitoring program that:
      - uses attended monitoring to evaluate the compliance of the development against the noise criteria in this consent;
      - evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
      - defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

   The Applicant must implement the approved management plan as approved from time to time by the Secretary.

AIR QUALITY

Air Quality Criteria

7. The Applicant must implement all reasonable and feasible avoidance and mitigation measures so that particulate matter emissions generated by the development do not exceed the criteria in Tables 3 to 6 at any residence on privately-owned land.

Table 3: Long-Term Criteria for Particulate Matter

Pollutant	***Averaging period***	***[d] Criterion***
Total suspended particulates (TSP)	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 4: Short-Term Criteria for Particulate Matter

Pollutant	Averaging period	[d] Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Table 5: Long-Term Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Table 6: Long and Short-Term Stack Emissions

Pollutant	Averaging period	[d] Criterion
Sulphur Dioxide	10-minute	712 µg/m^3
	1-Hour	570 µg/m^3
	24-Hour	228 µg/m^3
	Annual	60 µg/m^3
Nitrogen Dioxide	1-Hour	246 µg/m^3
	Annual	62 µg/m^3
Hydrogen Chloride	1 hour	0.14 mg/m^3

Notes to Tables 3-6:

- *[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).*
- *[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).*
- *[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.*
- *[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.*

Operating Conditions

8. The Applicant must:
   (a) implement all reasonable and feasible measures to minimise the stack and dust emissions of the development;
   (b) minimise surface disturbance and maximise progressive rehabilitation;
   (c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note (d) to Tables 3-6 above); and
   (d) monitor and report on compliance with the relevant air quality conditions in this consent;
   to the satisfaction of the Secretary.

Air Quality Management Plan

9. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA;
   (b) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless the Secretary agrees otherwise;
   (c) describe the measures that would be implemented to ensure:
      - compliance with the air quality criteria and operating conditions under this consent;
      - best practice management is being employed; and
      - the air quality impacts of the development are minimised during adverse meteorological conditions;
   (d) describe the air quality management system; and
   (e) include an air quality monitoring program that:
      - evaluates and reports on:
        - the effectiveness of the air quality management system; and
        - compliance with the air quality criteria and operating conditions; and
      - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

METEOROLOGICAL MONITORING

10. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that:
    (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South* Wales guideline; and
    (b) is capable of continuous measurement of stability class, in accordance with the *NSW Industrial Noise Policy*, or as otherwise approved by EPA.

TRANSPORT

Monitoring of Product Transport

11. The Applicant must keep accurate records of the:
    (a) tonnage of bricks transported from the site (monthly and annually);
    (b) amount of raw material imported to the site (monthly and annually); and
    (c) tonnage of each type of raw materials imported to the site (monthly and annually); and
    provide the Secretary with a summary of this information upon request.

Parking

12. The Applicant must provide sufficient parking on-site for all development-related traffic, in accordance with Camden Council's parking codes, to the satisfaction of the Secretary.

Operating Conditions

13. The Applicant must ensure that:
    (a) all development-related heavy vehicles enter and exit the site in a forward direction;
    (b) all laden vehicles entering or exiting the site have their loads covered (with the exception of vehicles carrying bricks);
    (c) all laden vehicles that have accessed the extraction and/or stockpile areas are cleaned of sand and other material that may fall on the road, before leaving the site;
    (d) all heavy vehicles exiting the site travel east of the site along Greendale Road to The Northern Road and/or Bringelly Road;
    (e) the dispatch of laden trucks is avoided during the peak drop-off and pick-up times at the Bringelly Public School to the greatest extent practicable, particularly prior to the upgrade of the Greendale Road/Bringelly Road intersection by RMS; and
    (f) no trucks queue at the entrance to the site before 6am.

Access Road Intersection Construction

14. Within 12 months of commencing development under this consent, unless otherwise agreed with the Secretary, the Applicant must design and construct the new site access road intersection with Greendale Road in accordance with applicable AUSTROADS standards, to the satisfaction of Camden Council. The Applicant must notify the Secretary in writing within 30 days of obtaining Council approval.

    Within 7 days of completing construction and the new site access road being operational, the existing site access road must be permanently closed.

Transport Management Plan

15. The Applicant must prepare a Transport Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with RMS, Camden Council, Liverpool City Council and Bringelly Public School, and be submitted to the Secretary for approval prior to the commencement of development under this consent, unless the Secretary agrees otherwise;
    (b) describe the measures that would be implemented to ensure compliance with the transport operating conditions under this consent, including specific measures to avoid the arrival and

dispatch of laden trucks from the site during the peak drop-off and pick-up times at the Bringelly Public School;

(c) include a Code of Conduct for heavy vehicle drivers that addresses:
- travelling speeds;
- procedures to minimise noise including a regular Truck Noise Auditing Program;
- procedures to minimise diesel exhaust emissions;
- instructions to avoid grouping or convoying of trucks;
- procedures to ensure that drivers adhere to the designated haulage routes and the haulage hours permitted under this consent;
- instructions to drivers not to overtake each other on the haulage route, as far as practicable, and to maintain appropriate distances between vehicles; and
- instruction to drivers to be properly safety conscious and to strictly obey all traffic regulations, particularly in relation to school zones along Greendale Road; and

(d) describe the measures that would be put in place to ensure compliance with the drivers' Code of Conduct and include a program to monitor the effectiveness of the implementation of these measures.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

SOIL AND WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development, including in respect of the extraction and/or interception of groundwater.

Water Supply

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

Water Discharges

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

Water Management Plan

18. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) be prepared by suitably qualified person/s approved by the Secretary;
(b) be prepared in consultation with the EPA and DPI Water;
(c) be submitted to the Secretary for approval prior to the commencement of development under this consent, unless the Secretary agrees otherwise;
(d) include a Site Water Balance that:
- includes details of:
  - quantity of water required to support operations;
  - sources and security of water supply;
  - water use and management on site;
  - reporting procedures; and
  - measures to be implemented to minimise potable water use on site;

(e) include a Surface Water Management Plan, that includes:
- baseline data on surface water flows and quality in the watercourses that could be affected by the development;
- a description of the surface water management system on site, including:
  - clean water diversions;
  - erosion and sediment controls;
  - the dirty water management system; and
  - water storages (addressing maximum harvestable rights if applicable);
- performance criteria, including trigger levels for investigating any potentially adverse surface water quality impacts;
- a program to monitor and report on:
  - any surface water discharges;

- the effectiveness of the water management system; and
- surface water flows and quality in local watercourses;

- a plan to respond to any exceedances of the performance criteria.

(f) a Groundwater Management Plan, which includes:

- baseline data on groundwater levels, yield and quality in surrounding aquifers;
- groundwater assessment and performance criteria, including trigger levels for investigating potentially adverse groundwater impacts;
- a program to monitor:
  - groundwater inflows to the quarry pit; and
  - impacts of the development on surrounding aquifers;
- an analysis of the monitoring results to determine long-term water levels within the quarry void; and
- a plan to respond to any exceedances of the performance criteria.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

BIODIVERSITY

Biodiversity Offset Strategy

19. The Applicant must implement the Biodiversity Offset Strategy described in the EIS, as summarised in Table 7 and shown conceptually in Appendix 4, to the satisfaction of the Secretary.

Table 7: Summary of the Biodiversity Offsets

Area	***Offset Criteria***	***Size (Ha)***
On-site offset	Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland.	1.93

Security of Offsets

20. Within 2 years of notifying the Department of commencement of development (see condition 8 of Schedule 2), unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.

Note: Mechanisms to provide appropriate long term security to the land within the Biodiversity Offset Strategy include a Biobanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.

Biodiversity Management Plan

21. The Applicant must prepare a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with the OEH and Camden Council;

(b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;

(c) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;

(d) describe the short, medium, and long term measures that would be implemented to:

- manage the remnant vegetation and habitat on the site and in the offset area and;
- implement the biodiversity offset strategy, including detailed performance and completion criteria;

(e) include performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);

(f) include a description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:

- maximising the salvage of resources within the approved disturbance area - including vegetative, soil and cultural heritage resources – for beneficial reuse in the enhancement of the biodiversity areas or rehabilitation area;

- minimising the impacts on fauna on site, including pre-clearance surveys and minimising the potential exposure to tailings;
- controlling weeds and feral pests;
- controlling erosion;
- controlling access; and
- bushfire management;

(g) identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and

(h) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

Conservation Bond

22. Within 6 months of the approval of the Biodiversity Management Plan, the Applicant must lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan.

The sum of the bond must be determined by:

a. calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and

b. employing a suitably qualified quantity surveyor to verify the calculated costs,

c. to the satisfaction of the Secretary.

The calculation of the conservation bond must be submitted to the Department for approval at least 1 month prior to lodgement of the final bond.

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

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

Notes:

- *Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate (or any other mechanism agreed with OEH) can be used to reduce the liability of the conservation bond.*
- *The sum of the bond may be reviewed in conjunction with any revision to the biodiversity offset strategy or the completion of major milestones within the approved plan.*

REHABILITATION

Rehabilitation Objectives

23. The Applicant must rehabilitate the site to the satisfaction of the Secretary. Rehabilitation must:

a. comply with the objectives in Table 8; and

b. be generally consistent with the proposed rehabilitation strategy in the EIS, and the final land form shown conceptually in Appendix 4 (unless modified by the Final Land Use Options Plan, prepared in accordance with condition 25 of this consent).

Table 8: Rehabilitation Objectives

Feature	***Objective***
Site (as a whole)	• Safe, stable and non-polluting • Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat

Surface infrastructure	• To be decommissioned and removed (unless the Secretary agrees otherwise)
Final void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void
Quarry pit floor	• Landscaped and revegetated using native flora species, above the anticipated final void water level
Community	• Ensure public safety

Progressive Rehabilitation

24. The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

Final Land Use Options Plan

25. The Applicant must prepare a Final Land Use Options Plan for the site to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with DRE and Camden Council;
    (b) be submitted to the Secretary for approval within 2 years of the date of notifying the Department of commencement of development (see condition 8 of Schedule 2), unless the Secretary agrees otherwise;
    (c) provide details of the conceptual final landform and associated final land uses for the site;
    (d) ensure that the conceptual final land form is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre;
    (e) inform the Rehabilitation Management Plan (prepared in accordance with condition 26 of this consent); and
    (f) be reviewed every 7 years to account for applicable land use priorities, and if necessary updated.

Rehabilitation Management Plan

26. The Applicant must prepare a Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH, DRE, DPI Water and Camden Council;
    (b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;
    (c) provide details of the conceptual final landform and associated land uses for the site (which must be consistent with the Final Land Use Options Plan under condition 25 of this consent);
    (d) describe the short, medium and long term measures that would be implemented to:
        • manage remnant vegetation and habitat on site; and
        • ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;
    (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any necessary remedial action;
    (f) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and
    (g) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

    The Applicant must implement the approved management plan as approved from time to time by the Secretary.

    Note: The Rehabilitation Management Plan must be reviewed, and if necessary updated, following any update of the Final Land Use Options Plan.

HERITAGE

Heritage Management Plan

27. The Applicant must prepare a Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
    a. be prepared in consultation with OEH;
    (a) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;
    b. describe the measures that would be implemented to:
        - manage identified heritage objects, previously unidentified heritage objects or the discovery of any human remains on site;
        - ensure ongoing consultation with Aboriginal stakeholders in the conservation and management of any Aboriginal cultural heritage values on site; and
        - protect sites identified adjacent to the development.

    The Applicant must implement the approved management plan as approved from time to time by the Secretary.

VISUAL

28. The Applicant must establish a vegetation screen on both noise bunds, as soon as practicable after construction of the bunds, to minimise visibility of site infrastructure from outside the development area. Following establishment, the Applicant must maintain the vegetation screen, to the satisfaction of the Secretary.

29. The Applicant must;
    a) implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development; and
    b) ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting,* or its latest version.

BUSHFIRE MANAGEMENT

30. The Applicant must:
    a) ensure that the development is suitably equipped to respond to any fires on site; and
    b) assist the Rural Fire Service, emergency services and National Parks and Wildlife Service as much as practicable if there is a fire in the surrounding area.

WASTE

31. Prior to importing onto the site any material that may be classified as a waste under the EPA *Waste Classification Guidelines 2009* (or its latest version), the Applicant must obtain a 'resource recovery exemption' under the POEO Act and provide evidence of this exemption to the Department.

    Note: This condition does not apply to routine deliveries to the site.

32. The Applicant must:
    a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Camden Council; and
    b) pump all sewage generated and stored on-site to a sewage treatment facility, unless otherwise agreed with the Secretary.

33. The Applicant must:
    a) minimise the waste generated by the development;
    b) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
    c) report on waste management and minimisation in the Annual Review,
    to the satisfaction of the Secretary.

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing an exceedance of any relevant criteria in schedule 3, the Applicant must notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria.

INDEPENDENT REVIEW

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

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

   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
   - consult with the landowner to determine his/her concerns;
   - conduct monitoring to determine whether the development is complying with the relevant criteria in schedule 3;
   - if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and

   (b) give the Secretary and landowner a copy of the independent review.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

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

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

Adaptive Management

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

   Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:
   (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement remediation measures as directed by the Secretary;
   to the satisfaction of the Secretary.

Management Plan Requirements

3. The Applicant must ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:

- impacts and environmental performance of the development; and
- effectiveness of any management measures (see (c) above);

(e) a contingency plan to manage any unpredicted impacts and their consequences;
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;
(g) a protocol for managing and reporting any:
- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria; and

(h) a protocol for periodic review of the plan.

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

Annual Review

4. By the end of September each year, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:
(a) describe the development (including rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;
(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against:
- the relevant statutory requirements, limits or performance measures/criteria;
- the monitoring results of previous years; and
- the relevant predictions in the documents in condition 2(a) of Schedule 2;

(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
(d) identify any trends in the monitoring data over the life of the development;
(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
(f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

5. Within 3 months of the submission of an:
(a) Annual Review under condition 4 above;
(b) incident report under condition 7 below;
(c) audit report under condition 9 below; and
(d) any modifications to this consent,
the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.

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

Community Consultative Committee

6. The Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version), and be operating prior to the commencement of development under this consent.

Notes:
- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*

- *In accordance with the guideline, the Committee should comprise an independent chair and appropriate representation from the Applicant, Camden Council and the local community.*

REPORTING

Incident Reporting

7. The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

9. Within a year of commencing development under this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
   (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
   (b) include consultation with the relevant agencies;
   (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);
   (d) review the adequacy of any approved strategy, plan or program required under these approvals;
   (e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals; and be conducted and reported to the satisfaction of the Secretary.

   Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

10. Within 12 weeks of commencing this audit, unless the Secretary agrees otherwise, the Applicant must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.

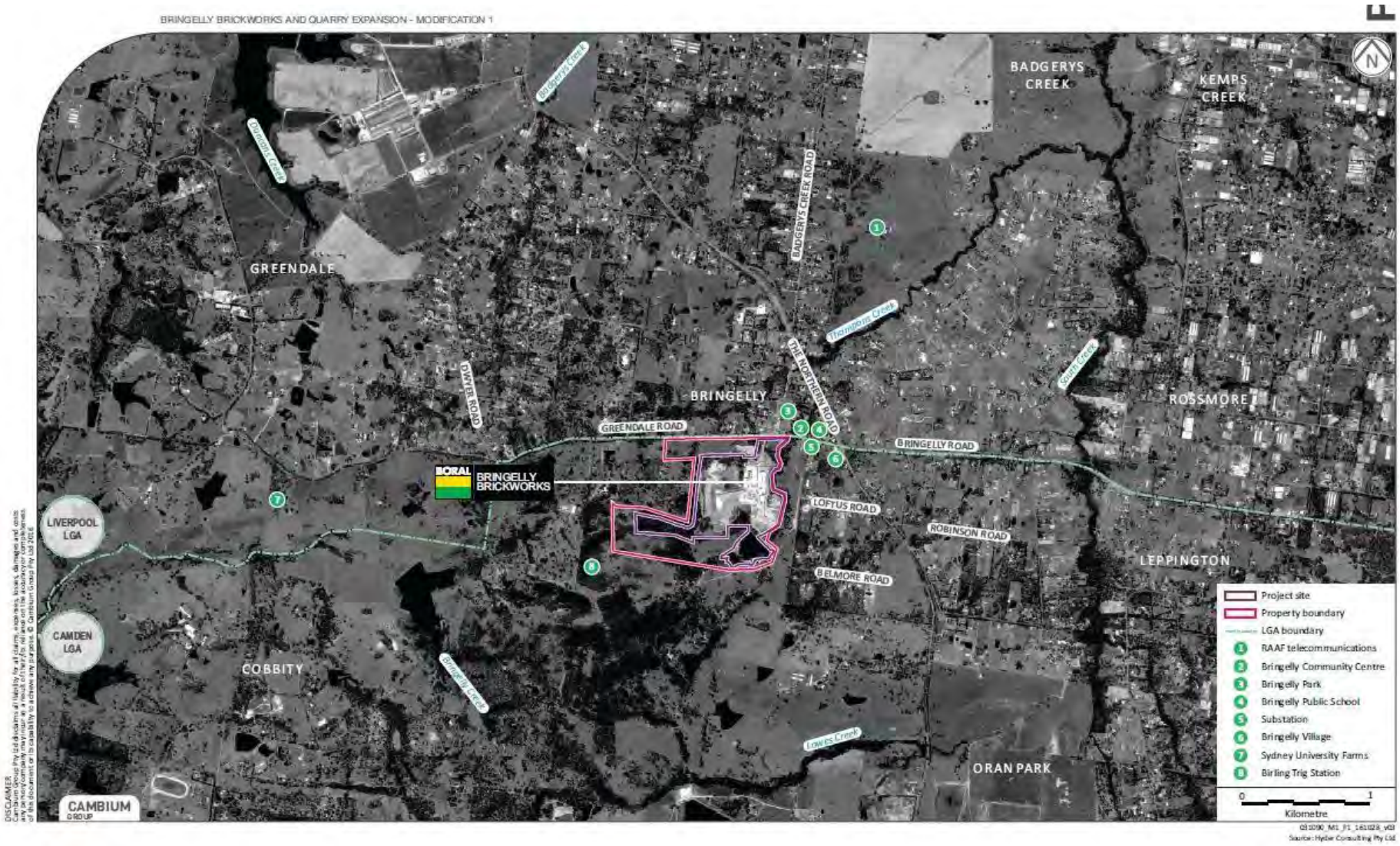
    Within 7 days of commencing the audit, the Applicant must notify the Department in writing of the commencement of the audit.

ACCESS TO INFORMATION

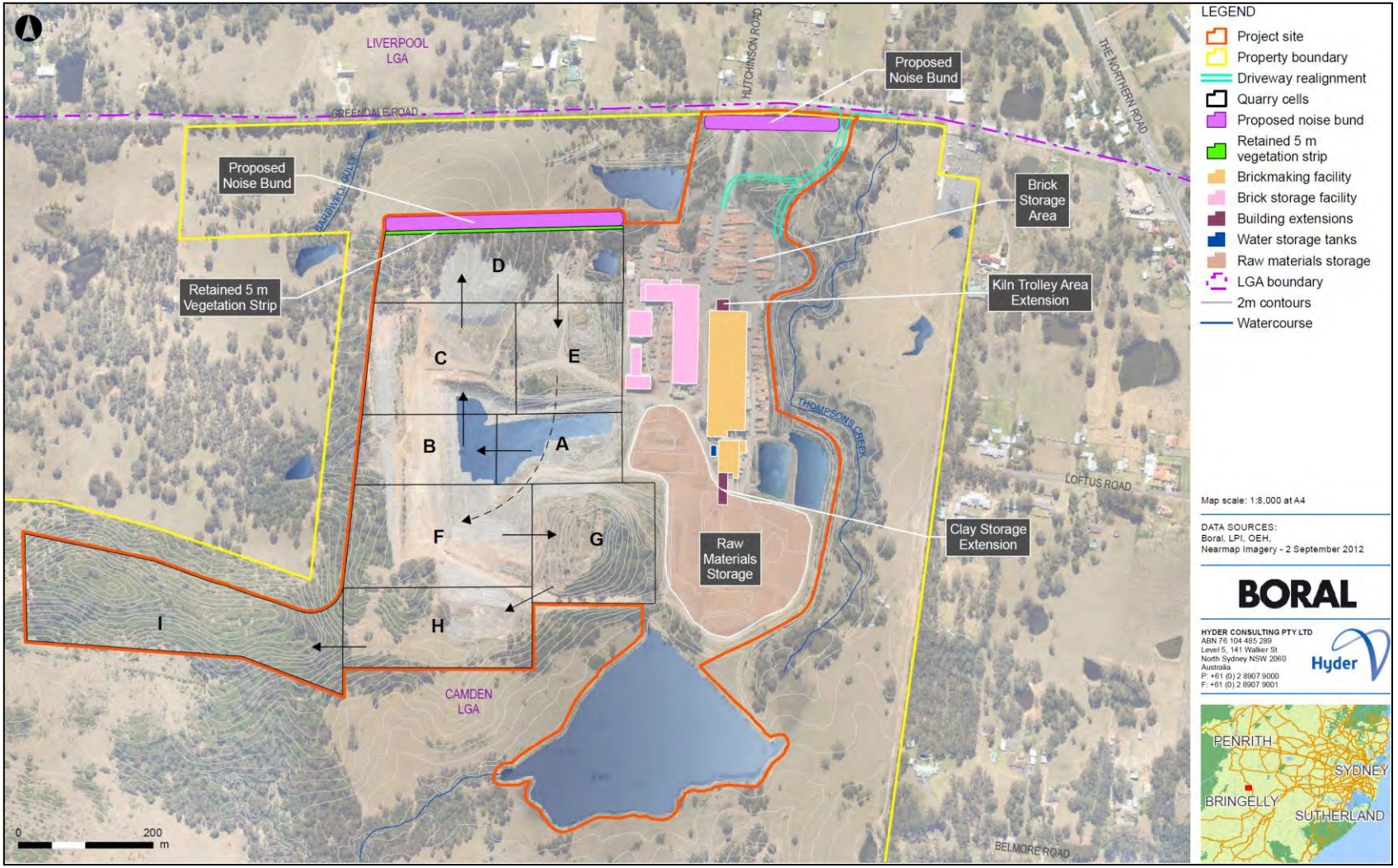
11. Within 6 months of commencing development under this consent, the Applicant must:
    (a) make copies of the following publicly available on its website:
        - the documents in condition 2(a) of Schedule 2;
        - current statutory approvals for the development;
        - approved strategies, plans and programs required under the conditions of this consent;
        - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
        - a complaints register, which is to be updated monthly;
        - minutes of CCC meetings;
        - the annual reviews of the development (for the last 5 years);
        - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
        - any other matter required by the Secretary; and

(b) keep this information up-to-date,
to the satisfaction of the Secretary.

APPENDIX 1
DEVELOPMENT AREA



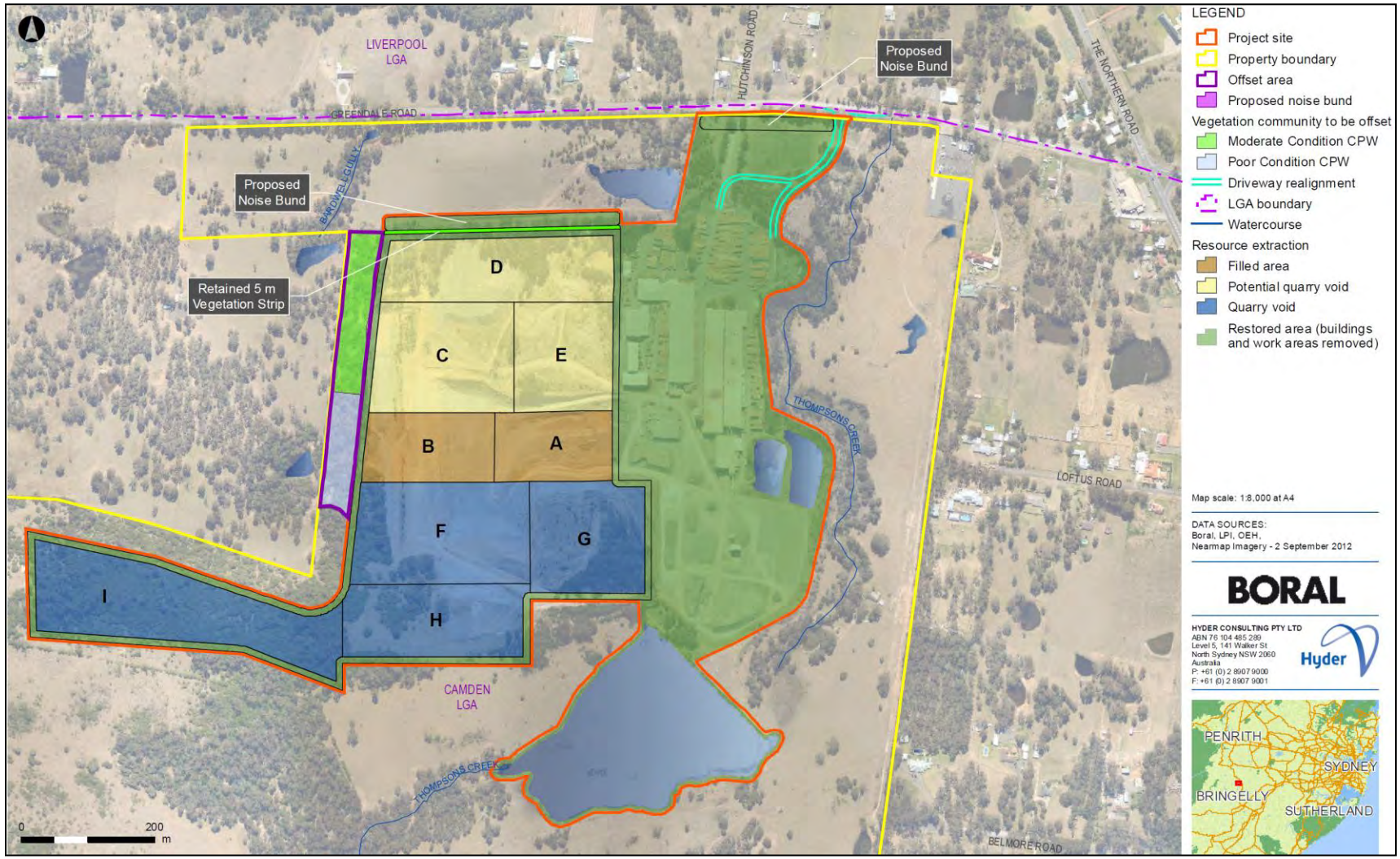
APPENDIX 2
DEVELOPMENT LAYOUT



APPENDIX 3
RECEIVER LOCATIONS

Receiver number	Receiver address
1	55 Loftus Road
2	54 Loftus Road
3	20 Greendale Road
4	9 Greendale Road
5	5 Greendale Road (Bringelly Community Centre)
6	46 Loftus Road
7	36 Loftus Road
8	47 Loftus Road
9	37 Loftus Road
10	27 Loftus Road
11	26 Loftus Road
12	15 Loftus Road
13	5 Loftus Road
14	23 Greendale Road
15	27 Greendale Road
16	29 Greendale Road
17	25 Greendale Road
18	31 Greendale Road
19	35 Greendale Road
20	170 Tyson Road
21	196 Greendale Road
22	46 Belmore Road
23	55 Belmore Road
24	63 Belmore Road
25	67 Belmore Road
26	73 Belmore Road
27	83-85 Belmore Road
28	76 Belmore Road
29	86 Belmore Road
30	87 Belmore Road
31	93 Belmore Road
32	95-97 Belmore Road
33	107 Belmore Road
34	96 Belmore Road
35	108 Belmore Road
36	1037 Northern Road
37	10 Greendale Road
38	Bringelly Public School

APPENDIX 4
CONCEPTUAL FINAL LANDFORM AND BIODIVERSITY OFFSET STRATEGY



APPENDIX 5
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 2 of the conditions are to apply under all meteorological conditions except the following:
   (a) wind speeds greater than 3 m/s at 10 m above ground level; or
   (b) temperature inversion conditions between 1.5 ºC and 3ºC/100 m and wind speeds greater than 2 m/s at 10 m above ground level; or
   (c) temperature inversion conditions greater than 3ºC/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station on or in the vicinity of the site.

Compliance Monitoring

3. Unless directed otherwise by the Secretary, quarterly attended monitoring is to be used to evaluate compliance with the relevant conditions of consent.

   Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the development.

4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   (a) monitoring locations for the collection of representative noise data;
   (b) meteorological conditions during which collection of noise data is not appropriate;
   (c) equipment used to collect noise date, and conformity with Australian Standards relevant to such equipment; and
   (d) modifications to noise data collected including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

Appendix B
Mine Lease Conditions

Instrument of Variation

Mining Lease 1731 (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 1731 (1992)** as described in Schedule A.

The conditions of **ML 1731 (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 **$776,000**.

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 - 1808

Licence Details	
Number:	1808
Anniversary Date:	01-June

Licensee

PGH BRICKS & PAVERS PTY LIMITED

LOCKED BAG 1345

NORTH RYDE NSW 1670

Premises

BRINGELLY

LOT 2 GREENDALE ROAD

BRINGELLY NSW 2556

Scheduled Activity

Ceramic works

Crushing, grinding or separating

Extractive activities

Mining for minerals

Fee Based Activity	Scale
Ceramics production	> 50000-200000 T annual production capacity
Crushing, grinding or separating	> 100000-500000 T annual processing capacity
Land-based extractive activity	> 100000-500000 T annual capacity to extract, process or store
Mining for minerals	> 100000-500000 T annual production capacity

Region

Metropolitan South - Wollongong

Level 3, NSW Govt Offices, 84 Crown Street
WOLLONGONG NSW 2500

Phone: (02) 4224 4100

Fax: (02) 4224 4110

PO Box 513

WOLLONGONG EAST NSW 2520

Environment Protection Licence

Licence - 1808

Environment Protection Licence

Licence - 1808

Environment Protection Licence

Licence - 1808

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 - 1808

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 - 1808

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	> 100000 - 500000 T annual processing capacity
Extractive activities	Land-based extractive activity	> 100000 - 500000 T annual capacity to extract, process or store
Mining for minerals	Mining for minerals	> 100000 - 500000 T annual production capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
BRINGELLY
LOT 2 GREENDALE ROAD
BRINGELLY
NSW 2556
LOT 11 DP 1125892

A3 Information supplied to the EPA

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

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998;

and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

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

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
2	Discharge to Air; Air Emissions Monitoring	Discharge to Air; Air Emissions Monitoring	Kiln exhaust stack as marked on map showing locations of discharge points submitted to the EPA with Licence Information Form dated 9/05/00.

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge and Monitoring; Discharge to waters	Discharge and Monitoring; Discharge to waters	Outlet from Dam 1 on map labelled: Site Layout Plan, Figure 2, Water Management Plan dated 10.11.15 (EPA DOC15/464889-02). Discharge point is located on the NE corner of Dam 1.
5	Discharge and Monitoring; Discharge to waters	Discharge and Monitoring; Discharge to waters	Discharge from Dam 5 on map labelled: Site Layout Plan, Figure 2, Water Management Plan dated 10.11.15 (EPA DOC15/464889-02). Discharge point is located on the NW corner of Dam 5.

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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.

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)	8400.00
Fine Particulates (Air)	33300.00
Fluoride (Air)	11700.00
Nitrogen Oxides - Summer (Air)	
Nitrogen Oxides (Air)	90300.00
Sulfur Oxides (Air)	186500.00

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

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 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L3.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L3.4 Air Concentration Limits

POINT 2

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Total Solid Particles	milligrams per cubic metre	100			
Hydrogen fluoride	milligrams per cubic metre	50			
Nitrogen Oxides	milligrams per cubic metre	2000			

L3.5 Water and/or Land Concentration Limits

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	milligrams per litre	-	-	-	10
pH	pH	-	-	-	6.5-8.5
Turbidity	nephelometric turbidity units	-	-	-	150

POINT 5

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Conductivity	microsiemens per centimetre	-	-	-	1450
Oil and Grease	milligrams per litre	-	-	-	10
pH	pH	-	-	-	6.5-8.5
Turbidity	nephelometric turbidity units	-	-	-	150

L3.6 Exceedance of a quality limit specified in this Licence for the discharge of total suspended solids or turbidity from Point 1 or Point 5 is only permitted if the discharge from Point 1 or Point 5 occurs solely as a result of rainfall. The rainfall must be equal to, or greater than, a 90th percentile 5-day rain event.

L3.7 For the purposes of Condition L3.6, a 90th percentile 5-day rain event equates to rainfall of 50

millimetres over a consecutive five day period.

L3.8 For the purposes of the condition(s) above, rainfall data recorded by the meteorological station identified as the Bureau of Meteorology (BoM) *Badgerys Creek* Weather Station must be used to determine the rain event.

L4 Noise limits

L4.1 Noise from the mobile plant must not exceed an LA10 (15 minute) noise emission criterion of 35 dB(A) at all times.

except as expressly provided by this licence.

L4.2 Noise from the premises must not exceed an LA10 (15 minute) noise emission criterion of 35 dB(A) at all times.

except as expressly provided by this licence.

L4.3 Noise from the premises is to be measured or computed at any point within 30 metres of the most affected residence to determine compliance with condition L4.1 and L4.2 5dB(A) must be added if the noise is tonal or impulsive in character

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 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

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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 2

Pollutant	Units of measure	Frequency	Sampling Method
Hydrogen fluoride	milligrams per cubic metre	Yearly	TM-9
Nitrogen Oxides	milligrams per cubic metre	Yearly	TM-11
Total Solid Particles	milligrams per cubic metre	Yearly	TM-15

M2.3 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method

Oil and Grease	milligrams per litre	Weekly during any discharge	Grab sample
pH	pH	Weekly during any discharge	Grab sample
Turbidity	nephelometric turbidity units	Weekly during any discharge	Grab sample

POINT 5

Pollutant	Units of measure	Frequency	Sampling Method
Conductivity	microsiemens per centimetre	<24hrs prior to discharge	Grab sample
Oil and Grease	milligrams per litre	<24hrs prior to discharge	Grab sample
pH	pH	<24hrs prior to discharge	Grab sample
Turbidity	nephelometric turbidity units	<24hrs prior to discharge	Grab sample

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".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

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

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.

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.

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.

G2 Other general conditions

G2.1 Completed Programs

Program	Description	Completed Date
PRP 1 - WATER MONITORING PROGRAM	Water monitoring program for conductivity in discharges into Thompsons Creek from Licensed Discharge Point 4.	30-May-2014
PRP 2 - WATER MANAGEMENT PLAN	Protect and reduce the impact on Thompsons Creek by preparing a Water Management Plan (WMP) which outlines options to improve on site water management and reduce pollutant loads discharged from the site to Thompsons Creek.	13-November-2015

8 Special Conditions

E1 Summary Table of Special Conditions Completed

E1.1

No.	Special Condition	Description	Completed Date
1	Water Quality	To submit a report confirming details of all surface water; process water and effluent management systems; all existing sedimentation controls; modifications required; and timetable for implementation.	1 Nov 2002
2	Surface water management options	To submit a report on the best utilisation of water from dams 5 & 6.	1 Mar 2005

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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

Ms Nadia Kanhoush

Environment Protection Authority

(By Delegation)

Date of this edition: 10-August-2000

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End Notes

1	Licence varied by Change of contact details, issued on 20-Nov-2001, which came into effect on 20-Nov-2001.
2	Licence varied by notice 1016336, issued on 27-Jun-2002, which came into effect on 22-Jul-2002.
3	Licence varied by notice 1040220, issued on 23-Sep-2004, which came into effect on 18-Oct-2004.
4	Licence varied by notice 1043879, issued on 21-Jan-2005, which came into effect on 15-Feb-2005.
5	Licence varied by notice 1051526, issued on 05-Sep-2005, which came into effect on 30-Sep-2005.
6	Licence varied by notice 1062983, issued on 28-Aug-2006, which came into effect on 28-Aug-2006.
7	Licence varied by change to legislation, issued on 06-Jul-2007, which came into effect on 06-Jul-2007.
8	Licence varied by notice 1076143, issued on 19-Sep-2007, which came into effect on 19-Sep-2007.
9	Licence varied by notice 1079902, issued on 15-Nov-2007, which came into effect on 15-Nov-2007.
10	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
11	Licence varied by change to FBA for summer pollutants, issued on 16-Jan-2009, which came into effect on 16-Jan-2009.
12	Licence varied by notice 1503297 issued on 23-Jan-2012
13	Licence varied by notice 1510257 issued on 06-Feb-2013
14	Licence varied by notice 1520429 issued on 20-May-2014
15	Licence varied by notice 1524516 issued on 28-Aug-2014
16	Licence transferred through application 1530191 approved on 04-May-2015 , which came into effect on 04-May-2015
17	Licence format updated on 04-May-2015
18	Licence format updated on 05-May-2015
19	Licence varied by notice 1536325 issued on 04-Mar-2016
20	Licence varied by notice 1597020 issued on 11-Aug-2020

Appendix D
Rehabilitation Management Plan (approved by DPE 8/12/2021)

DOCUMENT CONTROL	
Doc No. PR32_PGH_Bringelly EMS_RMP_R4	
Reason for Revision: Conditions of Approval for SSD_5684 S16-18 Resubmission	
Issue Date: 8/12/2021	Review Date: 8/12/2021
Writer: M Travers	Reviewed: T West & S Regio Candeias

Bringelly Brickworks Rehabilitation Management Plan

GLOSSARY AND ABBREVIATIONS

BMP	Biodiversity Management Plant
BOA	Biodiversity Offset Area
CoA	Conditions of Approval for SSD_5684
CPW	Cumberland Plain Woodland
CSR	CSR Limited
DPIE	Department of Planning, Industry & Environment
EIS	Bringelly Brickworks Quarry Extension Environmental Impact Statement (Hyder Consulting, 5 September 2013)
EMS	Environmental Management Strategy
ENV	Existing Native Vegetation
BC Act	*Biodiversity Conservation Act 2016*
EP&A Act	*Environmental Planning and Assessment Act 1979*
FM Act	*Fisheries Management Act 1994*
OEH	NSW Office of Environment & Heritage
PGH	PGH Bricks and Pavers Pty Ltd
PIRMP	Pollution Incident Response Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
RBM	Relevant biodiversity measures
RMP	Rehabilitation Management Plan
RR	Resources Regulator
RVH	Remnant Vegetation and Habitat
Secretary	The Secretary of the DPIE
SSD	State Significant Development
SWGC	South West Growth Centre
TSC Act	*Threatened Species and Conservation Act 1995*
WMS	Work method statements

Revision:

Number	Date	Document Name	Reason
1	Dec 2021	PGH_Bringelly_RMP-R4_F2	Initial Submission
2	28 June 2022	PGH_Bringelly_RMP_28062022	Revision based on DPIE feedback

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

1.1 Context

This Rehabilitation Management Plan (RMP or Plan) forms part of the Environmental Management Strategy (EMS) for Bringelly Brickworks (the facility). The Plan has been prepared following the approval of the Bringelly Brickworks Extension Project (the project, SSD_5684-Mod 1) in October 2016.

This RMP has been prepared to address the requirements of the Conditions of Approval (CoA), the mitigation measures listed in the *Bringelly Brickworks Quarry Extension Environmental Impact Statement* (EIS) (Hyder Consulting, 5 September 2013) and applicable legislation identified in this Plan.

The focus of this RMP is the management of rehabilitation and the implementation of the Rehabilitation Management Strategy.

1.2 Background

Bringelly Brickworks (the facility) is a clay/shale quarry and brick making facility located at 60 Greendale Road, Bringelly, on Lot 11 in DP 1125892 and comprises an area of approximately 385.55 hectares in the Camden Local Government Area. The facility has been in operation since 1968, and in its original form it had the capacity to process approximately 51,500 tonnes of bricks per annum.

In Mod 1 the extraction quantity was set to 200,000 tonnes per annum and the annual brick production increased to 263,500 tonnes, equating to approximately 87.8 million bricks.

1.3 Environmental Management Document System

The environmental management document system is described in the EMS and this RMP forms part of that system.

Management measures identified in this RMP will be addressed in relevant work method statements, environmental procedures, and sensitive area plans.

Work Method Statements (WMS) are approved by the Plant Manager. Operational personnel are required to undertake works in accordance with the safeguards identified in WMS.

The compliance management, review and improvement processes for this RMP are described in Sections 10 and 11.

1.4 RMP Approval

The RMP is to be prepared in consultation with NSW Department of Planning, Industry and Environment (DPIE), NSW Resources Regulator (RR) NSW Department of Planning, Industry and Environment: Water (DPIE Water) and Camden Council.

This RMP must be endorsed by the Plant Manager and National Workplace Health, Safety and Environmental Manager prior to submission to the Secretary of the Department of Planning, Industry and Environment (DPIE)

The RMP will be submitted to the Secretary of the DPIE for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise. No quarrying will commence until approval of this plan is received from DPIE.

1.5 Consultation

As outlined in the CoA, this Plan has been prepared in consultation with DPIE, RR, DPIE Water and Camden Council. A version of this Plan was provided to the following authorities and stakeholders on 23rd August 2016 for comment with responses summarised below.

Table 1. ***Comments on Draft RMP***

Authority	Date Submitted	Response
DPIE Water	23/8/2016	Minor changes to cadastral descriptions Areas not impacted through construction activities are indicated on all plans and signposted to prevent damage.
OEH (Conservation Planning)	23/8/2016	OEH had no comment of the draft plan.
RR- ESU	23/8/2016	Plan to be updated with any updates to the FLUOP. Specific design of final void will require much greater level of detail in future versions of RMP. *Section 7.1.2- Monitoring* *DRE [RR] considers the 'Safety' and 'Landform Stability' visual inspection frequency of 6 months to be too long. A greater frequency should be proposed.*
Bringelly Public School	23/8/2016	No comment received
Liverpool Council	23/8/2016	No comment received
Camden Council	23/8/2016	No comment received on the RMP
RMS	23/8/2016	No comment received
EPA	23/8/2016	No comment received

Further to the above Camden Council, DRE, OEH, DPIE Water were advised that there had been a delay in progress and PGH intended to activate the SSD and commence works in a letter dated 24 Jan 2020.

Subsequently Camden Council requested that management plans be submitted for their

records. This will be done upon approval of the documents.

The Resource Regulator also made comments on this advice and also commented on the submitted Final Land Form Options Plan that was developed as a separate document at the request of DPIE. (see Appendix B). No comments received required changes to either plan.

2 PURPOSE AND OBJECTIVES

2.1 Purpose

This RMP aims to provide guidance in the achievement of the objectives of the rehabilitation strategy for the site based upon the final landform shown conceptually in Appendix 4 of the COA. The Plan describes the short, medium and long-term measures that would be implemented to facilitate progressive rehabilitation of the quarry pit, manage remnant vegetation and habitat on-site and ensure compliance with the rehabilitation obligations in the COA.

This document does not represent the Final Land Use Options Plan (FLUOP) for the site as required by Condition 25 of the COA. The FLUOP has been prepared separately as a standalone document in consultation with the RR and Camden Council, and Rev 1, 23/02/2022 was approved by DPE representatives on 3/06/2022.

Following any update of the FLUOP this Plan will be reviewed and updated, if necessary, as described in *Section 11.*

2.2 Objectives

The rehabilitation measures presented in this Plan have been developed to meet of the rehabilitation objectives outlined in the COA, as reproduced in *Table 2* immediately below.

PGH will meet the conditions of consent in SSD 5684, to the satisfaction of the Secretary, particularly Table 8, as it pertains to rehabilitation. The key elements for addressing the consent from a biodiversity perspective have been summarised in Table 3 below, with references to the BMP document where the condition is addressed.

Table 2. ***Rehabilitation Objectives from the COA***

Feature	Objective
Site (as a whole)	Safe, stable and non-polluting; and Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat.
Surface infrastructure	To be decommissioned and removed (unless the Secretary agrees otherwise).
Final void	Minimise the size, depth and slope of the batters of the final void; and Minimise the drainage catchment of the final void.
Quarry pit floor	Landscaped and revegetated using native flora species, above the anticipated final void water level.
Community	Ensure public safety.

3 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

Legislation relevant to rehabilitation management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act);
- Protection of the Environment Operations Act 1997 (POEO Act)
- Mining Act 1992, including Mining Regulation 2016 and Mining Amendment (Standard Conditions of Mining Lease – Rehabilitation) Regulation 2021 ;
- National Parks and Wildlife Act 1974 (NPW Act);
- Fisheries Management Act 1994 (FM Act);
- Biodiversity Certification Order for the Sydney Region Growth Centres; and
- Biodiversity Conservation Act 2016 (Commonwealth) (BC Act).

3.1.2 Guidelines and References

Guidelines and reference documents relevant to this Plan include:

- State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extractive Industries) 2021;
- Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and quarries (DECC, 2008);
- Eco Logical Australia Pty Ltd 2013. *Local Biodiversity Strategy Camden Local Government Area*;
- Eco Logical Australia Pty Ltd. 2007 *Growth Centres Conservation Plan Exhibition Draft*;
- OEH 2019. *Translocation Operational Policy*;

3.2 Minister's Conditions of Approval

The CoA relevant to this RMP are listed in *Table 3*. A cross reference is also included to indicate where the condition is addressed in this RMP or other environmental management documents.

Table 3. ***Conditions of Approval Relevant to the RMP***

CoA No.	Requirement	Reference
Schedule 2 Condition 1,	In addition to meeting the specific performance criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.	
Schedule 2, Condition 14, ***Updating and staging strategies, plans or programs***	With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.	
Schedule 3, Condition 8 ***Operating Conditions***	The Applicant must: (b) minimise surface disturbance and maximise progressive rehabilitation	
Schedule 3, Condition 23 Rehabilitation Objectives	The Applicant shall rehabilitate the site to the satisfaction of the Secretary. Rehabilitation must:	-
	a) comply with the objectives in Table 8; and	This Report Section 2.2
	b) be generally consistent with the proposed rehabilitation strategy in the EIS, and the final landform shown conceptually in Appendix 4 (unless modified by the Final Land Use Options Plan, prepared in accordance with condition 25 of this consent). *Table 8: Rehabilitation Objectives* *Feature* / *Objective* Site (as a whole): • Safe, stable and non-polluting • Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat	This Report Section 2.2 Table 2
Schedule 3, Condition 24 Progressive Rehabilitation	The Applicant shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.	Section 7
Schedule 3, Condition 25 Final Land Use Options Plan	The Applicant shall prepare a Final Land Use Options Plan for the site to the satisfaction of the Secretary. This plan must:	Final Landuse Options Plan
	a) be prepared in consultation with DRE [RR] and Camden Council;	
	b) be submitted to the Secretary for approval within 2 years of the date of this consent, unless the Secretary agrees otherwise;	
	c) provide details of the conceptual final landform and associated final land uses for the site;	
	d) ensure that the conceptual final landform is compatible with surrounding land uses, and is consistent with the rehabilitation	

CoA No.	Requirement	Reference
	objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre;	
	e) inform the Rehabilitation Management Plan (prepared in accordance with condition 26 of this consent); and	
	f) be reviewed every 7 years to account for applicable land use priorities, and if necessary updated.	
Schedule 3, Condition 26 Rehabilitation Management Plan	The Applicant shall prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of the Secretary. This plan must:	This Plan
	a) be prepared in consultation with OEH, DRE [RR], NOW and Camden Council;	Section 0, Table 1 and Appendix B
	b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;	Section 1.4
	c) provide details of the conceptual final landform and associated land uses for the site (which must be consistent with the Final Land Use Options Plan under condition 25 of this consent);	Section & Final Landuse Options Plan
	d) describe the short-, medium- and long-term measures that would be implemented to: • manage remnant vegetation and habitat on-site; and • ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;	Section 8.2 Section 10
	e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any necessary remedial action;	Section 8 & Section 9 Table 19 Table 20
	f) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and	Section 10 & Section 11 Table 19
	g) include details of who would be responsible for monitoring, reviewing, and implementing the plan. Note: The Rehabilitation Management Plan must be reviewed, and if necessary updated, following any update of the Final Land Use Options Plan.	Section 10 & Section 11 Table 19
Schedule 5, Condition 2 Adaptive Management	The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing	Section 10 & 11

CoA No.	Requirement	Reference
	those options and any preferred remediation measures or other course of action; and c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.)	
Schedule 5, Condition 3 Management Plan Requirements	The Applicant must ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: - the relevant statutory requirements (including any relevant approval, licence or lease conditions); - any relevant limits or performance measures/criteria; and - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; d) a program to monitor and report on the: - impacts and environmental performance of the development; and - effectiveness of any management measures (see (c) above); e) a contingency plan to manage any unpredicted impacts and their consequences; f) a program to investigate and implement ways to improve the environmental performance of the development over time; g) a protocol for managing and reporting any: - incidents; - complaints; - non-compliances with statutory requirements; and - exceedances of the impact assessment criteria and/or performance criteria; and h) a protocol for periodic review of the plan. Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	a) Section 5 b) Section 3 c) Section 7 d) Table 19 and Section 10 e) Section 9 f) Section 11 g) Section 10 h) Section 11
Schedule 5, Condition 4 Annual Review	By the end of September each year, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must: a) describe the development (including rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year; b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against: - the relevant statutory requirements, limits or performance measures/criteria; - the monitoring results of previous years; and - the relevant predictions in the documents in condition 2(a) of Schedule 2; c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; d) identify any trends in the monitoring data over the life of the development; e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	Section 10&11

CoA No.	Requirement	Reference
	f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.	
Schedule 5 Condition 5 **Revision of Strategies, Plans and Programs**	Within 3 months of the submission of an: (a) Annual Review under condition 4 above; (b) incident report under condition 7 below; (c) audit report under condition 9 below; and (d) any modifications to this consent, the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary. Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.	Section 11
Schedule 5, Condition 7 **Incident Reporting**	The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Section 10&11
Schedule 5 Condition 8 **Regular Reporting**	The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	Section 10
Schedule 5, Condition 9 **Independent Environmental Audit**	Within a year of commencing development under this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must: (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (b) include consultation with the relevant agencies; (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals); (d) review the adequacy of any approved strategy, plan or program required under these approvals; (e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals; and be conducted and reported to the satisfaction of the Secretary. *Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.*	Section 10
Schedule 5, Condition 10	Within 12 weeks of commencing this audit, unless the Secretary agrees otherwise, the Applicant must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report,	Section 10

CoA No.	Requirement	Reference
Independent Environmental Audit	including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented. Within 7 days of commencing the audit, the Applicant must notify the Department in writing of the commencement of the audit.	
Schedule 5, Condition 11 **Access to Information**	Within 6 months of commencing development under this consent, the Applicant must: (a) make copies of the following publicly available on its website: the documents in condition 2(a) of Schedule 2; - current statutory approvals for the development; approved strategies, plans and programs required under the conditions of this consent; - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; - a complaints register, which is to be updated monthly; - minutes of CCC meetings; - the annual reviews of the development (for the last 5 years); - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit; - any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	Section 10

4 LICENCES AND PERMITS

4.1 Environmental Protection Licence

Environment Protection Licence (EPL) No. 1808 as issued under the *Protection of the Environment Operations Act 1997* (POEO Act) is currently held for the site. There are no specific conditions in the licence that relate to rehabilitation.

4.2 Mine Lease

Mine Lease ML1731 (Act 1992) has been issued by the RR on 6 March 2016. The mining lease was varied on the 17th October 2022 and no longer contains conditions relating to rehabilitation beyond the rights and duties prescribed by the Mining Act 1992 and the Mining Regulation 2016.

The site obligations under the Mining Act are addressed specifically with the Resources Regulator, in the Form and Way required under the relevant legislation. This report specifically addresses the requirements of the DPE and the approval conditions outlined in Section 3.2.

This RMP will be appended to the relevant documents required by the Resources Regulator.

5 EXISTING ENVIRONMENT

The following sections is reproduced from Biodiversity Management Plan (BMP). This section will require updating following any update of the BMP.

5.1 Flora

5.1.1 Vegetation communities

During the ecological assessment of the EIS, seven vegetation communities were identified within the ecological study area as illustrated in Figure ***2*** and summarised in *Table 4*.

Table 4. ***Summary of Vegetation Communities within the EIS study area***

Vegetation Community		Extent in Study Area
Native Vegetation	Moderate Condition Cumberland Plain Woodland	15.12
	Poor Condition Cumberland Plain Woodland	6.58
	Derived Grassland Cumberland Plain Woodland	0.97
	Poor Condition Riparian Woodland	8.22
Exotic Vegetation	Exotic Grassland	14.80
	Mixed Exotic/Planted Native	2.58
	Olive Dominant Woodland	9.02
Total		**57.29**

A description of the vegetation communities as described in the EIS is reproduced in the following sections.

5.1.1.1 Moderate Condition Cumberland Plain Woodland

Areas of Moderate Condition Cumberland Plain Woodland (CPW) had a canopy of regrowth *Eucalyptus moluccana* (Grey Box) and *E. tereticornis* (Forest Red Gum) to approximately 10 to 14 metres in height with an average diameter at breast height of 20 to 30 centimetres. The understorey in these areas consisted of patchy cover of *Olea europaea* subsp. *cuspidata* (African Olive) with other native shrubs such as *Acacia implexa* (Hickory Wattle), *Bursaria spinosa* (Blackthorn) and *Melaleuca styphelioides* (Prickly Paperbark) occasionally present. The ground layer varied from sparse native grasses and herbs with high leaf litter to dense native and exotic grasses, including *Themeda australis* (Kangaroo Grass), *Aristida ramosa* (Wiregrass), *Austrostipa scabra* (Speargrass), *Microlaena stipoides* (Weeping Grass) and *Eragrostis curvula* (African Lovegrass). Good cryptogam cover was observed in some of these areas. Understorey vegetation in the northeast section of Cell D was particularly weedy, containing exotic species such as *Eragrostis curvula*, *Bryophyllum delagoense* (Mother-of-millions) and *Chloris gayana* (Rhodes Grass). This area was not dominated by *Olea europaea* subsp. *cuspidata* in the understorey and therefore was not considered to constitute Poor Condition CPW.

5.1.1.2 Poor Condition Cumberland Plain Woodland

Poor Condition CPW consisted of areas of remnant and regrowth *E. moluccana* and *E. tereticornis* over a dense midlayer of *Olea europaea* subsp. *cuspidata*. In most parts of this community, the *O. europaea* subsp. *cuspidata* is greater than 50 per cent cover and ground layer vegetation is absent, supports *Olea* seedlings and leaf litter or has been reduced to very sparse cover of native and exotic grasses. These areas only very loosely meet the criteria for CPW and are considered unlikely to be viable in the long term.

5.1.1.3 Derived Grassland Cumberland Plain Woodland

South of the existing quarry, the stands of tree-dominated vegetation were interspersed with patches of

grassland. The grasslands were dominated by native species such as *Themeda australis, Microlaena stipoides, Aristida ramosa and Chloris truncata* (Windmill Grass), with the cosmopolitan native pasture grass *Cynodon dactylon* (Couch) and exotic species such as *Eragrostis curvula, Chloris gayana* (Rhodes Grass) and *Briza subaristata* also present and dominant in patches. Areas of derived grassland are included in the definition of CPW.

5.1.1.4 Poor Condition Riparian Woodland

Poor Condition Riparian Woodland occurred along Thompsons Creek to the east of the existing quarry. These areas supported scattered large trees of *Eucalyptus tereticornis* with an understorey of scattered *Olea europaea* subsp. *cuspidata* and *Bursaria spinosa* in the south and a denser midlayer of *Melaleuca styphelioides* and *Ligustrum sinense* (Small-leaved Privet) in the north. All areas of Poor Condition Riparian Woodland were in certified areas. This vegetation is in poor condition and loosely meets the criteria for the EEC River-flat Eucalypt Forest.

5.1.1.5 Olive Dominant Woodland

Areas of Olive dominant woodland support a canopy of *Olea europaea* subsp. *cuspidata* with only occasional eucalypt occurrence. The ground layer is generally absent or supports Olea seedlings and leaf litter, although there are small patches of native and exotic grasses where there are canopy gaps. These areas are not considered to meet the criteria for CPW.

5.1.2 Priority Weeds

The legislative framework for managing noxious weeds in NSW has changed with the introduction of the *Biosecurity Act 2015* which came into effect on 1 July 2017 replacing the *Noxious Weeds Act 1993*. Under The Act the term "noxious weed" is no longer used and previous noxious weed classes have been abolished. These have been replaced with new term of "priority weeds". Priority weeds in the Sydney region are specified in the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*. Priority weeds that are listed as "State Priority Weeds" and "Regional Priority Weeds" have specific measures for the control of individual weed species no matter of the land ownership or location meaning treatment is to be undertaken on both government and private lands. The relevant objectives of these State and Regional weeds found on site in the plan are summarised below.

- **State Priority Weed Objective – ASSET PROTECTION (Whole of State)**: These weeds are widely distributed in some areas of the State. As Weeds of National Significance, their spread must be minimised to protect priority assets.
- **Regional Priority Weeds Objective – CONTAINMENT:** These weeds are widely distributed in the region. While broad scale elimination is not practicable, minimisation of the biosecurity risk posed by these weeds is reasonably practicable.
- **Other Weeds of Regional Concern-** species known to occur in the Greater Sydney region as well as species not currently known to occur but at risk of moving into the region in the future. The species may warrant resources for control or management programs, or occur in neighbouring regions and are a priority to keep out of the region.

Table 5. ***State Priority Weeds on Site***

Scientific Name	Common Name	Biosecurity Act 2015 requirements & Strategic Response in the region
Senecio madagascariensis	Fireweed	**Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):** A person must not import into the State or sell. **Regional Strategic Response:** Identify priority assets for targeted management.

Table 6. ***Regional Priority Weeds on Site***

Scientific Name	Common Name	Land Description	Requirements to Demonstrate Compliance with GBD
Olea europaea subsp. *cuspidata*	African Olive	Core Infestation	Land managers prevent spread from their land where feasible. Land managers reduce the impact on priority assets.

Table 7. ***Other Weeds of Regional Concern***

Scientific Name	Common Name	Asset/ Value at Risk
Ligustrum sinense	Small-leaved Privet	Environment, Human Health

Control of weeds on Site is undertaken in accordance with the Resource Regulator approved Weed Management Plan (2019). In summary, the site has been divided into Management Units and the level of infestation of each unit has been assigned in order to prioritise control measures. The primary methods of control to be employed on the site include:

- Unmanned Aerial Vehicle (UAV) –Used to apply herbicides efficiently particularly over large and dense infestations, in areas that are not safe or practical to access on the ground (e.g. steep areas, aquatic area, dense infestations).
- 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 particularly woody stemmed weeds to chemically ring bark them. This method is best suited to specific species and application on isolated plants or plants that cannot 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 weed control works.

In areas treated by mechanical means, follow up chemical control is generally required to treat regrowth. There is also a requirement to introduce other desirable vegetation to protect the soil and reduce the potential for erosion as well as invasion with other weed species.

All spraying of weeds will be undertaken by a licenced contractor and a report will be provided to PGH by the contractor summarising the works undertaken. Bi-Annual inspections will be undertaken to monitor the progress of weed control measures and the results of monitoring and management activities will be included in the annual review.

5.1.3 Threatened Flora Species

Native flora habitat in the ecological study area is poor, with stands of *Olea europaea* subsp. *cuspidata* shading out habitat across most of the ecological study area.

Based on database and literature review completed during the EIS, 20 plant species listed under the EPBC and/or TSC Acts are either recorded or have the potential to occur within 10 kilometres of the ecological study area (refer *Table 8*). No threatened flora species were recorded/identified during the detailed field surveys of the EIS. Most of the threatened plant species identified in the database searches during the EIS were considered to have a low likelihood of occurring in the ecological study area, based on potential habitat and the proximity and number of records of these species in the locality.

Table 8. ***Threatened flora occurring within 10 kilometres of the ecological study area***

Scientific name	Common name	EPBC Act status	TSC Act status
Acacia pubescens	Downy Wattle	Vulnerable	Vulnerable
Allocasuarina glareicola	-	Endangered	Endangered
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	Vulnerable
Cynanchum elegans	White-flowered Wax Plant	Endangered	Endangered
Dillwynia tenuifolia	-	Vulnerable	Vulnerable
Eucalyptus benthamii	Camden White Gum	Vulnerable	Vulnerable
Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	-	Vulnerable
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	Vulnerable	Vulnerable
Lepidium hyssopifolium	Basalt Pepper-cress	Endangered	Endangered
Marsdenia viridiflora subsp. viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith LGAs	-	Endangered population

Pelargonium sp. Striatellum (G.W. Carr 10345)	Omeo Stork's-bill	Endangered	Endangered
Persoonia nutans	Nodding Geebung	Endangered	Endangered
Pimelea curviflora var. curviflora	-	Vulnerable	Vulnerable
Pimelea spicata	Spiked Rice-flower	Endangered	Endangered
Pomaderris brunnea	Rufous Pomaderris	Vulnerable	Vulnerable
Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Endangered
Pultenaea parviflora	Sydney Bush-pea	Vulnerable	Endangered
Streblus pendulinus	Siah's Backbone	Endangered	-
Syzygium paniculatum	Magenta Lilly Pilly	Vulnerable	Endangered
Thelymitra sp. Kangaloon	Kangaloon Sun-orchid	Critically Endangered	Critically Endangered

5.1.4 Existing Native Vegetation

The Growth Centres SEPP, which establishes a broad framework for the development of current and future Growth Centres in the Sydney region, was gazetted in July 2006 and is effective until 30 June 2025.
In December 2007 an order conferring biodiversity certification under the Growth Centres SEPP was made by the Minister for the Environment. In July 2008, the Minister's biodiversity certification was validated by the *Threatened Species Conservation Amendment (Special Provisions) Act 2008*.
The relevant biodiversity measures (RBM's) applying to the certification have remained unaltered since gazettal of the original order. Under the RBM's of the Growth Centres SEPP biodiversity certification, clearing of any Existing Native Vegetation (ENV) in the non-certified areas must be offset elsewhere in the Growth Centres.
ENV is defined as areas of indigenous trees (including any sapling) that had 10 per cent or greater over-storey canopy cover present, were equal to or greater than 0.5 hectares in area, and were identified as "vegetation" on maps 4 and 5 of the draft Growth Centres Conservation Plan (Eco Logical Australia, February 2007) at the time the biodiversity certification order took effect. Vegetation communities to be cleared within areas of ENV in non-certified areas is summarised in *Table 9*.

Table 9. ***Mapped vegetation communities to be cleared within areas of ENV in non-certified areas***

Vegetation Community		**ENV in non-certified areas within the approved disturbance area (Ha)**
Native vegetation	Moderate Condition Cumberland Plain Woodland	0.00
	Poor Condition Cumberland Plain Woodland	0.26
	Derived Grassland Cumberland Plain Woodland	0.09
	Poor Condition Riparian Woodland	0.00
Exotic vegetation	Exotic Grassland	0.39
	Cleared land	0.39
	Olive Dominant Woodland	0.03
Total		**1.16**

5.1.5 Threatened Ecological Communities

CPW within the approved disturbance area does not meet the criteria for a Threatened Ecological Community under the BC Act.

5.1.6 Groundwater Dependent Ecosystems

The EIS did not identify any high priority Groundwater Dependent Ecosystems (GDE's), subterranean GDE's, river base flows, karst or cave ecosystems, or known springs that are fed by groundwater in the ecological study area and surrounds.

5.2 Fauna

5.2.1 Terrestrial Fauna Habitat

During the ecological assessment of the EIS, three broad terrestrial fauna habitat types were identified in the ecological study area, namely: woodland, riparian and aquatic habitats and cleared/disturbed grassland. These habitats are briefly summarised in the following sections.

5.2.1.1 Woodland

Woodland habitat occurs across most of the ecological study area, with the largest continuous patches occurring in the southern extent of the site on non-certified land. Woodland habitat varied in condition from a moderate

structure and diversity of flora species to poor quality woodland and woodland dominated by *O. europaea* subsp. *cuspidata*.

Hollow-bearing trees were observed in woodland and were in highest concentration in Cell G at the south-eastern boundary of the quarry operations. Hollow-bearing tree locations were recorded if they occurred within the areas proposed for vegetation clearance. Thirteen hollow-bearing trees as well as several potential hollow-bearing trees (with no visible hollows) were recorded. A nest box program will be prepared and implemented in woodland habitat in areas with a naturally occurring low abundance of hollows to mitigate impacts to hollow-dependent threatened species potentially occurring at the site. The program would identify the target quantities and nest types and provide a protocol for installation, maintenance and monitoring. It will be developed and implemented prior to clearing the identified hollow bearing trees as identified in the EIS. The Nest Box Program will be appended to this report and updated as required.

5.2.1.2 Riparian and aquatic habitat values for terrestrial fauna

5.2.1.2.1 Dams

Four dams were recorded within the ecological study area that provide habitat for terrestrial fauna. Dams contained emergent vegetation and soft, muddy substrates, which would provide foraging and breeding habitat for frogs and wading birds. The dams also provide foraging opportunities for microchiropteran bats.

5.2.1.2.2 Thompsons Creek and Associated Dam

Thompsons Creek dam contained emergent vegetation, which would provide nesting habitat and shelter for waterbirds. The dam is also a foraging resource for waterbirds. The dam and Thompsons Creek also provide a freshwater resource for most local fauna including exotic species.

It was noted during the ecological assessment site survey that the southern section of Thompsons Creek became dry and void of aquatic vegetation as the creek progressed upstream from Thompsons Creek dam. Stagnant pools of water in this section of the creek would provide habitat for frogs. The northern section of Thompsons Creek (downstream of the dam) contained emergent vegetation, which would provide habitat for frogs and waterbirds. Gully erosion was common along the creek banks, particularly in the south and some vegetation overhangs the banks, which could provide shelter for fauna.

5.2.1.3 Cleared and Disturbed Grassland

Grassland at the site was mostly heavily grazed and disturbed by feral herbivores and farm animals (e.g. cattle). Rabbits (*Oryctolagus cuniculus*) and/or their scats and warrens were observed in every grassy habitat within the ecological study area. Native grasses occurred in some areas of the site and would provide a food source for native birds and macropods and shelter for reptiles. Other fauna resources within grasslands included fallen timber, loose rock and ant mounds, which would provide habitat and/or food for reptiles, birds and mammals.

5.2.2 Aquatic Fauna Habitat

During the EIS aquatic fauna habitat assessments were undertaken at four locations along Thompsons Creek, Thompsons Creek dam and four other dams within the property boundary (outside of the approved disturbance area). Thompsons Creek comprised intermittently wet channels and pools. The channel was narrow at times and undefined in some locations, particularly in the east. There was severe disturbance by cows trampling through the creek line on the east and severe bank erosion in the south west. Thompsons Creek is mapped as Key Fish Habitat by Department of Primary Industries (DPI) and would be considered Class 3 fish habitat using the Fairfull and Witheridge (2003) fish habitat classification system.

5.2.3 Threatened Fauna Species

Based on database and literature review completed during the EIS, 46 animal species listed under the BC and FM Acts are either known or have the potential to occur within 10 kilometres of the Study Area (refer *Table 10*).

No threatened fauna species were recorded/identified during the detailed field surveys of the EIS. The probability of each of the locally recorded threatened and migratory fauna species to occur within the ecological study area was assessed in the EIS using knowledge of each species' habitat and lifecycle requirements with regard to the habitat present within the ecological study area. It was concluded in the EIS that several threatened fauna species identified in the database searches were considered to have a moderate to high likelihood of occurring in the ecological study area based on potential habitat and the proximity and number of records of these species in the locality. This included waterbirds that could occur in Thompsons Creek dam, woodland birds that could utilise woodland habitats and native grassland and microbats that could forage at waterbodies and within woodland and utilise hollow-bearing trees for roosting.

Table 10. ***Threatened fauna potentially occurring within 10 kilometres of the ecological study area***

Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
Anthochaera phrygia	*Regent Honeyeater*	*Endangered,*	*Critically*	-

Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
		Migratory	*endangered*	
Apus pacificus	*Fork-tailed Swift*	*Migratory*		-
Ardea alba	*Great Egret*	*Migratory*		-
Ardea ibis	*Cattle Egret*	*Migratory*		-
Botaurus poiciloptilus	*Australasian Bittern*	*Endangered*	*Endangered*	-
Burhinus grallarius	*Bush Stone-curlew*	-	*Endangered*	-
Callocephalon fimbriatum	*Gang-gang Cockatoo*	-	*Vulnerable*	-
Chalinolobus dwyeri	*Large-eared Pied Bat*	*Vulnerable*	*Vulnerable*	-
Chthonicola sagittata	*Speckled Warbler*	-	*Vulnerable*	-
Daphoenositta chrysoptera	*Varied Sittella*	-	*Vulnerable*	-
Dasyurus maculatus maculatus	*Spotted-tailed Quoll*	*Endangered*	*Endangered*	-
Ephippiorhynchus asiaticus	*Black-necked Stork*	-	*Endangered*	-
Erythrotriorchis radiatus	*Red Goshawk*	*Vulnerable*		-
Falsistrellus tasmaniensis	*Eastern False Pipistrelle*	-	*Vulnerable*	-
Gallinago hardwickii	*Latham's Snipe*	*Migratory*		
Glossopsitta pusilla	*Little Lorikeet*	-	*Vulnerable*	-
Haliaeetus leucogaster	*White-bellied Sea- Eagle*	*Migratory*		-
Heleioporus australiacus	*Giant Burrowing Frog*	*Vulnerable*	*Vulnerable*	-
Hieraaetus morphnoides	*Little Eagle*	-	*Vulnerable*	-
Hirundapus caudacutus	*White-throated Needletail*	*Migratory*		-
Hoplocephalus bungaroides	*Broad-headed Snake*	*Vulnerable*	*Endangered*	-
Lathamus discolour	*Swift Parrot*	*Endangered*	*Endangered*	-
Litoria aurea	*Green and Golden Bell Frog*	*Vulnerable*	*Endangered*	-
Litoria raniformis	*Growling Grass Frog*	*Vulnerable*	*Endangered*	-
Macquaria australasica	*Macquarie Perch*	*Endangered*	-	*Endangered*
Melanodryas cucullata cucullata	*Hooded Robin (south-eastern form)*	-	*Vulnerable*	-
Meridolum corneovirens	*Cumberland Plain Land Snail*	-	*Endangered*	-
Merops ornatus	*Rainbow Bee-eater*	*Migratory*		-
Miniopterus schreibersii oceanensis	*Eastern Bent-wing bat*	-	*Vulnerable*	-
Monarcha melanopsis	*Black-faced Monarch*	*Migratory*		-
Mormopterus norfolkensis	*Eastern Free-tail bat*	-	*Vulnerable*	-
Myiagra cyanoleuca	*Satin Flycatcher*	*Migratory*		-
Myotis macropus	*Southern Myotis*	-	*Vulnerable*	-
Ninox strenua	*Powerful Owl*	-	*Vulnerable*	-
Oxyura australis	*Blue-billed Duck*	-	*Vulnerable*	
Petrogale penicillata	*Brush-tailed Rock- wallaby*	*Vulnerable*		-
Petroica boodang	*Scarlet Robin*	-	*Vulnerable*	-
Petroica phoenicea	*Flame Robin*	*Marine*	*Vulnerable*	-
Phascolarctos cinereus	*Koala*	*Vulnerable (combined populations of QLD, NSW and the ACT)*	*Vulnerable*	
Potorous tridactylus tridactylus	*Long-nosed Potoroo (SE mainland)*	*Vulnerable*		
Prototroctes maraena	*Australian Grayling*	*Vulnerable*		*Protected*
Pseudomys novaehollandiae	*New Holland Mouse*	*Vulnerable*		
Pteropus poliocephalus	*Grey-headed Flying- fox*	*Vulnerable*	*Vulnerable*	
Rhipidura rufifrons	*Rufous Fantail*	*Migratory*		

Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
Rostratula australis	*Australian Painted Snipe*	*Vulnerable, Migratory*	*Endangered*	
Scoteanax rueppellii	*Greater Broad-nosed Bat*	-	*Vulnerable*	
Stagonopleura guttata	*Diamond Firetail*	-	*Vulnerable*	

6 CONCEPTUAL FINAL LANDFORM AND ASSOCIATED LAND USES

6.1 Site Overview

The project site is currently used for quarrying, brick production and associated activities. The brickmaking facility along with various administration buildings, a finished bricks storage yard, staff car park and internal road network is generally contained within the northern part of the project site and is set back approximately 200 metres from Greendale Road. The southern portion of the project site, adjacent to Thompsons Creek, is leased for the agistment of stock and grazing.

The underlying topography of the operational footprint on the project site is relatively flat, and the land generally slopes to the south and east toward Thompsons Creek. Existing quarrying activities in the northern portion of the site have substantially altered the natural landform, with various voids and elevated stockpiles present in the active, north-western part of the project site. Current active quarry areas have involved removing material below ground level from RL86 down to RL66. Other significant landforms on the site include the raw material stockpiles to the south of the buildings and manufacturing plants, unusable material stockpiles along the western boundary of the existing quarry pit and various stormwater management structures (sediment basins and dams).

The end-of-life land use for the project site is yet to be determined and may be influenced by a number of factors including future demand for bricks and surrounding land development progress. As outlined in *Section 2.1*, a FLUOP has been prepared for the site in accordance with Condition 25 of the CoA. Following any update of the FLUOP, this Plan will be reviewed and updated if necessary. (FLUOP V1 approved by DPIE 3 June 2022)

6.2 Future Land Use Options

In determining the future land use options for the project site, consideration was given to the applicable planning policy framework as well as the surrounding land use and environmental and market conditions at the time.

There are a number of potential future land use options that are being considered for the project site given the existing site status, surrounding land use and future strategic planning and development being considered for adjacent areas. Potential suitable future land uses for the project site that have been discussed in detail in the FLUOP include:

- Landfill;
- Industrial or commercial;
- Residential, as per the Growth Centres SEPP; and
- Continued quarrying and brickworks activities.

6.3 Conceptual Final Landform

As outlined in Condition 23 of the COA, the site must be rehabilitated generally consistent with the final landform shown conceptually in Appendix 4 of the COA. The conceptual final landform specified in the CoA consists of:

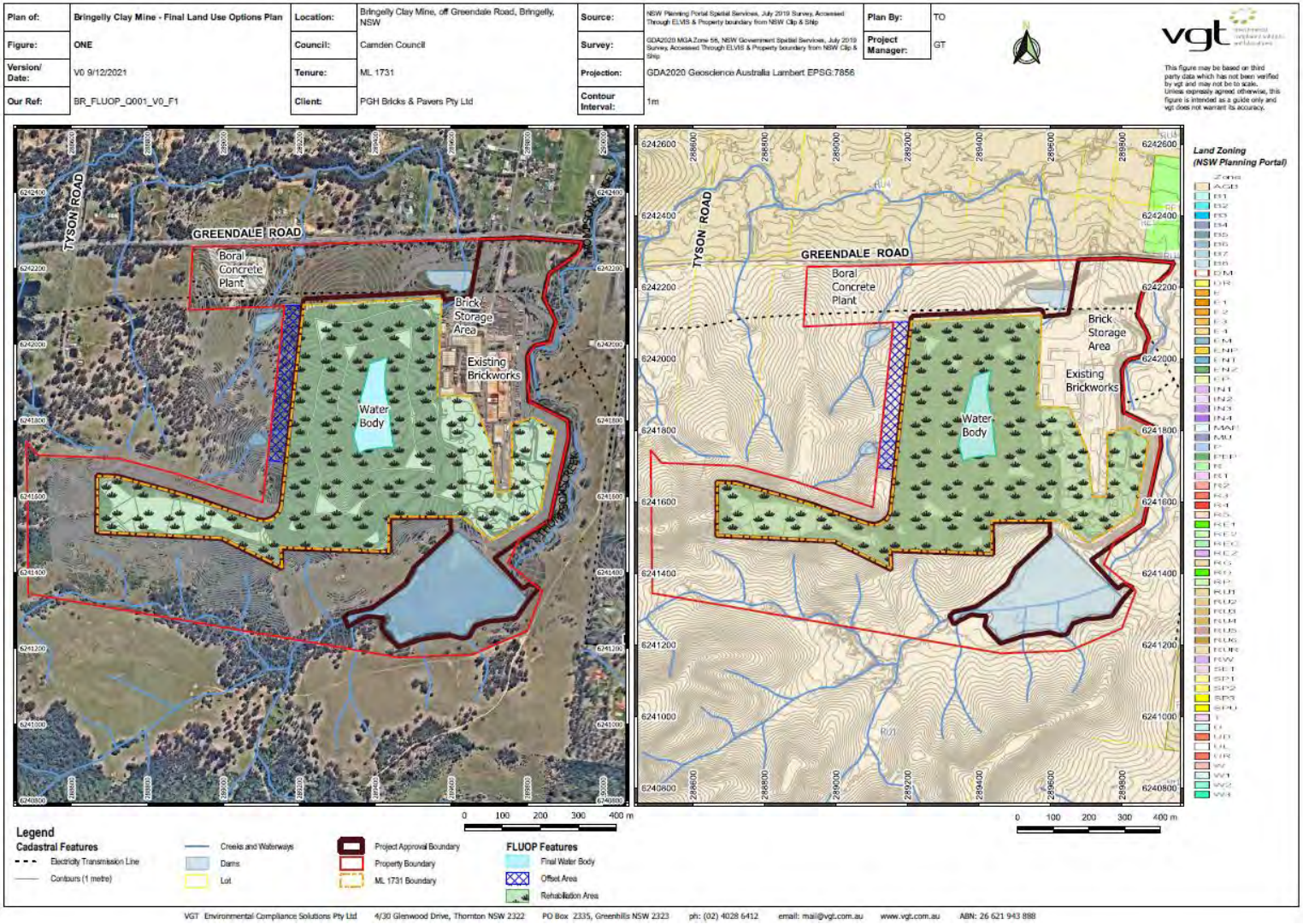
- A potential quarry void comprising of Cells C, D and E;
- A backfilled area comprising of Cells A and B;
- A quarry void comprising of Cells F, G, H and I; and
- An area where surface infrastructure has been decommissioned and removed and the area restored.

The retention of voids on the site will not sterilise or preclude land from being redeveloped, in line with future land use planning and policy.

Future land use and development will be best determined closer to quarry closure when market conditions, surrounding land use and development and relevant policy has been assessed and considered to establish the most appropriate future use of the land. As such, the final landform is conceptual only and will be reviewed and further considered in accordance with the FLUOP.

The Conceptual Final Landuse Options Plan from the FLUOP V1 is shown on the following page.

Figure 1 - Conceptual Final Land Use Options Plan



7 REHABILITATION

7.1 Key Principles of Rehabilitation

The facility has adopted the following three key principles when considering rehabilitation management measures:

- Least possible disturbance;
- Erosion and sediment control; and
- Progressive rehabilitation.

7.1.1 Least Possible Disturbance

- Quarrying activities will be staged in accordance with the EIS and Forward Plan to minimise the extent of the disturbance footprint at any one time;
- All reasonable and feasible measures will be undertaken to minimise the total area exposed for dust generation at any time;
- Extracted and imported raw material will be restricted to the designated stockpile areas;
- As quarry stages are completed, unusable material will be backfilled in the quarry pits in accordance with the FLUOP; and
- The perimeter (disturbance footprint) of each quarry stage will be delineated prior to the commencement of extraction activities in that stage. All contractors responsible for undertaking quarrying campaigns will be informed of the requirement to restrict extraction activities to within the approved extraction area and restrict associated stockpiling activities to designated stockpile areas.

7.1.2 Erosion and Sediment Control

Erosion and Sediment control measures shall be undertaken, progressively where practicable, in accordance with the approved Water Management Plan and key measures are summarised below.

- Stormwater pollution will be prevented through landform stabilisation, stormwater runoff management and erosion control, rather than relying on the treatment of captured stormwater runoff only;
- Groundcover will be established through re-vegetation with appropriate, locally occurring species;
- Erosion and sediment controls will be established and maintained, such as silt fencing, bunding, diversion structures, catch drains and sedimentation basins;
- Clean water runoff will be diverted around the quarry site wherever possible by the installation of clean water divergence structures; and
- Stormwater runoff within the facility will be managed by a stormwater management system that will reduce sediment loads and release water to the downstream system that meets EPL requirements.

7.1.3 Progressive rehabilitation

Progressive rehabilitation of final benches in each quarry pit (cell) will be undertaken by PGH where practicable. This has been found to reduce long-term rehabilitation liability and is usually more cost-effective than large scale rehabilitation following quarry closure. Mine Staging, including rehabilitation is outlined in *Section 7.3.12*.

All measure outlined in this report will be undertaken progressively if practicable.

7.2 Conceptual Rehabilitation Objectives from the EIS

Conceptual objectives of rehabilitation activities from the EIS are presented in *Table 11* below and have been considered on the development of performance and completion criteria (see *Section 8*).

Table 11. ***Conceptual Rehabilitation Objectives and Targets from the EIS***

Feature	Objective	Target
Safety	Significant hazards removed, controlled or contained	At completion of rehabilitation, no reasonably preventable hazards or reported incidents on site for 12 months.
Land Use	Provide for a combination of sustainable open woodland and grass land.	Rehabilitate mine to provide: • A mixture of grassland and woodland. • A suitable water body for possible stock grazing and/or recreation purposes. • Retain access road for future lifestyle and controlled grazing uses
Landform	Provide a geotechnically stable landform.	Geotechnical assessment based on site specific review and, if required, computer modelling determines that the retained slopes are not likely to actively erode or 'slip' to an extent requiring earthworks and profiling.
	Provide a non-polluting landform	Water quality monitoring results show that the landform is non-polluting within the meaning of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).
Biodiversity	Revegetated areas provide a vegetation community with maintenance requirements no greater than adjoining vegetation not disturbed by mining activities.	Rehabilitation monitoring confirms that the established vegetation communities are self-sustaining (refer to 8.3 for detailed criteria).
	Revegetated areas contain species consistent with surrounding vegetation communities.	Rehabilitation monitoring confirms the non-native and non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.
Tenement Relinquishment	Allow for the relinquishment of the mining lease and the return of the security lodged over the Mining Lease within a reasonable time after the end of the mine life.	5 years after final rehabilitation.

7.3 Rehabilitation Management

PGH is committed to implementing a program of progressive rehabilitation of disturbed areas as they become available for rehabilitation.

The PGH rehabilitation program will be monitored and reviewed according to Section 10, and any changes or updates to the program will be facilitated in accordance with Section 11.

The PGH rehabilitation program will focus on rehabilitation of disturbed areas.

Strategies and measures for the rehabilitation of the site are discussed in more detail in the following sub-sections.

7.3.1 Land Clearing

Land clearing activities are to be constrained to approved disturbance areas only and the extent of vegetation clearing is to be clearly identified on construction and mining plans. Extent of clearing should be fenced with highly visible temporary fencing to ensure that clearing does not extend beyond the area necessary.

It is recommended that topsoil and plant material which is to be cleared is salvaged for re-use in rehabilitation works.

PGH will undertake a two-stage approach to clearing:

- Remove non-hollow bearing trees at least 48 hours before hollow-bearing trees are removed.
- Hollow bearing trees are to be knocked to encourage fauna to evacuate the tree immediately prior to felling. Felled trees would be left for a short period of time on the ground to give any fauna trapped in the trees an opportunity to escape.

Fauna microhabitat such as logs should be removed from areas to be cleared and relocated to suitable nearby bushland in the presence of an ecologist.

A 5-metre-wide strip (approximately) of Moderate Condition CPW is to be retained between the noise bund and the extraction pit. This area includes mature trees with a predominantly native grass and shrub understorey.

7.3.2 Dust Control

All measures described in the Air Quality Management Plan will be implemented at all stages on the site, including during progressive rehabilitation. The environmental management measures outlined in the AQMP are reproduced in Table 13 with further management measures in the Sections 7.3.3-5 below:

Table 12. ***Air Quality Impact Management Measures***

ID	Measure / Requirement	Reference	When to implement	Responsibility	Additional Resources Needed
AQ1.	Restrict ground disturbance to the minimum area practically possible, in accordance with the staging plan.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	
AQ2.	Progressively rehabilitate exhausted quarry pits.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	Rehabilitation Management Plan
AQ3.	Stockpiles are to be restricted to the designated raw material	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	

ID	Measure / Requirement	Reference	When to implement	Responsibility	Additional Resources Needed
	stockpile area to the south of the brick making facility.				
AQ4.	Temporary topsoil stockpiles are to be located in previously disturbed areas (devoid of vegetation). The management of topsoil stockpiles is to be in accordance with the management strategies in Section 7.3.3.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	
AQ5.	Unsealed haul roads and manoeuvring areas are to be appropriately watered/dampened to minimise dust.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	
AQ6.	Inform employees and contractors of internal vehicle speed limits.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	Site Induction
AQ7.	Retain a 5 m strip of existing native vegetation along the northern boundary of quarry Cell D.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	
AQ8.	Establish dense vegetation cover on the 4.5 m high noise bunds to be established along the northern boundary of quarry Cell D and to the east of the realigned site access road.	Section 7.5.4 EIS Volume 1	All stages	Plant Manager	
AQ9	All internal paved/sealed roadways shall be maintained in a clean and dust free state to minimise dust from vehicle movement		All stages	Plant Manager	
AQ10	Roadways immediately beyond the site entrance shall be regularly inspected and swept to prevent build-up of material.		Construction	Plant Manager	
AQ11	During adverse weather conditions (e.g. wind speeds greater than 40 km/h), activities which generate dust emissions are to cease temporarily and dampening frequency of haul roads, stockpiles and other disturbed areas are to be increased until weather conditions improve.		All stages	Plant Manager	

7.3.3 Topsoil Stripping and Storage

Soil surveys will be undertaken prior to commencement of quarrying in new Cells to determine the condition of topsoils. The texture, thickness and quality of available topsoil will be described and mapped to inform ongoing rehabilitation activities on the project site.

Where topsoil is stripped for future use in rehabilitation, the duration of topsoil stockpiling should be minimised as far as possible, as periods longer than three months may cause structural degradation and death of seeds and micro-organisms. The following techniques will be used to prevent excessive soil deterioration:

- Weed control should be undertaken on land clearing areas prior clearing to minimise transfer of weeds;

- Topsoil will not be stripped during excessively wet or dry conditions;
- Where practical, stripped material will be placed directly onto reshaped overburden and spread immediately (if mining sequences, equipment scheduling and weather conditions permit) to avoid the requirement for stockpiling;
- As part of the planning process, sufficient area for stockpiling, placement or burial of topsoil will have been identified prior to stripping and these areas will be accessible;
- As part of the planning process, temporary drainage, erosion and sediment control measures will be employed to minimise erosion and pollution of waters if required;
- Where practicable, vegetation will be mulched and used as soil cover on rehabilitation areas;
- A record will be kept of the nature and quantities of salvaged bush rocks, timber etc. to ensure the salvage of these items is maximised;
- Where possible, topsoil stockpiles will be located in areas away from drainage lines. Drainage will be diverted around stockpiles to prevent erosion;
- Sediment controls will be installed downstream from stockpiles to prevent contamination of clean water;
- Topsoil stockpiles will be limited to a maximum height of 2 metres;
- More erodible materials will be placed on flatter areas to minimise the potential for erosion;
- Where necessary, the surface of soil stockpiles shall be contour scarified in order to promote infiltration and minimise erosion until vegetation is established; and
- Topsoil intended to be stockpiled for more than three months will be seeded with cover crops to protect the stockpile from raindrop splash erosion, aerate the soil to reduce anaerobic conditions, enhance organic carbon levels and suppress weeds.
- Dust suppression will be addressed by a water cart as conditions dictate to ensure no fugitive dust emissions from site.

7.3.4 Topsoil Respreading

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.

Where topsoil resources allow, topsoil should be spread to a nominal depth of 100 mm 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.

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.

7.3.5 Seedbed Preparation

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-tined plough or disc harrow.

7.3.6 Access Limitations

The soil erosion hazard on the site will be kept as low as practicable by minimising disturbance and progressively rehabilitating. Limiting access to certain areas of the operation during various stages is one way of reducing the erosion hazard and are outlined in *Table 13*.

Table 13. ***Limitations to Access***

Landuse	Access Limitations	Comments
Extraction	• Extraction will take place within a defined work area and materials will be transported only within the site for stockpiling or rehabilitation. • Entry to land not involved directly in the extraction process will be prohibited and will be managed as natural grassland.	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. • Limit vehicular access to the site to that essential for extraction or rehabilitation work.	
Remaining Lands	Land disturbances are prohibited except for essential management works.	

7.3.7 Soil Stabilisation and Erosion Control

Soil stabilisation is primarily achieved through the progressive rehabilitation of exposed areas. Here, rehabilitation (either permanent, progressive or interim) means achieving a C-factor (Revised Universal Soil Loss Equation) of less than 0.1 (equivalent of 60% groundcover for recently disturbed soils) and the program that ensures it will drop permanently, by reducing the risk of erosion by vegetation, paving, armouring, etc. as soon as practicable after activities cease.

NOTE: 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 life of the mine, they should not exceed those given in *Table 14* within the specified times.

Table 14. ***Maximum acceptable C-factors at nominated times during life of mine***

Lands	Maximum C-Factor	Remarks
Waterways and other areas subjected to concentrated flows, post construction.	0.05 (70% groundcover)	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.
Topsoil/ Subsoil/Overburden Stockpiles stored out of the pit	0.1 (60% groundcover)	Applies after ten working days from completion of formation.
All other lands outside of the extraction area	0.15 (50% groundcover)	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; or
- anionic bitumen emulsion sprayed over hessian cloth (at 0.5 L/m2) in areas of concentrated flow, e.g. diversion banks and waterways; or
- a temporary vegetative cover.

Application of any soil binders employed should follow the manufacturer's instructions.

A suggested listing of suitable plant species is shown in *Table 15*. Before sowing, additional tests should be undertaken to assess the requirements of ameliorants such as lime to help plant growth. Final selection of suitable plant species will be made based on current best practice.

Table 15. ***Plant Species for Temporary Cover***

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

While ever the C-factor is higher than 0.1, maintain the lands in a condition that resists removal by wind. This can be achieved by keeping the soil moist (not wet) by sprinkling with water or 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
- 20 days on slopes less steep than 30 per cent.

Where practicable, 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.

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

7.3.8 Revegetation

The timing for revegetation works to achieve adequate vegetative contact cover prior to the period of maximum erosion hazard (i.e. wettest and windiest months) is critical for reducing erosion during the establishment phase.

Revegetation activities should ideally be completed by early September each year to allow sufficient time for appropriate levels of vegetation to establish before the period of high erosion hazard from October to February. However, opportunistic revegetation may be undertaken outside these ideal periods if areas are ready for rehabilitation.

Revegetation plans will be prepared in advance of an area becoming available for rehabilitation, with reference to the BMP and in consultation with a suitably qualified ecologist, and will take the following into consideration:

- The ecologist will determine the preferred revegetation species and methodologies to be applied;
- Ensure that the Cumberland Plain Woodland vegetation community is enhanced and established.
- Where feasible, areas rehabilitated with native vegetation will be integrated with areas of undisturbed native vegetation, to provide connectivity and wildlife corridors;
- Native vegetation re-established at the site should be suitable for potential subsequent land use and as far as possible be compatible with the surrounding land fabric and land use requirements i.e. locally occurring, native plant species should be used in all revegetation; and
- Consideration should be given when re-establishing native vegetation to accommodating threatened flora and fauna where appropriate.

7.3.9 Cumberland Plain Woodland Species

Species that are consistent with comprise the Cumberland Plain Woodland (CPW) will be utilised in rehabilitation and enhancement of the Biodiversity Offset Area (BOA). The final landuse of the site has not been determined as discussed in *Section 6* however, the final vegetation assemblage in areas outside the BOA is likely to be sympathetic to the CPW. The CPW is characterised by the following assemblage of species as defined by the NSW Scientific Committee.

Table 16. ***Cumberland Plain Woodland Species Assemblage***

Species	
Acacia implexa	Ajuga australis
Aristida ramosa	Aristida vagans
Arthropodium milleflorum	Arthropodium minus
Asperula conferta	Austrodanthonia caespitosa
Austrodanthonia racemosa var. racemosa	Austrodanthonia tenuior
Bossiaea prostrata	Bothriochloa decipiens
Bothriochloa macra	Brunoniella australis
Bursaria spinosa	Carex inversa
Centaurium spicatum	Centella asiatica
Cheilanthes distans	Cheilanthes sieberi subsp. sieberi
Chloris truncata	Chloris ventricosa
Chorizema parviflorum	Chrysocephalum apiculatum
Clematis glycinoides var. glycinoides	Commelina cyanea
Crassula sieberiana	Cymbonotus lawsonianus
Cymbopogon refractus	Cyperus gracilis
Daucus glochidiatus	Daviesia ulicifolia
Desmodium brachypodium	Desmodium varians
Dianella longifolia	Dichanthium sericeum
Dichelachne micrantha	Dichelachne parva
Dichondra repens	Dichopogon fimbriatus
Dichopogon strictus	Digitaria diffusa
Dillwynia sieberi	Dodonaea viscosa subsp. cuneata
Echinopogon caespitosus var. caespitosus	Echinopogon ovatus
Einadia hastata	Einadia nutans
Einadia polygonoides	Einadia trigonos
Elymus scaber var. scaber	Eragrostis leptostachya
Eremophila debilis	Eriochloa pseudoacrotricha
Eucalyptus crebra	Eucalyptus eugenioides
Eucalyptus moluccana	Eucalyptus tereticornis
Euchiton sphaericus	Exocarpus cupressiformis
Fimbristylis dichotoma	Galium migrans
Galium propinquum	Geranium homeanum
Geranium solanderi var. solanderi	Glossogyne tannensis
Glycine clandestina	Glycine microphylla
Glycine tabacina	Goodenia hederacea subsp. hederacea
Hardenbergia violacea	Hypericum gramineum
Hypoxis hygrometrica	Hypoxis pratensis var. pratensis

Species	
Indigofera australis	Juncus usitatus
Lachnagrostis avenacea var. avenacea	Lomandra filiformis subsp. filiformis
Lomandra multiflora subsp. multiflora	Mentha diemenica
Microlaena stipoides var. stipoides	Opercularia diphylla
Oxalis perennans	Panicum effusum
Paspalidium distans	Phyllanthus virgatus
Plantago debilis>	Plantago gaudichaudii
Plectranthus parviflorus	Poa labillardieri var. labillardieri;
Pratia purpurascens	Pultenaea microphylla
Rubus parvifolius	Scleria mackaviensis
Scutellaria humilis	Senecio diaschides
Senecio hispidulus var. hispidulus	Sida corrugata
Solanum cinereum	Solanum prinophyllum
Sorghum leiocladum	Sporobolus creber
Sporobolus elongatus	Stackhousia viminea
Themeda australis	Tricoryne elatior
Vernonia cinerea var. cinerea	Veronica plebeia
Wahlenbergia gracilis	Wahlenbergia stricta subsp. stricta
Wurmbea dioica subsp. dioica	Zornia dyctiocarpa var. dyctiocarpa
Other tree species occurring less frequently in this community include:	
Angophora bakeri	Angophora floribunda
Angophora subvelutina	Corymbia maculata
Eucalyptus amplifolia	Eucalyptus baueriana
Eucalyptus bosistoana	Eucalyptus fibrosa
Eucalyptus globoidea	Eucalyptus longifolia
Eucalyptus paniculata	Eucalyptus punctata
Syncarpia glomulifera	

7.3.10 Weed Control

Weed control will be in accordance with mitigation strategies documented in the BMP and Weed Management Plan. Weed management practices on disturbed sites generally involve the following:

- Management of weeds in and adjacent to cleared areas will occur in accordance with the BMP and Weed Management Plan. These will include details relating to the eradication of weeds, disposal of green waste, and vehicle/plant weed wash down protocols if required;
- Equipment used for treating weed infestation will be cleaned prior to moving to a new area within the project site to minimise the likelihood of transferring any plant material and weed seeds in soil;

- Soil stripped and stockpiled from areas containing known weed infestations is to be stored separately and is not to be moved to areas free of weeds;
- Use of VENM only for any materials brought onto the site for rehabilitation purposes;
- Any vegetation removed from the site will be disposed of at an appropriately licensed waste facility where it cannot be reused locally; and
- The density of weeds on the rehabilitated site should be no greater than the surrounding area.

7.3.11 Construction Phase Rehabilitation

These works include construction involved with the brickworks facility, and road or access tracks to be formed, installation of noise bunds or similar items. During the construction phases of the project, the following rehabilitation strategies will be implemented:

- The construction disturbance footprint will be restricted to as small an area as possible;
- All disturbed areas not required for ongoing operational use will be rehabilitated in as timely a manner as possible;
- Areas to be rehabilitated, including road and earthworks batters, will be topsoiled and seeded with a cover crop and grass species;
- Sediment and erosion controls will be implemented in disturbed areas in accordance with the Water Management Plan until rehabilitation is complete; and
- Rehabilitated areas will be regularly watered and monitored during construction and remediation works will be undertaken as required.
- Noise bunds should be covered with a 100-150 mm deep layer of topsoil from previously cleared area. This topsoil may then be covered with a layer of coarsely mulched native vegetation. Additional planting of fast-growing local native shrubs such as Acacia spp. and Bursaria spinosa may assist in slope stabilisation. The bund should be monitored during revegetation to ensure that Olea europaea subsp. cuspidata does not establish.

7.3.12 Mine Rehabilitation Staging

Extraction of raw material from the quarry will generally be undertaken in accordance with the EIS and Forward Plan. Overburden, inter-burden and all unusable material from each subsequent stage will be placed in the preceding void when finished faces are available, facilitating sustainable re-use of unusable materials. This minimises the disturbance footprint as additional undisturbed land is generally not required for the stockpiling of unusable material and assists with progressive rehabilitation consistent with the FLUOP. Where finished faces are not available, overburden material may be stockpiled and temporarily revegetated to await final emplacement in rehabilitation areas.

PGH are proposing to use a benched quarry design to create a stable landform. Benches will be topsoiled and revegetated with the advice of an ecologist using a mixture of locally occurring native trees and shrubs. A bund will be created on the outer edge of the quarry pit to act as a safety barrier and to divert clean water where possible and ensure that the quarry voids are internally draining. The width and height of the benches will be determined closer to the time of rehabilitation in consultation with an appropriately qualified geotechnical engineer.

It should also be noted that concurrent mining and rehabilitation of the Cells is likely thus minor changes may be made due to practicality and safety issues and do not affect the overall rehabilitation goals.

7.3.13 Restoration of Surface Infrastructure Areas

Surface infrastructure areas (including the raw material stockpile area) will be the final areas to be rehabilitated at the end of quarry life, with the objective being to reduce potential dust sources but have flexibility for the final landform and use. Restoration of these areas will commence with the decommissioning and removal of infrastructure and hard-stand. It is assumed that these areas would be at or near ground level for the final landform. Rehabilitation will involve ripping the compacted surfaces, placement and spreading of topsoil and establishing suitable groundcover with the advice of an ecologist.

7.4 Rehabilitation Domain Selection

For the purposes of describing the rehabilitation progression, the site has been divided into Primary Domains (Operational) as listed in *Table 17* and illustrated on Figure 4 and Secondary Domains (Post Mining Land Use) as listed in *Table 18*.

Table 17. ***Operational Domain Codes***

Code	Primary Domains (Operational)
1	Infrastructure Area
3	Water Management Area
4	Overburden Emplacement Area
6	Void (open cut void)
9	Conservation and Biodiversity Offset Area

Table 18. ***Post Mining Land Use Domain Codes***

Code	Secondary Domains (Post Mining)
A	Infrastructure
B	Water Management Area
C	Rehabilitation Area- Grassland
E	Rehabilitation Area- Woodland
H	Relinquished Lands
J	Conservation and Biodiversity Offset Area

8 PERFORMANCE AND COMPLETION CRITERIA

The rehabilitation of a mine site is a dynamic process with various phases of rehabilitation being achieved at different times during the mine life. The following illustrates the progression of a Domain through the Rehabilitation Phases and the consideration of how monitoring of completion criteria correlates with short, medium- and long-term implementation measures to ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations of the COA.

8.1 Rehabilitation Phases and Implementation Measure Timing

Rehabilitation Phases	Implementation Measure Timing/ Completion Criteria
Active Mining Area ↓ Decommissioning ↓ Landform Establishment ↓ Growth Medium Development ↓ Ecosystem and Land Use Establishment ↓ Ecosystem and Land Use Sustainability ↓ Relinquished Lands	Short Term ↓ Medium Term ↓ Long Term

Note, the progression of the BOA (Domain J) through the rehabilitation phases is described in the BMP and the implementation measures are reproduced below. (as required in Condition 26, Schedule 3)

8.2 Biodiversity Offset Area and Remnant Vegetation Mitigation Measures

PGH will implement the mitigation measures described below

8.2.1 Fencing

- Short-term (within 1 year of BOA being established): Review the existing fencing and consider replacing or upgrading fencing to ensure the BOA is secure, excludes grazing animals and restricts unauthorised human access. Remove any redundant internal fencing within the BOA to reduce the risk of injury to native fauna.
- Medium-term (within 3 years of BOA being established): All fencing to be installed and maintained and will be of a rural character i.e. post and wire, and located around the BOA.
- Long-term (after 3 years): Fence line maintained and fit for purpose.

8.2.2 Weed and pest control

- Short-term (within 6 months of establishment of BOA): Undertake a baseline survey of weeds and pests to establish a baseline to monitor future improvement. Appoint a bush

regeneration specialist to undertake targeted weed and pest control measures in the BOA.

- Medium and Long-term (12 months post BOA establishment and ongoing): Management to be undertaken in accordance with the Weed Management Plan as approved by DPIE and available on request.

8.2.3 Fire management

No prescribed burning activities are planned for the BOA.

PGH bushfire policy does not permit staff to engage in firefighting activities or bushfire management. All firefighting is undertaken by the RFS. Hazard reduction is based on RFS advice and not undertaken by PGH.

PGH maintains fencing around the site to discourage trespassing and the risk of deliberately lit fires. Procedures and training exist for PGH personnel and contractors, within site Emergency Response Procedures for minimising fire risk and dealing with fires.

PGH will ensure that the facility is suitably equipped and access available to fight fires on site.

Site management will liaise with RFS to minimise fire risk as advised and is responsible for managing fire risk within policy guidelines.

PGH commits to work with RFS on any reasonable request to improve property risk profile. The site has suitable access and ongoing dialogue with RFS will ensure that the facility is accessible for fighting fires. In addition, dams on site will be made available for RFS as required in the event of fire.

In the event of a fire, on site or in the surrounding area, PGH will work as much as practical in co-operation with RFS, emergency services and National Parks and Wildlife Service. The presence of a bushfire in the area will activate the PIRMP.

8.2.4 Management of human access and disturbance

- Short-term (within 1 year of BOA being established):: Restrict access (e.g. locked gates) to prevent unauthorised access to the BOA and reduce the risk of introducing or spreading weed and pest species. Install signage in prominent locations to advise unauthorised personnel not to enter.

- Medium and Long-term (12 months post BOA establishment and ongoing): Maintain access restrictions and signage.

8.2.5 Retention or addition of habitat features

- Short-term (within 6 months of establishment of BOA): Retain all existing native vegetation within the BOA. No habitat features, such as fallen timber is to be removed from the BOA.

- Medium and Long-term (12 months post mine expansion) : Following clearing for mine expansion, habitat features e.g. logs and rocks will be transported and strategically placed within the BOA or in other rehabilitation areas, in consultation with a suitably qualified ecologist. Nest boxes are installed as appropriate.

8.2.6 Erosion control

Erosion control is to be undertaken as the need is identified during monthly environmental inspections, with a focus on areas of lower vegetation coverage, which present a higher erosion risk e.g. areas recently cleared of weeds and access tracks (as detailed in the Water Management

Plan and summarised here). Erosion controls measures to be undertaken will include the following as relevant to type of erosion and land type:

- Extraction will occur within a pre-defined area to limit the area of disturbance;
- Materials will be transported only within the site for processing;
- Entry to land not directly involved in the extraction or rehabilitation process will be prohibited;
- Land disturbance will not occur more than 2 months prior to an active extraction campaign;
- Roads and tracks are limited to a width that are the minimum necessary to allow safe operation of heavy equipment;
- Sediment fencing, jute mesh or geofabric, temporary vegetative cover (oats or Japanese millet) and/or barrier mesh will be installed in areas identified in the monthly environmental inspections.

8.2.7 Salvage of Soil and Vegetative Resources

Within the approved disturbance area, all salvageable vegetation and soil resources will be retained for reuse on areas to be prepared for rehabilitation. Areas to be disturbed will be marked ahead of clearing to ensure that activities do not occur beyond the area necessary. Locations for reusable vegetation and soils will be identified prior to disturbance. Soils stripped from areas of known weed infestations will be stored separately and not moved to areas free of weeds.

Fauna microhabitat, such as previously fallen trees or logs, or suitable bush rock, if present, will be relocated to areas previously marked for rehabilitation or other suitable bushland as identified by a suitably qualified person.

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

Consideration of the erosion potential of the soils will be made in the storage of the soils and the re-use of the soils in rehabilitation. If overburden or topsoil is unable to be re-used immediately on final faces, stockpiles will be created and stabilised with sterile vegetative cover as soon as practicable, and not more than 12 months after relocation.

Once final rehabilitation faces become available, they will be ripped using a dozer and the overburden material will be keyed into the surface. This will increase water retention and reduce erosion and slumping of the emplaced overburden. The organic topsoil layer will then be placed over the overburden in a similar manner up to a minimum depth of 5cm. Stored vegetative resources will then be placed over the topsoil. Rehabilitation procedures are detailed in the Section 7 (in detail 7.3) above.

8.2.8 Minimising Impacts of Clearing on Fauna

Pre-clearance surveys will be undertaken by a suitably qualified person at least 1 week prior to clearing activities are scheduled to commence. These will identify and mark any potential habitat including ground logs or hollow-bearing trees. Clearing will not be undertaken in rain events, and hollow bearing trees will only be cleared between March and May. A suitably qualified person will be present during the felling of hollow bearing trees. These will be knocked

prior to felling to encourage mobile fauna to evacuate. Felled trees will be inspected by a suitably qualified person for the presence of trapped fauna.

There are no tailings on the site as the mine is extracting clay/shale, not metalliferous or coal minerals, therefore fauna will not be impacted by tailings.

8.3 Performance and Completion Criteria

The formal monitoring program that will be used to assess the rehabilitation performance against completion criteria and trigger a TARP is detailed in the table below. Where the following completion criteria are not achieved, as indicated by the monitoring methodology and frequency described below, the action response plan described in Section 9 will be triggered and implemented by a suitably qualified person. In addition to monitoring and inspection measures, review and continuous improvement measures would be used to manage rehabilitation and remnant vegetation and habitat (as outlined in Section 10&11). This is explained further in the text of section 8 and table 20 below.

Table 19. ***Performance and Completion Criteria***

Decommissioning Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain 1- Infrastructure					
All infrastructure and services not suitable for the final landuse will be removed.	Services not required for final landuse are disconnected.	Long term: Relevant services disconnected by qualified contractors	Report from qualified contractors	Upon decommissioning completion	EIS, Rehabilitation Management Plan
	Infrastructure not required for final land use is removed	Long term: Relevant infrastructure removed.	Relinquishment inspection and report	Upon decommissioning completion	EIS, Rehabilitation Management Plan
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.	Short term: Unsealed roads are sprayed with water to reduce dust. Medium and long term: Roads removed unless specified to be retained	Relinquishment inspection and report	Upon decommissioning completion	EIS, Rehabilitation Management Plan
	Roads required for final landuse are reduced in width (if required)	Short term: Unsealed roads are sprayed with water to reduce dust. Medium and long term: Roads removed unless specified to be retained	Relinquishment inspection and report	Upon decommissioning completion	EIS, Rehabilitation Management Plan
	Hardstand areas reduced to a size required for the final landuse	Long term: Hardstand areas reduced in size to that suitable for final landuse.	Relinquishment inspection and report	Upon decommissioning completion	EIS, Rehabilitation Management Plan

Decommissioning Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Sediment runoff to be contained	Sediment retained in water management structures	Short term: Sediment Dams will be designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Medium to Long term: All drains will be designed for the 1 in 10-year design storm event.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan
Domain free from hazardous materials	No hazardous material remains	Short term: All hazardous materials handled in accordance with legislative requirements. Long term: All hazardous material removed	Contamination report prepared by qualified person.	Following decommissioning with follow up validation testing as required.	EIS, Rehabilitation Management Plan
All remaining stockpiles will be removed and/or reused in the establishment of the final landform.	No remaining stockpiles	Short term: Unused stockpiles will be seeded with cover crop such as oats or millet. Long term: All remaining stockpiles are removed.	Relinquishment inspection and report	Upon decommissioning completion	EIS, Rehabilitation Management Plan
Domain 3- Water Management					
Sediment dams to be retained in the final landform are converted to clean water dams.	No sediment laden water enters the remaining clean water dam system.	Short term: Dams have been desilted to increase capacity and minimise sediment entrainment in discharged water. Medium to long term: The catchment areas for the remaining sediment dams are sufficiently rehabilitated so as to only contain clean water runoff.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan

Decommissioning Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
	Sediment dam discharge due to overtopping does not entrain sediment.	Short term: Sediment Dams are designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Long term: All drains and spillways will be designed for the 1 in 10-year design storm event and do not re-entrain sediment.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan
Water discharged from the site is consistent with the baseline ecological, hydrological and geomorphic conditions of the surrounding environment	Water quality monitoring results show that the landform is non-polluting.	Short term: Water Quality meets the objective of Section 120 of the Protection of the Environment Operations Act 1997. In particular Monitoring Point 4 and 5 will record pH between 6.5 and 8.5, turbidity < 150 NTU, Oil & Grease < 10mg/L and total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater). Point 4 conductivity will also be <700µS/cm.	Downstream water to be monitored for pH, EC, NTU, Oil & Grease and TSS prior to discharge. NATA laboratory	Prior to discharge	EPL 1808 EIS, Rehabilitation Management Plan, Water Management Plan
Domain 4- Overburden Emplacement Area					
All overburden will be removed and reused in the establishment of the final landform.	No remaining overburden stockpiles	Long term: All overburden stockpiles are removed and or incorporated into the final landform.	Relinquishment inspection and report	Upon decommissioning completion	EIS
Sediment runoff to be contained.	Sediment retained in water management structures	Short term: Sediment Dams are designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan

Decommissioning Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
		Long term: All drains and spillways will be designed for the 1 in 10-year design storm event.			
Domain 6- Open Cut Void					
No activities within this domain are required during this phase					

Landform Establishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain 1- Infrastructure					
Domain landform is safe, stable and non-polluting, fit for the purpose of the intended final land use	Final landform contours similar to pre-disturbance and surrounding contours.	Long term: Slopes are no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 25m for a 3H:1V batter. Slope lengths shall not exceed 35m for a 4H:1V batter. Slope lengths shall not exceed 80m for batters <4H:1V.	Survey on completion by registered surveyor. Geotechnical assessment report.	Upon completion of landform establishment phase.	EIS, Rehabilitation Management Plan, Water Management Plan
	Suitable sediment and erosion controls in place	Short term: Sediment Dams are designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Long term: All drains will be designed for the 1 in 10-year design storm event.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan
Domain 3- Water Management					

Landform Establishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Water management structures to be retained. No landform establishment activities applicable to this domain.					
Domain 4- Overburden Emplacement Area					
Ensure overburden emplacement areas has been battered/shaped to the final landform.	Final landform contours similar to pre-disturbance and surrounding contours.	Long term: Slopes are no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 25m for a 3H:1V batter. Slope lengths shall not exceed 35m for a 4H:1V batter. Slope lengths shall not exceed 80m for batters <4H:1V.	Survey on completion by registered surveyor. Geotechnical assessment report.	Upon completion of landform establishment phase.	EIS, Rehabilitation Management Plan, Water Management Plan
Sediment runoff to be contained.	Sediment retained in water management structures	Short term: Sediment Dams are designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Long term: All drains will be designed for the 1 in 10-year design storm event.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan
Domain 6- Open Cut Void					
Domain landform is safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s)	Final landform contours similar to pre-disturbance and surrounding contours.	Long term: Slopes are no greater than 3 horizontal to 1 vertical. Slope lengths shall not exceed 25m for a 3H:1V batter. Slope lengths shall not exceed 35m for a 4H:1V batter. Slope lengths shall not exceed 80m for batters <4H:1V.	Survey on completion by registered surveyor. Geotechnical assessment report.	Upon completion of landform establishment phase.	EIS, Rehabilitation Management Plan, Water Management Plan

Landform Establishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain landform is effectively drained and protected from erosion	Landform drains towards water management domain	Short term: Sediment Dams are designed to Best Practice according to the 'Blue Book' Criteria for a 5 day 90th percentile storm event. Long term: All drains will be designed for the 1 in 10-year design storm event.	Inspection for capacity by mine manager.	On construction completion and 6-monthly until relinquishment.	EIS, Rehabilitation Management Plan, Water Management Plan
Access tracks to be retained	Tracks suitable for private access or pedestrian usage	Short term: Slopes of major tracks are <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. Stabilisation methods to be recorded and reported.	Upon completion of landform establishment phase.	EIS, Rehabilitation Management Plan, Water Management Plan
Materials (including topsoils of the disturbed areas) are recovered, appropriately managed and used efficiently as resource in the rehabilitation	Available topsoils are stockpiled appropriately and reused on the site	Short, medium and long term: Available topsoil is spread over final landform.	Suitably qualified Site contractor to record growth medium management procedures in Annual Reports. Records to include amounts stripped, locations and depths re-spread	Annually	EIS, Rehabilitation Management Plan

Growth Medium Development Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain A- Infrastructure					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain B- Water Management					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain C and D- Rehabilitation Area- Grassland/Woodland					
Establish soil/growing medium suitable for establishment of grassland or woodland vegetation community	Short to medium term: Compacted surfaces deep ripped along contour	Photographs of ripped areas	Progress to reported by suitably qualified persons in Annual Review or relinquishment report	Following Deep ripping	EIS, Rehabilitation Management Plan
	Short to medium term: Minimum 50mm of topsoil spread unless rehabilitation trials indicate that an alternative thickness is acceptable.	Small 'test pits' dug and photographed to show final soil depth, report indicates required thicknesses achieved.	Photographs of test pits reported in Annual Review or relinquishment report	Following spreading of soil	EIS, Rehabilitation Management Plan
	Short to long term: Soil quality comparable to that in undisturbed areas	Analysis of soil samples record similar parameter for pH, EC, Dispersion percentage and organic content.	Soil analysis report included in CCR and RR or relinquishment report.	Following spreading of soil and annually for 5 years	EIS, Rehabilitation Management Plan

Ecosystem and Land Use Establishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain A- Infrastructure					
No revegetation is to occur in this domain, therefore no activities are required during this phase					
Domain B- Water Management					
Wetlands water management structure to remain therefore no activities required during this phase					
Domain C and D- Rehabilitation Area- Grassland/Woodland					
Re-establishment of a grassland/woodland community with a similar composition to the pre-disturbance community.	Revegetation species mix applied as suggested in Rehabilitation Management Plan	Medium term: A target coverage factor of 70% will be subject to further refinement.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS, Rehabilitation Management Plan
	The rehabilitated area does not constitute an erosion hazard.	Long term: Total projected foliage cover is greater than or equal to 70%.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS, Rehabilitation Management Plan, Water Management Plan
	Weeds not preventing revegetation from establishing	Long term: 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.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS, Rehabilitation Management Plan

Ecosystem and Land Use Establishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
	Grazing by native and domestic fauna not adversely impacting on ecosystem development.	Short term: Rural fences and gates installed around disturbed area to allow controlled grazing of domestic stock. Short term: Feral animal controls will be implemented if required. Long term: Monitoring reports indicate the level of grazing is appropriate.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved.	EIS, Rehabilitation Management Plan

Ecosystem and Land Use Sustainability Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
Domain A- Infrastructure					
No activities are required during this phase.					
Domain B- Water Management					
No activities are required during this phase.					
Domain C and D- Rehabilitation Area- Grassland/Woodland					
Re-establishment of a grassland/woodland community with a similar composition to the pre-disturbance community.	Long term: Vegetation self-sustaining.	Monitoring confirms: • Evidence of new growth of endemic species. • Evidence of successive generations of endemic species • No further active weed control required (beyond that considered necessary at analogue sites).	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved.	EIS, Rehabilitation Management Plan

Relinquishment Phase					
Rehabilitation Objective	**Performance Indicator**	**Completion Criteria**	**Monitoring Methodology and Responsibility**	**Monitoring Frequency**	**Justification/Source**
All Domains					
Relinquishment	Demonstrated compliance with all completion criteria	Satisfaction of rehabilitation completion by the Minister.	Relinquishment Report to be prepared by suitably qualified person describing compliance with all criteria	Prior to relinquishment	-

9 RISKS AND TRIGGER ACTION RESPONSE PLAN

Potential risks to the successful implementation of the Rehabilitation Strategy are identified in the table below. Where performance criteria from *Table 19* are not met, actions to be implemented to mitigate the risk are outlined in the table below. Further to this, Section 10&11 describe management measures and protocols for handling deviations to the plan.

Table 20. ***Trigger Action Responses Plan***

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Final landform does not conform to approved final landform.	Stockpiles not removed/used in the establishment of the final landform.	Inventory indicates stockpiles are not removed/reused. Slopes required by the final landform are not obtained due to material deficits.	Stockpile material is to be removed from the site or incorporated into the rehabilitation of the final landform.
	Overburden not used in the establishment of the final landform.	Inventory indicates stockpiles are not removed/reused. Slopes required by the final landform are not obtained due to material deficits.	Overburden material is to be removed from the site or incorporated into the rehabilitation of the final landform.
	Slopes too steep to be rehabilitated as planned.	Field slope measurements taken during land forming activities indicate slope do not meet the completion criteria.	Slopes to be reduced until all slopes meet approved final landform unless final landform considered stable by geotechnical review and vegetation establishment success meets completion criteria- subject to approval by DPIE.
Domain landform is not safe, stable and fit for the purpose of the intended final land use.	Geotechnical instability of the final open cut void.	Monitoring or final closure geotechnical assessment identities instability/unacceptable movement (actual or potential) in final face of open cut void.	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability Recommendation to be implemented in consultation with the DPIE.

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Domain landform is not properly protected from erosion.	Vegetation is unable to be established due to erosion.	Projected total foliage cover is less than 70%	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method. If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.
	Final landform is a source of pollution.	Surface water monitoring records indicate that water quality levels are outside the completion criteria. Visual inspection indicates that the final landform is the source of unacceptable levels of sedimentation or is actively eroding.	Mine personnel identify site of erosion and remediate through additional earthworks, soil works including addition of ameliorants, supplementary revegetation or other stabilisation method. If the above is unsuccessful, a suitably qualified professional in sediment and erosion control will be engaged to prepare and assessment report and recommendations to be implemented.

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Incorrect species established on final landform	Vegetation community does not become established on final landform affecting final land use and ecosystem.	Monitoring indicates that endemic species represent less than 80% of the total species number and projected foliage cover after 2 years from planting and less than 90% after 5 years from planting.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for divergence of failure of endemic species establishment and recommend actions to ensure that the final vegetation community corresponds as closely as possible to the approved community. Additional actions may include: • Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community; • Use of Tubestock, seed and mulch mix or other application techniques; • Soil amelioration works such as addition of fertiliser; and • Additional weed control activities (mechanical and/or chemical).

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Failure to establish soil/growing medium suitable for establishment of grassland or woodland vegetation community.	Insufficient soil available for rehabilitation.	Soil inventory prior to rehabilitation (particularly stockpile volumes) indicates a deficit of soil material.	• Suitable sources of additional soil material to be identified, including the need for importation of soils from off-site. • Investigation into measures that may be implemented to ameliorate other materials to make them suitable for use as a growth medium.
	Inadequate soil thickness applied to final landform	Test pits following placement of soil material identifies placed soil thickness not consistent with final approved soil thickness	Additional soil material spread on the final landform.
	Soil not capable of sustaining vegetation community	Topsoil parameters not within the identified criteria (see 8.3).	Suitably qualified agronomist or soil scientist engaged to prepare a report including a range of recommendations to ensure that the identified criteria are achieved/soil is suitable for sustaining the vegetation community.

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Vegetation community is not self-sustaining	Final landform requires significantly more management than analogue sites.	Monitoring indicates that: • Established vegetation is not replacing itself through successive generations; or • Weed growth is increasing above a projected foliage cover of 10%	Suitably qualified ecologist or revegetation expert engaged to assess reasons for additional management requirements and recommend actions to align management required with that of the analogue sites. Additional actions (to be undertaken in targeted areas) may include: • Sowing of additional seed mix for targeted species or additional species endemic to the pre-disturbance community; • Use of Tubestock, seed and mulch mix or other application techniques; • Soil amelioration works such as addition of fertiliser; and • Additional weed control activities (mechanical and/or chemical) and/or pest management as required (especially of rabbits).
Vegetation community not receiving adequate rainfall to establish/self-sustain	Failure of vegetation community	Rainfall below the lowest 10% of records for greater than 3 months	Water cart to be utilised over revegetated areas.
Public access to open cut void possible	Damage to rehabilitation areas	Monitoring indicates evidence of trespassing and/or damage to rehabilitation areas.	Appropriate fencing, signage and bunding is to be repaired and maintained.

10 COMPLIANCE MANAGEMENT

10.1 Inspections and Monitoring

The Plant Manager (or delegate) will undertake at least Quarterly inspections of the site in accordance with Section 6 of the EMS to ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in the consent. During these inspections, the facility's condition, and environmental controls, will be observed and recorded. More specifically, observations and inspections of the implementation measures and objectives of the RMP cited in *Section 8* to be undertaken. Records will include details of any maintenance of controls required and an implementation priority. Site assessments will continue until such time as the completion criteria in *Section 8* have been achieved.

The monitoring will be undertaken by a suitably qualified person. This will be via consultation with qualified ecologists/bush regenerators where appropriate, but not exclusively.

The monitoring requirements of the CoA are listed in section 5.4 of the EMS and addressed in the relevant management plans. Any exceedances of environmental criteria will be immediately reported to the Secretary in accordance with section 12.6 of this plan and section 8.1 EMS.

All environmental monitoring equipment shall be maintained and calibrated according to the manufacturer's specifications and appropriate records kept.

A summary of all monitoring results will be available on the website as available, tabled at CCC meetings, and provided in the Annual Review.

10.2 Training

Employees and contractors working on-site will undergo site induction training, which will cover rehabilitation management, including:

- Location of the BOA;
- Access restrictions and disturbance limitations;
- Internal speed limits;
- Biodiversity management measures (see BMP);
- Emergency and spill response procedures; and
- Aspects of this plan and legislation relevant to the task.

Further details regarding competence, training and environmental awareness are outlined in Section 7 of the EMS.

10.3 Auditing and Reporting

Audits (both internal and external) and reporting will be undertaken to assess the effectiveness of rehabilitation management measures, performance criteria, compliance with CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 6.3 of the EMS. This includes internal and external audits. External audits will be in accordance with the consented conditions (every 3 years with reporting to DPIE)

Independent external auditing will be undertaken by an independent environment auditor in accordance with *ISO 19011:2003 - Guidelines for Quality and / or Environmental Management Systems Auditing,* as required by CoA Schedule 5, Condition 9. External auditing will be undertaken every three years, unless the Secretary directs otherwise, with the first audit being held within a year of commencing development under the SSD consent.

The audit will include consultation with the relevant agencies and will assess if all conditions of the consent are being met. It will also review adequacy of all management plans and form part of the program of improvement on the site.

Within 12 weeks of commencing the external audit, unless the Secretary agrees otherwise, PGH will submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report.

If PGH intends to defer the implementation of a recommendation, reasons will be documented.

Within 7 days of commencing the audit, PGH will notify the Department in writing of the commencement of the audit.

10.4 Annual Review

An Annual Review of the Environmental Performance of the Site will be undertaken and submitted to the Department for review to the satisfaction of the Secretary. In addition, the mine lease conditions require an Annual Rehabilitation Review be undertaken and submitted to DPIE for approval.

By the end of September each year, management reviews are undertaken as part of the continual improvement process required by CoA Schedule 5, Condition 4.

The Annual Review will involve the executive management team. This review will be held every 12 months, will cover the financial year period, and will include a review of:

- The facility's activities (including rehabilitation) for the past year and consideration of the developments activities (including rehabilitation) planned for the next year;
- Descriptions of environmental management and mitigation measures, and their effectiveness;
- Consideration of monitoring, inspection and audit results;
- Comparison of results against statutory requirements, limits, performance measures, previous monitoring and relevant predictions;
- A summary of complaints and feedback, and the resulting actions undertaken;
- Identification of any non-compliances during the report period, and the resulting actions undertaken;
- Identify any trends in the monitoring data over the life of the development;
- Identify any discrepancies between the predicted and actual impacts of the

development, and analyse the potential cause of any significant discrepancies;
- Describe what measures will be implemented over the current financial year to improve the environmental performance of the development;
- Annual quarry production data using a standard DRE form;
- Organisation changes; and
- Effectiveness of training and inductions.

The Annual Review will be submitted to the DPIE (in accordance with CoA Schedule 5, Condition 4), the DRE (in accordance with Condition 3 of ML1731), the Community Consultation Committee, and any other stakeholder that requests a copy.

10.5 Contingency Plans

Should an exceedance of any consent condition occur, immediate actions will be put in to place to mitigate or prevent any material harm to the environment.

The key measure of concern here for Rehabilitation is risk to key on-site Biodiversity. Other short, medium and long term measures are outlined in Section 8. Contingency plans (TARP) for certain scenarios are outlined in Section 9.

Should exceedances or risks to biodiversity be discovered, they will be rectified immediately and corrective actions put in place to ensure that the risk of future transgressions are minimized.

Any other impacts on environmental measures will also trigger contingency plans to minimise current impacts and prevent future occurrence.

10.6 Reporting of Non Compliance and Incidents

Non Conformances and incidents can be identified via monitoring, inspection, audit or complaints.

PGH will report and manage all incidents and non compliances in accordance with Section 8 of the EMS.

Depending on the nature of the incident or non compliance, appropriate reporting will be undertaken.

All breaches of consent conditions will be reported to DPIE immediately and a detailed report submitted within 7 days Schedule 5, Condition 7.

For non compliances / incidents relating to council, EPA or other authority reporting will be undertaken as required.

Where non compliances relate to a receiver or neighbour, these persons will be advised and informed in corrective actions to be undertaken,

Incidents and non compliances will be presented in the CCC meeting.

The site manager in conjunction with the National Environmental manager, is responsible for managing and reporting incidents.

10.7 Complaints

Complaints will be managed as per Section 8.2 of the Environmental Management Strategy.

A 24hr phone line is available and any complaints received by the site will be displayed on the external website.

Complaints will be logged and reported on the PGH external website, to the CCC meetings and in the Annual Review. CCC meeting minutes will be available on the website.

10.8 Adaptive Management

Extensive risk assessment and management have been undertaken. In addition to the management of incidents, complaints, exceedances or non compliances outlined above, PGH will at the earliest opportunity take all and reasonable and feasible measures to ensure that the exceedance ceases and does not recur.

Further to the above when remediation is required, PGH will, where relevant, submit a report to the DPIE outlining reasonable and feasible options for rectifying the deviation.

All directions from DPIE regarding reasonable and feasible remediation measures will be implemented.

10.9 Communication

As per the EMS section 8, and specifically Section 8.5, any information, documents, monitoring, or reports pertaining to this SSD and environmental performance will be published on the PGH external website. It will be updated as changes occur or as new reports/data is available.

Included on the external website will be:
current statutory approvals for the development; approved strategies, plans and programs required under the conditions of this consent;

- a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
- a complaints register, which is to be updated monthly or when complaints are received or updated;
- minutes of CCC meetings;
- the annual reviews of the development (for the last 5 years);
- any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
- any other matter required by the Secretary;

It is the site manager, with the National Environmental manager, that is responsible for keeping this site up to date to the satisfaction of the DPIE. This will be in place within 6 months of commencement.

11 REVIEW AND IMPROVEMENT

11.1 Continuous Improvement

Continuous improvement of this RMP will be achieved in accordance with Section 10 of the EMS, through the ongoing evaluation of environmental management performance against environmental policies, objectives and targets. As outlined in the EMS, the site manager, in conjunction with national WHSE resources, are responsible for implementing the plan, monitoring progress, managing the continuous improvement process and the revision of management plans.The continuous improvement process is designed to:

- identify areas of opportunity for improvement of environmental management and performance;
- determine the cause or causes of non-conformances and deficiencies;
- develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- verify the effectiveness of the corrective and preventative actions;
- document any changes in procedures resulting from process improvement; and
- make comparisons with objectives and targets.
- Update the RMP in line with outcomes from above.

11.2 RMP Update and Amendment

The processes described in Sections 10 and 11 of the EMS may result in the need to update or revise this Plan. The approval of updates or revisions to the RMP will need to be considered in accordance with Section 11.2 of the EMS.

Notwithstanding the above, the rehabilitation strategy will be reviewed every five years as stipulated in Section 5.3 of the EIS.

All strategies, plans and programs will be reviewed within 3 months of an:

(a) Annual Review;

(b) Incident report;

(c) Audit report; and

(d) Any modifications to the consent, licences or permits.

Where any review leads to revisions in any such document, then within 4 weeks of the review the revised document will be submitted for the approval of the Secretary, if required under clause 11.2 of the EMS.

Through this process of review, the assessment of changing performance in audits, regular site WHSE meetings, annual budgeting / planning cycles a program will be in place to maintain and improve environmental performance over time. It will drive a periodic review of plans.

Suitably qualified persons will be involved in the review process. Specialised resources will be consulted as required to ensure the plan is delivering against environmental measures.

12 REFERENCES

Ref. 1. Ecological Australia (2013) – *Local Biodiversity Strategy Camden Local Government Area*

Ref. 2. Hyder Consulting - Bringelly Brickworks and Quarry Expansion ENVIRONMENTAL IMPACT STATEMENT Volumes 1 & 2 -5 September 2013.

Ref. 3. NSW Department of Environmental and Conservation (2005)- *Recovering Bushland on the Cumberland Plain*

Ref. 4. NSW LLS Greater Sydney- Greater Sydney Regional Strategic Weed Management Plan 2017- 2022- Revised September 2019.

Ref. 5. NSW OEH (2014) *NSW Biodiversity Offsets Policy for Major Projects*

Ref. 6. NSW OEH (2014) *NSW Biodiversity Offsets Policy for Major Projects- Fact Sheet: Managing offset sites- information for landowners*

Ref. 7. NSW Minister for Climate Change, Environment and Water (2006) *Sydney Region Growth Centres Order for Biodiversity Conservation*

Ref. 8. PGH Bricks and Pavers Pty Ltd (2019)- *PGH Bricks and Pavers, Bringelly- Weeds Management Plan 2018-2023.*

Ref. 9. VGT Environmental Compliance Solutions Pty Ltd (2016) Mine Operations Plan for Bringelly Clay Mine.

Appendix A: Figures

Figure 1

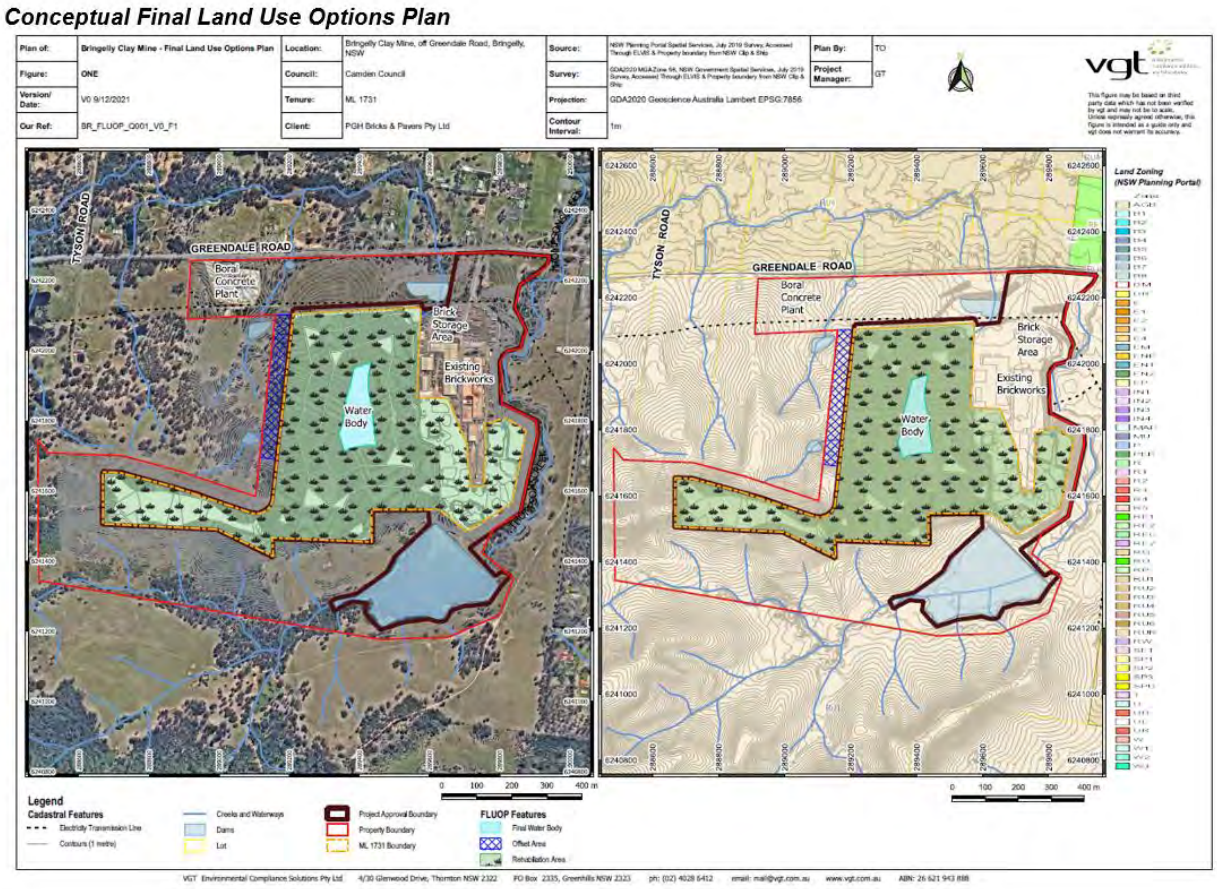


Figure 2

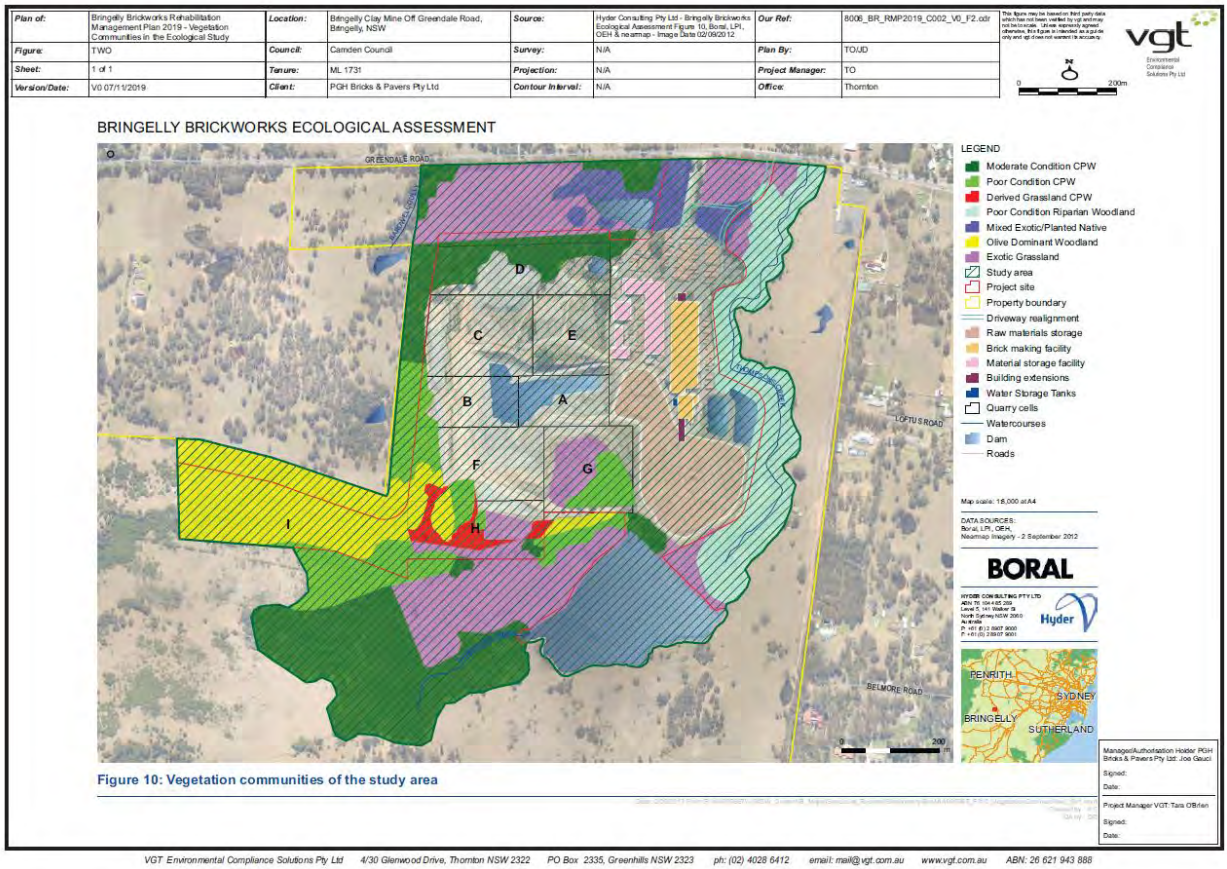


Figure 3

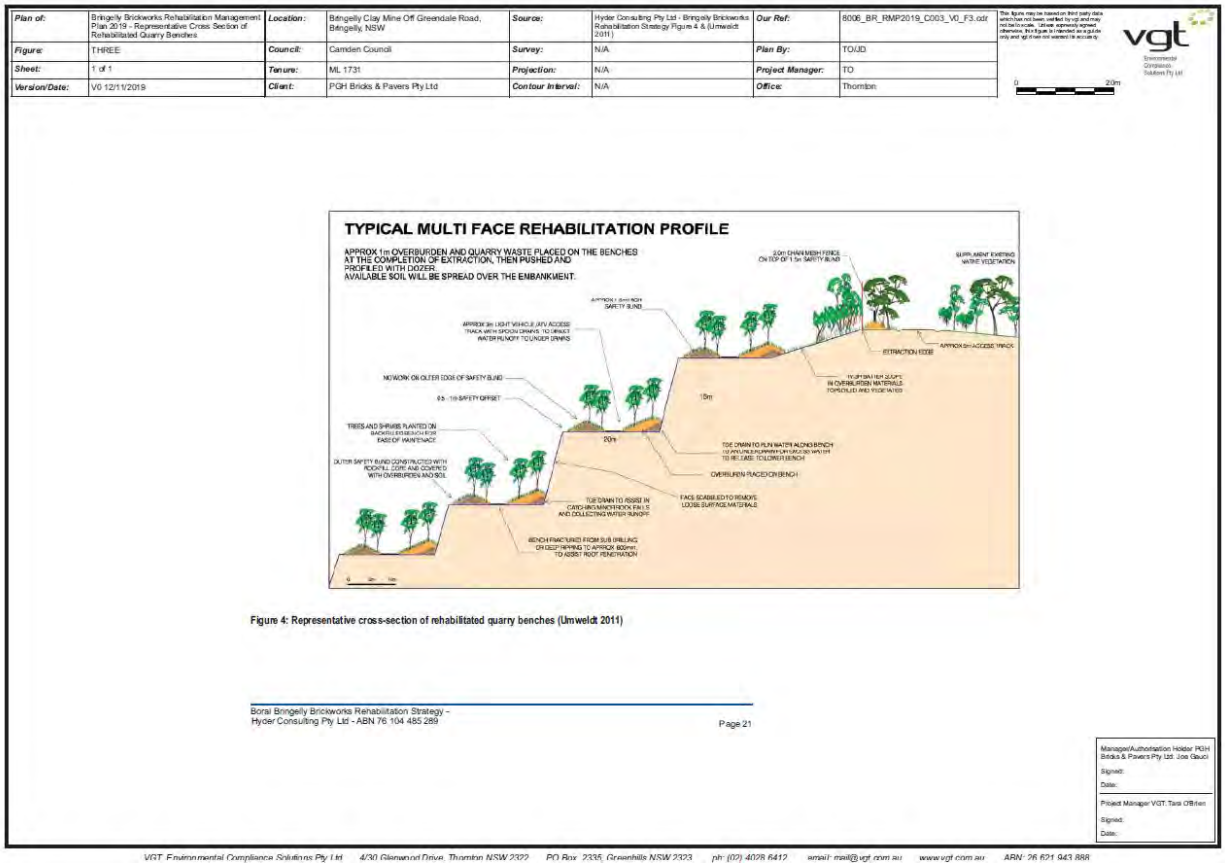
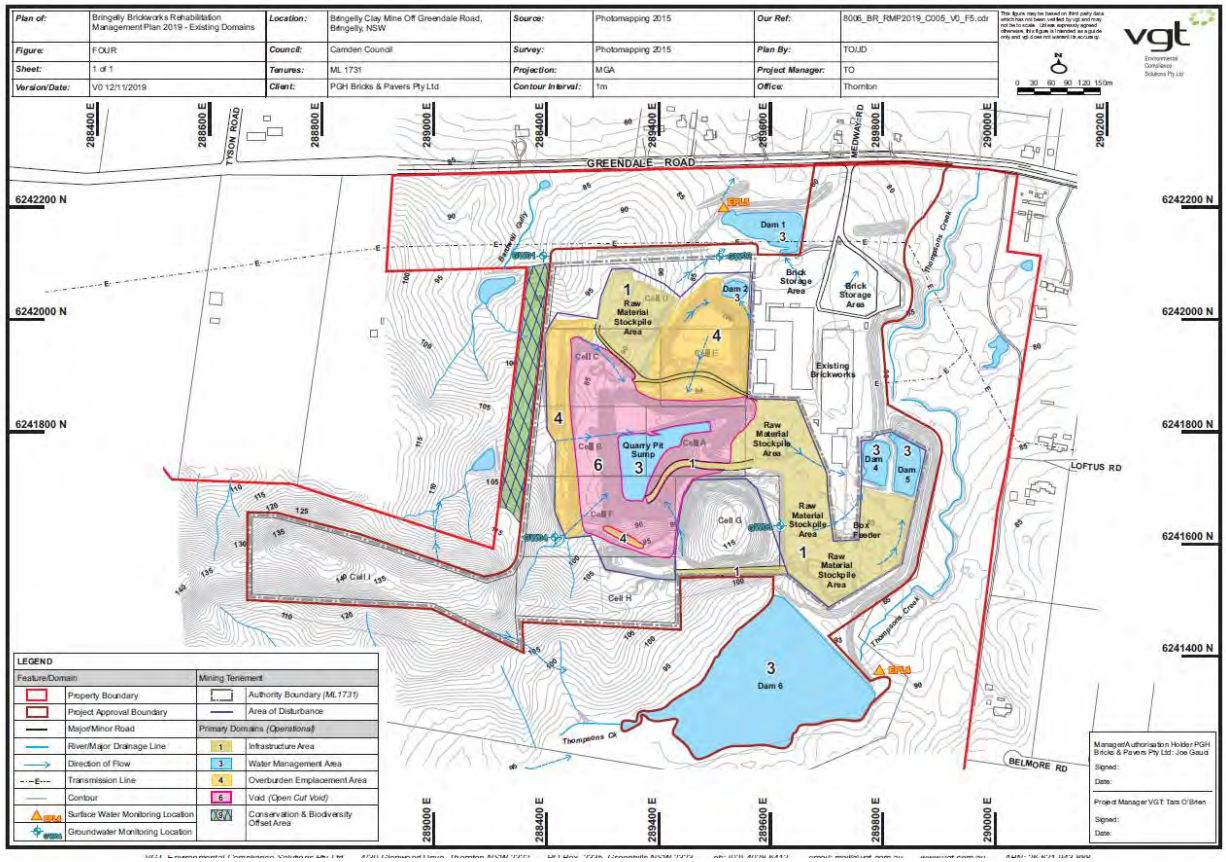


Figure 4



Appendix B: Consultation

Camden Council
70 Central Avenue, Oran Park NSW 2570
PO Box 183, Camden 2570
Telephone: 02 4654 7777
Email: mail@camden.nsw.gov.au
DX 25807
ABN: 31 117 341 764
Fax: 02 4654 7829

30 September 2016

Darren Green – Senior Environmental Consultant
Element Environment
PO Box 1563
WARRIEWOOD NSW 2102

Dear Darren,

RE: Bringelly Brickworks Project (SSD_5684)

SITE DESCRIPTION: 60 Greendale Road, Bringelly
LOT: 100 DP: 1203966

I refer to the above State Significant development application (DA) approved by the Department of Planning and Environment on 3 March 2015, and the associated draft management plans submitted to Camden Council for comment, which include:

- Transport Management Plan;
- Biodiversity Management Plan; and
- Rehabilitation Management Plan

It is understood several conditions of the approved consent require Boral CSR Bricks to consult with Camden Council in preparation of the final management plans.

Council officers have reviewed the draft management plans and submits that several issues require further information and consideration before the plans are finalised.

Transport Management Plan

The following comments are provided by Council's Traffic Engineer:

1. An analysis of the Greendale Road and The Northern Road intersection must be undertaken using computer analysis software by SIDRA Intersection. The Transport Management Plan (TMP) must be informed by this analysis and the accompanying data submitted as part of the TMP. The analysis must also consider potential traffic impacts from the proposed mobile concrete batching plant on the same site (proposed via DA 578/2016).

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2. The TMP must address how heavy vehicle movements will be mitigated during peak school pick up and drop off periods.

3. The TMP must include swept path analysis demonstrating the following:

   - The largest design vehicle turning left from Greendale Road to travel north along The Northern Road; and

   - The largest vehicle entering and exiting the site in a forward direction.

4. The TMP must address employee parking, and how this will be accommodated and managed on site.

5. The TMP must demonstrate compliance with relevant Australian standards for any external road upgrades.

Biodiversity Management Plan and Rehabilitation Management Plan

The following comments are provided by Council's Natural Resources Officer:

1. The Biodiversity Management Plan (BMP) must detail the volume of vegetative, soil and cultural heritage resources to be salvaged within the approved disturbance area for re-use in biodiversity or rehabilitation areas.

2. The BMP must detail conservation measures over the next 3 years, which include:

   - The location and type of fencing to be removed and installed;

   - The location and type of access control;

   - A survey of weeds, and the staged program and methodology for their removal; and

   - The location of current areas of erosion and the measures to implement erosion control.

3. The BMP must detail long term bushfire management of the site.

4. Pre-clearance fauna surveys must be undertaken. If fauna (particularly roosting and breeding fauna) are discovered, the proposed measures for their relocation must be identified within the BMP.

5. Additional risks to the implementation of the BMP such as drought, heavy rainfall events causing erosion, and bushfires must be identified and assessed.

Contingency plans and resources (including financial) must be provided to deal with identified risks.

6. The inspection, monitoring, reviewing and implementation of the BMP must be undertaken by a qualified ecologist / bush regenerator(s).

7. The determination of the conservation bond for the Biodiversity Offset Site (BOS) must be undertaken by a qualified ecologist / bush regenerator.

Additional Information Required

Council requires revised management plans for further review that address each of the concerns listed above. A response to this letter with an explanation as to how each item is addressed must also be provided. Once Council staff has reviewed the revised management plans, further comments will be provided.

Should you have any enquiries in relation to this matter, please do not hesitate to contact Kate Drinan, Manager Statutory Planning on (02) 4654 7777.

Yours sincerely,

Kate Drinan
MANAGER STATUATORY PLANNING
(Planning and Environmental Services)

www.camden.nsw.gov.au

Department of Industry

OUT16/34013

Mr Darren Green
Element Environment Pty Ltd
PO Box 1563
WARRIEWOOD NSW 2102

Dear Darren

Bringelly Brickworks (SSD_5684) – Draft Rehabilitation Management Plan Preparation and Consultation

I refer to your letter dated 23 August 2016 and attached draft "Bringelly Brickworks Rehabilitation Management Plan", Version 0.

The Department of Industry, Division of Resources and Energy (DRE) Environmental Sustainability Unit has reviewed the draft Bringelly Brickworks Rehabilitation Management Plan (RMP).

DRE notes that the RMP will be reviewed and updated, if necessary, following any update of the Final Land Use Options Plan (FLUOP). DRE considers this is essential and the current lack of a FLUOP makes the RMP a very general and conceptual document only at this stage.

The retention of a final void is not confirmed as the most appropriate post mining landform and the specific design of any final void will require a much greater level of detail in a future version of the RMP and any other applicable rehabilitation documents. This will include the DRE approved Mining Operations Plan or equivalent document.

The following specific comment on the draft RMP is provided:

Section 7.1.2 – Monitoring
DRE considers the 'Safety' and 'Landform Stability' visual inspection frequency of 6 months to be too long. A greater frequency should be proposed.

If you require further information on this issue please contact me directly on (02) 4222 8304.

Yours sincerely

Greg Kininmonth
Manager & Principal Inspector Environment (Southern)
Environmental Sustainability Unit
19 September 2016

Copy to – Joe Gauci, Boral CSR Bricks Pty Ltd (via email)
Chris Schultz, Department of Planning and Environment (via email)

PO Box 674, Wollongong NSW 2500, Australia
Level 1, Block H State Office Block, 84 Crown Street, Wollongong NSW 2500, Australia,
Tel: +612 4222 8333 Fax: +612 4226 3851 www.industry.nsw.gov.au ABN: 72 189 919 072

From: Cook, Debbie
To: Lisa Thomson
Subject: FW: Bringelly Brickworks (SSD_5684): Management Plan Consultation
Date: Monday, 9 September 2019 1:09:17 PM
Attachments: image002.png

Consultation OEH- biodiversity, rehabilitation and heritage plan

From: Darren Green <darren@elementenvironment.com.au>
Sent: Tuesday, 6 September 2016 1:26 PM
To: Cook, Debbie <DECOOK@pghbricks.com.au>
Cc: Neville Hattingh <neville@elementenvironment.com.au>; PR32 <SMO-PR32@elementenvironment.com.au>
Subject: FW: Bringelly Brickworks (SSD_5684): Management Plan Consultation

Debbie,

Comments from OEH regarding the Biodiversity, Rehabilitation and Heritage Management Plans. There's nothing in the comments which is substantial. We possibly need to just clarify the nest box procedure/program matter. Other than that it's another good outcome.

Darren Green
Senior Environmental Consultant

m 0418 969 624
e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

From: Richard Bonner [mailto:Richard.Bonner@environment.nsw.gov.au]
Sent: Tuesday, 6 September 2016 1:07 PM
To: Darren Green <darren@elementenvironment.com.au>
Cc: Elle.Donnelley@planning.nsw.gov.au
Subject: RE: Bringelly Brickworks (SSD_5684): Management Plan Consultation

Hello Darren,

Further to your recent conversation with Marnie Stewart, OEH provides the following comments on the draft Biodiversity Management Plan and draft Heritage Management Plan . OEH has no comments to make on the draft Rehabilitation Management Plan.

Draft Biodiversity Management Plan

- p.2, Glossary and Abbreviations – Typo, replace *'Plant'* in BMP abbreviation meaning with *'Plan'*

p.16 & 17, 4.2.1 Terrestrial Fauna Habitat, Woodland – Reference is made to a *'nest box procedure would be prepared and implemented in woodland habitat …'*. It is unclear if this is referring to an action that will be implemented. If so, clarification is required on where and when it will be developed and how will it be incorporated within the BMP?

- p.24, Measure B1 – Based on the description of the measure shouldn't the *'when to implement'* response be *'prior to commencement of construction'*?
- p.24, Measure B2 – How are *'rain events'* defined?
- p.24, Measure B4 – The location of stockpiles and appropriateness of erosion and sediment controls should be in accordance with the required Surface Water Management Plan (although it is unclear how this relates to the Sensitive Area Plans). Alternatively, more objective measures could be included eg those in the relevant volume of the Managing Urban Stormwater best practice guidelines (Blue book).
- p.25, Measure B10 – Should be rewritten as a measure (i.e. not a recommendation).
- p.25, Measure B11 – Should be rewritten as a measure (i.e. not optional – replace *'should'* and *'may'* with *'will'*)
- p.26, Measure B13 – Further to comment above for p.16 & 17, has a *'nest box program'* been developed? Is this the same as the *'Nest Box Procedure'*? Is the area with a *'naturally occurring low abundance of hollows'* the proposed offset area?
- p.26, Measure B14 – Is the area of *'suitable nearby bushland'* the proposed offset area? Replace *'should'* with *'will'*.
- p.26, Measure B15 – Replace *'should'* with *'will'*.
- p.26, Measure B16 – Is the three (not two) stage process based on best practice guidelines? The logic and practicality of removing non hollow-bearing trees 48 hours before hollow-bearing trees is unclear.
- p.27, Measure B20 – Replace *'… BMP and Rehabilitation strategy'* with *'Rehabilitation Management Plan'*.
- p.29 (note: pages not numbered from page 28), 8. Biodiversity Offset Strategy.
  - Recommend the 4th paragraph be amended as follows (insert red text, delete strikethrough text): *The BOA will conserve CPW in a certified area to offset the clearing of ENV in a non-certified area in accordance with RMB 8 of the Biodiversity Conservation Order. ~~and would maintain the minimum area of ENV to be retained and protected in the Growth Centre, as specified in RBM 6 of the Biodiversity Certification Order~~.*
  - Recommend the 2nd last paragraph be amended as follows: *BCB proposes to manage and enhance the biodiversity values of ~~minimise impacts to~~ the BOA through ~~with the implementation of~~ the environmental management measures cited in **Table 7**, and ~~manage and enhance the existing vegetation of the BOA~~ in accordance with the guidelines for managing remnant CPW described in Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland (DEC, 2005) (refer **Appendix C**).*
- pp.31-33, 8.1 Implementation measures, 8.2 Performance Criteria and 8.4 Completion Criteria – Suggest combining as one table using existing sub-headings.
- p.31, 8.1.5 Retention or addition of habitat features, Medium and Long-term – Recommend replacing *'… clearing for mine development or approved thinning, …'* with *'… clearing for quarry expansion, …'*.

Heritage Management Plan

- p.11, 5.1.1 Confirmed Aboriginal Site Records, Table 2 Summary of Survey Findings – Recommend this include the findings of the test excavation to reflect the assessment as a whole not just the initial survey. It should also be noted that the significance of BB OS2 was determined by the test excavation.
- p.15, 6.2.3 Discovery of suspected human remains - This section contains inappropriate instructions. Any reference to salvage, recording and reburial of human remains should be removed. It is recommended the text in this section be replaced with the following: *If any human remains are discovered the following actions must be taken:*
  a. *immediately cease all work at the particular location;*
  b. *secure the area so as to avoid further harm;*
  c. *notify the local police and OEH's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location, and*
  d. *work cannot recommence at the particular location unless authorised by OEH in writing.*

Regards

Richard Bonner
Conservation Planning Officer
Greater Sydney Region
Regional Operations Group
Office of Environment and Heritage
T: 02 9995 6917

---------- Original Message ----------
From: Darren Green [darren@elementenvironment.com.au]
Sent: 23/08/2016 17:02
To: info@environment.nsw.gov.au
Cc: smo-pr32@elementenvironment.com.au
Subject: Bringelly Brickworks (SSD_5684): Management Plan Consultation

To whom it may concern,
Following the commencement of a State Significant Development application (SSD_5684) in December 2012 for a proposed expansion to Bringelly Brickworks at 60 Greendale Road, Bringelly, Development Consent was issued on 3 March 2015 by the Department of Planning and Environment (DP&E).
In accordance with this Development Consent, several conditions require Boral CSR Bricks, the owner of Bringelly Brickworks, to consult with OEH in the preparation of several of the development's management plans. More specifically, Conditions 21, 26 and 27 of Schedule 3 of the Development Consent requires Boral CSR Bricks to prepare a Biodiversity Management Plan, Rehabilitation Management Plan and Heritage Management Plan in consultation with OEH.
Therefore on behalf of Boral CSR Bricks, please find attached a covering letter and several draft management plans for review.
If you have any questions please don't hesitate to give me a call.

Regards,

Darren Green
Senior Environmental Consultant

[Inline image name : image001.png]

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e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

From: Cook, Debbie
To: Lisa Thomson
Subject: FW: Bringelly Management Plans Update
Date: Monday, 9 September 2019 2:28:21 PM
Attachments: image002.png

FYI

From: Darren Green <darren@elementenvironment.com.au>
Sent: Monday, 19 September 2016 1:38 PM
To: Cook, Debbie <DECOOK@pghbricks.com.au>
Cc: PR32 <SMO-PR32@elementenvironment.com.au>; Neville Hattingh <neville@elementenvironment.com.au>
Subject: Bringelly Management Plans Update

Hi Debbie,

As you may be aware, the consultation period for the draft management plans concluded on 7 September. During this period we received responses from Office of Environment & Heritage and DPI: Water. Today we received a response from DPI: DRE. We have not received comments from: Bringelly Public School, Liverpool and Camden Council, RMS and EPA. EPA did acknowledge receipt of notification and I've followed up to confirm whether they actually intend on submitting comments or not.

The comments have been minor and do not necessitate significant amendments.

Because the consultation period has concluded we are in a position to commence with finalising the plans and preparing them for submission to DP&E. I'm aware of some correspondence between DP&E and Boral CSR Bricks regarding Bringelly's Conditions of Approval. Are you OK with us commencing the finalisation of these plans?

Regards,

Darren Green
Senior Environmental Consultant

m 0418 969 624
e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

Department of Primary Industries
Water

Contact John Galea
Phone 02 8838 7520
Fax 02 8838 7554
Email john.galea@dpi.nsw.gov.au

Our ref V15/3875-2#1; INT16/107531
Your ref

Darren Green
Senior Environmental Consultant
Phone: 0418 969 624
PO Box 1563,
Warriewood, NSW, 2102

Email: darren@elementenvironment.com.au

Dear Mr Green

BRINGELLY BRICKWORKS (SSD_5684)
Comment on the Environmental Management Plan Preparation and Consultation

I refer to your emailed letter dated 23 August 2016 to the Department of Primary Industries – Water (DPI Water) in respect to the above matter.

DPI Water makes the following recommendations:

- The property description in Section 1.2 Background; should be amended to correctly reflect the current cadastre of the property which is Lot 100 DP 1203966.
- It is suggested that all areas that are not impacted through construction activities are clearly indicated on all plans and signposted to prevent any damage through construction activities.

For further information please contact John Galea, Acting Senior Water Regulation Officer, Parramatta, 8838 7520, john.galea@dpi.nsw.gov.au

Yours sincerely

Richard Nevill
Acting Regional Manager – Metro
Water Regulation Operations
2 September 2016

Level 11, 10 Valentine Avenue, Parramatta | PO Box 3720 Parramatta NSW 2124
t (02) 8281 7777 | f (02) 8838 7554 | www.water.nsw.gov.au

24 January 2020

Attn: Kate Drinan
Manager Statutory Planning
Camden City Council

PO Box 183
Camden
NSW 2570

PO Box 1563
Warriewood
NSW 2012

ABN 45 163 835 093

Dear Kate

Bringelly Brickworks (SSD 5684): management plan consultation

In August 2016, Element Environment Pty Ltd (Element) on behalf of PGH Bricks, sought comment for the transport, biodiversity and rehabilitation management plans for Bringelly Brickworks as required by SSD 5684.

Camden Council (CC) forwarded comments on 30 September 2016. At the time of receiving comments from CC, PGH Bricks were not able to take up SSD 5684 and therefore no immediate response was provided to CC.

A period has passed and Element, on behalf of PGH Bricks, wishes to notify CC that PGH Bricks are now able to take up SSD 5684 and wish to commence works approved therein.

The management plans have been updated accordingly to address CC comments and PGH Bricks has submitted these plans to the Department of Planning, Industry and Environment for approval.

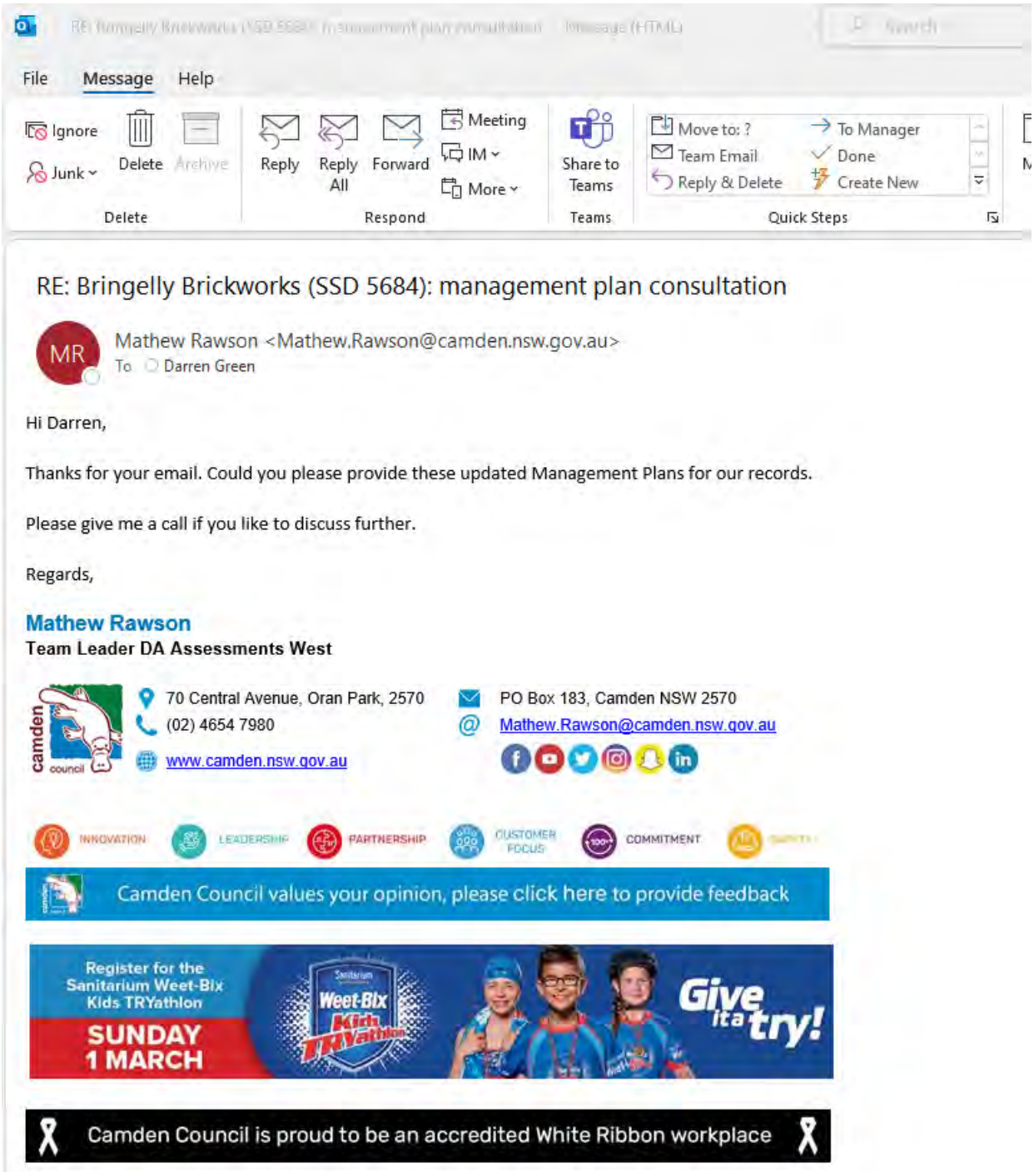
The updated management plans are available upon request should CC wish to review the latest versions.

We trust the above provides clarification around the matter and the delay in responding to previous correspondence. Should you have any queries on the above, please don't hesitate to contact me.

Kind regards,

Darren Green
Associate

0418 969 624
darren@elementenvironment.com.au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Share to Teams
Move to: ?
Team Email
Reply & Delete
To Manager
Done
Create New
Delete
Respond
Teams
Quick Steps
RE: Bringelly Brickworks (SSD 5684): management plan consultation
MR
Mathew Rawson <Mathew.Rawson@camden.nsw.gov.au>
To Darren Green
Hi Darren,
Thanks for your email. Could you please provide these updated Management Plans for our records.
Please give me a call if you like to discuss further.
Regards,
Mathew Rawson
Team Leader DA Assessments West
70 Central Avenue, Oran Park, 2570
(02) 4654 7980
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Mathew.Rawson@camden.nsw.gov.au
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24 January 2020

Attn: Greg Kininmonth
Manager & Principal Inspector Environment (South)
Environmental Sustainability Unit

PO Box 674
Wollongong
NSW 2500

PO Box 1563
Warriewood
NSW 2012

ABN 46 162 835 083

Dear Greg

Bringelly Brickworks (SSD 5684): management plan consultation

In August 2016, Element Environment Pty Ltd (Element) on behalf of PGH Bricks, sought comment for the rehabilitation management plan for Bringelly Brickworks as required by SSD 5684.

Department of Planning, Industry and Environment – Resources Regulator (Resources Regulator) forwarded comments on 19 September 2016. At the time of receiving comments from the Resources Regulator, PGH Bricks were not able to take up SSD 5684 and therefore no immediate response was provided.

A period has passed and Element, on behalf of PGH Bricks, wishes to notify the Resources Regulator that PGH Bricks are now able to take up SSD 5684 and wish to commence works approved therein.

The rehabilitation management plan has been updated accordingly to address the Resources Regulator comments and PGH Bricks has submitted the plan to the Department of Planning, Industry and Environment for approval.

The updated management plan is available upon request should the Resources Regulator wish to review the latest version.

We trust the above provides clarification around the matter and the delay in responding to previous correspondence. Should you have any queries on the above, please don't hesitate to contact me.

Kind regards,

Darren Green
Associate

0418 969 624
darren@elementenvironment.com.au

AREQ0006123 | Bringelly Brickworks (SSD 5684): management plan consultation

Resources Regulator <nswresourcesregulator@service-now.com>
To darren@elementenvironment.com.au
Cc greg.kininmonth@planning.nsw.gov.au

Reply | Reply All | Forward

Wed 22/01/2020 4:50 PM

Dear Darren

I refer to your email and letter "Bringelly Brickworks (SSD 5684): Management Plan Consultation", both dated 24 January 2020.

I note that the Rehabilitation Management Plan for Bringelly Clay Mine has been updated, incorporating Resources Regulator comments, and has been submitted to the Department of Planning, Industry and Environment for approval.

The current Mining Operations Plan for Mining Lease ML 1731 – Bringelly Clay Mine is dated November 2019 and was approved on 25 November 2019 (Our Reference: MAAG0004972) and remains in force.

It is our generally our preference that the Mining Operations Plan required by Mining Title Conditions and the Rehabilitation Management Plan (RMP) required by Development Consent Conditions should be addressed by a single document, reducing duplication.

If the Rehabilitation Management Plan is approved by the Secretary of DPIE, and is prepared as a separate document to the Mining Operations Plan (MOP), then a subsequent revision to the Bringelly Clay Mine MOP may be required to ensure consistency.

The Resources Regulator will assess in detail any submitted new or amended Mining Operations Plan for ML1731 - Bringelly Clay Mine.

Can you please submit a copy of the updated Rehabilitation Management Plan to the Resources Regulator for our information. Please submit this via email to nswresourcesregulator@service-now.com at your earliest convenience and preferably include "Bringelly Clay Mine - ML1731 - Rehabilitation Management Plan (for information)" in the subject heading.

Feel free to contact me by phone or return email if you require further information regarding this issue.

Regards,

Greg Kininmonth
Manager Environmental Operations
Regulatory Compliance - Team 1 | Resources Regulator
T 02 42767428 M 0429 168 021

resourcesregulator.nsw.gov.au

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NSW Planning, Industry & Environment

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Fwd: AREQ0025305 | Submission of Final land Use Option Plan for the Bringelly Clay Mine ML1717 From: tara@vgt.com.au

Tara O'Brien <Tara@vgt.com.au>
To Travers, Michael

Reply | Reply All | Forward

Tue 22/02/2022 10:45 PM

You replied to this message on 23/02/2022 7:52 AM.

Date: 22 February 2022 at 4:48:31 pm AEDT
To: Tara O'Brien <Tara@vgt.com.au>
Cc: greg.kininmonth@planning.nsw.gov.au
Subject: AREQ0025305 | Submission of Final land Use Option Plan for the Bringelly Clay Mine ML1717 From: tara@vgt.com.au
Reply-To: Resources Regulator <nswresourcesregulator@service-now.com>

Dear Tara O'Brien,

The NSW Resources Regulator received the "PGH Bricks and Pavers, Bringelly Brickworks, Final Land Use Options Plan (Version: V1)" dated February 2022 ("FLUOP") on 11 February 2022.

The Regulator notes that this FLUOP is due for submission to the Department of Planning, Industry and Environment by 24 February 2022.

Nonetheless, the Regulator has had an opportunity to review the FLUOP and wishes to make the following comments:

- The FLUOP appears to address items (a) to (f) under Clause 25, Schedule 3 of SSD_6584;
- The FLUOP acknowledges the ongoing growth and development occuring within the Camden LGA and South West Growth Centre which is likely to have a significant effect on the final land use outcome for this site. This is particularly likely given the current consent extends the mine life to approximately 2045. It is for this reason that the Regulator considers flexibility in final land use selection be a key consideration as the development proceeds; and
- The FLUOP does not appear to significantly differ from the currently approved final land use outcomes contained in the Mining Operations Plan (MOP) for the Bringelly Clay/Shale Mine.

The Regulator notes that transitional arrangements are currently in place for the Operational Rehabilitation Reforms and that the Bringelly Clay/Shale Mine will need to comply with the new regulation by 2 July 2022. It would be expected that consistency be maintained at all times between the FLUOP document and the new Rehabilitation Management Plan and Annual Forward Program requirements of these reforms.

If you have any further questions, please contact me on the details provided below.

Regards,

Craig Campbell
Snr Inspector Environment
MAI - Team 1 | Resources Regulator
M 0428 254 994

Appendix E Rehabilitation Objectives

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
SSD6484MOD1	Community - ensure public safety	I1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	A1	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	A1	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	A1	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Management of waste and process	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	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.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	A1	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	A1	Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	F3	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	F3	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	F3	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	F3	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	F3	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	F3	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.
SSD6484MOD1	Community - ensure public safety	F3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	F3	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	F3	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	F3	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.
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	F3	Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	F3	Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
SSD6484MOD1	Community - ensure public safety	J1	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J1	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
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SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	J1	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J1	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J1	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J1	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.
	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J1	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.
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SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J1	Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Community - ensure public safety	J3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	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.
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	Management of waste and process	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	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.

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J3	Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J3	Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Community - ensure public safety	J4	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J4	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J4	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
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SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	J4	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
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SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	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.

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J4	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	Management of waste and process	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	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.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J4	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J4	Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J4	Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Community - ensure public safety	J5	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J5	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J5	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native specifies and habitat	J5	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	J5	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	J5	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities of the Cumberland Plains Woodland and Grassland.
SSD6484MOD1	Quarry pit floor - Landscaped and revegetated using native flora species, above the anticipated final void water level	J5	Ecological rehabilitation	Levels of ecosystem function have been established that demonstrate the rehabilitation is selfsustainable.

Development Consent Reference Number	Rehabilitation Objectives Sourced from Development Consent	Spatial Reference (e.g. A3)	Rehabilitation Objective Category	Rehabilitation Objectives
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	Groundwater	Groundwater quality is similar to, or better than the predisturbance water quality.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	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.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J5	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	Management of waste and process	Residual waste materials stored on site (e.g. tailings, coarse rejects and other wastes) will be appropriately contained / encapsulated so it does not pose any hazards or constraints for intended land use.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	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.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J5	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.
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)
SSD6484MOD1	Site as a whole to be safe, stable and non-polluting	J5	Surface water	Runoff water quality from mine site is similar to, or better than the pre-disturbance runoff water quality.
SSD6484MOD1	Ensure the final landform is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre	J5	Water approvals	All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc)

Appendix F
Final Landuse Options Plan

Bringelly Brickworks

Final Land Use Options Plan

GLOSSARY AND ABBREVIATIONS

Abbreviation	Description
CA	Conditions of Approval for SSD_5684, including Modification 1
CSR	CSR Limited
DPIE	Department of Planning & Environment
EIS	Bringelly Brickworks Quarry Extension Environmental Impact Statement (Hyder Consulting, 5 September 2013)
EMS	Environmental Management Strategy
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
FLUOP	Final Land Use Options Plan
OEH	NSW Office of Environment & Heritage
PIRMP	Pollution Incident Response Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
RTS	Bringelly Brickworks Quarry Extension Response to Submissions
SAP	Sensitive Area Plan
Secretary, the	The Secretary of the DPIE
SSD	State Significant Development
WMS	Work method statement
RR	NSW Resources Regulator
MOP	Mine Operations Plan

Document Control

Version	Date	Description of Change
1	Feb 2022	Original

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Figures

1 INTRODUCTION

1.1 Context

This Final Land Use Options Plan (FLUOP or Plan) forms part of the Environmental Management Strategy (EMS) for Bringelly Brickworks (the facility). The Plan has been prepared following the approval of the Bringelly Brickworks Extension Project (SSD_5684) on 3 March 2015 and a Section 96(1A) modification application (MOD1) which was determined on 31 October 2016.

This FLUOP has been prepared to address the requirements of the CoA as updated following the determination of MOD 1, the mitigation measures listed in the *Bringelly Brickworks Quarry Extension Environmental Impact Statement* (EIS) (Hyder Consulting, 5 September 2013) and applicable legislation identified in this Plan.

1.2 Background

Bringelly Brickworks (the facility) is a clay/shale quarry and brick making facility located at 60 Greendale Road, Bringelly, on Lot 100 in DP 1203966 and comprises an area of approximately 385.55 hectares in the Camden Local Government Area. The facility has been in operation since 1968, and in its original form it had the capacity to process approximately 51,500 tonnes of bricks per annum.

In 1991, Boral Bricks (NSW) Pty Limited undertook to upgrade the facility with new technology and increase production to ensure the continued economic viability of the site due to the age of the manufacturing plant and machinery. The Council of the Municipality of Camden, as the approving authority at the time, approved the Development Application on 13 September 1991 (Council ref. DA 91/1194). From 1991 until 2013, the Bringelly Brickworks facility operated under this approval, which permitted (among other things) quarry extraction up to 200,000 tonnes per annum, the receipt of up to 96,000 tonnes of supplementary materials and brick production up to 160,000 tonnes per annum.

In 2013, Boral Bricks Pty Limited (Boral) prepared an Environmental Impact Statement (EIS) to assess the environmental impacts of an increase in production at the facility and continued extraction of the quarry to meet the anticipated demand for its brick products ('Bringelly Brickworks Extension Project', Application No. SSD_5684). The project was determined to be State Significant Development (SSD) under Part 4, Division 4.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and Clause 8 State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP).

The EIS was publicly exhibited from 6 November 2013 to 9 December 2013. The then Department of Planning & Environment (DPIE) received 12 submissions during this period, including 11 from public authorities and 1 submission from the general public who objected to the project due to its potential impacts. While none of the government authorities objected to the project, most raised concerns about its potential impacts and/or made recommendations for managing these impacts.

Boral prepared and submitted an initial Response to Submissions (RTS) to the DPIE in February 2014. However, following receipt of the RTS, DPIE received further correspondence from 7 public authorities which necessitated further consultation between Boral, DPIE and the relevant government authorities.

The additional consultation was resolved and in February 2015 DPIE finalised their Environmental Assessment Report and the Bringelly Brickworks Extension Project was approved with conditions on 3 March 2015.

On 1 May 2015, CSR Limited (CSR) and Boral Limited (Boral) formally completed the establishment of a joint venture for operations located in New South Wales, Victoria, Queensland, South Australia, Tasmania and the ACT. Ownership of Bringelly Brickworks (including quarrying activities) was transferred to the joint venture Boral CSR Bricks Pty Ltd (BCB), trading as PGH Bricks & Pavers. PGH Bricks & Pavers (PGH) was the controlling entity of the facility and responsible for implementing the Environmental Management Strategy of the site. On 31 October 2016 CSR agreed to acquire Boral's

interest in BCB, therefore resulting in CSR owning 100% of PGH. BCB no longer exists.

Since Project Approval, the type of bricks demanded by the market have changed and Boral Bricks withdrew from the site. These two critical factors necessitated PGH to review its manufacturing requirements to ensure the most efficient use of all the resources available. To manufacture the bricks demanded by the market, the type, composition and quantity of the raw materials to be imported to Bringelly Brickworks was reconsidered because the type of raw materials required could not be solely extracted from the Bringelly quarry. PGH therefore applied to DPIE to modify SSD_5684 under Section 96(1A) of the Environmental Planning and Assessment Act 1979 (EP&A Act), to provide for an increased raw material import limit to 321,000 tonnes per annum (referred to as MOD1). MOD1 was approved by DPIE on 31 October 2016.

Bringelly Brick Works continued to operate under DA 91/1194, however approval for State Significant Development (SSD 5684) was issued in March 2015 for the extension of the quarry and to upgrade ancillary infrastructure.

Schedule 2, Condition 9 of SSD 5684 required PGH to surrender DA 91/1194 following commencement of development, as approved in SSD 5684. The SSD was triggered on 24 Feb 2020, and DA 91/1194 was surrendered to Camden Council.

DA 91/1194 was surrendered as per consent conditions in 2020. The site now operates completely under the SSD 5684.

1.3 Environmental Management Document System

The environmental management document system is described in Section 5.1 of the EMS and this FLUOP forms part of that system.

1.4 FLUOP Approval

The FLUOP has been prepared in consultation with NSW Resource Regulator (RR) and Camden Council.

Camden Council acknowledged receipt of the Plan in correspondence received on (refer Section 6 & Appendix A).

This FLUOP must be endorsed by the Plant Manager prior to submission to the Secretary of the Department of Planning & Environment (DPIE).

The FLUOP is required to be submitted to the Secretary of the DPIE for approval within 2 years of notifying the Secretary of commencement (24 Feb 2020), as per SSD_6584, unless the Secretary agrees otherwise.

2 PURPOSE AND OBJECTIVES

2.1 Purpose

The purpose of this Plan is to describe the proposed Final Land Use Options, post activity on the site by PGH.

2.2 Objectives

The key objective of the FLUOP is to ensure that by meeting the stated consent conditions, the final landform is compatible with surrounding land uses and in accordance with any relevant legislation.

3 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

Legislation relevant to Final Land Use Options Plan includes:

- NSW Planning legislation

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this FLUOP include:

- Growth Centres SEPP for the South West Growth Centre;
  - Appendix 9 Camden Growth Centre Precinct Plan

3.2 Minister's Conditions of Approval

The CoA relevant to this FLUOP are listed in **Table 1**.

Table 1. Condition of Approval relevant to the FLUOP

CoA No.	Requirement
Schedule 3, Clause 25	**Final Land Use Options Plan** The Applicant must prepare a **Final Land Use Options Plan** for the site to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with DRE and Camden Council; (b) be submitted to the Secretary for approval within 2 years of the date of notifying the Department of commencement of development (see condition 8 of Schedule 2), unless the Secretary agrees otherwise; (c) provide details of the conceptual final landform and associated final land uses for the site; (d) ensure that the conceptual final land form is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre; (e) inform the Rehabilitation Management Plan (prepared in accordance with condition 26 of this consent); and (f) be reviewed every 7 years to account for applicable land use priorities, and if necessary updated.
Schedule 3, Clause 26	**Rehabilitation Management Plan** 26. The Applicant must prepare a Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with OEH, DRE, DPI Water and Camden Council; (b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise; (c) provide details of the conceptual final landform and associated land uses for the site (which must be consistent with the **Final Land Use Options Plan** under condition 25 of this consent); (d) describe the short, medium and long term measures that would be implemented to: • manage remnant vegetation and habitat on site; and • ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent; (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any necessary remedial action; (f) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and (g) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

3.3 Licenses and Permits

Environment Protection License (EPL) No. 1808 as issued under the *Protection of the Environment Operations Act 1997* (POEO Act) is currently held for the site. As there is no change to the operating times of the facility, a variation to the EPL for FLUOP-related matters will not be sought; this however does not preclude a potential variation of the EPL due to changes in criteria stipulated in the CoA.

4 EXISTING ENVIRONMENT

4.1 Site Overview

The local terrain generally consists of gently undulating low hills with vegetation comprising scattered bushland with trees up to 10m high, interspersed with fields cleared for pasture. The land usage is a mixture of agricultural and residential. The Bringelly Public School and village is located approximately 500m to the northeast of the facility. There are several rural residential properties in the area surrounding the facility.

The project site is used for quarrying, brick production and associated activities. The brick-making facility along with various administration buildings, a finished bricks storage yard, staff car park and internal road network is generally contained within the northern part of the project site, and is set back approximately 200 metres from Greendale Road. The southern portion of the project site, adjacent to Thompsons Creek, is leased for the agistment of stock and grazing.

5 PROPOSED FINAL LAND FORM

5.1 Site Overview

Schedule 3, Condition 25, part (c) requests the plan provide details of the conceptual final land form and land use for the site. As presented in Figure 1, PGH proposes a conceptual final landform in line with the EIS. The EIS mentions:

- One central water management storage area, following the completion of mining activities;
- One void (mine pit), comprised of cells from the approved mining lease and MOP;
- Brickmaking facility (roofed) and other associated hardstand areas, including carpark, brick storage areas and internal roads, located outside of the ML area; and
- Rehabilitated non-hardstand areas (areas not under roof or covered with asphalt and/or buildings) including the raw material stockpile area, noise bunds located directly to the east and north of the brickmaking facility and final stormwater management structures.

The retention of voids on the site will not sterilise or preclude land at the project site from being redeveloped for other purposes in line with land use planning and policy at the time.

The site has a long expected life, with the current consent extending until 2045. Brick making operations expect to continue for at least 30 years. Mining on site, within current consents, will see a general flattening of the terrain and landscaping and rehabilitation undertaken as per the Bringelly Rehabilitation Management Plan and Mining Operations Plan (2021).

Although planning has been undertaken to anticipate the end land use for the project site as a component of the development of this rehabilitation strategy, it is impossible to predict accurately the likely future land use at the site, given substantial changes expected to occur in the region over the next 30 years. Future land use will need to consider the applicable future planning policy framework as well as the surrounding land use and environmental and market conditions at the time.

Characteristic of landforms resulting from quarrying activities, some voids would remain at the project site upon quarry closure in order to preserve options for further quarrying and other land uses if viable and approved. PGH intends to rehabilitate the site with the aim of creating a landform which is compatible with future land uses. Currently the site is zoned rural and the conceptual land form in Figure 1 is in alignment with this zoning category.

PGH has also considered available planning documents, and the final land form, as described above, is in line with the objectives of the Sydney Metropolitan Strategy and more specifically, Growth Centres SEPP for the South West Growth Centre; particularly Appendix 9 Camden Growth Centre Precinct Plan.

Quarry voids have successfully been rehabilitated for a range of uses including parks, water recreation, playing fields, golf courses, landfill, employment uses and continued quarrying and brickworks activities. In consideration of the alternative end uses of the site, it is important to ensure that the ultimate end use is sustainable, both environmentally and commercially. It is also important to consider possible end use options well before any filling occurs, as the type of filling method employed will determine what end use option can be achieved at the site. This is primarily related to the geotechnical stability of the final landform.

The above-mentioned possible future land uses will require more detailed investigation closer to the end of life of the quarry when an altered plan would be submitted.

Schedule 3, Condition 25, part (d) requires that “the conceptual final land form is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre”;

As outlined above and indicated in Figure 1, the conceptual Final Landform is compatible with surrounding land uses .

The Rehabilitation Objectives are stated in Table 8 (SSD 5684 consent) below.

Table 2. Rehabilitation Objectives from Table 8 of SSD-5684

Feature	Objective
Site (as a whole)	• Safe, stable and non-polluting • Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat
Surface infrastructure	• To be decommissioned and removed (unless the Secretary agrees otherwise)
Final void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void
Quarry pit floor	• Landscaped and revegetated using native flora species, above the anticipated final void water level
Community	• Ensure public safety

The table directly below outlines the site rehabilitation plans and objectives that addresses the consented requirements in Table 8 of the SSD-5684.

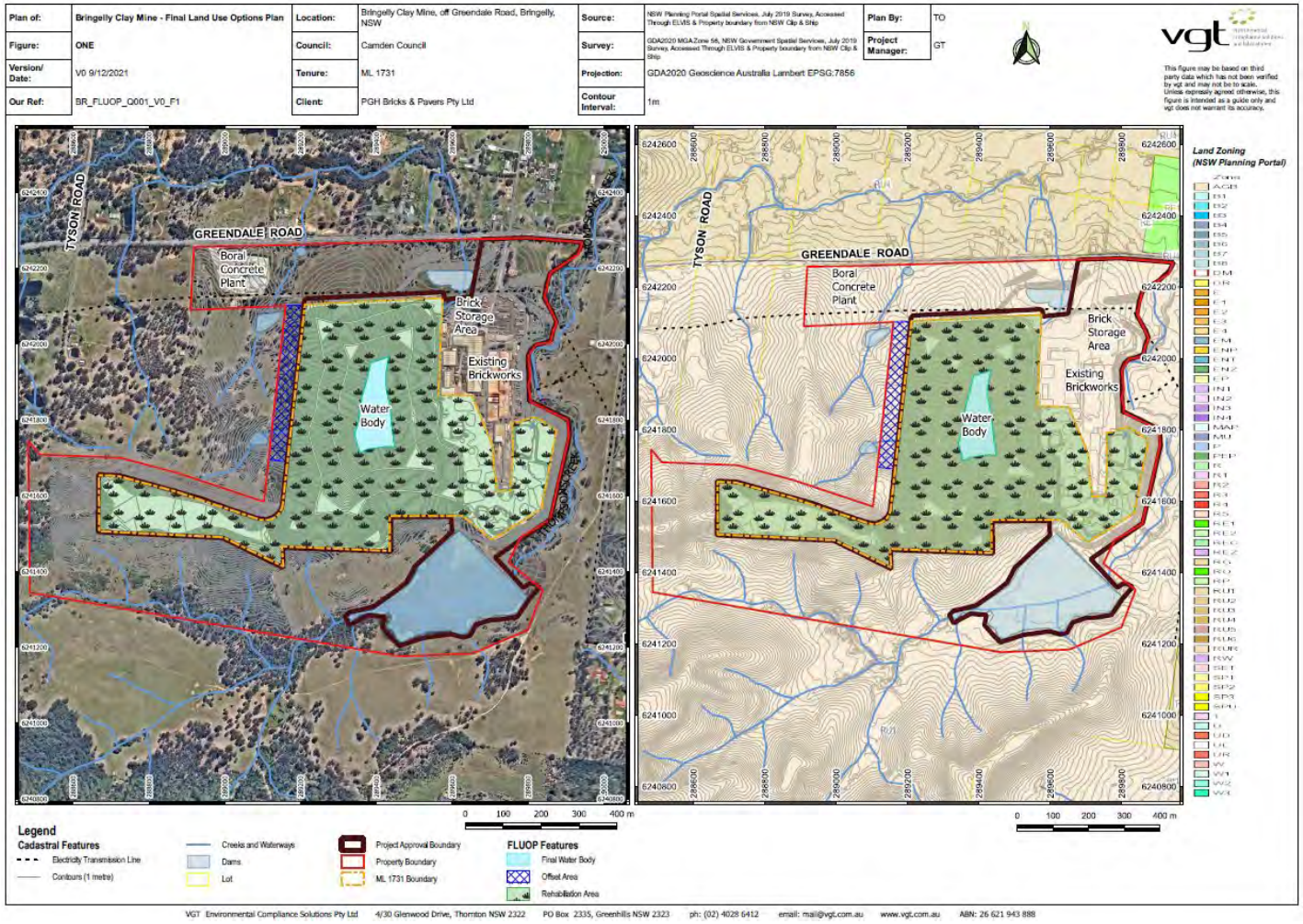
Table 3. Rehabilitation Objectives and Targets

Feature	Objective	Target
Safety	Significant hazards removed, controlled or contained	At completion of rehabilitation, no reasonably preventable hazards or reported incidents on site for 12 months.
Land Use	Provide for a combination of sustainable open woodland and grass land.	Rehabilitate mine to provide: • A mixture of grassland and woodland. • A suitable water body for possible stock. • grazing and/or recreation purposes. • Retain access road for future lifestyle and controlled grazing uses.
Landform	Provide a geotechnically stable landform.	Geotechnical assessment based on site specific review and, if required, computer modelling determines that the retained slopes are not likely to actively erode or 'slip' to an extent requiring earthworks and profiling.
	Provide a non-polluting landform	Water quality monitoring results show that the landform is non-polluting within the meaning of Section 120 of the Protection of the Environment Operations Act 1997. In particular, 'downstream' water quality monitoring will record total suspended solids <50mg/L or within 10% of 'upstream' levels (whichever is the greater).
Biodiversity	Revegetated areas provide a vegetation community with maintenance requirements no greater than adjoining vegetation not disturbed by mining activities.	Rehabilitation monitoring confirms that the established vegetation communities are self-sustaining
	Revegetated areas contain species consistent with surrounding vegetation communities.	Rehabilitation monitoring confirms the non-native and non-target species (weeds) represent less than 10% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.
Tenement Relinquishment	Allow for the relinquishment of the mining lease and the return of the security lodged over the Mining Lease within a reasonable time after the mine life	5 yrs after final rehabilitation

Demolition of manufacturing buildings and associated infrastructure on site would be undertaken as required, depending on the approved final form. The stormwater management infrastructure would remain until there was a change to the final landform that dealt with this in an alternate manner.

As discussed above, the conceptual final landform is in accordance with the Growth Centres SEPP for the South West Growth Centre; Appendix 9 Camden Growth Centre Precinct Plan. The final landform conforms with zoning and does not include prohibited activity.

Figure One. *Conceptual Final Land Use Options Plan*



6 CONSULTATION

As outlined in the CoA (refer **Table 1**), this Plan has been prepared in consultation with the RR and Camden Council (refer **Appendix A**).

Camden Council responded acknowledging receipt of this Plan, advising PGH update they had no comments on the FLUOP, deferring to the decision of DPIE

7 REVIEW AND IMPROVEMENT

7.1 Continuous Improvement

Continuous improvement of this FLUOP will be achieved in accordance with Section 10 of the EMS, through the ongoing evaluation of environmental management performance and land use guidelines as required.

7.2 FLUOP Update and Amendment

The processes described in Sections 6 and 10 of the EMS may result in the need to update or revise this FLUOP. The approval of updates or revisions to the FLUOP will need to be considered in accordance with Section 11.2 of the EMS.

In terms of conditions of this consent, the FLUOP will be reviewed every 7 years to account for applicable land use priorities, and if necessary updated

APPENDIX A CONSULTATION CORRESPONDANCE

RE: Contact to Review Final Landform User Options Plan

Reply | Reply All | Forward

MR Mathew Rawson <Mathew.Rawson@camden.nsw.gov.au>
To Travers, Michael
Fri 17/12/2021 8:20 AM

You replied to this message on 17/12/2021 8:54 AM.

BR_FLUOP_2021_Q001_V0_F1 reduced.pdf
6 MB

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Hi Michael,

I am happy to be nominated as the contact person.

However Council has no comments to add to the proposal, the Department of Planning will provide the ultimate decision regarding the Final Land Use Options Plan (attached) for the site.

Regards,

Mathew Rawson
Team Leader DA Assessment – West

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Appendix Weed Management Plan

PGH Bricks and Pavers, Bringelly – Weeds Management Plan 2018-2023

Prepared for: **PGH Bricks and Pavers – Bringelly**
Greendale Road
Bringelly NSW
Attn: Ben King, Raw Materials NSW
Ph: 0437 832 572

Document Control:

Version	Description	Date	Author	Reviewer
1.1	Draft	14.06.19	R.Mason	B.King
2.0	Final	3/10/2019	R.Mason	B.King

Contents

EXECUTIVE SUMMARY

Weed infestations that are identified during operation would be managed in accordance with a weed and pest management procedure. The procedure would be prepared in accordance with the Noxious Weeds Act 1993 to manage weed impacts across the site under advice from Phillip Milling of Sky Land Management Pty Ltd. The weed load at the Greendale Road, Bringelly site is very high, with a dominance of one main woody weed, African olive. This weed dominates a significant proportion of the site, to the detriment of most other native vegetation, except larger trees that would have seen the African olive grow up around it.

It is important for the native flora and fauna diversity at the site and the surrounding catchment to reduce the weed load at the site. As the site has a high weed load, the process of control will require significant resources in the short to medium term to bring the weeds back to a more sustainable level.

Two of the 22 exotic species recorded in the ecological study area are listed as noxious weeds (Class 4) in the Camden Local Government Area. One of the noxious weeds, Opuntia stricta (Prickly Pear) and an additional weed, Senecio Madagascariensis (Fireweed) are also listed as Weeds of National Significance under the National Weeds Strategy (Australian Weeds Committee 2012).

The growth and spread of L. Sinense and O. stricta will be controlled according to the measures specified in Camden Council's Management Plan for The Control and Enforcement of Class 4 Noxious Weeds Policy 3.2 S. madagascariensis will be controlled according to the Weed Management Guide – Fireweed stipulated by the Department of Environment.

Most modified environments, such as this one, require regular and sustained weed management. This is the most efficient and cost effective way to manage weeds. Unfortunately, this site has built up a significant weed burden over many years. This weed management plan outlines a program for management, as a first step to creating a more sustainable natural environment onsite.

1.0 INTRODUCTION

This is a management plan for the control of weeds at the PGH Bringelly operations. The site is a mine as well as a brick processing facility. There is an extensive area around the mine and brick making facilities which acts as a buffer zone. Part of this zone is also proposed for future extractive operations.

This management plan identifies the weed issues associated with the site and provides a planned program of control. As with any weed control program there are multiple stages required. This is due to an existing weed presence at the site, which has established over many years and hence will usually take some years to bring back under control. This is because there is the presence of propagules such as seeds and plant fragments in abundance, which are designed to spread the plant. The presence of weeds on neighbouring properties also means that the threat of weed invasion is ever present.

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 so as 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.

The other factor to consider when controlling weeds is what is going to replace them. If, for example, a weed has been totally dominant, not allowing other plants to grow, then once the weed is removed there is nothing to replace it. This is important for several reasons. These may include ensuring that there is sufficient ground cover so erosion by wind or water does not occur, replacing habitat for fauna which is using the site, creating a more aesthetically pleasing environment and above all creating an environment that reduces the opportunity for the weeds to re-establish.

This plan takes into consideration all these factors and provides a holistic approach to management of the weeds on the site. The plan identifies the weed presences and load at the site and the priority for management. Prioritisation is based on a few factors. These include their legal status as priority weeds in accordance with the *Greater Sydney Regional Strategic Weed Management Plan 2017-2022*, their impact on the operation of the site and the local natural or farmed environment.

2.0 SITE ANALYSIS

The site has very little diversity of weeds because one weed is dominating the site, African olive (*Olea europea subsp. cuspidata*). There are only a few other weeds of major concern at the site, namely Mother of millions and Green cestrum, which have been prioritised for control due to their regional significance. Other weeds that have been given high – medium priority for control, as identified in Table 1 below, are generally low in number and readily controlled with minimal resources at this stage.

Management Unit (MU): The site has been divided into areas of management. This is based on the current or previous operational areas, land use and/or the location and features of the site. Dividing the site into these operational areas facilitates ready identification, which ensures operational weed control is specific and targeted and can be coordinated across the entire site. See **Figure 1: Weed Management Units**.

Infestation: The level of infestation for each management unit is estimated for each weed species. It indicates the percentage of weed load across the entire area of the management unit.

I – Isolated, indicates low level infestation of isolated individual plants or groups of plants scattered across the MU. Generally less than 0.1% coverage;
L – Low, indicates low level of infestation > 0.1 to < 1% coverage;
M – Medium, indicates a moderate infestation level, >1% to <25% coverage;
H – High, is a weed load which is dominating the vegetation or ground cover, >25% coverage.

Priority: The priority for weed management is based on the following criteria:

1. Regional priority according to the *Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022* (GSRSWMP). This plan identifies the priority weeds species for NSW and the Greater Sydney Local Land Services Region under the *NSW Biosecurity Act2015*.

2. Fulfillment of the General Biosecurity Duty (GBD), under the 'NSW Biosecurity Act 2015'. GBD means *'Any person who deals with biosecurity matter* (weeds) *or a carrier and who knows, or ought to reasonably know, the biosecurity risk posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised'*.

3. Ensure the current operational requirements of the site are not impeded and the risk to any future operations of the site is minimised.

4. The weed control program is undertaken in accordance with best practice. For example, for weeds that are widespread, this usually means working from areas of lower infestation levels towards higher infestation levels. Another example are weeds that are currently at low levels of infestation, which if controlled immediately will require minimal resources, but if left uncontrolled will required far greater resources into the future.

Based on these criteria, weeds within each management unit have been given a priority for control (see Table 1). These rankings fit within the following three categories:

H – High; Immediate control to reduce the potential for spread on site, or to neighbouring properties, of weeds that are a high priority according to the *GSRSWMP 2017-2022* and generally fall into the category of *Eradication* or *Containment.*

M – Medium; Weeds to be managed so as to prevent the spread to neighbouring properties or off site generally through natural processes, however it may include spread via materials or equipment that leave the site too. This also includes weeds that are currently at **I**solated or **L**ow

infestation levels and or are readily eradicated or contained and weeds also listed in the *GSRSWMP 2017 – 2022*, categorised as *Containment*

L – Low; These are weeds that pose a low risk of spread from site or within the management unit or they are at levels that will require continued and sustained management over an extended time frame, due to the high infestation level. This does not mean they are not to be managed, rather the approach is more long term.

Note that the same weed within different management units may have different priorities assigned to them. Over time and upon review of the plan, these prioritisations are expected to change.

MU	Weed		Infestation level (I, L, M, H)	Priority for control (H, M, L)
	Common Name	Botanical name		
Factory / Clay Prep	Very little weed load is present in these areas. Various Isolated weeds		I	H
South	African olive	*Olea europaea subsp. cuspidata*	M	H
	Fire weed	*Senecio madagascariensis*	I	L
	Prickly pear	*Opuntia* species	I	L
	Purple top	*Verbena bonariensis*	I	M
	Tree tobacco	*Nicotiana glauca*	I	H
	Small leaf privet	*Ligustrum Sinsense*	I	L
North	African olive	*Olea europaea subsp. cuspidata*	M	H
	Fire weed	*Senecio madagascariensis*	I	L
	Green cestrum	*Cestrum parqui*	L	H
	Ink weed	*Phytolacca octandra*	I	L
	Mother of millions	*Bryophyllum* species	M	H
	Prickly pear	*Opuntia* species	I	L
	Purple top	*Verbena bonariensis*	I	L
	Tree tobacco	*Nicotiana glauca*	I	M
	Small leaf privet	*Ligustrum Sinsense*	I	L
West	African olive	*Olea europaea subsp. cuspidata*	H	L

Table 1: Weeds present at site & priority for control

Figure 1: **PGH Bringelly – Weed Management Units**	
Site details: Greendale Road, Bringelly NSW	
Management units	North
	South
	West

Date	August 2018
Plan by	P. Milling
	Sky Land Management

Scale (m)

0 100 200

3.0 MANAGEMENT

This section of the plan outlines the program for primary and follow up management at the site for a three year period. The schedule has been developed based on the priority allocated in the previous section.

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.

This site currently has a high weed burden and hence significant resources are required to bring it back to a level that can be maintained more readily. This weed management plan sets out an initial three year control program. Due to the severe issue with weeds at the site, these three years will be quite intensive.

Timing – The correct timing of weed control 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 program outlined in Table 2 below divides each year into the seasons, however due to variability that may take place, slight variations in the timing of management activities may be required.

Method – There are many methods used for weed control. 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:

- Unmanned Aerial Vehicle (UAV) – Used to apply herbicides efficiently particularly over large and dense infestations, in areas that are not safe or practical to access on the ground (e.g. steep areas, aquatic area, dense infestations).

- 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 barkspraying.

- 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 weed control works.

In areas treated with mechanical means follow up chemical control is generally required to treat regrowth. There is also a requirement to introduce other desirable vegetation to protect the soil and reduce the potential for erosion as well as invasion with other weed species.

Budget - A budget estimate is provided for these control activities. If necessary, the management program can be varied up or down to match operational requirements or constraints. The budget includes all costs associated with control activities, except for large plant equipment such as dozers or scrub mulchers.

Table 2: Management Program 2018-2021

Key - Control Method
Unmanned Aerial Vehicle (UAV) spraying
High Volume spraying
Basal Bark spraying
Direct application (Cut & Paint, Stem injection)
Mechanical

		Year 1 – 2018 - 2019					Year 2, 2019 – 2020					Year 3, 2020 - 2021				
Species		**MU**	**Spring**	**Summer**	**Autumn**	**Winter**	**MU**	**Spring**	**Summer**	**Autumn**	**Winter**	**MU**	**Spring**	**Summer**	**Autumn**	**Winter**
African olive	*Olea europaea subsp. cuspidata*	South, North					South, North					South, North				
							West					West				
Fire weed	*Senecio madagascariensis*	South, North					South, North					South, North				
Green cestrum	*Cestrum parqui*	North					North					North				
Small leaf privet	*Ligustrum sinsense*	South, North														
Ink weed	*Phytolacca octandra*						North					North				
Mother of millions	*Bryophyllum* species	North					North					North				
Prickly pear	*Opuntia* species											South, North				
Purple top	*Verbena bonariensis*	South, North					South, North					Monitor and follow up as required				
Tree tobacco	*Nicotiana glauca*	South, North					South, North					Monitor and follow up as required				
Various weeds		Factory / Clay Prep					Factory / Clay Prep					Factory / Clay Prep				
	Budget (excl. GST)			**$50,500.00**					**$ 50,500.00**							**$45,000.00**

4.1 MONITOING & REVIEW

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. Through regular monitoring the annual management program can be refined, if required, to ensure most effective weed management. 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 weed control activities;
- Details of the next stage of works to be undertaken.

This reporting will form the basis for an annual report. The annual report will summarise the weed management activities achieved throughout the preceding 12-month period and confirm the program for the year ahead.

Weed control will always be necessary to some degree at this site, as with any site. At the moment there is a high weed load present and hence there is a requirement for a high level of inputs, to bring it back to a more sustainable level requiring lower inputs in the long term. This is a five year weed management plan, which sets out a specific management program for three years. A major review of the plan after the three years will be completed. The review will set the management program for the remaining two years of this plan.

Scientific name	Common name	Noxious Weed Control Class	Weed of National Significance
Ligustrum sinense	Small-leaved Privet	4	-
Opuntia stricta	Prickly Pear	4	Yes
Senecio madagascariensis	Fireweed	-	Yes

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