Brisbane Mining Project

Progressive Rehabilitation and Closure Plan (PRCP)

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Environmental Authority	EPML03821316
Contact Details	Level 5, Triniti 3 39 Delhi Road NORTH RYDE NSW 2113
Mining Leases (MLs)	Oxley (ML1102) Dinmore (ML4552, ML4604, ML4639, ML4640, ML4706, ML50028, ML50144) Greenwood Village (ML4628, ML4629, ML4632, ML4643, ML4654, ML4713) Redbank Plains (ML4583, ML4622, ML50116, ML50117)

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Greenwood Village Final Site Design	(Drawing no. 1835.DRG.097R2)
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Redbank Plains Concept Rehabilitation Plan	(Drawing no 1835.DRG.140)
Dinmore Concept Rehabilitation Plan	(Drawing no 1835.DRG.141)

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Attachment 1	ASIC Historical Details for ABN 68 168 794 821
Attachment 2	Dinmore Area Bore Reports
Attachment 3	Desktop Mining Study for Mining Lease 4583
Attachment 4	Community Consultation Register
Attachment 5	Landowner Statement
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1 Introduction

1.1 Background

Groundwork Plus Pty Ltd has been engaged by PGH Bricks & Pavers Pty Limited (PGH) to prepare a Progressive Rehabilitation and Closure Plan ('PRCP') relating to the Mining Leases (MLs) associated with Environmental Authority ('EA') EPML03821316, administered by the Department of Environment and Science ('the administering authority').

The EA authorises the carrying out of the following Environmentally Relevant Activity ('ERA') under Schedule 3 of the *Environmental Protection Regulation 2019* ('EP Reg'):

> *20 (b) clay pit mining, dimension stone mining or mining gemstones (including the material from which gemstones are extracted) if the activity involves mining a quantity of material of more than 100,000t but not more than 1,000,000t in a year.*

The sites and Mining Leases ('MLs') which are relevant to this PRCP are as follows:

- Oxley (ML 1102)
- Dinmore (ML4552, ML 4604, ML 4639, ML 4640, ML 4706, ML 50028, ML 50144)
- Greenwood Village (ML 4628, ML 4629, ML 4632, ML 4643, ML 4654, ML 4713)
- Redbank Plains (ML 4583, ML 4622, ML 50116, ML 50117)

Collectively, the above sites are referred to as the 'Brisbane Mining Project' in this PRCP.

PGH has consulted with the Department regarding this PRCP development since early 2020. The first consultation with the Department occurred on 7 February 2020 and was held with assessment officers of the Minerals and Northern Compliance unit, inclusive of the Director and Acting Director of the Department's Mineral Business Centre, Environmental Services Regulation. During this initial meeting, the Department acknowledged the uniqueness of the sites and the need for the activities to be situated close to urban markets which require the construction materials, accepting that the Post-Mining Land Uses (PMLUs) are largely planning driven. The Department acknowledged that the *Guideline: Progressive rehabilitation and closure plans (PRC plans)* (DES 2021) ('the Guideline') content requirements had been born from the coal and metals industry. Further to this meeting, the Department provided subsequent correspondence welcoming early consultation regarding the PRCP to ensure that the somewhat novel nature of the sites is captured in a way that meets the PRCP requirements whilst ensuring that PGH can continue working towards industrial outcomes in line with local Council[1]. The Department invited PGH to prepare a draft PRCP to facilitate in-depth discussions to go through site-specifics to determine what aspects would be relevant to the PGH sites.

In line with this recommendation, a draft of the PRCP was developed and submitted to the Department on 18 December 2020 for a pre-lodgement review and a request for a pre-lodgement meeting. A meeting was held with the Department on 2 March 2021 to discuss the draft and the Department subsequently provided written feedback on the draft PRCP on 8 March 2021[2] and further advice on 18 March 2021[3] to guide the content requirements of the final PRCP submission.

[1] Turner, A. (Department of Environment and Science). Email to Groundwork Plus Pty Ltd. 10 February 2020.
[2] Courteville, M. (Department of Environment and Science), Email to Groundwork Plus Pty Ltd. 8 March 2022 including attachment 'Comments on PGH Bricks PRCP – 8 March 2021.
[3] Courteville, M. (Department of Environment and Science). Email to Groundwork Plus Pty Ltd. 18 March 2022.

The PRCP was submitted to the Department on 29 August 2022. The submitted version of the PRCP contained the information presented in the draft PRCP and incorporated revisions to specifically respond to the pre-lodgement feedback provided, which was understood to reflect the Department's view of the operations as unique given the nature and locality of the clay pit mining activities.

On 11 October 2022 the Department issued an Information Request to PGH with a due date of 12 April 2023. The due date for the Information Request was subsequently extended to 15 November 2023 to allow for the surrender of Darra (ML 1100), however this was unable to be achieved in that timeframe and an additional extension was not available. On 12 July 2024 the Department issued an approval for the partial surrender of the EA, being the total surrender of Darra (ML1100). Aspects of this PRCP (1835_610_28_V4) associated with ML1100 have been removed or revised to align with surrender of the Darra ML.

This PRCP (V4) is updated to align with the approved PRCP schedule, reference P-PRCP-100726381 approved on 26 September 2025.

1.2 Purpose of the PRCP

In accordance with the stated purpose of the PRCP prescribed under the *Environmental Protection Act 1994* ('EP Act'), the PRCP is intended to:

- plan for how and where the mining activities will be carried out on the land in a way that maximises the progressive rehabilitation of the land to a stable condition.
- provide for the condition to which PGH must rehabilitate the land before the EA may be surrendered.

This PRCP has been prepared to address the requirements of Sections 126C and 126D of the EP Act, inclusive of the following:

- Provide a description of:
  - each resource tenure, including the area of each tenure, that applies to the PRCP.
  - the relevant activities to which the application relates.
  - the likely duration of the relevant activities.
- A description of how and where the mining activities will be carried out.
- Proposed methods and techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP Schedule.
- Details of community consultation (i.e., Community Consultation Plan and Register).
- Details of how the proposed Post-Mining Land Uses ('PMLUs') are consistent with community consultation.
- Any risks of a stable condition for land not being achieved, methods for managing and/or or minimising any potential risks.
- Outline of the proposed PRCP Schedule that states the proposed 'PMLUs' for the land.

This PRCP has also been prepared to include the necessary information required in accordance with the Guideline.

1.3 Land Outcome Documents

In accordance with the definition prescribed under Section 750 of the EP Act, the following 'Land Outcome Documents' apply to the sites:

- Environmental Authority EPML03821316.

- *Report on Investigations into Rehabilitation of Disturbed Areas and Residual Voids and Acceptance Criteria* (Groundwork Plus 2008) (relevant to Dinmore, Greenwood Village and Oxley only).

The above documents are referenced throughout this PRCP where relevant. However, it is noted that, under Section 754 of the EP Act, the 'land outcome documents' prescribed under Section 750 of the EP Act is hierarchical. As such, the PMLUs referenced in the EA have been used as the PMLUs for the purpose of this PRCP.

2 Project Description

2.1 Resource Tenure Description

Figure 1 - Site Location Plan provides an illustration of the location of the site in a regional context. **Table 1 – Mining Tenements Summary** provides a summary of the background tenure relevant to this PRCP.

Table 1 – Mining Tenements Summary

ML No.	Mineral / Purpose	Grant Date	Expiry	Lease Area / Surface Area (ha)	Land Parcel	Landowner[1]
Dinmore						
ML4552	Clay – Fire Clay; Clay – Pottery / White Ware; Clay – Brick Clay; Shale	20/02/1975	28/02/2026	3.6377	Lot 67 RP838410	PGH Bricks & Pavers Pty Ltd
ML4604	Clay – Pottery / White Ware; Clay – Brick Clay; Shale	19/09/1974	30/09/2026	2.4243	Lot 2 RP164685; Lot 3 SL11493 (access)	PGH Bricks & Pavers Pty Ltd
ML4639	Clay – Pottery / White Ware	13/03/1975	31/03/2026	13.0742	Lot 2 RP164685; Lot 3 SL11493; Lot 67 RP838410	PGH Bricks & Pavers Pty Ltd
ML4640	Clay – Pottery / White Ware	13/03/1975	31/03/2026	13.645	Lot 2 RP164685; Lot 67 RP838410	PGH Bricks & Pavers Pty Ltd
ML4706	Clay – Brick Clay, Building Stone -- Sandstone	13/03/1975	31/01/2025	4.0469	Lot 2 RP164865; Lot 3 SL11493	PGH Bricks & Pavers Pty Ltd
ML50028	Clay – Brick Clay	15/10/1992	31/10/2027	9.2320	Lot 1 and 2 RP22534; Lot 2 RP895110;	PGH Bricks & Pavers Pty Ltd

ML No.	Mineral / Purpose	Grant Date	Expiry	Lease Area / Surface Area (ha)	Land Parcel	Landowner[1]
					Lot 67 RP838410	
ML50144	Clay – Brick Clay; Shale	19/11/1998	30/11/2038	4.846	Lot 67 RP838410	PGH Bricks & Pavers Pty Ltd
Greenwood Village						
ML4628	Clay – Brick Clay; Shale	05/09/1974	30/09/2034	7.385	Lot 138 S3186	The State of Queensland
ML4629	Clay – Brick Clay; Shale	05/09/1974	30/09/2025	6.806	Lot 125 S3186	PGH Bricks & Pavers Pty Ltd
ML4632	Clay – Brick Clay; Shale	12/12/1974	31/12/2025	3.566	Lot 141 S3186	GFA Holdings Pty Ltd
ML4643	Clay – Pottery / White Ware; Clay – Brick Clay; Shale	07/03/1974	30/09/2025	0.4905	Road Reserve (Blackheath Road)	The State of Queensland
ML4654	Clay – Brick Clay; Shale	01/12/1977	31/12/2027	3.71	Lot 125 S3186	PGH Bricks & Pavers Pty Ltd
ML4713	Clay – Brick Clay; Stockpile Ore / Overburden	09/11/1989	30/11/2025	8.61	Lot 125 S3186	PGH Bricks & Pavers Pty Ltd
Oxley						

ML No.	Mineral / Purpose	Grant Date	Expiry	Lease Area / Surface Area (ha)	Land Parcel	Landowner[1]
ML1102	Clay – Brick Clay; Shale	30/05/1974	31/05/2030	14.8749	Lot 1 and 2 RP190493	PGH Bricks & Pavers Pty Ltd
Redbank Plains						
ML4583	Clay, shale and coal	28/08/1972	31/12/2034	37.8142 (0 ha surface area)	Lot 6 RP22540 Lot 7 RP22540 Lot 20 SP212645 Lot 22 SP212646 Lot 24 SP212646 Lot 26 SP212647	PGH Bricks & Pavers Pty Ltd
ML4622	Clay and shale mining / brick and ceramic products manufacture	01/08/1974	31/08/2024	38.6	Lot 30 SP212649 Lot 19 RP22540	Ipswich City Council
ML50116	Clay and shale mining / brick and ceramic products manufacture	29/08/1996	31/08/2026	44.4880	Lot 1 RP22539 Lot 2 RP22539 Lot 3 RP22539 Lot 8 RP22539 Lot 9 RP22539 Lot 10 RP22539 Lot 11 RP22539 Lot 12 RP22539	PGH Bricks & Pavers Pty Ltd

ML No.	Mineral / Purpose	Grant Date	Expiry	Lease Area / Surface Area (ha)	Land Parcel	Landowner[1]
					Lot 13 RP22539	
					Whitwood Road (Road Reserve) Austin Road (Road Reserve)	The State of Queensland
ML50117	Clay and shale mining / brick and ceramic products manufacture	29/08/1996	31/08/2026	39.43	Lot 16 SP212644 Lot 6 RP22540 Lot 7 RP22540 Lot 20 SP212645 Lot 22 SP212646 Lot 24 SP212646 Lot 26 RP212647	PGH Bricks & Pavers Pty Ltd
					Austin Street (Road Reserve)	The State of Queensland

Table notes:

1.In May 2015, Boral and CSR Limited (CSR Limited being the parent company of PGH) formed the joint venture company 'Boral CSR Bricks Pty Limited', of which CSR was the 60% shareholder. As part of the joint venture creation, in 2016, all tenures held by Boral (as 100% holder) were transferred to the joint venture company. The Boral CSR Bricks Pty Limited entity was soon after renamed to PGH Bricks & Pavers Pty Ltd in late 2016. Please note that, whilst current Title Search records show the registered owner as 'Boral CSR Bricks Pty Limited', the entity name for ABN 68 168 794 821 changed to PGH Bricks & Pavers Pty Ltd as of 05 Nov 2016. Refer to **Attachment 1 – ASIC Historical Details for ABN 68 168 794 821** for confirmation.

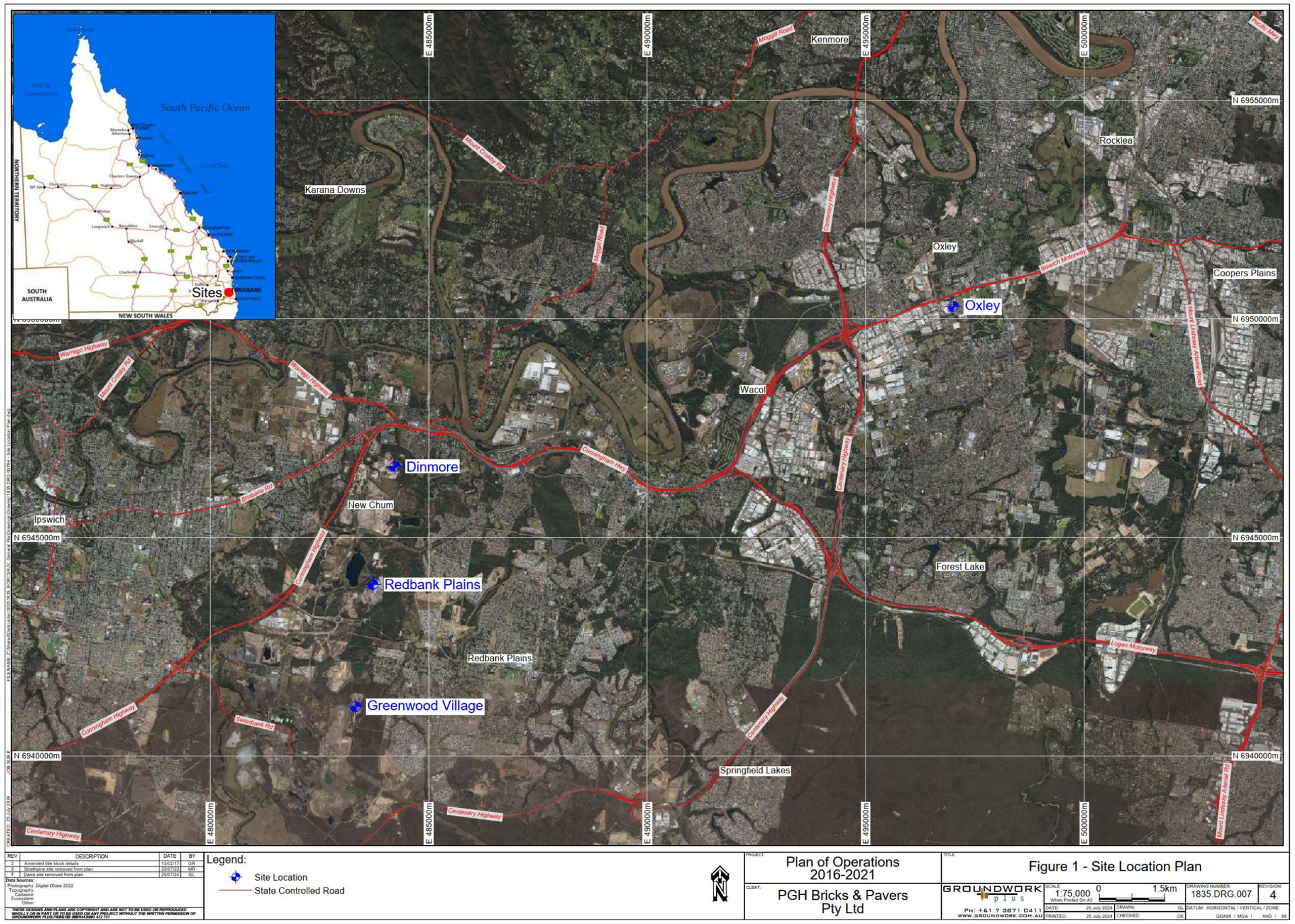


Figure 1 - Site Location Plan

2.2 Project Description

2.2.1 Type of Mining Operation

The mining operations at the sites comprise the following basic elements:

- Clearing of vegetation, mulching and reusing the material for site stabilisation and revegetation.
- Stripping of topsoil and overburden material using mechanical means (i.e. bulldozer or excavator), which is either used in the brick and paver manufacturing activity where suitable, or stockpiled for incorporation into on-site rehabilitation works, or where required, for use in constructing environmental control structures (e.g., perimeter banks / bunds).
- Extraction of minerals via mechanical means (e.g., excavator, dozer, etc.) from either in situ resource or reclamation from old spoil stockpile areas.
- Stockpiling of raw material on the mine pit floor prior to load out into delivery trucks for transfer to the brick and paver manufacturing facilities.
- Stockpiling, and blending of materials to create the desired material composition, prior to use in the manufacturing activities.
- Processing of the raw materials at the brick manufacturing plants.
- Storage of the final products within designated laydown areas until transportation off-site to market.

Materials from the extraction locations is generally won and carted via highway haul trucks to the manufacturing facilities on a campaign basis. The duration of the campaign on each of the sites, and the frequency of campaigns, depends upon market demand, site conditions and equipment availability.

2.2.2 Primary Mine Features / Infrastructure On-Site

The principal equipment and machinery that may be used on the MLs includes, but is not limited to:

- Bulldozer
- Excavator/s
- Off-highway haul truck/s
- Front end loader
- Scraper
- Water truck/s
- Mobile fuel tanker (as required)
- Delivery trucks
- Fuel storage.

Temporary gravel roads are provided within the workings to enable truck access and load out from the floor of the excavation. Access tracks are relocated when and where required.

The Oxley site houses the Oxley Brick Plant and all ancillary plant and facilities (e.g., crusher, site office, laboratory, amenities). Raw material extracted from the mineral extraction sites is transferred to the Oxley site where it is stockpiled and blended to create the desired firing characteristics, before being used as raw feed for the Brick Plant. Final products produced at the plant include a range of construction materials not limited to bricks, pavers, mortars, etc. The Oxley manufacturing activities are authorised under EA ref. EPPR00213613 for the following prescribed ERAs:

- 15 Fuel burning more than 500 kg per hour.
- 16 Threshold (3)(a) Screening 5000 tonnes, but not more than 100,000 tonnes per year.
- 42 Threshold (b) Clay or ceramic products more than 5,000 tonnes per year.

The Prescribed ERAs associated with the brick plant are distinct from the mineral extraction activities to which this PRCP relates.

2.2.3 Proposed Duration of Operation

In accordance with the Guideline, probable or proved ore reserve means a probable ore reserve or proved ore reserve mentioned in the listing rules made by ASX Limited. Under the *ASX Listing Rules Guidance Note 31: Reporting on Mining Activities* (ASX Compliance 2013)[4], the reporting framework is underpinned by the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* ('the JORC Code') prepared by The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (ASX Compliance 2013, p. 2-3).

To provide justification for the proposed duration of operations, PGH commissioned a resource investigation of the mineral extraction sites, Dinmore, Greenwood Village and Redbank Plains, which was completed in June 2022. The resource investigation classified mineral resource as Measured, Indicated and Inferred Resources in accordance with JORC Code[5] as the method recognised by the ASX. Resource categories were defined using definitive criteria determined during interpretation of the geological data, with consideration of the JORC Code categorisation guidelines. At current resource utilisation rates the estimated duration to exhaust the available resource is shown in **Table 2 – Estimated Remaining Life of Mine***.

The Oxley site is the primary stockpiling, blending, and manufacturing facility. It is the intention of PGH to align the duration of mining at all sites to the life of the Oxley brick plant. As such, the proposed life of mine for all sites is 23 years, with activities concluding in 2046. **Table 2 – Estimated Remaining Life of Mine** includes the estimated duration to exhaust the available resource, and the proposed life of mine for each site. Given that the available resource will not be fully realised by the proposed life of mine, the ultimate duration of the activities may be longer than the forecast estimates. PGH will continue to seek renewals of the MLs as and when required to ensure that the remaining resource can be fully realised, and manufacturing activities can continue. Should the Brick Plants life extend beyond current estimates a revision to the PRCP will also be undertaken to align the mining activities with the revised Brick Plant life. As a result, the life of mine is currently capped at 23 years for all sites. The available resource does not necessarily align with the life of mine, as in some cases the resource available extends beyond 350 years. The resource may never be fully realised, as market forces, constraints, technology etc. changes and resource demand changes.

Table 2 – Estimated Remaining Life of Mine*

Site	Estimated duration to exhaust available resource	Proposed Life of Mine
Dinmore	139 years	23 years
Greenwood Village	99 years	23 Years
Oxley^	50 years	23 Years

[4] ASX Compliance, (2013). *ASX Listing Rules Guidance Note 31L Reporting on Mining Activities*. Accessed 20 July 2022 via https://www.asx.com.au/documents/rules/gn31_reporting_on_mining_activities.pdf

[5] JORC Code, (2012). *The JORC Code 2012 Edition*. Accessed 20 July 2022 via https://www.jorc.org/docs/JORC_code_2012.pdf

Site	Estimated duration to exhaust available resource	Proposed Life of Mine
Redbank Plains	375 years	23 Years

*no mineral extraction or rehabilitation, subject to surrender of the EA only.

^primary stockpiling, blending, and manufacturing facility. The life of mine for this site has been aligned with the resource estimations to reflect the reality that it may need to remain available for ongoing use until such time that resource is exhausted.

In 2006, the Oxley Brick Plant underwent a significant upgrade at a cost of $30 Million to enable an increase in the production capacity of the site, and a more efficient and cost-effective facility. The upgrades have resulted in reduced environmental emissions and an overall decrease in the volume of waste bricks generated at the site. The upgrades included the construction of a new 600m^2 factory building, a second kiln and drier system, a new workshop building and factory office extension, as well as a new brick storage yard and additional amenities.

At the time of the plant re-opening, PGH commented that:

> *"The Oxley Plant expansion positions PGH favourably to supply the residential construction market in Queensland at its peak during the next building cycle. This is particularly significant given that the industry was short of capacity at the last peak. In the meantime, this expansion has enabled us to mothball high cost capacity at our Strathpine plant, until the market recovers."* (CSR n.d.)

Additional upgrades confirmed by PGH include:

- 2017 / 2018 - complete upgrade of the mill room (estimated cost $1.7 million).
- 2019 / 2020 - increased automation and introduction of 25 additional product lines and an additional export product.
- 2020 / 2021 - hardstand extension and environmental control (dust suppression) upgrades (estimated cost $1.6 million).

Additional upgrades of the kilns are proposed in 2022 / 2023 to increase capacity by 11% at an estimated cost of $5 million. All of the above-mentioned investment supports PGH's intention to ensure longevity of the site. The Oxley brick plant is recognised as one of the largest in Queensland, and the expansion of the plant has enabled PGH to deliver on the businesses the long-term strategy of growth and commitment to re-invest in its building products businesses and in Queensland. PGH's Oxley Brick Plant is favourably positioned in the growing Southeast Queensland region to ensure demand for its products can be met.

DNRME (2016) stated that yearly production of structural clay represents approximately $7 million and noted the recent trend of rationalisation of the brickworks around the Brisbane region to reduce operating costs (p. 65). This highlights the importance of the PGH's manufacturing activities, which offer long term security for the supply of construction materials to the Queensland market, providing further justification for the life of mine estimates provided in **Table 2 – Estimated Remaining Life of Mine*.**

3 Baseline Information

3.1 Dinmore

3.1.1 Land Use

3.1.1.1 Pre-Mining Land Use

Mining and brick manufacturing activities at the Dinmore site commenced considerably earlier than the grant of the current MLs and PGH's activities at the site. Below is an extract sourced from Picture Ipswich, and initiative of the Ipswich City Council Libraries, which provides an overview of the Dinmore Brickworks & Pottery which was established at the site (and land beyond the bounds of the current ML):

> ***Dinmore Brickworks & Pottery*** *– Dinmore Brickworks and Pottery was established in 1884 by three parties: W.T. Clark, T.F. Fauset and H.C. Thompson. The factory was located near Dinmore Railway Station. The 80 acres of land on which the pottery was located contained ideal clay to produce various types of earthenware, stoneware, bricks and pipes and the seam was also quite deep, so would last for many years. Upon first starting, the pottery used a number of different methods for making and firing bricks, including the use of a newer plastic process and the semi-dry process which could easily produce up to 15,000 bricks a day. The land also had eight brick kilns installed and two pipe kilns, which they used to produce drainpipes. Like Richard Rogers & Co., the Dinmore Pottery also produced a wide array of domestic pottery such as teapots, water filters, soap trays and Staffordshire ware which they too exhibited in national and international shows. By 1886 the company had employed 25 men and boys who were producing up to 20,000 bricks a day which were being used in many of the large buildings in the Brisbane area. The company grew at a rapid rate throughout its years in operation and employed a number of Ipswich's budding pottery production company owners. However, during the 1880s came hard times and Dinmore Brickworks and Pottery was forced to close for a period between 1889-1899. It was reopened again in 1899 but later closed in 1916. During the company's time in operation the Dinmore site was purchased by Reliance Pottery, which was also located in the same vicinity as the Dinmore Brickworks. Reliance Pottery then leased this land back to the original Dinmore Brickworks owners for a period of time. After purchasing the land Reliance Pottery changed its name to: Reliance and Dinmore Potteries. Due to the two Companies close vicinity to one another and also similar company names, there was often confusion between the two. This is not helped by the fact that numerous newspaper articles reported in the Queensland Times during the 1880s – 1920s refer to both the Dinmore Brickworks and Reliance Pottery using the same name interchangeably, with the Reliance Pottery being referred in later years as the 'Dinmore Pottery'* (Picture Ipswich (n.d.a), *Brickworks and Potteries of Ipswich*).

Included as **Photo 1 - Dinmore Pottery near Ipswich, c 1898** is a photograph of the Dinmore Pottery in approximately 1898.

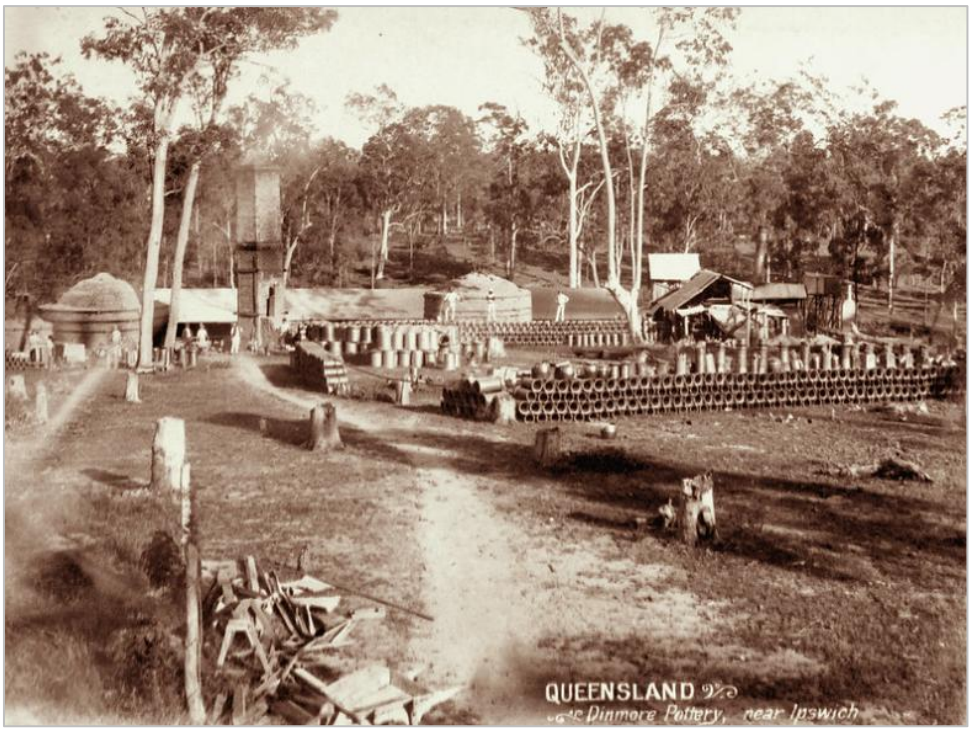


Photo 1 - Dinmore Pottery near Ipswich, c 1898

(Source: Queensland State Archives)

Survey plans prepared in 1930 show the distribution of the brickworks and potteries in the Dinmore locality, refer to **Figure 3 – Dinmore MLs Overlain on Queensland Twenty Chain series sheet 2521, 1930**. The boundary of the site is shown in pink; however, the underlying plan has been manually georeferenced and therefore this is indicative only.

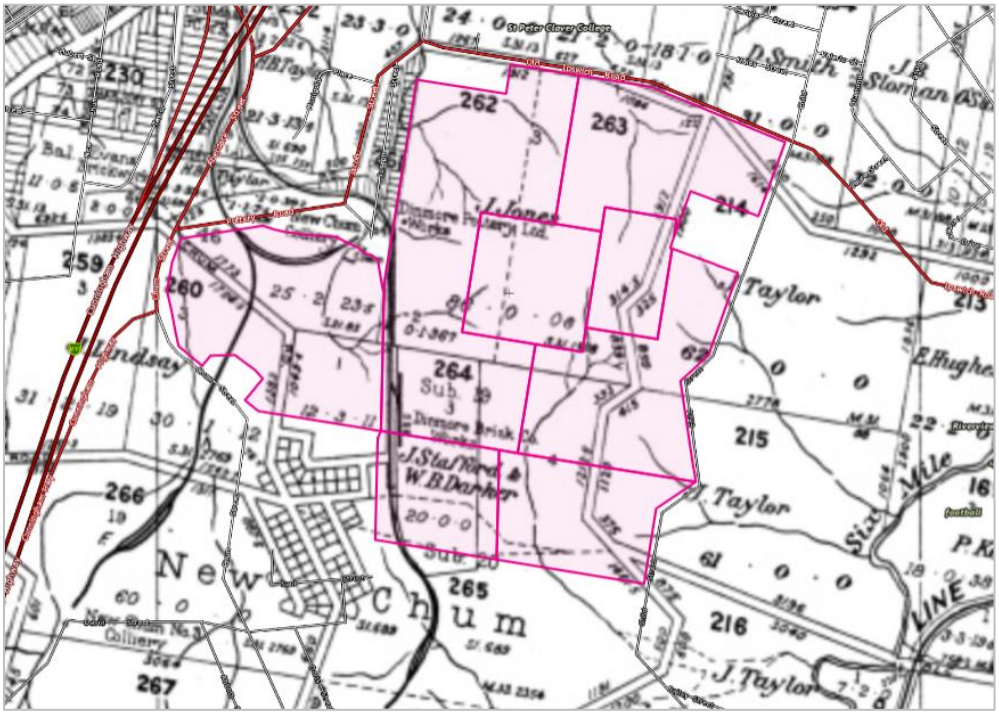


Figure 3 – Dinmore MLs Overlain on Queensland Twenty Chain series sheet 2521, 1930

(Figure reprinted and adapted from Picture Ipswich (n.d.b), Queensland Twenty Chain series sheet 2521, 1930)

The Dinmore Pottery remained in operation for many decades until the late 1900s when it became disused. PGH's clay pit mining activities at the site commenced in approximately 1989.

Land underlying the current MLs was also subject to ML 4590 which was lodged 11 December 1952 and held by New Whitwood Collieries Pty Ltd for the purpose of coal mining. This lease is assumed to have been for the purpose of sub-surface mining. Post office records dating back to 1949 recorded the Belmont, New Aberdare, Rhonnda, Rylance and Whitwood collieries in the district defined as Dinmore, along with the Dinmore, Hudson and Rylance pottery/brickworks (Centre for the Government of Queensland, 2018).

3.1.1.2 Existing Land Use

The site is currently used for mining activities, refer to aerial imagery dated 23 June 2022 for an illustration **Plate 1 - Dinmore Aerial Imagery Dated 23 June 2022**.



Plate 1 - Dinmore Aerial Imagery Dated 23 June 2022

(Source: Nearmap)

3.1.1.3 Land Use Adjacent to Site

The site is wholly situated within the Swanbank Industrial Area, which is subject to extensive Environmentally Relevant Activities including but not limited to composting facilities, landfills, transfer stations, tyre recycling facilities, clay mining, landfill gas conversion and power generation (Swanbank Power Station). Refer to **Figure 4 – Swanbank Industrial Area Map** for mapping provided by the State illustrating the bounds of the Swanbank Industrial Area. Included as **Table 3 – Adjacent Land Uses: Dinmore** provides a summary of the land uses immediately adjacent to the site.

Table 3 – Adjacent Land Uses: Dinmore

Direction	Land Use
North	Old Ipswich Road bounded by St Peter Claver College. Dwellings situated along Joseph Street and industrial activities along Jacob Street including fabricators and steel suppliers.
East	Vacant land zoned recreation in accordance with the Ipswich Planning Scheme.
South	Industrial activities.
West	Chum Street, clay pit mining and brick manufacturing, Cunningham Highway and industrial activities.

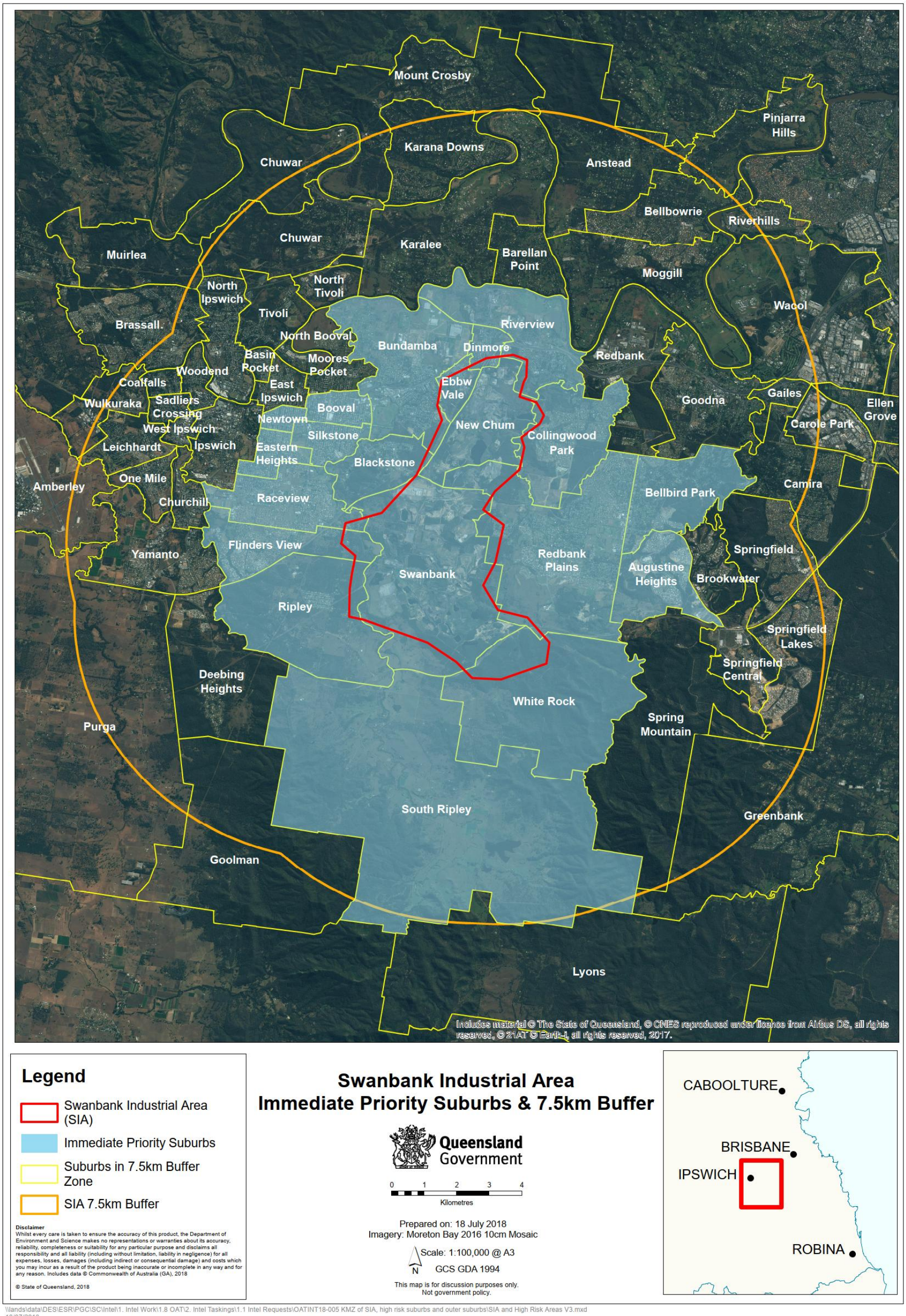


Figure 4 – Swanbank Industrial Area Map

(Source: The State of Queensland (2018))

3.1.2 Topography

The landform has been subject to an extensive history of clay pit mining and therefore the current topography has been shaped by prior activities. Elevations within the site are highest adjacent to the eastern boundary at the hill summit at approximately 98 m AHD, sloping downwards in a general westerly direction to the base of the current extraction area. Refer to **Figure 5 – Topography: Dinmore** provides an indicative indication of elevations at the site.

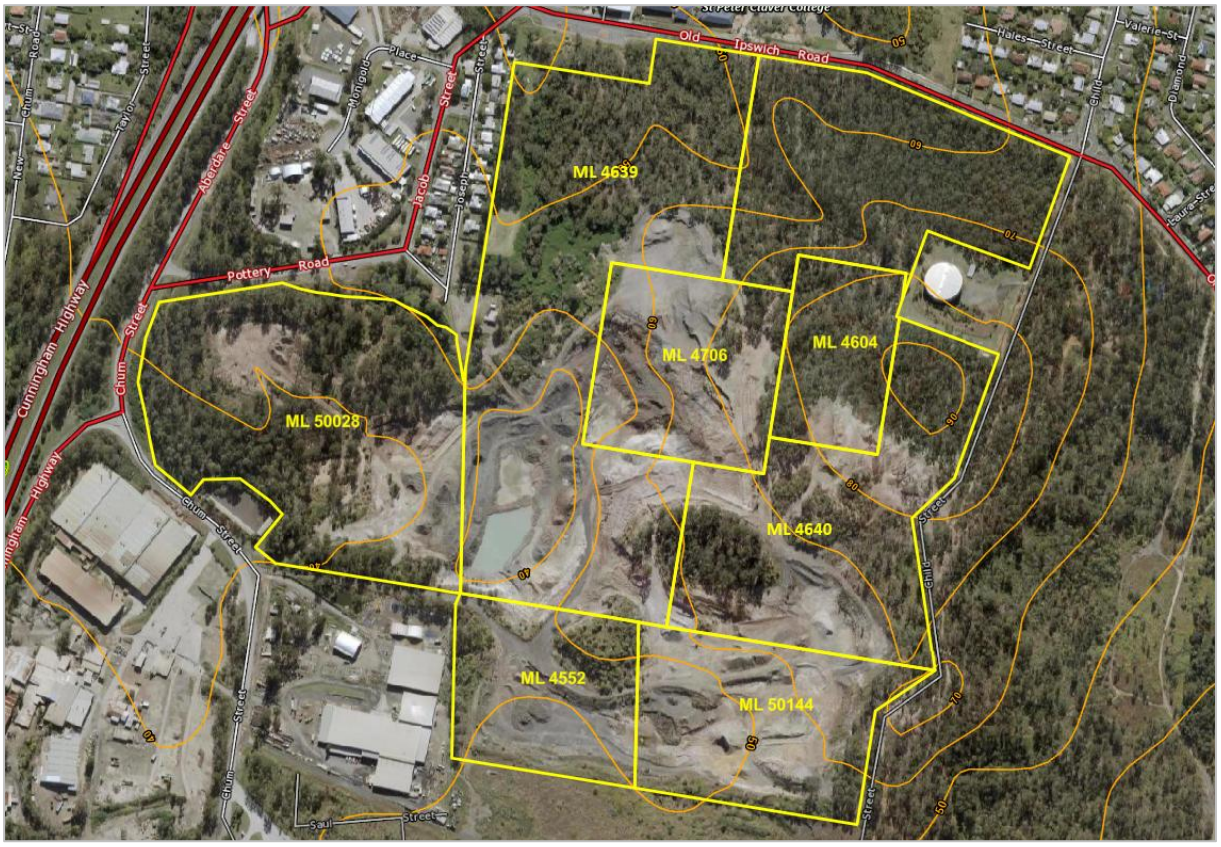


Figure 5 – Topography: Dinmore

(Source: The State of Queensland (2022a))

3.1.3 Climate

A summary of the regional climate data relevant to the Dinmore locality, Bureau of Meteorology ('BoM') Archerfield Airport 040211 station, is provided in Table **4 – Dinmore Regional Climatic Statistics**.

Table 4 – Dinmore Regional Climatic Statistics

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (mm)													
Mean	134.2	158.7	128.9	76.9	71.7	65.8	46.7	35.9	34.3	78.9	97.8	125.7	1,053.1
Mean Temperature (°C)													
Min	20.4	20.2	18.5	15.2	11.9	9.4	7.7	8.1	11.2	14.5	17.2	19.2	14.5
Max	30.5	29.9	28.9	26.6	24.0	21.5	21.3	22.8	25.4	27.1	28.6	29.7	26.4

Source:
Rainfall data from BoM Airport 040211.

3.1.4 Geology

Refer to **Figure 6 – Geological Plan Dinmore (See cross section for rock legend**) and **Figure 7 – Geological Cross Section A-B Dinmore** for an illustration of the geology within the site. The area within the leases at Dinmore contains shales, siltstones and sandstones of the Tivoli and Blackstone Formations and is overlain in part by clays of the Redbank Plains Formation.

A prominent regional structure, the Ebbw Vale Fault, cuts through the central portion of the leases in a north-westerly direction, dipping steeply to the south-west. This structure is a normal fault with a reported offset of around 130m, resulting in the underlying Tivoli Formation to be adjacent to the Blackstone Formation. Drag folding caused by movement along the fault has resulted in localised reduction in dip angles of rock units either side of the fault. The area of highest elevation of the site in the northeast is dominated by a layer of conglomerate within the Tivoli Formation, which may be up to 15m thick. Beneath this unit are sandstones, siltstones and shales of the Tivoli formation. The areas of lowest elevation in the south-west, across the Ebbw Vale Fault, have been partially mined and consist mainly of sandstones, siltstones and shales of the Blackstone Formation. Clays and claystones of the Redbank Plains Formation occur as a thin veneer overlying the older rocks in the central and western portions of the site, becoming thicker in the northwestern area.

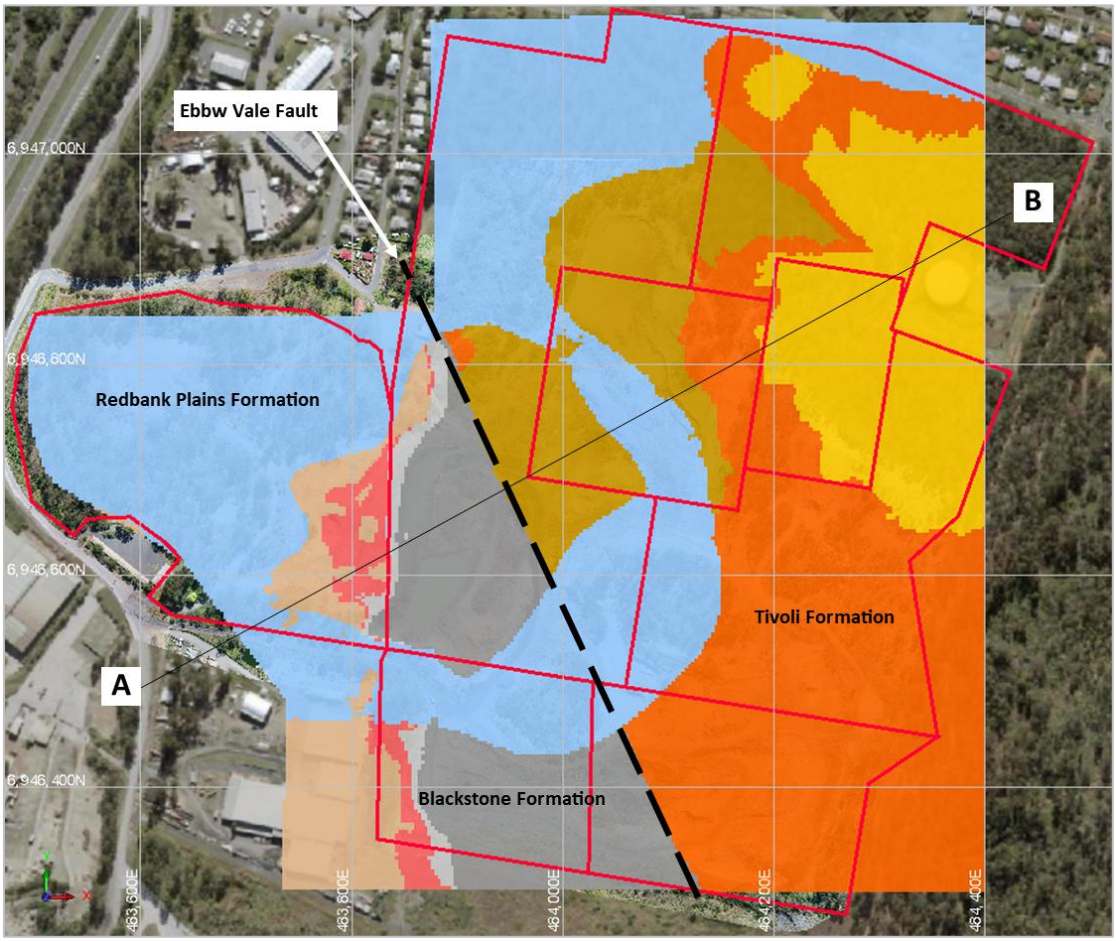


Figure 6 – Geological Plan Dinmore (See cross section for rock legend)

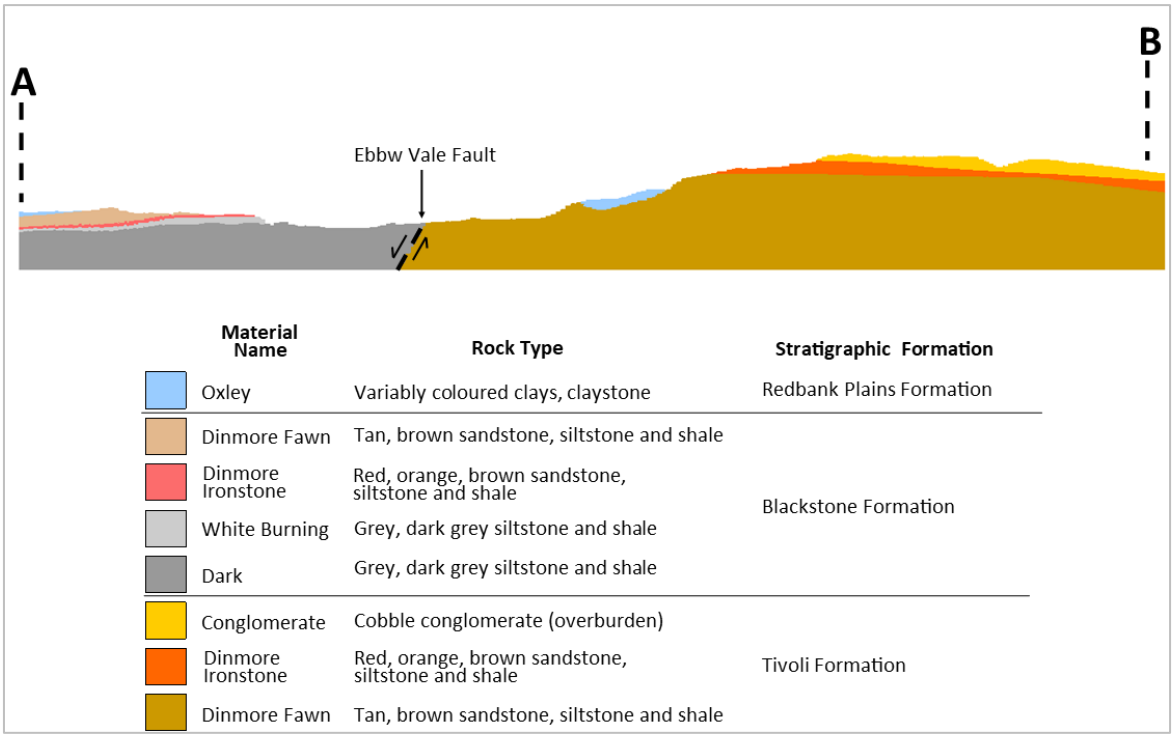


Figure 7 –Geological Cross Section A-B Dinmore

The geology of the Dinmore site leads it to be used for a range of brick products, with approximately twelve (12) different blends being created from the materials on site to manufacture bricks. Given the high degree of variability within the materials, the mining campaigns at the site are difficult to plan and establish, particularly as demand changes for the types of brick that are to be produced.

3.1.5 Hydrology

Watercourse mapping is shown in **Figure 8 – Watercourse Mapping: Dinmore** and **Figure 9 – Regional Watercourse Mapping: Dinmore**. The site lies approximately 1.4 km north-east of the Brisbane River, 2.2 km south of the Bremer River and 1.6 km west of Six Mile Creek. The closest watercourse is within the northern boundary of the site and is a minor non-perennial watercourse that would generally flow with rainfall events. This water course is a drainage feature that flows towards Bremer River, traveling through a drain and meeting approximately 2.1 km north of the site. Bremer River is a perennial major waterway and a tributary of the Brisbane River with its confluence approximately 2.3 km to the north-east of the site.

The Bremer River drains several Scenic Rim Valleys in south-east Queensland and has several tributaries. The Bremer River catchment is within the Ipswich local government area and contains six major waterways including the Bremer River, Bundamba Creek, Purga Creek, Reynolds Creek, Warrill Creek and Western Creek.



Figure 8 – Watercourse Mapping: Dinmore

(Source: The State of Queensland (2022a))



Figure 9 – Regional Watercourse Mapping: Dinmore

(Source: The State of Queensland (2022a))

Figure 10 – Wetland Mapping: Dinmore provides an illustration of wetlands in the locality. The nearest mapped wetland is a riverine wetland situated 750 m southeast of the site boundary. There are no VMA wetlands within proximity of the site.

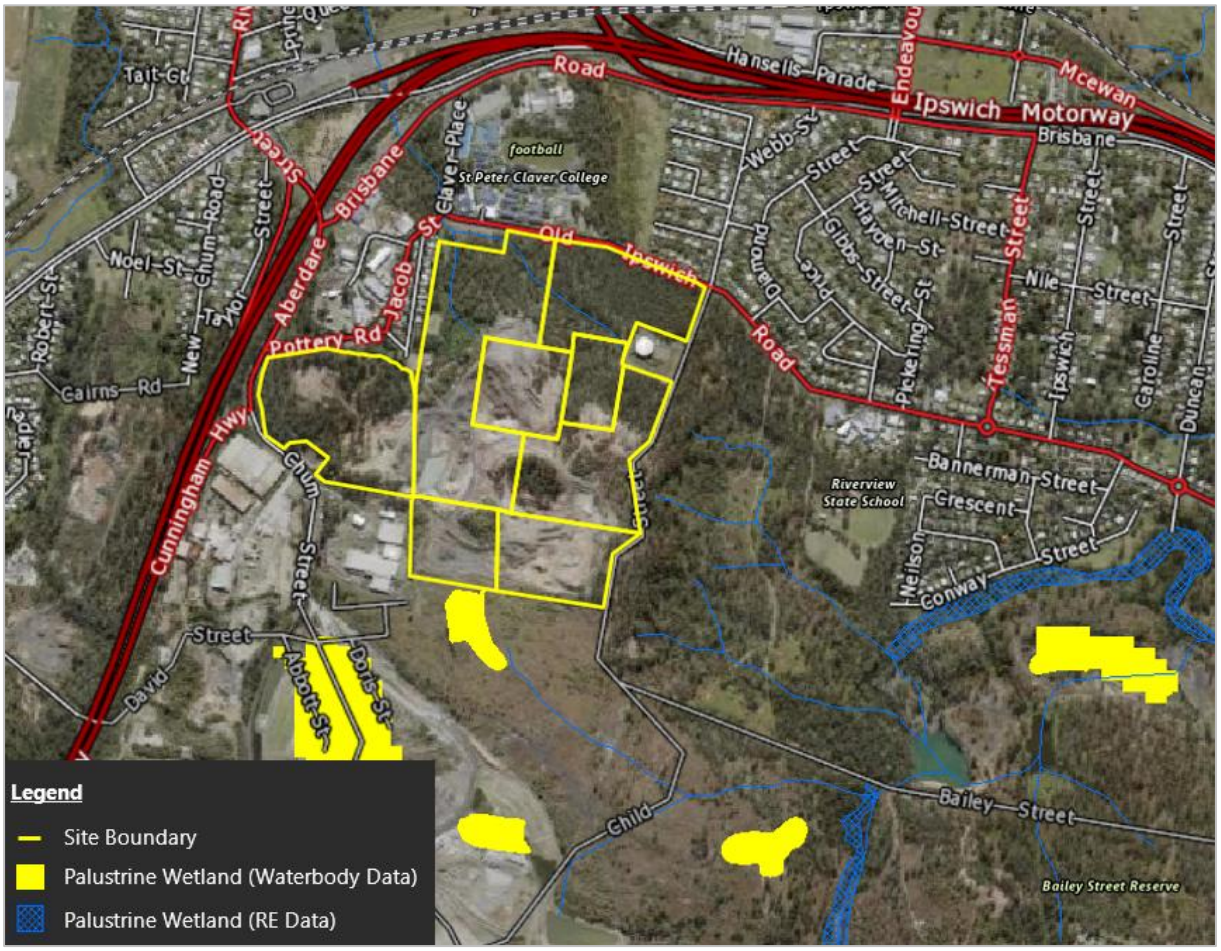


Figure 10 – Wetland Mapping: Dinmore

(Source: The State of Queensland (2022a))

3.1.6 Regional Water Quality Objectives

The site is situated within the coastal streams water type of the Bremer River Basin, which is subject to the *Environmental Protection (Water) Policy 2009: Bremer River environmental values and water quality objectives* (DERM 2010b). The WQOs for these waters are summarised in **Table 5 – Bremer River Basin Coastal Streams WQOs**.

Table 5 – Bremer River Basin Coastal Streams WQOs

Parameter	Objective
Turbidity	< 17 NTU
Suspended Solids	< 6 mg/L
Chlorophyll a	<5 µg/L

Parameter	Objective
Total Nitrogen ('N')	< 500 µg/L
Oxidised N	< 60 µg/L
Ammonia N	< 20 µg/L
Organic N	< 420 µg/L
Total Phosphorous ('P')	< 50 µg/L
Filterable Reactive P ('FRP')	< 20 µg/L
Dissolved Oxygen	85-110%
pH	6.5 – 8.0
Conductivity	< 770 µS/cm

3.1.7 Groundwater Levels and Properties

3.1.7.1 Groundwater Bores

Review of the bore cards for the groundwater bores in the area clearly show that a perched aquifer does exist to the north and west of site in and around the service station constructed on the corner of Aberdare and Brisbane Roads. Importantly this work was clearly completed more for contaminated land purposes, however, was useful in that it identified that the groundwater level in this area is hosted in quaternary alluvium with the groundwater at approximately 5-8 metres below surface, refer Attachment **2 -** Dinmore Area Bore Reports. Importantly the bores were generally non yielding and had very low to no flow rates, with Bores RN 154776 and 777 being the two closest bores to the Dinmore operation in this area which encountered groundwater within quaternary clay at around 31m AHD. Both were described as non-flow sources.

Table 6 – Dinmore Local Groundwater Levels provides a summary of local groundwater data sourced from available bore reports for the locality. **Figure 11 – Local Groundwater Bores: Dinmore** provides an illustration of registered groundwater bores in the surrounding area which have been reviewed to determine potential groundwater levels in the locality.

Table 6 – Dinmore Local Groundwater Levels

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level (m BGL)	Comment (purpose; install date; other)
152720	55 mAHD	56.20 to 62.00 m	Monitoring, though likely for water supply; installed 2014; water level based on installation of screen within the bore.
154776	40 mAHD	7.00 to 10.00 m.	Monitoring; 2015; Water level reported as 5.00 m during monitoring 2 / 2 / 2015.

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level (m BGL)	Comment (purpose; install date; other)
154779	40 mAHD	7.00 to 10.00 m.	Monitoring; 2015; Water level reported as 5.50 m during monitoring 2 / 2 / 2015.
154708	40 mAHD	7.00 to 11.00 m.	Monitoring; 2014; Water level reported as 5.00 m during monitoring 24 / 8 / 2014.
154777	40 mAHD	8.80 to 11.00 m	Monitoring; 2015; Water level reported as 7.00 m during monitoring 2 / 2 / 2015.
138323	30 mAHD	37.00 to 49.00 m; aquifer reported as being 40.00 to 47.00 m.	Monitoring; 2007; Water level reported as 11.60 m during monitoring 19 / 6 / 2017, however bore likely under pressure.

Note: Green – denotes bores likely installed to target deep aquifers for water use and supply; Yellow – denotes bores likely installed for shallow perched aquifer monitoring, and not be supply.

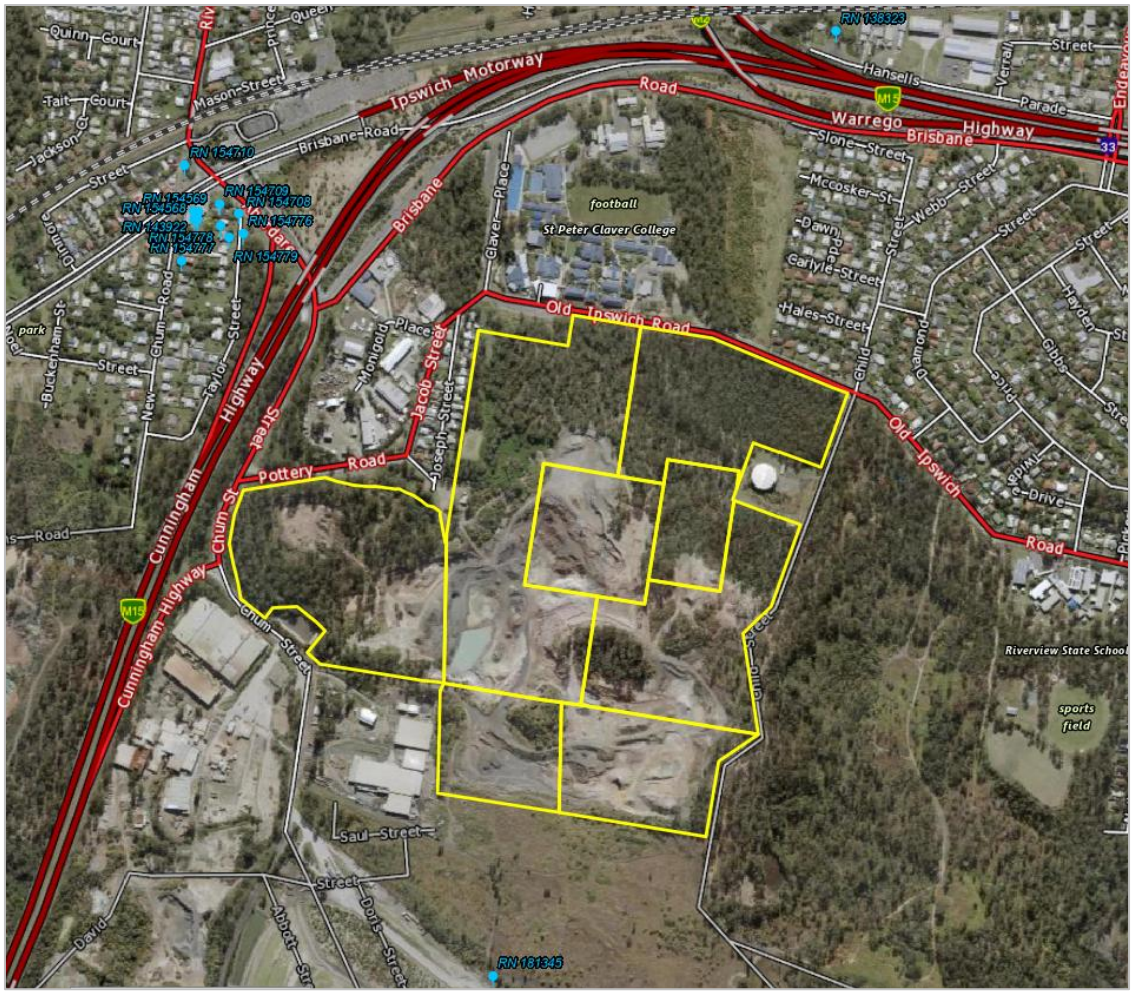


Figure 11 – Local Groundwater Bores: Dinmore

(Source: The State of Queensland (2022a))

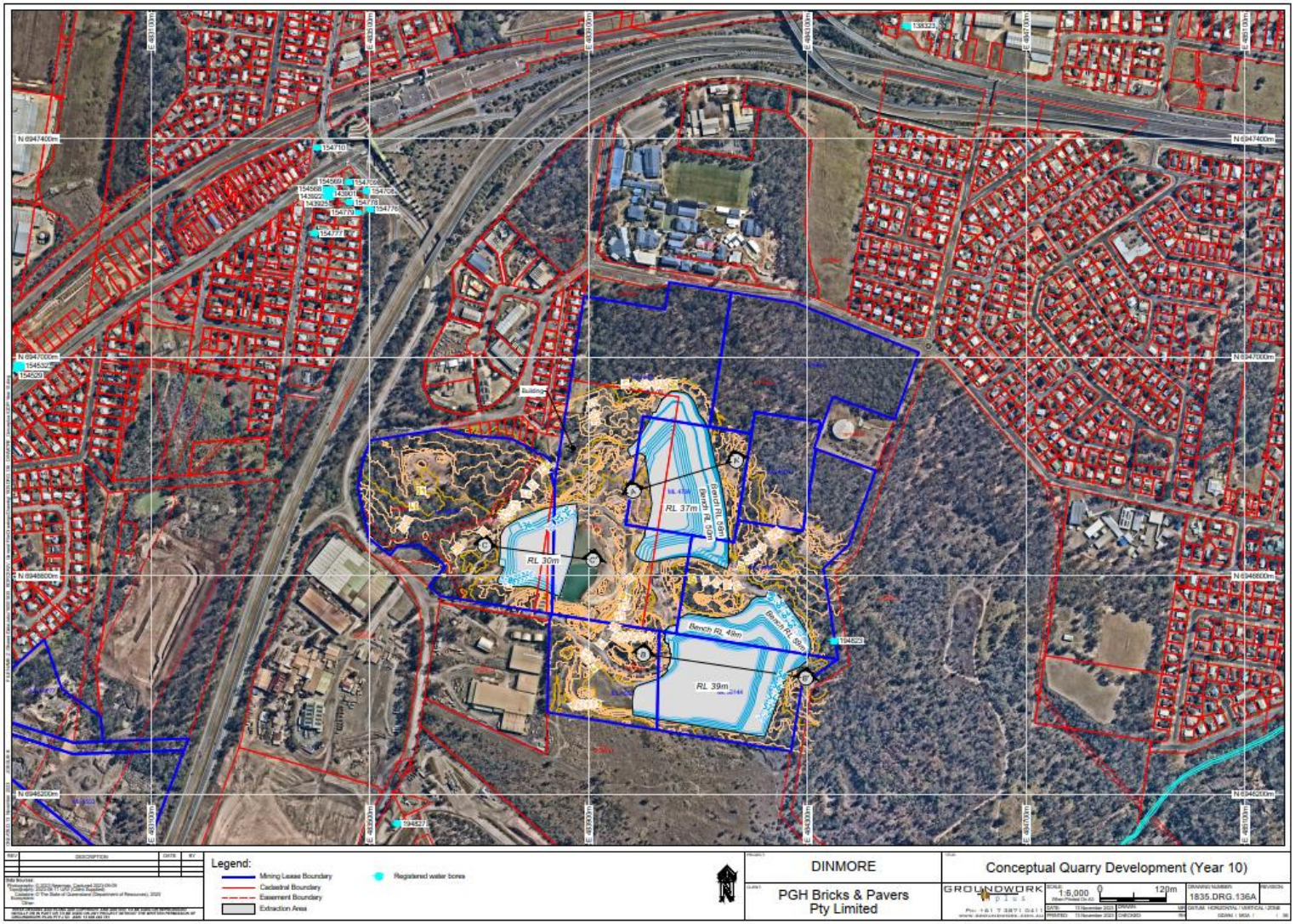


Figure 12 – Pit Depths and Bores: Dinmore

Figure 12 above shows the pit designs and depths for the Dinmore clay pits with the location of the nearby registered DNRM bores of relevance also shown.

Importantly the geology and groundwater encountered in these bores as logged by DNRM is considered quaternary alluvial material and accordingly the very low volumes of groundwater encountered is likely to be reflective of an ephemeral, non-yielding, non-flow, alluvial aquifer which sits over and above the deeper groundwater levels which are hosted in the sandstones and shales of the area, refer bores RN 152720 and RN138323. The regional geology of the areas is shown on **Figure 13 - Regional Geology with Groundwater Bores: Dinmore**.



Figure 13 - Regional Geology with Groundwater Bores: Dinmore

(Source: The State of Queensland (2022a))

This quaternary alluvium is not encountered on the Dinmore site and the material which is currently extracted for brick manufacture is a combination of weathered claystone and mudstone of both the Blackstone and Tivoli Formations which are Triassic in age. These geological units are quite different to the Redbank Plains Formation which hosts the northwest cluster of bores and which is Tertiary in age and unconformably overlies the older Triassic Rocks.

To the south of site DNRM Bore 194827 is probably the most contemporaneous and useful bore to review and groundwater levels encountered in this bore area approximately 24m below ground level or

at approximate an elevation of 23m AHD. Importantly when this bore was first monitored the groundwater levels were 44 meters below ground or at approximately -1m AHD. It has since recharged since the 2008 initial monitoring campaign. The next bore RN 194826 encountered groundwater on the 11/8/22 at 30bgl or at approxamtely22 m AHD which provides good control for the Dinmore site.

To the northeast of site the nearest bore RN 138323 encountered groundwater at approximately 40m below ground level, or approximately -5m AHD. This suggests that the flow gradient will flow south to north toward the Brisbane River, which makes practical sense.

Based on these observations from the DNRM it would appear that:

- Groundwater flows south to north with a west to east vector component also likely to be apparent.
- Groundwater levels on site will change slightly across site being around 20m AHD in the south, extrapolated from the southern bores, to 17m AHD in the north of site.

Critically the final floor level of the pit is 30m AHD at its lowest point and in most areas is around 37 to 39m AHD or a minimum of ten metres above groundwater. This makes sense as no groundwater inflow has been recorded occurring into the pit, and the water collected in the pit sump visible in the aerial image is stormwater which is used on site for dust suppression and rehabilitation purposes.

3.1.7.2 Other Findings

- Historical drilling completed to varying depths across site has not encountered groundwater with the bulk of the holes being drilled between elevations of 40 to 20m AHD.
- The main rock type extracted at Dimore is clay and claystone of the Blackstone formation. By its very nature the clay acts as an aquitard and as expected being clay does not host any significant volume of groundwater because it is a tight, stiff clay with low linear shrinkage. Tight, stiff clays like those of the Blackstone beds are not commonly, if ever, considered aquifers as they do not possess the capacity to host or transmit significant volumes of groundwater.
- Like many clays they are generally considered impervious with permeability rates in the order of 10^{-9} to 10^{-11} m/s. This is why these clays are used for ceramics, impervious cores for dam walls and capping for landfills as they do not transmit water.

3.1.7.3 Groundwater Summary

No groundwater impacts are currently experienced or are likely to be encountered by the shallow clay pit operation, at Dinmore as most of the pits are less than 15 metres deep and remain well above the groundwater table. This is supported by site observations, where it is very apparent that no groundwater inflows have been recorded along with the regional bore network, which shows groundwater occurs a minimum of ten meters below the final floor of the clay pits. Additionally the clays are impervious and while they can store groundwater they do not act as aquifers to any significant degree as they are impervious materials. In practicality the clay pits do not act as either a significant source of groundwater or, a sink for groundwater as the sit above the groundwater table and have hydrogeological characteristics which preclude them from acting as a significant source of yielding groundwater.

The groundwater impacts within the Dinmore clay pits are considered non material and negligible for the following reasons.

- Groundwater occurs between 8 and 12 metres below the lowest level of the pit floor on site. In most areas the pit floor is 15-17 meters above the ground water table. When backfilled this depth differential will ensure that no impacts occur to the regional groundwater milieu.

- The clays are non-yielding and are considered impervious, having permeability rates in the order of 10^{-9} to 10^{-11}. This means they cannot host any significant volume of groundwater that could yield or flow.
- Historical drilling has not intersected groundwater with most drilling occurring to a depth off 20m AHD.
- No groundwater is recognised as occurring into the pit, with the sump collecting stormwater which is used for dust suppression purposes.
- The DNRM bores confirm groundwater occurs at levels between 20-17m AHD shallowing to the north and also having a northerly and very shallow flow vector.
- No alluvial perched aquifers are recorded on site and the perched aquifers recorded to the northwest occur in quaternary alluvium and are likely to represent ephemeral alluvial aquifers which do not occur with the Triassic claystone's of the Blackstone Formation.

3.1.8 Soils

3.1.8.1 Soil Group

The soil type within the site boundaries is mapped as duplex yellow-grey, hard setting A horizon, A2 horizon conspic bleached, acid pedal mottled B horizon. The dominant entity is Dy3.41 – Hard pedal mottled-yellow duplex soils (The State of Queensland 2022a).

3.1.8.2 Acid Sulfate Soils

Review of the Acid Sulfate Soils ('ASS') mapping (The State of Queensland (2022a) has confirmed that the site is not located within, or near, an area where ASS have previously been identified, or within a prospective land zone containing ASS. As elevations over the site are above 40 m AHD, presence of ASS is considered very unlikely.

3.1.8.3 Productivity

Testing has been undertaken of retained topsoils on site which allow for an assessment of the quality of soil available for rehabilitation at the site.

The soil testing locations are described as follows:

- D1 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- D2 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- D3 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.

Analysis was undertaken for parameters typical for growth media suitability assessments. The soil on site has been described as Clay Loam soil. Results are provided in

Table 7 - Soil Quality: Dinmore**.** Included in this table are indicative guidelines based on 'Albrecht' and 'Reams' concepts and the *National Environmental Protection Measure – Guideline on Investigation Levels for Soil and Groundwater* (NEPC 2013) ('NEPM').

Table 7 - Soil Quality: Dinmore

Parameter		Soil sample			Guideline
		D1	D2	D3	Clay Loam
Soluble Calcium (mg/kg)		233	182	331	*750*
Soluble Magnesium (mg/kg)		534	356	439	*105*
Soluble Potassium (mg/kg)		162	124	105	*75*
Soluble Phosphorus (mg/kg)		<1	<1	<1	*12*
Phosphorus (mg/kg P)		2.8	2.5	2.3	*30*
		6.6	6.6	8.2	*50*
		4.0	3.5	2.4	*60*
Nitrate Nitrogen (mg/kg N)		3.3	0.47	2.3	*13*
Ammonium Nitrogen (mg/kg N)		2.6	1.7	6.6	*18*
Sulfur (mg/kg S)		13	16	6.7	*8.0*
pH		4.97	5.14	5.30	*6.5*
Electrical Conductivity (dS/m)		0.048	0.053	0.043	*0.150*
Estimated Organic Matter (% OM)		5.8	4.4	7.2	*>4 .5*
Exchangeable Calcium	(mg/kg)	615	382	830	*2150*
Exchangeable Magnesium	(mg/kg)	1,319	724	931	*200*
Exchangeable Potassium	(mg/kg)	460	314	219	*190*
Exchangeable Sodium	(mg/kg)	84	101	83	*60*
Exchangeable Aluminium	(mg/kg)	421	295	209	*45*
Exchangeable Hydrogen	(mg/kg)	12	13	20	*5*
Effective Cation Exchange Capacity (ECEC) ($cmol_+/kg$)		21	14	17	*14.3*
Calcium (%)		14	14	24	*75.7*
Magnesium (%)		51	44	45	*11.9*
Potassium (%)		5.5	5.9	3.3	*3.5*
Sodium - ESP (%)		1.7	3.2	2.1	*1.8*

Parameter	Soil sample			Guideline
	D1	D2	D3	Clay Loam
Aluminium (%)	22	24	14	*7.1*
Hydrogen (%)	5.8	9.4	12	
Calcium/Magnesium Ratio	0.28	0.32	0.54	*6.4*
Zinc (mg/kg)	2.8	3.1	4.6	*5.0*
Manganese (mg/kg)	17	14	20	*22*
Iron (mg/kg)	64	34	84	*22*
Copper (mg/kg)	0.21	0.39	0.80	*2.0*
Boron (mg/kg)	0.66	1.1	0.75	*1.7*
Silicon (mg/kg Si)	46	29	39	*45*
Total Carbon (%)	3.3	2.5	4.1	*> 2.6*
Total Nitrogen (%)	0.20	0.14	0.21	*> 0.25*
Carbon/Nitrogen Ratio	17	18	19	*10–12*
Chloride Estimate (equiv. mg/kg)	31	34	28	..

The above soil results have been used to understand existing soil suitability at the site, with the following comments provided.

The **pH range** for the soils on site is from 5 to 5.3 and are described as acidic. In their current state, they will not be suited to a wide range of revegetation species. However, vegetation exists (refer **Photo 2 - Vegetated area surrounding D3**) within these same soils, indicating the pH ranges on site are not hostile to some native plants. The natural soils in this area have an inherently low pH and are able to sustain a variety of vegetation. PGH will select native species that already exist on location for rehabilitation to align with the surrounding undisturbed ecosystem. As a result, ameliorating pH may not be necessary.



Photo 2 - Vegetated area surrounding D3

The **electrical conductivity** for the soils is low. D2 and D3 results indicate a slightly elevated **exchangeable sodium percentage**, however current vegetation growth indicates salinity and salt is not a limitation.

The **nutrient** levels within the soils, represented by the nitrogen suites of analysis, indicate the fertility of the soils to be poor in regard to nitrogen and phosphorus levels available. This isn't uncommon for soils in Australia, with native plant varieties well-conditioned to low nutrient soils. Nitrogen availability may also be affected by low pH. If necessary, fertility levels can be improved through the addition of fertilisers to ensure an additional nutrient source is made available for plant establishment, particularly in the short term of any rehabilitation program. However nutrient deficiencies have not been observed in current undisturbed land.

The soil materials at the site indicate limitations, particularly in regard to pH, nutrient levels and the clay loam nature of the soil. The soil is however successfully supporting vegetated areas at the site. No soil ameliorants have been used in these vegetated areas. It is also noted that these limitations can be readily overcome through the addition of common ameliorants such as gypsum, lime and fertilisers if necessary.

3.1.9 Vegetation Communities

Refer to **Figure 14 – Mapped RE: Dinmore** for an illustration of the remnant vegetation mapping over the site. A large portion of the site is mapped as non-remnant vegetation under the VMA.

The balance of the site is mapped as containing the following remnant vegetation.

Category A or B and C or R Of Concern RE:

- RE 12.9-10.2 / RE 12.9-10.7 / RE 12.9-10.19 (65%/20%/15%):
    - Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks
    - E. crebra +/- E. tereticornis, C. tessellaris, Angophora spp. and E. melanophloia woodland on sedimentary rocks.
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments.
- RE 12.11.23/12.11.27 (60%/40%) – E. pilularis open forest on coastal metamorphics and interbedded volcanics, and E. racemosa subsp. racemosa and/or E. seeana and C intermedia woodland on metamorphics +/- interbedded volcanics respectively.

Category A or B Least concern RE:

- RE 12.9-10.19 (100%):
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments.

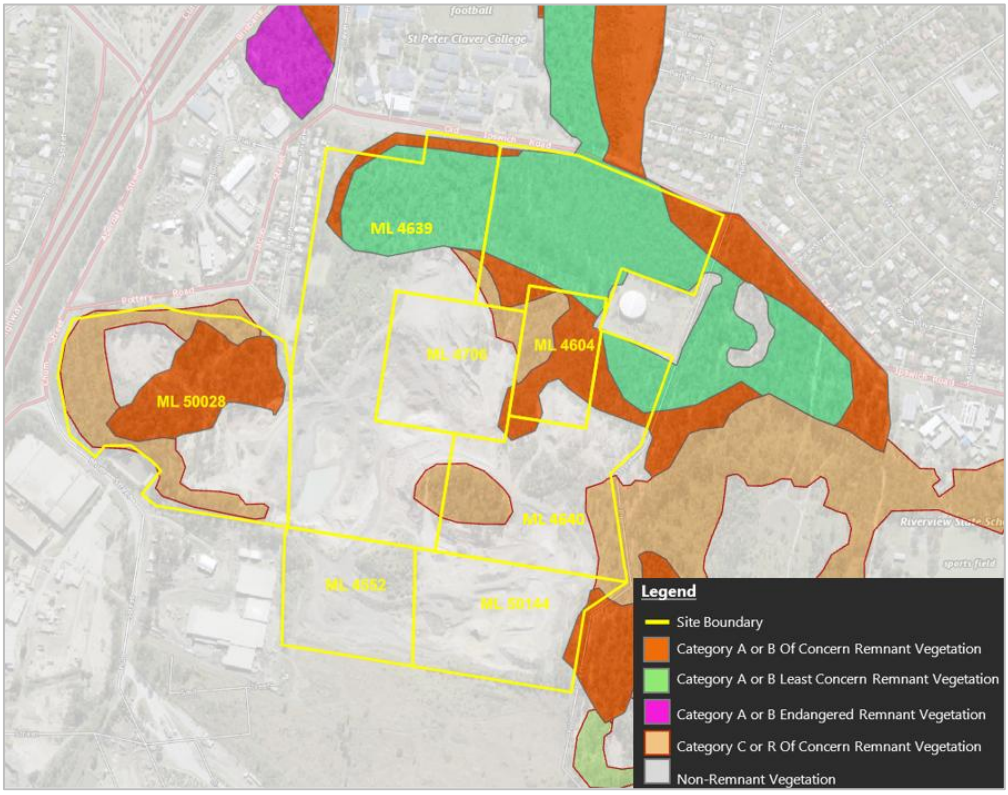


Figure 14 – Mapped RE: Dinmore

(Source: The State of Queensland (2022a))

3.1.10 Fauna Presence and Populations

No site fauna surveys have been carried out. In the absence of site-specific data, reference has been made to the DAWE Protected Matters Search Tool to determine the possible presence of species protected under the EPBC Act in the site locality (0 km buffer applied). A summary of the search results

is provided in **Table 8 – Protected Matters Search Results: Dinmore**. It must be noted that this species list has not been ground-truthed, and it's likely that the actual species composition on-site will vary.

Table 8 – Protected Matters Search Results: Dinmore

Scientific Name	Common Name	Class	Simple Presence	Threatened Category
Actitis hypoleucos	Common Sandpiper	Bird	May	-
Anthochaera phrygia	Regent Honeyeater	Bird	May	Critically Endangered
Apus pacificus	Fork-tailed Swift	Bird	Likely	
Argynnis hyperbius inconstans	Australian Fritillary	Insect	May	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	Bird	Likely	Endangered
Calidris acuminata	Sharp-tailed Sandpiper	Bird	May	
Calidris ferruginea	Curlew Sandpiper	Bird	May	Critically Endangered
Calidris melanotos	Pectoral Sandpiper	Bird	May	
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Mammal	May	Vulnerable
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	Bird	May	Vulnerable
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	Bird	Known	
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Bird	May	Endangered
Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]	Mammal	May	Endangered
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Mammal	Likely	Endangered
Delma torquata	Adorned Delma, Collared Delma	Reptile	Likely	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Bird	Known	Vulnerable
Falco hypoleucos	Grey Falcon	Bird	Likely	Vulnerable
Furina dunmalli	Dunmall's Snake	Reptile	May	Vulnerable
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Bird	Likely	
Geophaps scripta scripta	Squatter Pigeon (southern)	Bird	May	Vulnerable
Grantiella picta	Painted Honeyeater	Bird	May	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Bird	Known	Vulnerable
Lathamus discolor	Swift Parrot	Bird	Likely	Critically Endangered
Macroderma gigas	Ghost Bat	Mammal	May	Vulnerable
Mixophyes fleayi	Fleay's Frog	Frog	May	Endangered
Monarcha melanopsis	Black-faced Monarch	Bird	Likely	
Motacilla flava	Yellow Wagtail	Bird	May	
Myiagra cyanoleuca	Satin Flycatcher	Bird	Known	
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	Bird	May	Critically Endangered
Petauroides volans	Greater Glider	Mammal	Likely	Vulnerable
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Mammal	Likely	Vulnerable

Scientific Name	Common Name	Class	Simple Presence	Threatened Category
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Mammal	Known	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo (northern)	Mammal	May	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-fox	Mammal	Known	Vulnerable
Rhipidura rufifrons	Rufous Fantail	Bird	Likely	
Rostratula australis	Australian Painted Snipe	Bird	Likely	Endangered
Symposiachrus trivirgatus	Spectacled Monarch	Bird	Known	
Tringa nebularia	Common Greenshank, Greenshank	Bird	Likely	
Turnix melanogaster	Black-breasted Button-quail	Bird	Likely	Vulnerable

Table notes:
*Known = Known to occur within area. Likely = Likely to occur within area, May = May occur within area.
M = Migratory species.

3.2 Greenwood Village

3.2.1 Land Use

3.2.1.1 Pre-Mining Land Use

Clay pit mining is estimated to have commenced soon after grant of the earliest Greenwood Village ML based on review of aerial imagery. In 1968 prior to these activities commencing, the land within the site area was primarily vegetated rural land. Refer to **Plate 4 – Aerial Imagery Dated 1968: Greenwood Village** for aerial imagery dated 1968.

Land immediately adjacent to the site is in use for coal mining activities (Blackheath Collieries), and the Swanbank Power Station is in operation to the southwest of the site. Land underlying the site is understood to have been subject to extensive coal mining activities.

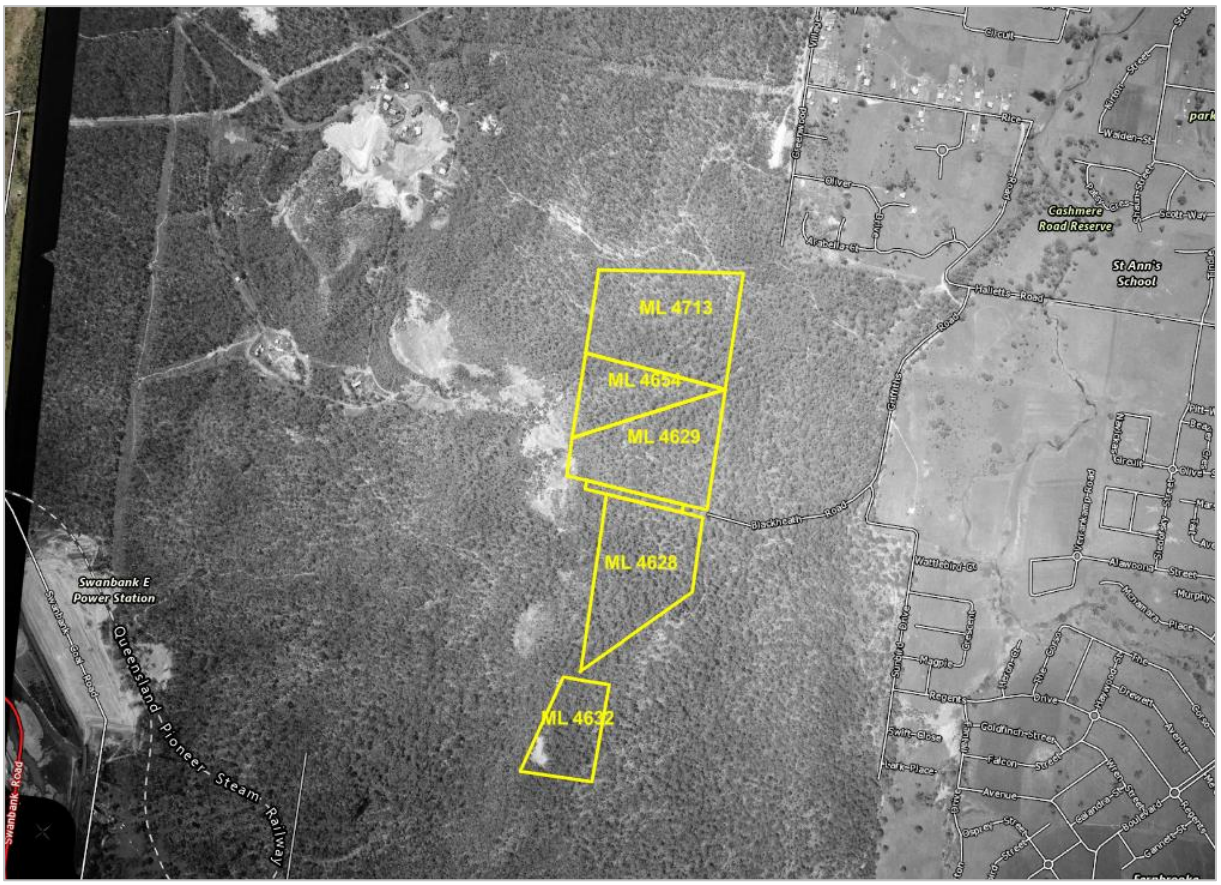


Plate 2 – Aerial Imagery Dated 1968: Greenwood Village

(Source QImagery. "Ipswich Transportation Study" Run: 5. Brisbane: QImagery, 22 February 1968)

3.2.1.2 Existing Land Use

The site is currently used for mining activities, refer to aerial imagery dated 23 June 2022 for an illustration **Plate 3 – Greenwood Village Aerial Imagery Dated 23 June 2022**.

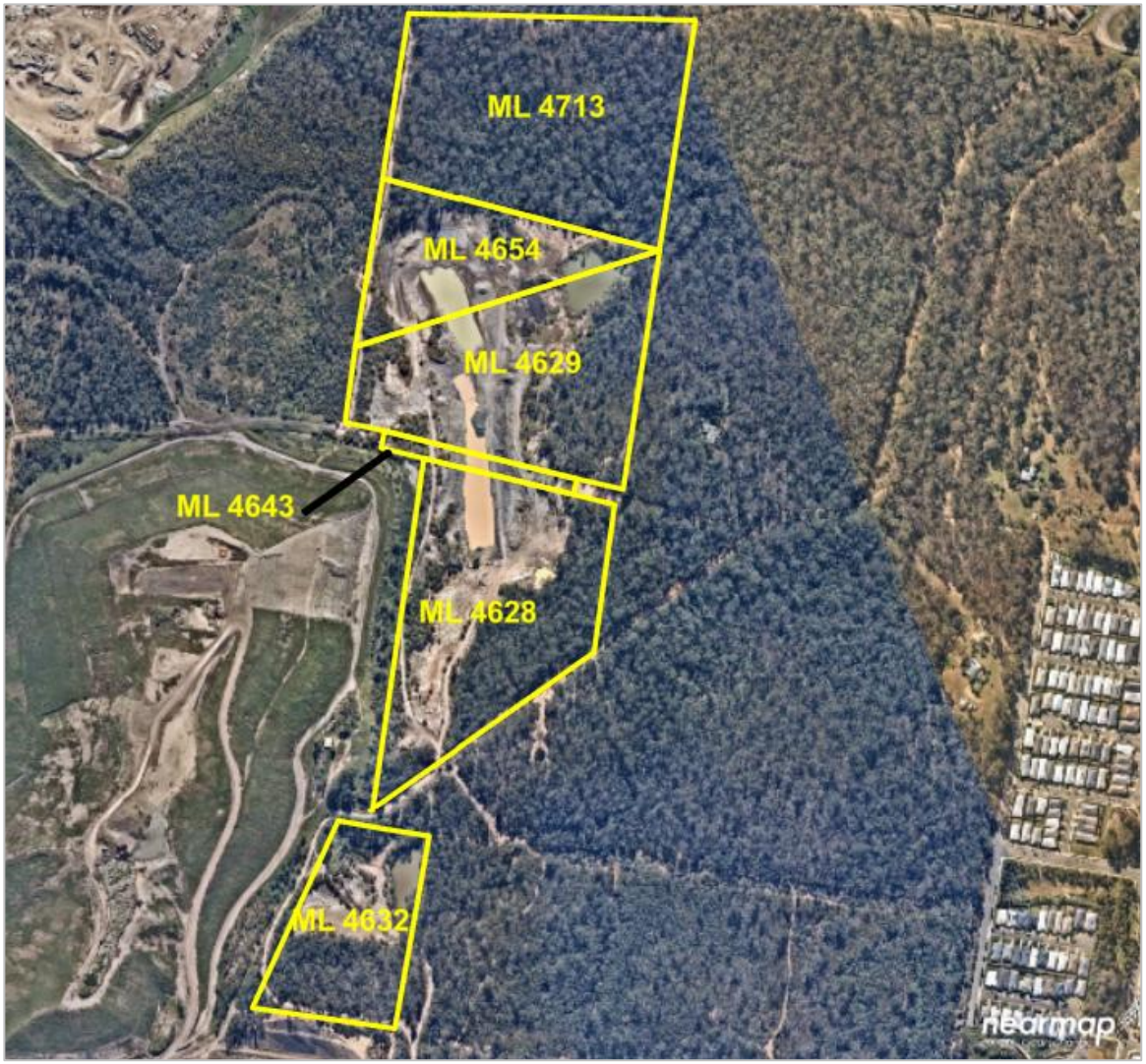


Plate 3 – Greenwood Village Aerial Imagery Dated 23 June 2022

(Source: Nearmap)

3.2.1.3 Land Use Adjacent to Site

Table 9 – Adjacent Land Uses: Greenwood Village provides a summary of the land uses surrounding the site. The site is wholly within the Swanbank Industrial Area outlined in **Section 3.1.1.3 Land Use Adjacent to Site**.

Table 9 – Adjacent Land Uses: Greenwood Village

Direction	Land Use
North	Single rural residential dwelling bordered by the Veolia waste management facilities, Tyrecyle and pacific Fertiliser to the north-west and residential dwellings to the northeast.
East	Waste treatment and disposal (landfill operated by Brisbane City Council).
South	Vacant land and Remondis Swanbank Renewable Energy and Waste Management Facility (Swanbank Landfill).
West	Swanbank Landfill

3.2.2 Topography

Elevations across the site range from 54 m AHD at the current base of the extraction area to 115 m AHD at the hill summit in the north-western corner of ML 4713. **Figure 15 – Topography: Greenwood Village** provides an illustration of the topographical features in the locality.

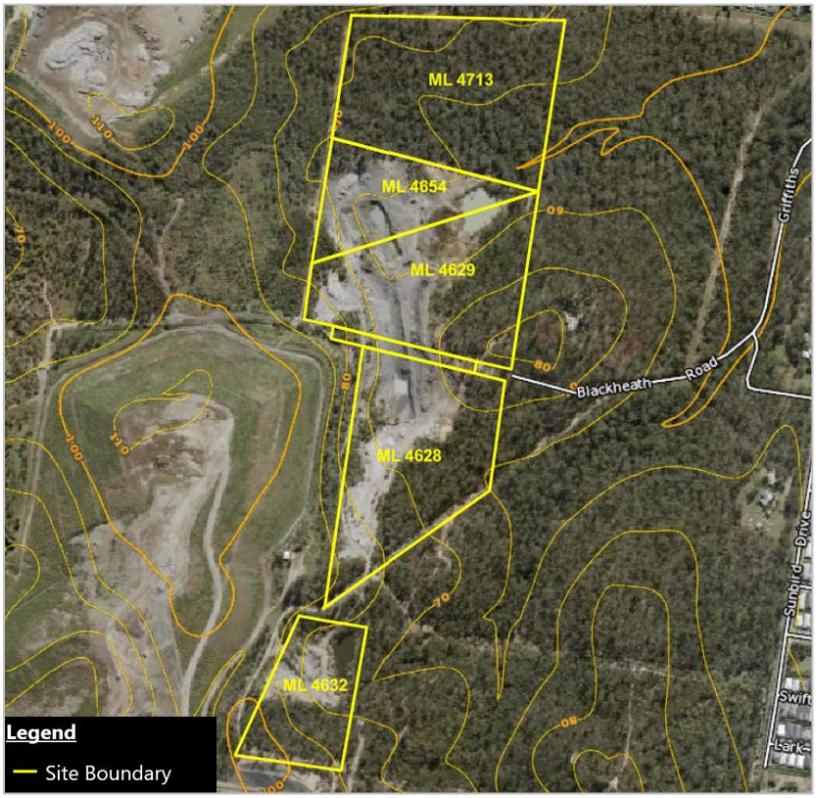


Figure 15 – Topography: Greenwood Village

(Source: The State of Queensland (2022a))

3.2.3 Climate

A summary of the regional climate data relevant to the Swanbank locality is provided in **Table 10 - Regional Climatic Statistics: Greenwood Village**.

Table 10 - Regional Climatic Statistics: Greenwood Village

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (mm)													
Mean	117.9	163.9	134.6	56.1	55.5	45.5	23.7	32.3	25.6	74.0	104.6	124.7	916.2
Mean Temperature (°C)													
Min	32.0	31.1	29.9	27.5	24.1	21.5	21.1	22.8	25.9	28.5	30.8	31.9	27.3
Max	20.0	19.7	18.3	14.7	11.0	8.2	7.0	7.6	10.7	14.2	16.9	18.8	13.9

Table notes:
Rainfall data sourced from BoM Bellbird Park (Purser Rd) AL station 40985.
Temperature data sourced BoM Ipswich station 40101.

3.2.4 Geology

Refer to **Figure 16 – Geology Mapping: Greenwood Village** and **Figure 17 - Geological Cross Section A-B Greenwood Village** for an illustration of the detailed surface geology mapped as occurring within the site. The area within the leases contains shales, siltstones and sandstones of the Blackstone and Raceview Formations, with the current exposed surface area dominated by the Raceview Formation. Locally, the rock units have variable dips between 10-30°, but generally dip around 20° towards the east to southeast. The two mining areas (North Pit and South Pit) have predominantly extracted a grey shale unit up to 60m true thickness (150m horizontal thickness) that lies between tan-brown layers of sandstone, siltstone and shale.

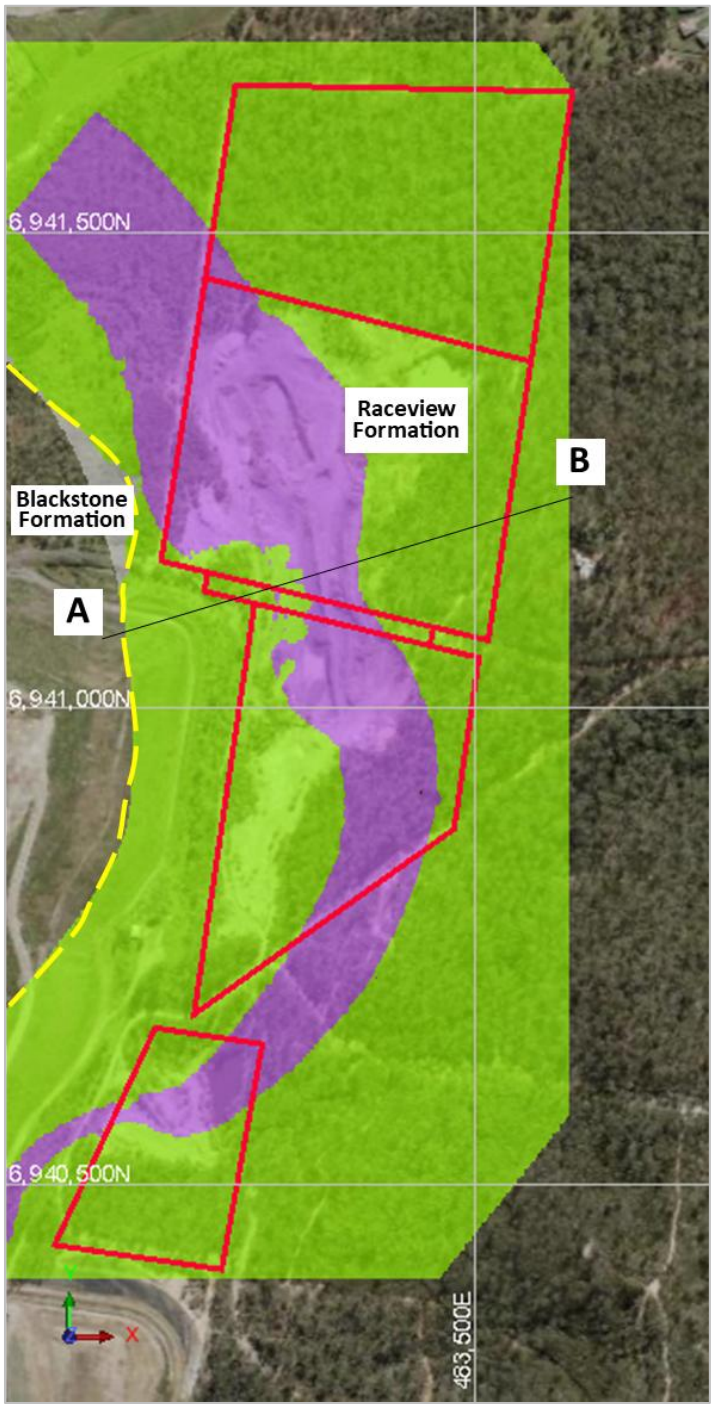


Figure 16 – Geology Mapping: Greenwood Village

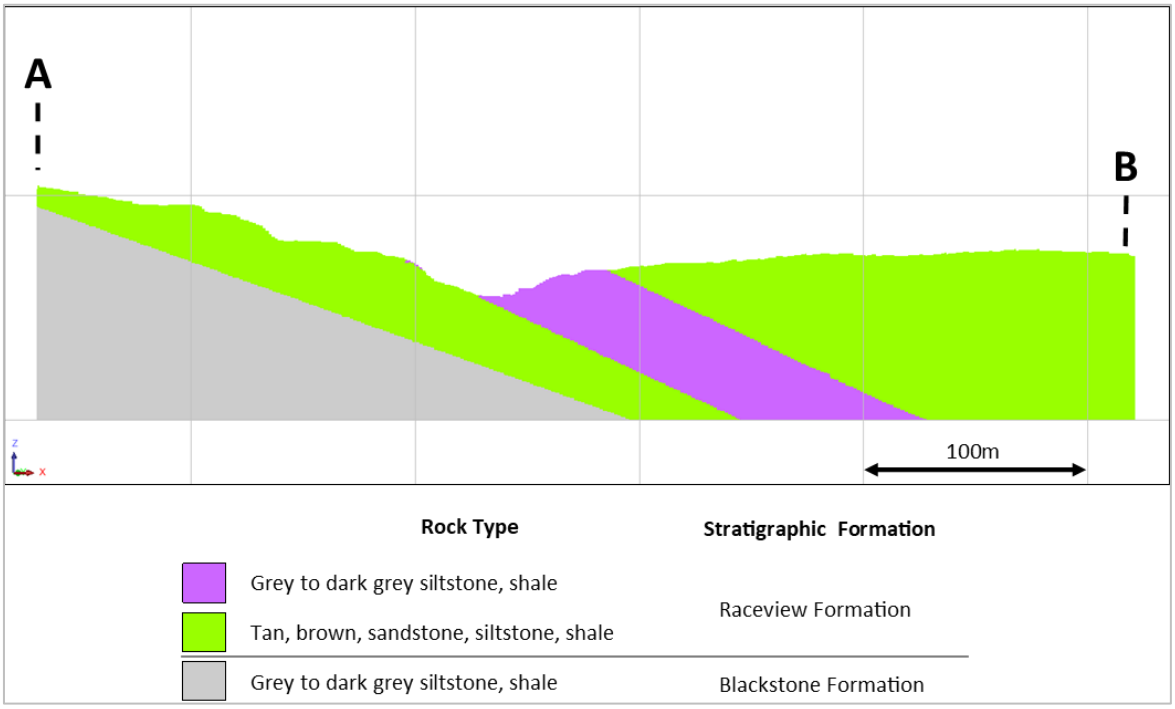


Figure 17 - Geological Cross Section A-B Greenwood Village

3.2.5 Hydrology

Watercourse mapping is shown in **Figure 18 – Watercourse Mapping: Greenwood Village** and **Figure 19 – Regional Watercourse Mapping: Greenwood Village**. The site lies approximately 6.2 km south-west of the Brisbane River, 800 m west of Six Mile Creek and 2.6 km east of Bundamba Creek. There is a minor non-perennial watercourse that is located within the site's boundary, that would generally flow with rainfall events. This water course is a drainage feature that flows towards Six Mile Creek and meets approximately 900 m north-east of the site. Six Mile Creek is a perennial watercourse that flows into Brisbane River approximately 6.2 km north-east of the site and Bundamba Creek is a perennial watercourse that flows into Bremer River approximately 8 km north-west of the site.

Bremer River is a perennial major waterway and a tributary of the Brisbane River with its confluence approximately 7.6 km to the north-east of the site. The Bremer River drains several Scenic Rim Valleys in south-east Queensland and has several tributaries. The Bremer River catchment is within the Ipswich local government area and contains six major waterways including the Bremer River, Bundamba Creek, Purga Creek, Reynolds Creek, Warrill Creek and Western Creek. Six Mile Creek is part of the Brisbane River Catchment.

The nearest mapped wetland is a riverine wetland situated 4 km northeast of the site boundary. There are no VMA wetlands within proximity of the site.

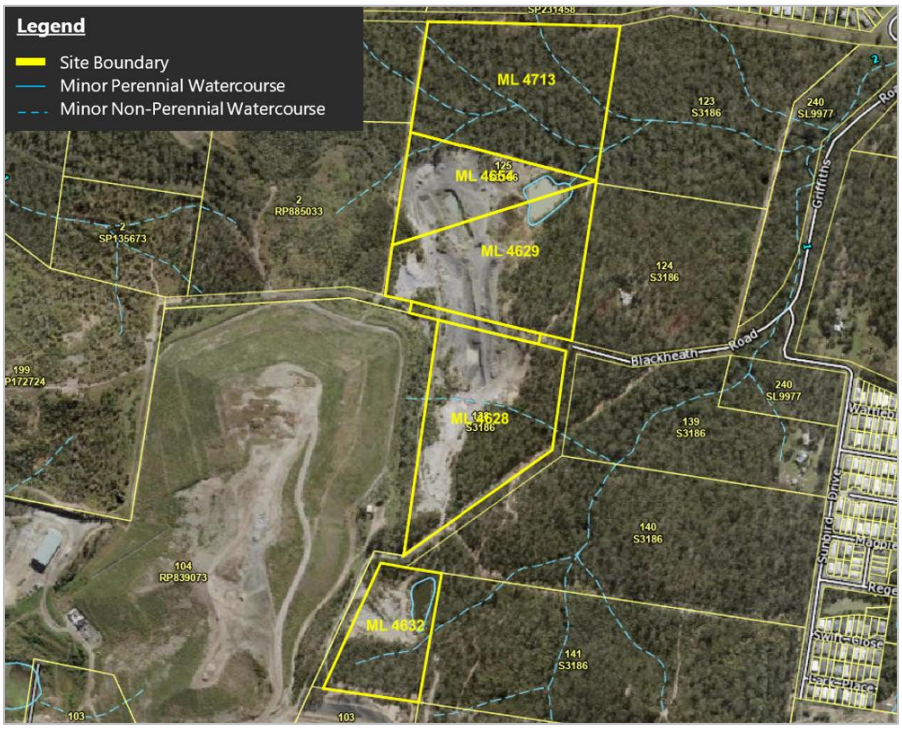


Figure 18 – Watercourse Mapping: Greenwood Village

(Source: The State of Queensland (2022a))

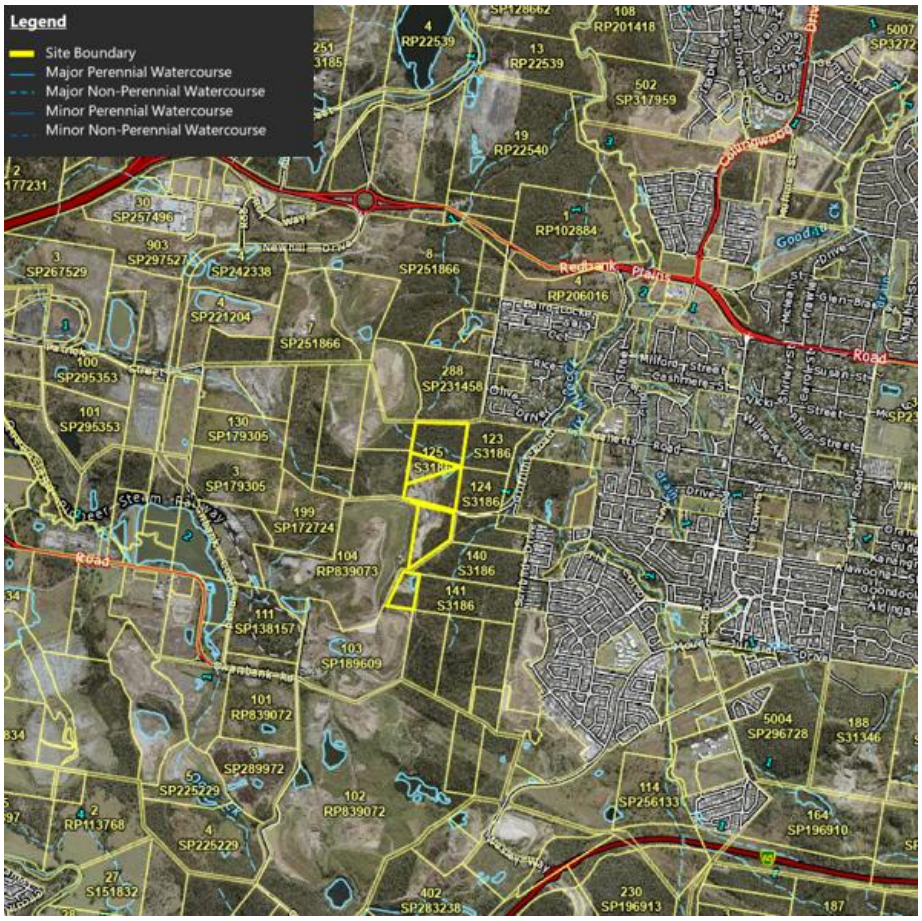


Figure 19 – Regional Watercourse Mapping: Greenwood Village

(Source: The State of Queensland (2022a))

3.2.6 Water Quality Objectives

The majority of the site is situated within the coastal streams water type of the Upper Six Mile Creek catchment; however, drainage features both on and adjacent to the site, which are the immediate receiving environment, are mapped as lowland streams, which are subject to the *Environmental Protection (Water) Policy 2009 Sandy, Six Mile, Wolston, Woogaroo and Goodna Creeks environmental values and water quality objectives Basin No. 143 (part), including all tributaries of the creeks* (DERM 2010c). The WQOs for these waters are summarised in **Table 11 – Upper Six Mile Creek Catchment Lowland Streams WQOs**.

Table 11 – Upper Six Mile Creek Catchment Lowland Streams WQOs

Parameter	Objective
Turbidity	< 50 NTU
Suspended Solids	< 6 mg/L
Chlorophyll a	<5 µg/L
Total Nitrogen ('N')	< 500 µg/L
Oxidised N	< 60 µg/L
Ammonia N	< 20 µg/L
Organic N	< 420 µg/L
Total Phosphorous ('P')	< 50 µg/L
Filterable Reactive P ('FRP')	< 20 µg/L
Dissolved Oxygen	85-110%
pH	6.5 – 8.0
Conductivity	600 µS/cm

The WQOs for the site-specific release waters as set by the EA are summarised in **Table 12 – Release Limits: Greenwood Village**.

Table 12 – Release Limits: Greenwood Village

Parameter	Objective
pH	6.5 – 8.5
TDS	1,000 mg/L
TSS	50 mg/L

3.2.7 Groundwater Levels and Properties

The site is in the *Water Plan (Moreton) 2007* area, and within the Lower Brisbane River sub-catchment. **Figure 20 – Surrounding Registered Groundwater Bores – Greenwood Village** provides an illustration of registered groundwater bores in the surrounding area which have been reviewed to determine potential groundwater levels in the locality. **Table 13 – Greenwood Village Local Groundwater Levels** provides a summary of local groundwater data sourced from available bore reports for these locations.

Table 13 – Greenwood Village Local Groundwater Levels

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level (m BGL)	Comment (purpose; install date; other)
142988	60 mAHD	49.10 m	Monitoring; installed 2005; water level based on monitoring records. Likely bore is for water supply.
169291	80 mAHD	56.00 to 60.00 m	Water supply; installed 2015; water level based on Installation of screen within the bore. Note, that water level recorded at 28.00 m below ground level, however likely bore is under pressure. Aquifer is reported at 58.00 to 62.00 m
154731	90 mAHD	43.00 to 49.00 m	Monitoring; installed 2014; water level based on installation of screen within the bore. Note, that water level recorded at 10.00 m below ground level, however likely bore is under pressure.
154730	60 mAHD	14.00 to 20.00 m	Monitoring; installed 2014, water level based on installation of screen within the bore. Note, that water level recorded at 5.50 m below ground level, however likely bore is under pressure.
154729	70 mAHD	7.50 to 13.50 m	Monitoring; installed 2014, water level based on installation of screen within the bore. Note, that water level recorded at 5.00 m below ground level, however likely bore is under pressure.
154509	50 mAHD	10.50 to 16.50 m	Monitoring; installed 2013, water level based on installation of screen within the bore. Note, that aquifer noted in report as being between 9.00 m to 14.00 m below ground level.
154104	60 mAHD	17.60 to 29.60 m	Monitoring; installed 2010; water level based on installation of screen within the bore. Aquifer reported as being between 27.00 to 30.00 m BGL
138928	60 mAHD	Aquifers reported at 21.00 to 24.50 m (siltstone) and at 55.00	Water supply; installed 2009; aquifers reported in bore report.

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level (m BGL)	Comment (purpose; install date; other)
		to 56.00 m (sandstone)	
133037	50 mAHD	Aquifer reported at 59.00 to 76.00 m BGL	Monitoring; installed 2007; aquifers reported in bore report.

Note: Green – denotes bores likely installed to target deep aquifers for water use and supply; Yellow – denotes bores likely installed for shallow perched aquifer monitoring, and not be supply.

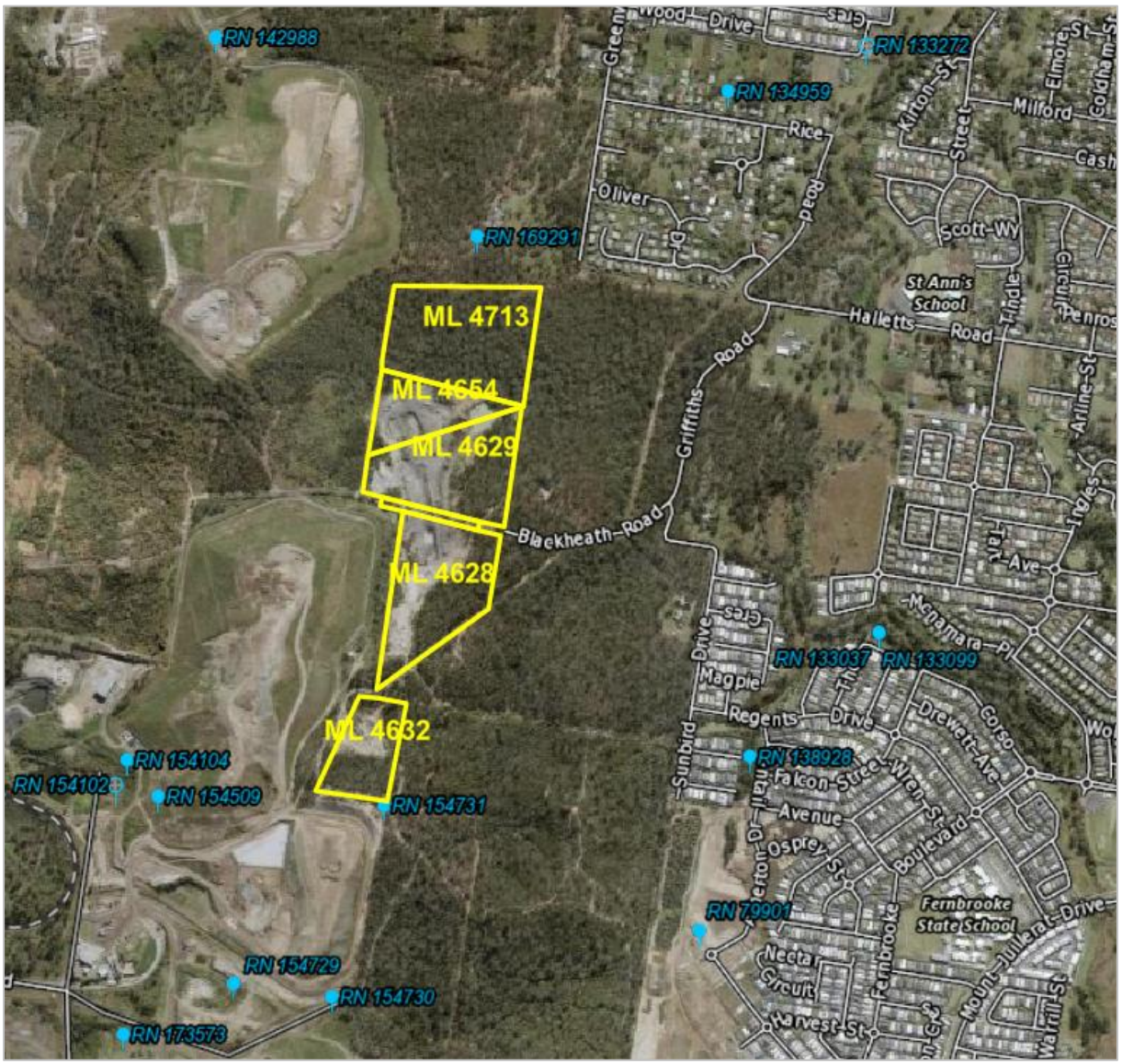


Figure 20 – Surrounding Registered Groundwater Bores – Greenwood Village

(Source: The State of Queensland (2022a))

In reviewing the DNRM dataset it is noted that:

- RN 154731 occurs to the immediate south of the mining lease areas, and encountered groundwater at depths between 43 and 49m below surface.
- RN 204058 which unfortunately has no data.
- RN169291 occurs to the immediate north of site and encountered groundwater at levels 50-60 metres below surface.
- A large landfill now occurs to the west of site and bores in this area have been installed for very specific purposes and should be treated with some caution. That said RN204057 to the southwest also encountered groundwater 44m bgl, while Bore RN 204059 encountered water 54m bgl.

Based on groundwater levels from the DNRM dataset being 40-50 metres below surface at approximately 20-30m AHD and the lack of an apparent perched aquifer (there is no available data supporting the hypothesis of a perched aquifer) it is clear the shallow clay pits which will have a maximum depth of 18 metres (floor level 52m AHD) will not impact the groundwater table as they sit 20 to 30 meters above the regional groundwater table. Resultantly the groundwater table will not be intersected and resultantly the impacts on groundwater are considered negligible. Similar to the Dimore area this resource is clay and shale and permeability rates and storativity capacity will be very low, further negating any potential groundwater impacts. This area is neither a sink nor source for groundwater. **Figure 21 - Pit Depths and Bores Greenwood Village** shows the extent and depth of the pit along with the location of the DNRM registered bores in the area.

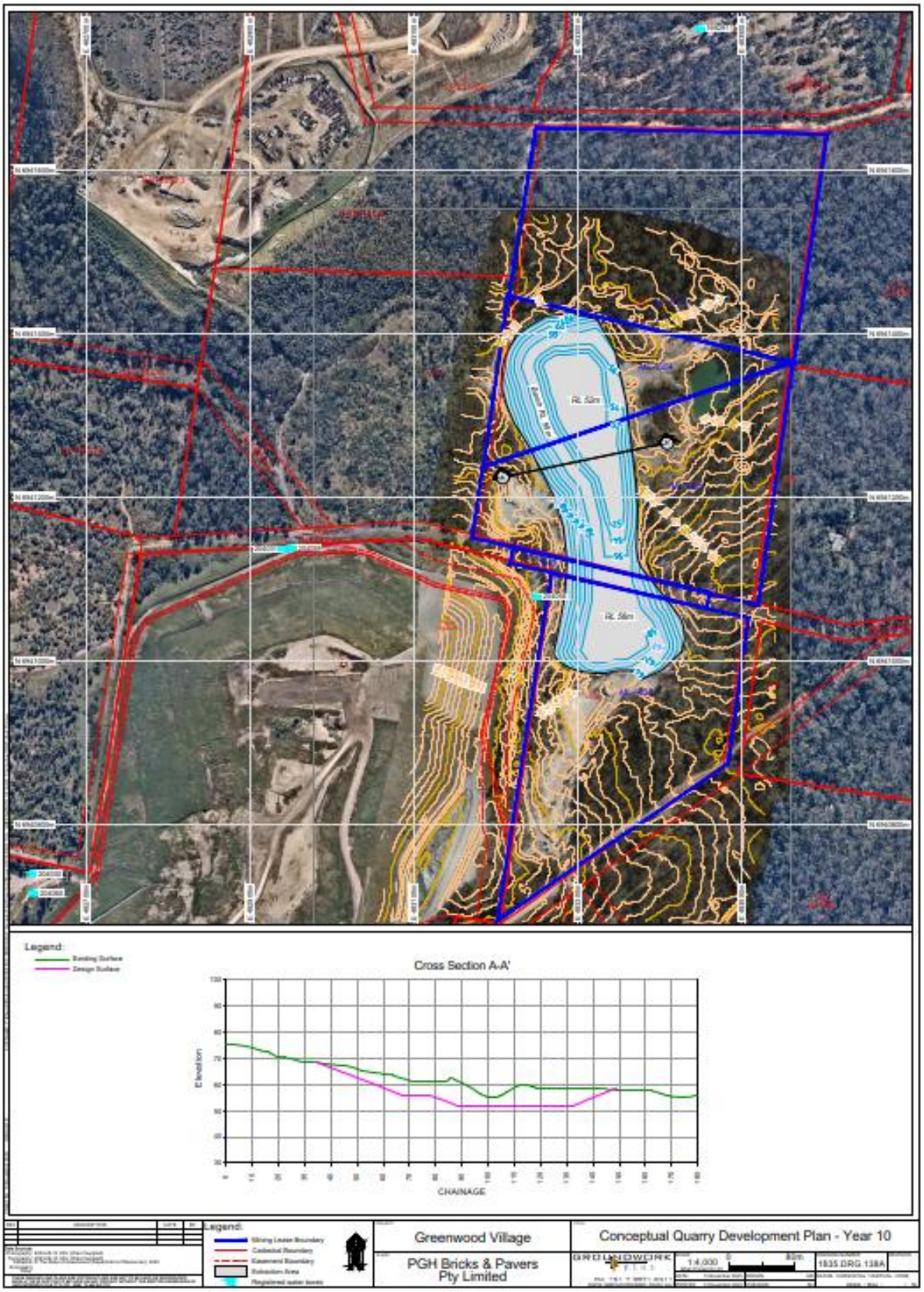


Figure 21 - Pit Depths and Bores Greenwood Village

3.2.8 Soils

3.2.8.1 Soil Group

The soil type within the site boundaries includes duplex red, hard setting A horizon, A2 horizon conspic bleached, acid pedal mottled B horizon. The dominant entity is Dr3.41 – Hard pedal mottled-red duplex soils (The State of Queensland 2022a).

3.2.8.2 Acid Sulfate Soils

Review of the ASS mapping provided by The State of Queensland has confirmed that the site is not located within, or near, an area where ASS have previously been identified, or within a prospective land zone containing ASS.

3.2.8.3 Productivity

Testing has been undertaken of topsoils on site which allow for an assessment of the quality of soil available for rehabilitation at the site. No stockpiles were present on site and all sampling has been undertaken from undisturbed areas.

The soil testing locations are described as follows:

- GWV1 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- GWV2 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- GWV3 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.

Analysis was undertaken for parameters typical for growth media suitability assessments. The soil on site has been described as Loam/Loamy Sandy soil. Results are provided in **Table 14 - Soil Quality: Greenwood Village.** Included in this table are indicative guidelines based on 'Albrecht' and 'Reams' concepts and the NEPM.

Table 14 - Soil Quality: Greenwood Village

Parameter	Soil sample			Guideline	
	GWV1	GWV2	GWV3	Loam	Loamy Sand
Soluble Calcium (mg/kg)	148	318	66	*375*	*175*
Soluble Magnesium (mg/kg)	114	119	143	*60*	*25*
Soluble Potassium (mg/kg)	81	75	66	*60*	*50*
Soluble Phosphorus (mg/kg)	<1	1.2	<1	*10*	*5.0*
Phosphorus (mg/kg P)	5.0	3.3	2.7	*24*	*20*
	12	14	6.9	*45*	*35*
	5.8	3.9	2.5	*48*	*40*

Parameter		Soil sample			Guideline	
		GWV1	GWV2	GWV3	Loam	Loamy Sand
Nitrate Nitrogen (mg/kg N)		1.9	5.0	0.49	*10*	*10*
Ammonium Nitrogen (mg/kg N)		3.3	7.7	5.3	*15*	*12*
Sulfur (mg/kg S)		11	10	3.9	*8.0*	*7.0*
pH		5.29	5.80	5.70	*6.3*	*6.3*
Electrical Conductivity (dS/m)		0.046	0.052	0.026	*0.120*	*0.100*
Estimated Organic Matter (% OM)		7.1	3.9	1.7	*> 3.5*	*> 2.5*
Exchangeable Calcium	(mg/kg)	255	533	85	*1000*	*375*
Exchangeable Magnesium	(mg/kg)	154	149	180	*145*	*75*
Exchangeable Potassium	(mg/kg)	146	96	97	*150*	*100*
Exchangeable Sodium	(mg/kg)	50	19	31	*51*	*25*
Exchangeable Aluminium	(mg/kg)	154	9.2	40	*32*	*14*
Exchangeable Hydrogen	(mg/kg)	7.1	<1	4.2	*4*	*2*
Effective Cation Exchange Capacity (ECEC) ($cmol_+/kg$)		5.6	4.4	3.2	*7.8*	*3.3*
Calcium (%)		23	61	13	*65.6*	*57.4*
Magnesium (%)		23	28	47	*15.7*	*18.1*
Potassium (%)		6.7	5.6	7.8	*5.2*	*9.1*
Sodium - ESP (%)		4.0	1.9	4.3	*2.9*	*3.3*
Aluminium (%)		31	2.4	14	*10.5*	*12.1*
Hydrogen (%)		13	1.1	13		
Calcium/Magnesium Ratio		1.0	2.2	0.29	*4.2*	*3.2*
Zinc (mg/kg)		1.5	3.5	1.5	*4.0*	*3.0*
Manganese (mg/kg)		12	18	7.9	*18*	*15*
Iron (mg/kg)		169	102	147	*18*	*15*
Copper (mg/kg)		0.72	0.34	0.40	*1.6*	*1.2*
Boron (mg/kg)		0.43	0.56	0.31	*1.4*	*1.0*
Silicon (mg/kg Si)		19	9.5	9.4	*40*	*35*
Total Carbon (%)		4.0	2.2	0.97	*> 2.0*	*> 1.4*

Parameter	Soil sample			Guideline	
	GWV1	GWV2	GWV3	Loam	Loamy Sand
Total Nitrogen (%)	0.18	0.13	0.07	*> 0.20*	*> 0.15*
Carbon/Nitrogen Ratio	23	17	14	*10–12*	*10–12*
Chloride Estimate (equiv. mg/kg)	29	33	17	..	..

The above soil results have been used to understand existing soil suitability at the site, with the following comments provided.

The **pH range** for the soils on site is from 5.3 to 5.8 and are described as acidic. The pH range is slightly below the recommend guideline. However, vegetation exists (refer **Photo 3 - Vegetated area surrounding GWV2**) within these same soils, indicating the pH ranges on site are not hostile to some native plants. The natural soils in this area have an inherently low pH and are able to sustain a variety of vegetation. PGH is to select native species that already exist on location for rehabilitation to align with the surrounding undisturbed ecosystem. As a result, ameliorating pH may not be necessary.



Photo 3 - Vegetated area surrounding GWV2

The **electrical conductivity** for the soils is low. GWV1 and GWV3 results indicate a slightly elevated **exchangeable sodium percentage**, however current vegetation growth indicates salinity and salt is not a limitation.

The **nutrient** levels within the soils, represented by the nitrogen suites of analysis, indicate the fertility of the soils to be poor in regard to nitrogen and phosphorus levels available. This isn't uncommon for soils in Australia, with native plant varieties well-conditioned to low nutrient soils. Nitrogen availability may also be affected by low pH. If necessary, fertility levels can be improved through the addition of fertilisers to ensure an additional nutrient source is made available for plant establishment, particularly in the short term of any rehabilitation program. However nutrient deficiencies have not been observed in current undisturbed land.

The soil materials at the site, although with some limitations, particularly in regard to pH and nutrient levels, are successfully supporting vegetated areas at the site. No soil ameliorants have been used in these vegetated areas. It is also noted that these limitations can be readily overcome through the addition of common ameliorants such as gypsum, lime and fertilisers if necessary.

3.2.9 Vegetation Communities

Refer to **Figure 22 – Mapped RE: Greenwood Village** for an illustration of the remnant vegetation mapping over the site. A large portion of the site is mapped as non-remnant vegetation under the VMA.

The balance of the site is mapped as containing the following remnant vegetation.

Category A or B and C or R Of Concern RE:

- RE 12.9-10.2 / RE 12.9-10.7 / RE 12.9-10.19 (65%/20%/15%):
    - Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks
    - E. crebra +/- E. tereticornis, C. tessellaris, Angophora spp. and E. melanophloia woodland on sedimentary rocks.
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of E. sideroxylon. Occurs on Cainozoic and Mesozoic sediments.
- RE 12.9-10.3 (100%) – E. moluccana open forest on sedimentary rocks.

Category A or B Least concern RE:

- RE 12.9-10.19 (100%):
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments.

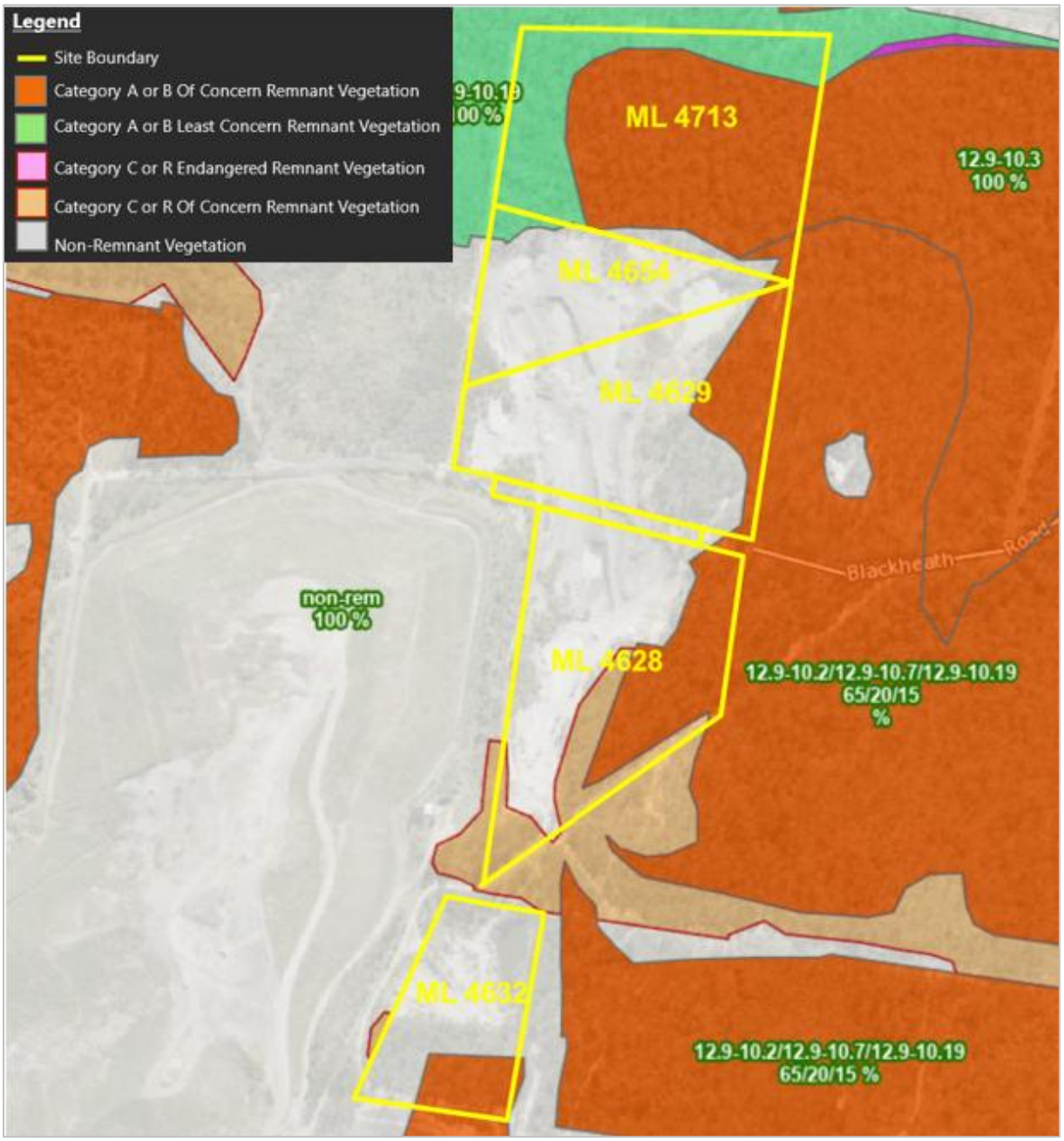


Figure 22 – Mapped RE: Greenwood Village

(Source: The State of Queensland (2022a))

3.2.10 Fauna Presence and Populations

No site fauna surveys have been carried out. In the absence of site-specific data, reference has been made to the DAWE Protected Matters Search Tool to determine the possible presence of species protected under the EPBC Act in the site locality (0 km buffer applied). A summary of the search results is provided in **Table 15 – Protected Matters Search Results: Greenwood Village**. It must be noted that this species list has not been ground-truthed, and it's likely that the actual species composition on-site will vary.

Table 15 – Protected Matters Search Results: Greenwood Village

Scientific Name	Common Name	Simple Presence*	Threatened Category
Actitis hypoleucos	Common Sandpiper	May	-
Anthochaera phrygia	Regent Honeyeater	May	Critically Endangered
Apus pacificus	Fork-tailed Swift	Likely	-
Argynnis hyperbius inconstans	Australian Fritillary	May	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	May	Endangered
Calidris acuminata	Sharp-tailed Sandpiper	May	-
Calidris melanotos	Pectoral Sandpiper	May	-
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Likely	Vulnerable
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	May	-
Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]	May	Endangered
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Likely	Endangered
Delma torquata	Adorned Delma, Collared Delma	May	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Known	Vulnerable
Falco hypoleucos	Grey Falcon	Likely	Vulnerable
Furina dunmalli	Dunmall's Snake	May	Vulnerable
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Known	-
Geophaps scripta scripta	Squatter Pigeon (southern)	May	Vulnerable
Grantiella picta	Painted Honeyeater	May	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Known	Vulnerable
Lathamus discolor	Swift Parrot	Likely	Critically Endangered
Macroderma gigas	Ghost Bat	May	Vulnerable
Monarcha melanopsis	Black-faced Monarch	Likely	-
Motacilla flava	Yellow Wagtail	May	-
Myiagra cyanoleuca	Satin Flycatcher	Known	-
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	May	Critically Endangered
Pandion haliaetus	Osprey	Likely	-
Petauroides volans	Greater Glider	Likely	Vulnerable
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Likely	Vulnerable
Petrogale penicillata	Brush-tailed Rock-wallaby	Likely	Vulnerable

Scientific Name	Common Name	Simple Presence*	Threatened Category
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Known	Endangered
Plectranthus habrophyllus	null	Likely	Endangered
Pteropus poliocephalus	Grey-headed Flying-fox	Known	Vulnerable
Rhipidura rufifrons	Rufous Fantail	Known	-
Rostratula australis	Australian Painted Snipe	Known	Endangered
Samadera bidwillii	Quassia	Likely	Vulnerable
Symposiachrus trivirgatus	Spectacled Monarch	May	-
Thesium australe	Austral Toadflax, Toadflax	Likely	Vulnerable
Tringa nebularia	Common Greenshank, Greenshank	Likely	-
Turnix melanogaster	Black-breasted Button-quail	Likely	Vulnerable

Table notes:
*Known = Known to occur within area. Likely = Likely to occur within area, May = May occur within area.

3.3 Oxley

3.3.1 Land Use

3.3.1.1 Pre-Mining Land Use

Based on review of aerial imagery, the site has been operational as a Brick Plant and clay pit mining activities since the mid-1900s. **Plate 4 – Aerial Imagery Dated 31 May 1946: Oxley** shows the site in 1946, no discernible brick manufacturing or clay pit mining is evident. **Plate 5 – Aerial Imagery Dated 1 July 1951: Oxley** shows that a Brick Plant and associated clay pit mining activities are evident at the site in approximately 1951. Prior to the establishment of the brick plant and clay pits, the site appears to have been used as a rural residence.

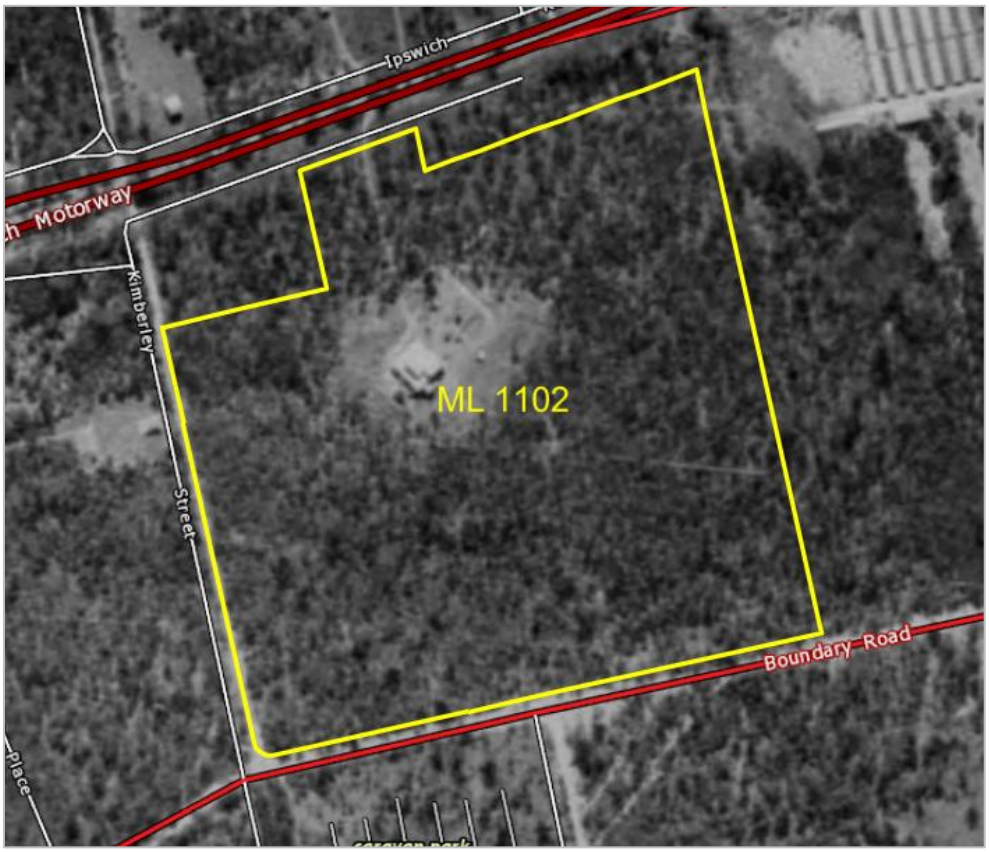


Plate 4 – Aerial Imagery Dated 31 May 1946: Oxley

(Source QImagery. "Brisbane City 1946" Run: 15A. Brisbane: QImagery, 31 May 1946)



Plate 5 – Aerial Imagery Dated 1 July 1951: Oxley

(Source QImagery. "Ipswich East 1955" Run: 3. Brisbane: QImagery, 1 July 1951)

3.3.1.2 Existing Land Use

The site is currently used for mining activities, refer to aerial imagery dated 23 June 2022 for an illustration as shown in **Plate 6 – Oxley Aerial Imagery Dated 23 June 2022**.



Plate 6 – Oxley Aerial Imagery Dated 23 June 2022

(Source: Nearmap)

3.3.1.3 Land Use Adjacent to Site

Table 16 – Adjacent Land Uses: Oxley provides a summary of the land uses surrounding the site. The site is wholly within the Swanbank Industrial Area outlined in in **Section 3.1.1.3 Land Use Adjacent to Site**.

Table 16 – Adjacent Land Uses: Oxley

Direction	Land Use
North	Ipswich Motorway. Further south is a residential and commercial premises.
East	Industrial premises and vacant industrial land.
South	Oxley Pines Caravan Park and industrial development.
West	Industrial premises.

3.3.2 Topography

Elevations across the site are primarily flat to accommodate the brick plant and ancillary infrastructure. The highest elevation is approximately 50 mAHD along the northern site boundary, to approximately 23 mAHD in the south-eastern corner of the site. **Figure 23 – Topography: Oxley** provides an illustration of the topographical features in the locality.



Figure 23 – Topography: Oxley

(Source: The State of Queensland (2022a))

3.3.3 Climate

A summary of regional climate data relevant to the Oxley locality, sourced from the Bureau of Meteorology ('BoM') Archerfield Airport 040211 station, is provided in **Table 17 - Regional Climatic Statistics: Oxley**.

Table 17 - Regional Climatic Statistics: Oxley

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (mm)													
Mean	134.2	158.7	128.9	76.9	71.7	65.8	46.7	35.9	34.3	78.9	97.8	125.7	1,053.1
Mean Temperature (°C)													
Min	20.4	20.2	18.5	15.2	11.9	9.4	7.7	8.1	11.2	14.5	17.2	19.2	14.5
Max	30.5	29.9	28.9	26.6	24.0	21.5	21.3	22.8	25.4	27.1	28.6	29.7	26.4

3.3.4 Geology

Geology at the site is uniformly comprised of the Darra Formation, a Paleocene aged sedimentary deposits consisting of lacustrine and fluviatile lithic labile sandstone, mudstone, siltstone, shale and minor conglomerates. Refer to **Figure 24 – Geology Mapping: Oxley** for an illustration of the detailed surface geology within ML 1100.



Figure 24 – Geology Mapping: Oxley

(Source: The State of Queensland (2022a))

3.3.5 Hydrology

Watercourse mapping is shown in **Figure 25 – Watercourse Mapping: Oxley** and **Figure 26 – Regional Watercourse Mapping: Oxley**.

The site lies approximately 2.8 km south of the Brisbane River and 1.8km south-west of Oxley Creek. The closest watercourse is approximately 30 m from the site's southern boundary and is a minor non-perennial watercourse that would generally flow with rainfall events. This water course is a drainage feature that flows towards Oxley Creek and meets approximately 1.9 km north-east of the site. Oxley Creek is a major waterway and a tributary of the Brisbane River with its confluence approximately 5.7 km to the north north-east of the site. The water source of Oxley Creek begins from the granite uplands of Mount Perry in the Scenic Rim Region and flows northwards approximately 70 km to the Brisbane River.

The Oxley Creek catchment includes the tributaries of Crewes Creek, Blunder Creek, Sheep Station Gully, Stable Swamp Creek, Rocky Water Holes Creek, Little Doris Creek and Moolabin Creek, which collectively flow for 522 km, and cover a total area of approximately 270 km^2.



Figure 25 – Watercourse Mapping: Oxley

(Source: The State of Queensland (2022a))



Figure 26 – Regional Watercourse Mapping: Oxley

(Source: The State of Queensland (2022a))

The drainage feature traversing the site is mapped as a Palustrine Wetland. This mapped wetland system extends downstream to Little Dorsi Creek, refer to **Figure 27 – Wetland Mapping: Oxley**.



Figure 27 – Wetland Mapping: Oxley

(Source: The State of Queensland (2022a))

3.3.6 Water Quality Objectives

The Oxley site is situated within the coastal streams water type of the Brisbane River Basin, which is subject to the *Brisbane River Estuary environmental values and water quality objectives Basin No. 143 (part), including all creeks of the Brisbane River estuary, other than Oxley Creek* (DERM 2010a). The Water Quality Objectives ('WQOs') for these waters are summarised in **Table 18 - Brisbane River Estuary Coastal Streams WQOs**.

Table 18 - Brisbane River Estuary Coastal Streams WQOs

Parameter	Objective
Turbidity	< 50 NTU
Suspended Solids	< 6 mg/L
Chlorophyll a	<5 µg/L
Total Nitrogen ('N')	< 500 µg/L

Parameter	Objective
Oxidised N	< 60 µg/L
Ammonia N	< 20 µg/L
Organic N	< 420 µg/L
Total Phosphorous ('P')	< 50 µg/L
Filterable Reactive P ('FRP')	< 20 µg/L
Dissolved Oxygen	85-110%
pH	6.5 – 8.0

The WQOs for the site-specific release waters as set by the EA are summarised in **Table 19 – Release Limits: Oxley.**

Table 19 – Release Limits: Oxley

Parameter	Objective
pH	6.5 – 8.5
TDS	1,000 mg/L
TSS	50 mg/L or not more than 110% of the value at IMW (Ipswich Motorway)

3.3.7 Groundwater Levels and Properties

The Oxley site/s are covered by DNRM monitoring wells. Eight bores occur in the main pit area while no direct bores occur within the smaller eastern pit area, south of Ipswich Motorway. Importantly clay extraction has now largely stopped with only minor volumes of material now being removed from site. The depth of most of the clay pits at Oxley was generally less than 12 meters in most areas although minor deeper areas were extracted to between 15-18 meters below the original ground level. As background, the site is in the *Water Plan (Moreton) 2007* area, and within the Lower Brisbane River sub-catchment. **Table 20 – Oxley Local Groundwater Levels** provides a summary of local groundwater data sourced from available bore reports for these locations. **Figure 28 – Surrounding Registered Groundwater Bores –Oxley** provides an illustration of registered groundwater bores in the surrounding area which have been reviewed to determine potential groundwater levels in the locality.

As stated in the Report on Investigations (Groundwork Plus 2008, p. 7), 'frilling undertaken on site has intersected groundwater between 4 and 12 m below the pit base'.

Table 20 – Oxley Local Groundwater Levels

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level (m BGL)	Comment (purpose; install date; other)
169309	55 mAHD	4.00 to 10.50 m	Water monitoring; installed 2015; water level based on depth at which gravel pack was installed in the well.
169700	35 mAHD	30.00 to 42.00 m	Water supply (potable); installed 2016; water level based on depth at which gravel pack was installed in the well.
169158	8 mAHD	2.00 to 7.00 m	Monitoring bore; installed 2015; water level based on depth at which screen was installed.
169124	45 mAHD	24.00 m	Water supply bore; installed 2015; water level based on observation made in bore report. Screen is installed from 24.00 to 30.00 m BGL, and 34.00 to 41.00 m BGL.
152505	15 mAHD	13.50 m	Water supply bore; installed 2014; water level based on observation made in bore report. Screen installed at 48.50 m BGL to 57.60 m BGL
145734	35 mAHD	16.00 to 28.00 m	Water supply bore; installed 2008; water level based on screen being installed at 16.00 to 22.00 m BGL.
134816	35 mAHD	20.00 to 26.00 m Note SWL was noted at 11 m (though potentially under pressure).	Water supply bore; installed 2006; water level based on screen installation depth.
133701	20 mAHD	20.00 to 24.00 m	Water supply bore; installed 2006; water level based on screen installation depth.
134816	25 mAHD	16.00 to 20.00 Note SWL was noted at 9 m (though potentially under pressure).	Water supply bore; installed 2007; water level based on screen installation depth.
134122	10 mAHD	14.00 to 30.00	Water supply bore; installed 2006; water level based on screen installation depth.

Note: Green – denotes bores likely installed to target deep aquifers for water use and supply; Yellow – denotes bores likely installed for shallow perched aquifer monitoring, and not be supply.

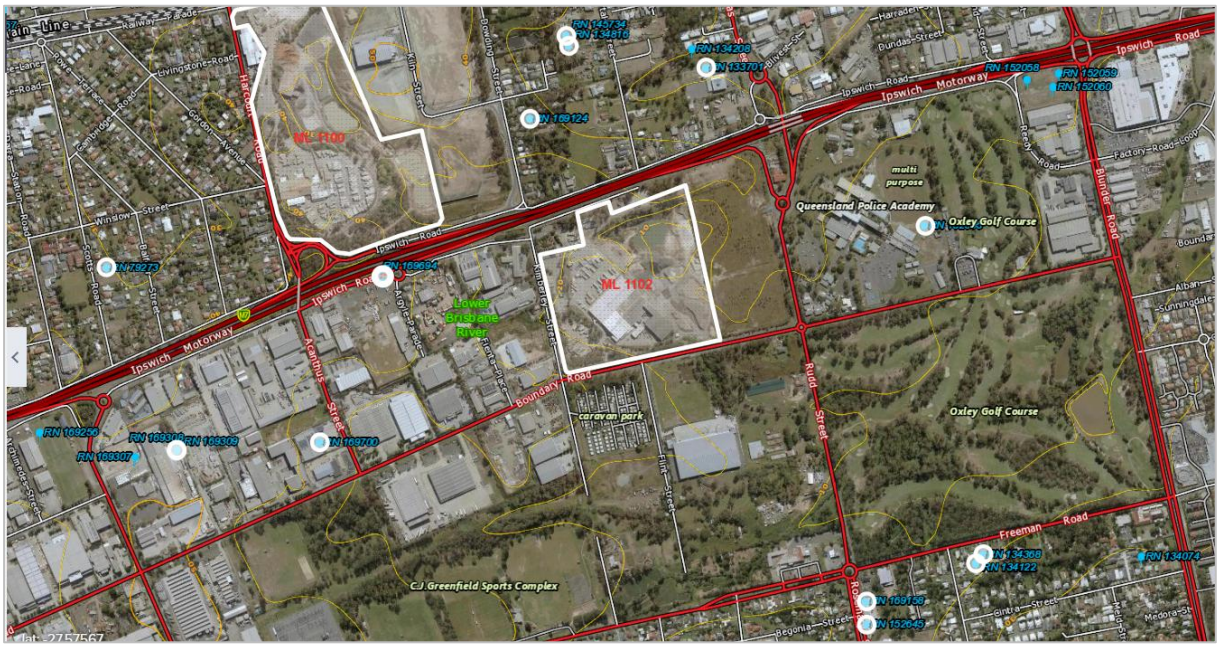


Figure 28 – Surrounding Registered Groundwater Bores –Oxley

(Source: The State of Queensland (2022a))

Bores demonstrating these impacts are:

- RN 181789 groundwater not encountered at 18.8m bgl.
- RN 194752 groundwater not encountered at 20m bgl.
- RN 181791 groundwater not encountered at 18m bgl.
- RN 169124 drilled to the east of site encountered brackish water at 26.5m bgl.
- RN152505 also drilled to the east of site encountered brackish water at 20.8m bgl, and
- It also noted that no groundwater impacts have been recorded in the pit.

Regarding groundwater for both sites a detailed review has not been completed for precisely the reasons that have been outlined in the previous reviews. The monitoring networks on site clearly show that groundwater occurs well below the base of extraction and that no impacts are expected resultant of the ongoing activities. Importantly there is no evidence supporting the occurrence of a perched aquifer in the clay pits in this area. Based on this information no further work is warranted because the groundwater table has not been intersected nor impacted.

3.3.8 Soils

3.3.8.1 Soil Group

The soil type within the site boundaries have been mapped as mottled podzolic soils and soloths on the undulating surface of mudstone, siltstone and sandstone (The State of Queensland 2022a).

3.3.8.2 Acid Sulfate Soils

Review of the ASS mapping provided by The State of Queensland (2022a) has confirmed that the site is not located within, or near, an area where ASS have previously been identified, or within a prospective land zone containing ASS.

3.3.8.3 Productivity

There is no topsoil or growth media that has been retained at the Oxley site. Importation of material will be required to facilitate any future rehabilitation and will be managed as part of the development of the industrial estate.

3.3.9 Vegetation Communities

Refer to **Figure 29 – Mapped RE: Oxley** for an illustration of the remnant vegetation mapping over the site. The entirety of the site is mapped as non-remnant vegetation under the VMA.

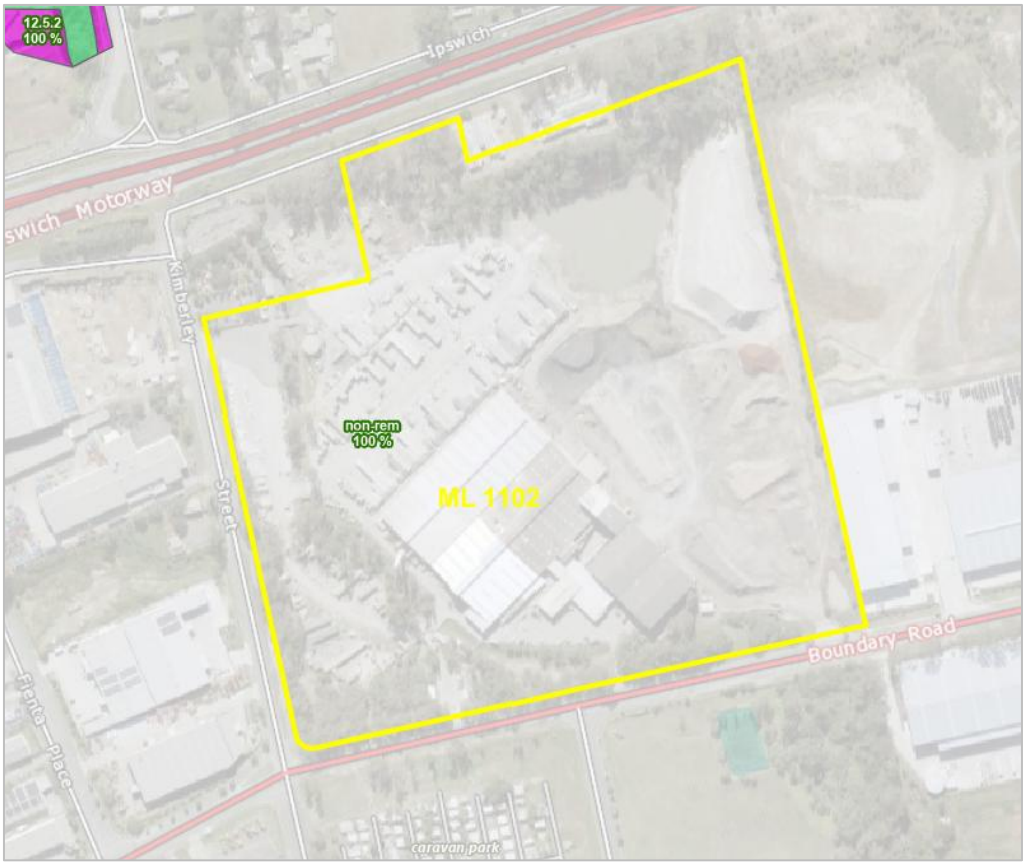


Figure 29 – Mapped RE: Oxley

(Source: The State of Queensland (2022a))

3.3.10 Fauna Presence and Populations

No site fauna surveys have been carried out. In the absence of site-specific data, reference has been made to the DAWE Protected Matters Search Tool to determine the possible presence of species protected under the EPBC Act in the site locality (0 km buffer applied). A summary of the search results

is provided in **Table 21 – Protected Matters Search Results: Oxley**. It must be noted that this species list has not been ground-truthed, and it's likely that the actual species composition on-site will vary.

Table 21 – Protected Matters Search Results: Oxley

Scientific Name	Common Name	Simple Presence	Threatened Category
Anthochaera phrygia	Regent Honeyeater	Likely	Critically Endangered
Argynnis hyperbius inconstans	Australian Fritillary	May	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	Likely	Endangered
Calidris ferruginea	Curlew Sandpiper	May	Critically Endangered
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	May	Vulnerable
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	May	Vulnerable
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	May	Vulnerable
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	May	Endangered
Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]	May	Endangered
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Likely	Endangered
Delma torquata	Adorned Delma, Collared Delma	Likely	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Known	Vulnerable
Falco hypoleucos	Grey Falcon	Likely	Vulnerable
Furina dunmalli	Dunmall's Snake	May	Vulnerable
Geophaps scripta scripta	Squatter Pigeon (southern)	May	Vulnerable
Grantiella picta	Painted Honeyeater	May	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Known	Vulnerable
Lathamus discolor	Swift Parrot	Likely	Critically Endangered
Macroderma gigas	Ghost Bat	May	Vulnerable
Mixophyes fleayi	Fleay's Frog	May	Endangered
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	May	Critically Endangered
Petauroides volans	Greater Glider	Likely	Vulnerable
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Likely	Vulnerable
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Known	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo (northern)	May	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-fox	Known	Vulnerable
Rostratula australis	Australian Painted Snipe	Likely	Endangered
Thesium australe	Austral Toadflax, Toadflax	May	Vulnerable
Turnix melanogaster	Black-breasted Button-quail	Likely	Vulnerable
Symposiachrus trivirgatus	Spectacled Monarch	Known	

Scientific Name	Common Name	Simple Presence	Threatened Category
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	May	Critically Endangered
Apus pacificus	Fork-tailed Swift	Likely	
Rhipidura rufifrons	Rufous Fantail	Likely	
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	Known	
Myiagra cyanoleuca	Satin Flycatcher	Known	
Monarcha melanopsis	Black-faced Monarch	Known	
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	May	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Known	Vulnerable
Calidris ferruginea	Curlew Sandpiper	May	Critically Endangered
Actitis hypoleucos	Common Sandpiper	May	
Tringa nebularia	Common Greenshank, Greenshank	Likely	
Calidris melanotos	Pectoral Sandpiper	May	
Calidris acuminata	Sharp-tailed Sandpiper	May	
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Likely	
Motacilla flava	Yellow Wagtail	May	

Table notes:
*Known = Known to occur within area. Likely = Likely to occur within area, May = May occur within area.

3.4 Redbank Plains

3.4.1 Land Use

3.4.1.1 Pre-Mining Land Use

The Redbank Plains locality has a long history of coal mining dating back to the 1840s. The *Desktop Mining Study for Mining Lease 4583 – Redbank Plains Road, Redbank Plains* (Moreton Geotechnical Services Pty. Ltd. 2016), included as **Attachment 3 – Desktop Mining Study for Mining Lease 4583,** identified that the site has been subject to the underground workings of the former Noblevale No. 1 Colliery.

Noblevale No. 1 Colliery was opened in the early 1900s and became the largest coal producer in the region during its early operations. The Redbank Plains site was formally part of the larger landholdings called 'Cooneana' which was established in the 1860s (Satterthwait, L. 1991).

In approximately 1902, the Redbank Bundamba line was established to exploit coal in the region, with part of the rail line traversing land now overlain by ML 50116 (Satterthwait, L. 1991). **Photo 4 - Coal Train Departing Noblevale Colliery No. 1 (c.1916)** provides an illustration of a loaded coal train departing the mine in 1916.



Photo 4 - Coal Train Departing Noblevale Colliery No. 1 (c.1916)

(Reprinted from Coal in Queensland (Whitmore 1991)

Refer to **Figure 30 – Redbank Plains ML 50116 Overlain on Queensland Twenty Chain series sheet 2521, 1930** which provides mapping indicating the former rail line traversing ML 50116 (note that ML 50116 is situated at the limit of the mapping extent and southern MLs are not visible).

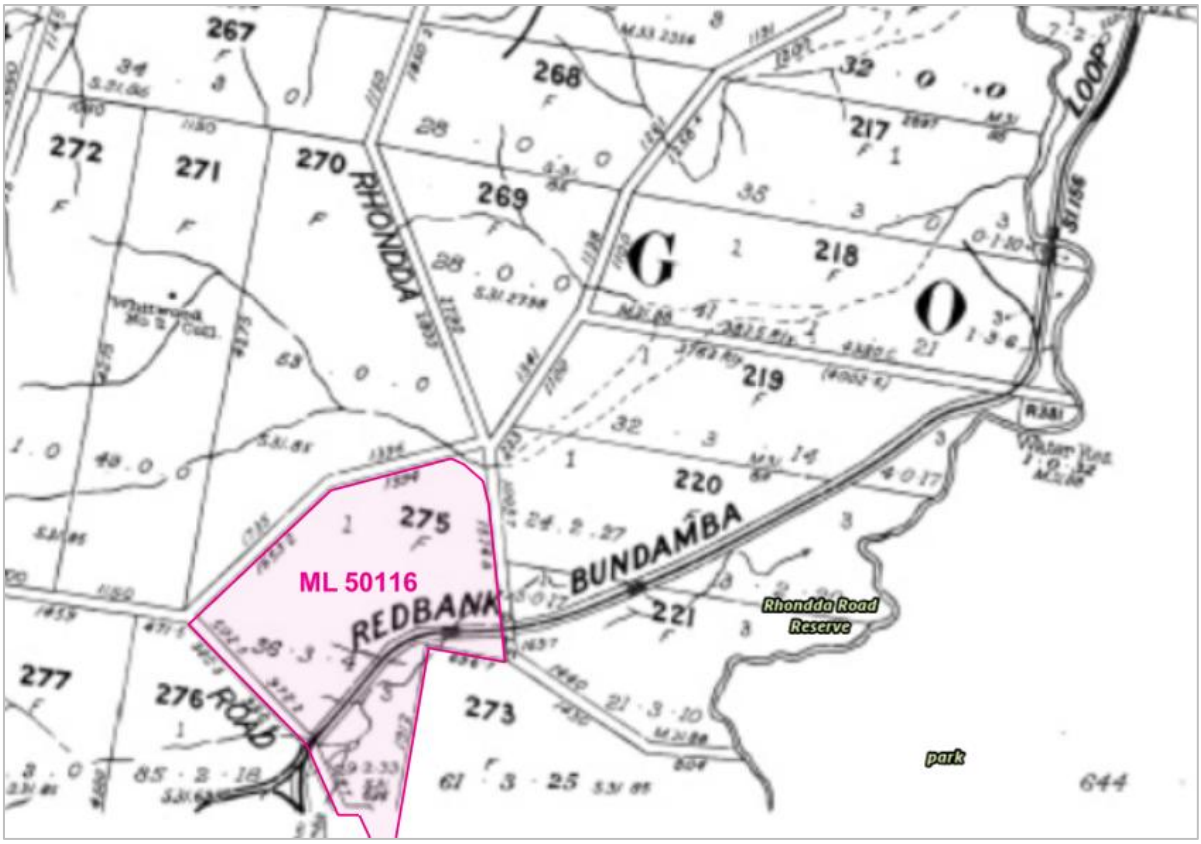


Figure 30 – Redbank Plains ML 50116 Overlain on Queensland Twenty Chain series sheet 2521, 1930

(Figure reprinted and adapted from Picture Ipswich (n.d.b), Queensland Twenty Chain series sheet 2521, 1930)

Several subdivisions of the land took place, with land parcels progressively acquired by coal mine operators and passing between various operators including Noblevale Collieries and Rhonda Collieries (Satterthwait, L. 1991). Available records show that ML 4583, being the oldest tenure within the Redbank Plains MLs, was formerly held by Rhondda Collieries Pty Ltd; however, it is noted that this is based on available records only.

Surface mining for clay and shale materials is assumed to have commenced in the mid-1900s. Available records show that ML 4622 was held by Brittains Bricks & Pipes Pty Limited in 1967 and was acquired by Boral Bricks in 1970.

3.4.1.2 Existing Land Use

The site is currently used for mining activities, refer to aerial imagery dated 27 August 2021 for an illustration as shown in **Plate 7 – Redbank Plains Aerial Imagery Dated 23 June 2022**.

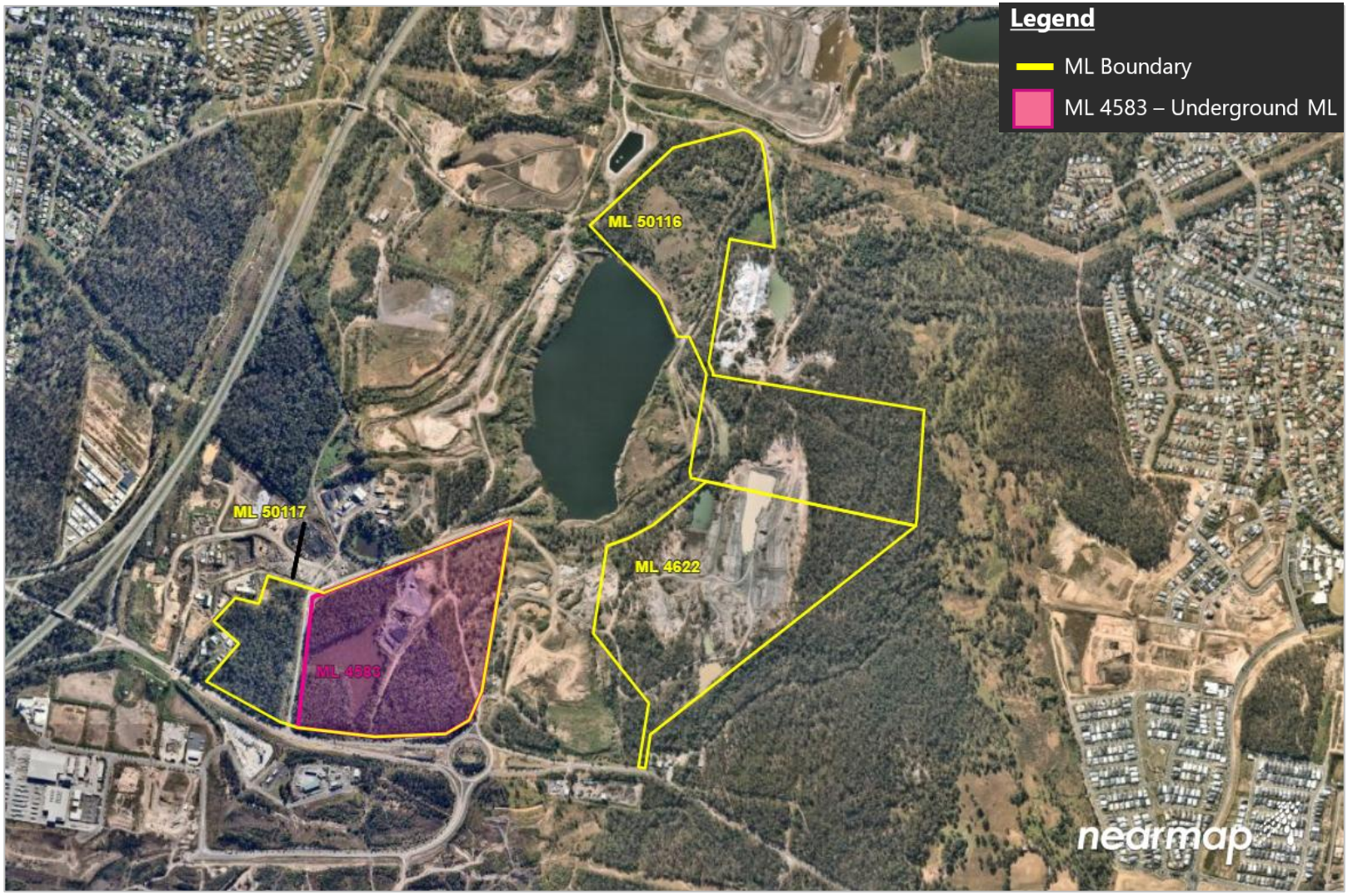


Plate 7 – Redbank Plains Aerial Imagery Dated 23 June 2022

(Source: Nearmap)

3.4.1.3 Land Use Adjacent to Site

Table 22 – Adjacent Land Uses: Redbank Plains provides a summary of the land uses surrounding the site. The site is wholly within the Swanbank Industrial Area outlined in in **Section 3.1.1.3 Land Use Adjacent to Site.**

Table 22 – Adjacent Land Uses: Redbank Plains

Direction	Land Use
North	Cleanaway New Chum Solid Waste Landfill. Clay pit mining activities operated by Jackal Renewables Pty Ltd.
East	Rural residential land bounded by Six Mile Creek Wildlife Reserve. South east of the site is a landscape supply commercial premises.
South	Redbank Plains Road and innumerous industrial and commercial activities including tyre recycling, asphalt manufacturing, fertiliser and mulch producers, and landfills.
West	Former coal mining activities, now a large water-filled void, operated by Bogside Mining Industries Pty Ltd. Industrial activities including tyre recycling.

3.4.2 Topography

Elevations across the site are highly variable and resultant from historical mining activities. At present, highest elevations are in the west of ML 50117 at approximately 97 mAHD. Lowest elevations are approximately 36 m AHD at the base of the current extraction area. **Figure 31 – Topography: Redbank Plains** provides an illustration of the topographical features in the locality.

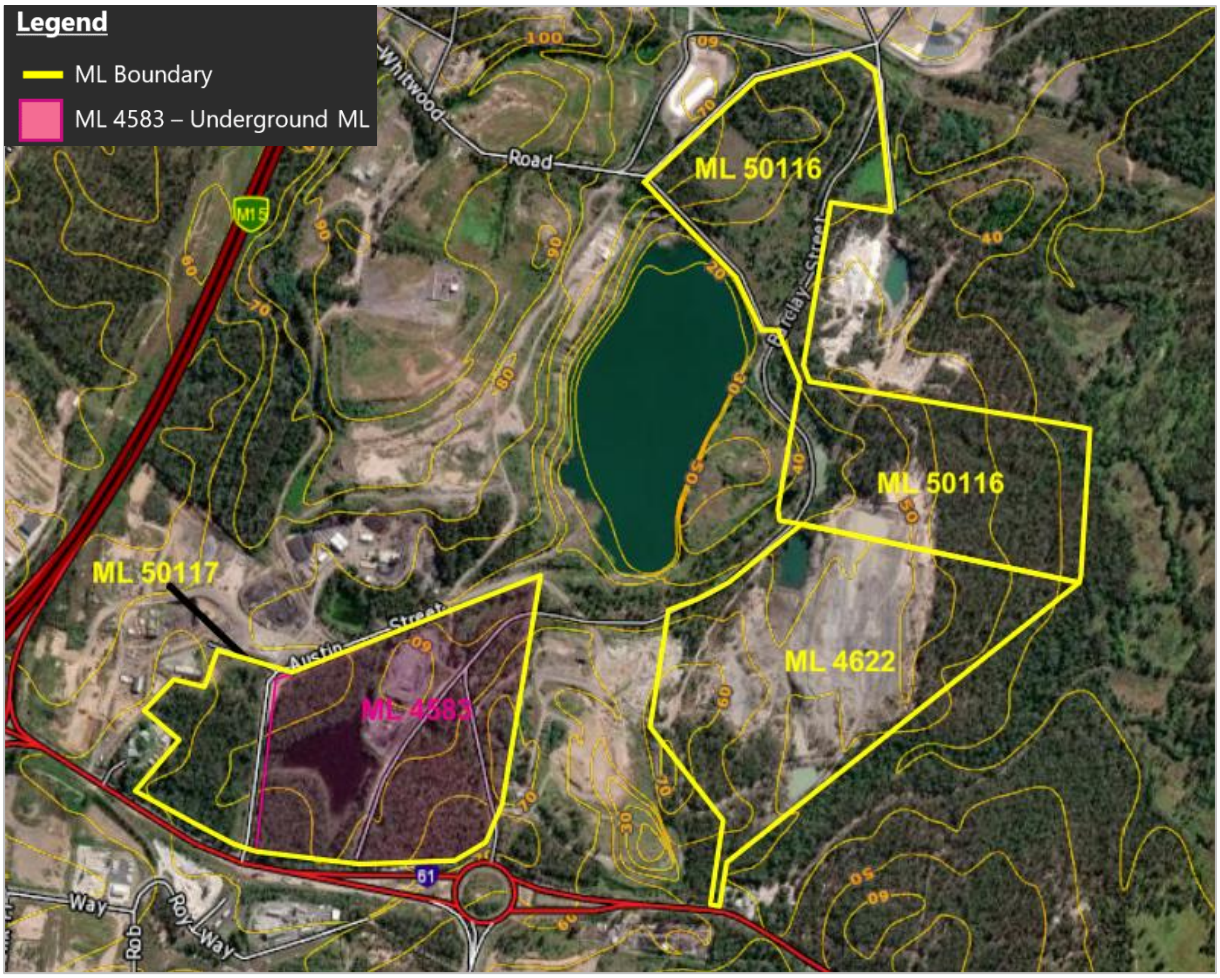


Figure 31 – Topography: Redbank Plains

(Source: The State of Queensland (2022a))

3.4.3 Climate

Refer to **Section 3.2.3 - Climate** for a summary of regional climate data for the locality. The Redbank Plains site is situated in the same geographic region as the Greenwood Village site, and therefore the sites share the same climate statistics.

3.4.4 Geology

Refer to **Figure 32 - Geological Plan Redbank Plains (See cross section for rock legend)**, **Figure 33 – Geological Cross Section A - B Redbank Plains, Figure 34 – Geological Cross Section C - D Redbank Plains** and **Figure 35 –Geological Cross Section E - F Redbank Plains** for an illustration of the geology within the site. The area within the Redbank Plains mining area leases contains shales, siltstones and sandstones of the Tivoli, Blackstone and Raceview Formations and is overlain in the east by clays and siltstones of the Redbank Plains Formation.

The current extraction area within the eastern leases (ML4622, ML50116) has exposed dark grey shales of the Raceview Formation, dipping between 10-20° the east. At the base of this unit is an orange brown layer of fine grained sandstone, the top of which forms the western batter of the pit.

The western lease (ML50117) is immediately adjacent to the Bundamba Anticline so the rock units here have a shallower dip (~8°) compared to the units within the eastern leases (~20°). This lease contains a 10-15m thick sandstone/conglomerate layer as well as a number of coal seams about 2 -2.5m thick which were intersected in drilling and have been partially extracted by underground mining in the past.

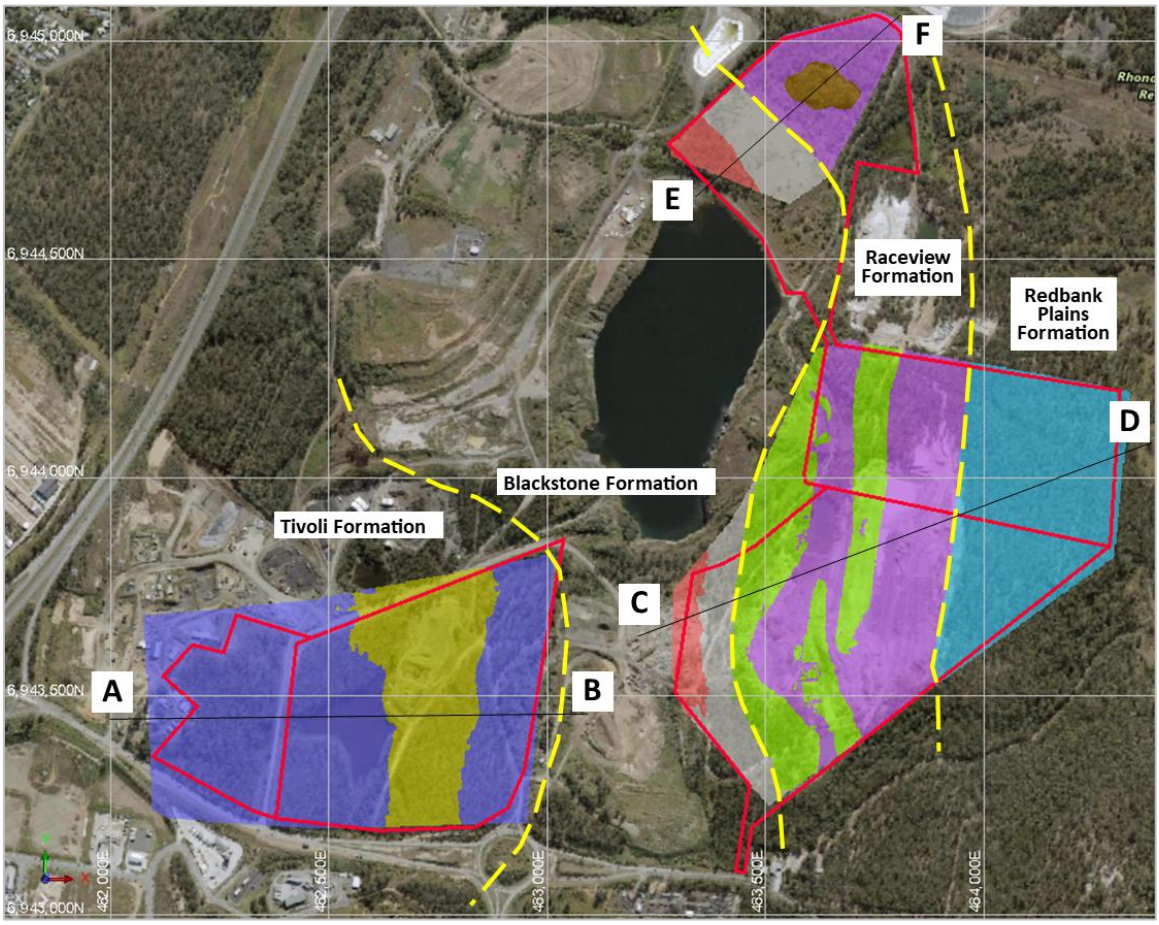


Figure 32 - Geological Plan Redbank Plains (See cross section for rock legend)

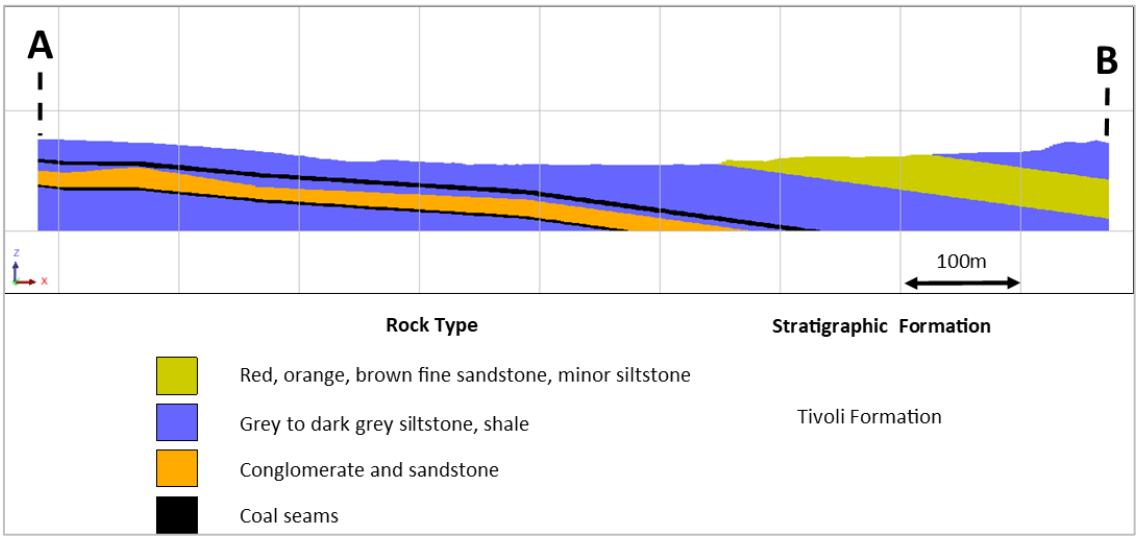


Figure 33 – Geological Cross Section A - B Redbank Plains

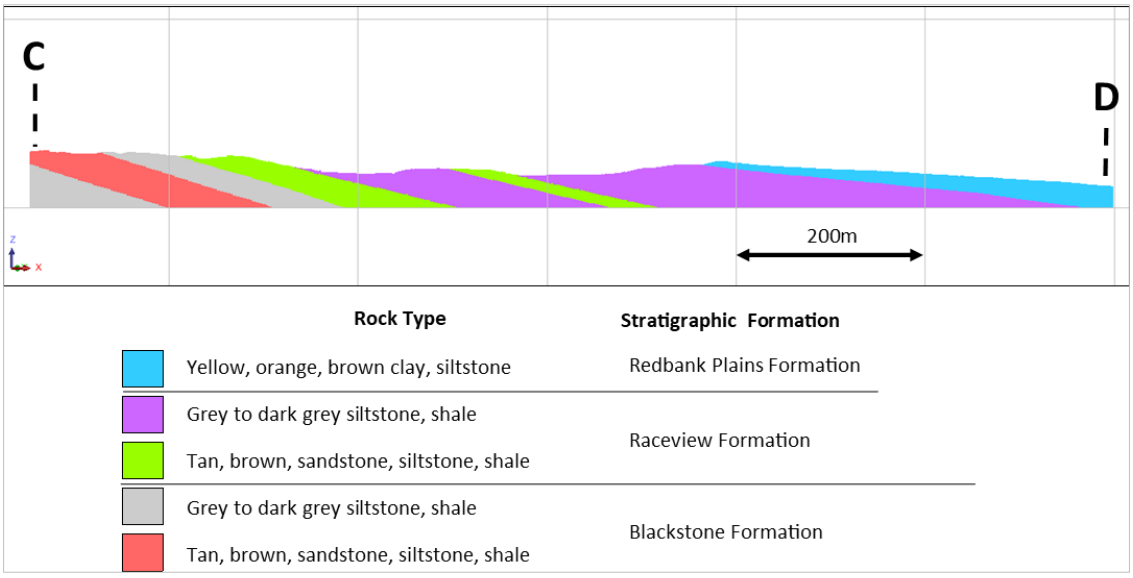


Figure 34 – Geological Cross Section C - D Redbank Plains

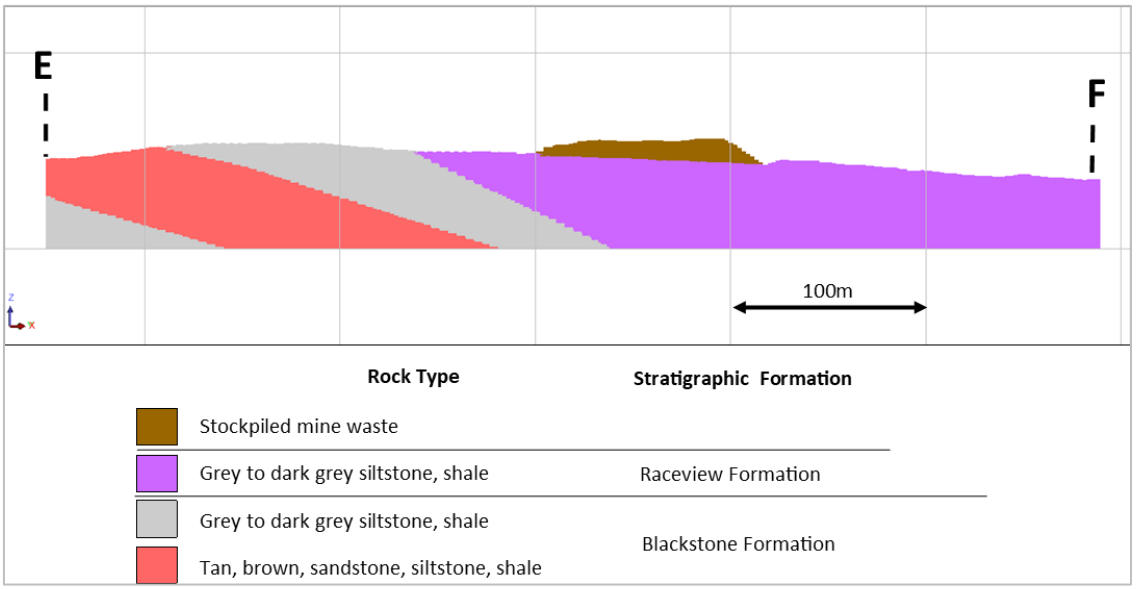


Figure 35 –Geological Cross Section E - F Redbank Plains

3.4.5 Hydrology

Watercourse mapping is shown in **Figure 36 – Watercourse Mapping: Redbank Plains** and **Figure 37 – Regional Watercourse Mapping: Redbank Plains**.

The site lies approximately 3.2 km south-west of the Brisbane River, 4.3 km south of Bremer River, 1.7 km south-east of Bundamba Creek. There is a minor non-perennial watercourse that is located within the site's boundary, that would generally flow with rainfall events. This water course is a drainage feature that flows towards Six Mile Creek and meets approximately 0.7 km east of the northern boundary of the site and meets approximately 0.9 km from the eastern boundary. Six Mile Creek follows the eastern edge of the site. Six Mile Creek is a perennial watercourse that flows into Brisbane River approximately 3.2 km north-east of the site and Bundamba Creek is a perennial watercourse that flows into Bremer River approximately 5.7 km north-west of the site. Bremer River is a perennial major waterway and a tributary of the Brisbane River with its confluence approximately 4.4 km to the north-east of the site. There is a

reservoir/dam approximately 0.1 km from the eastern boundary of the site. The Bremer River drains several Scenic Rim Valleys in south-east Queensland and has several tributaries. The Bremer River catchment is within the Ipswich local government area and contains six major waterways including the Bremer River, Bundamba Creek, Purga Creek, Reynolds Creek, Warrill Creek and Western Creek. Six Mile Creek is part of the Brisbane River Catchment

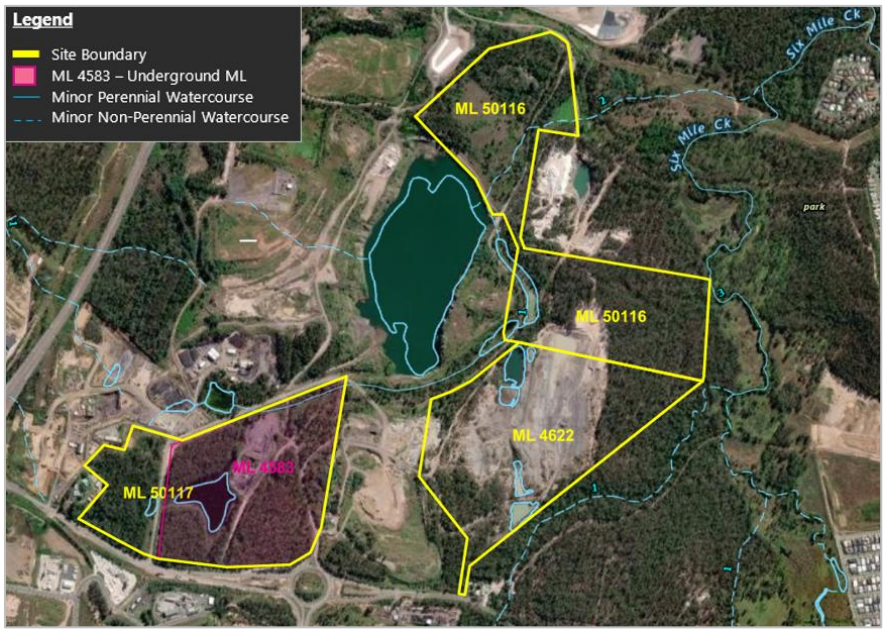


Figure 36 – Watercourse Mapping: Redbank Plains

(Source: The State of Queensland (2022a))

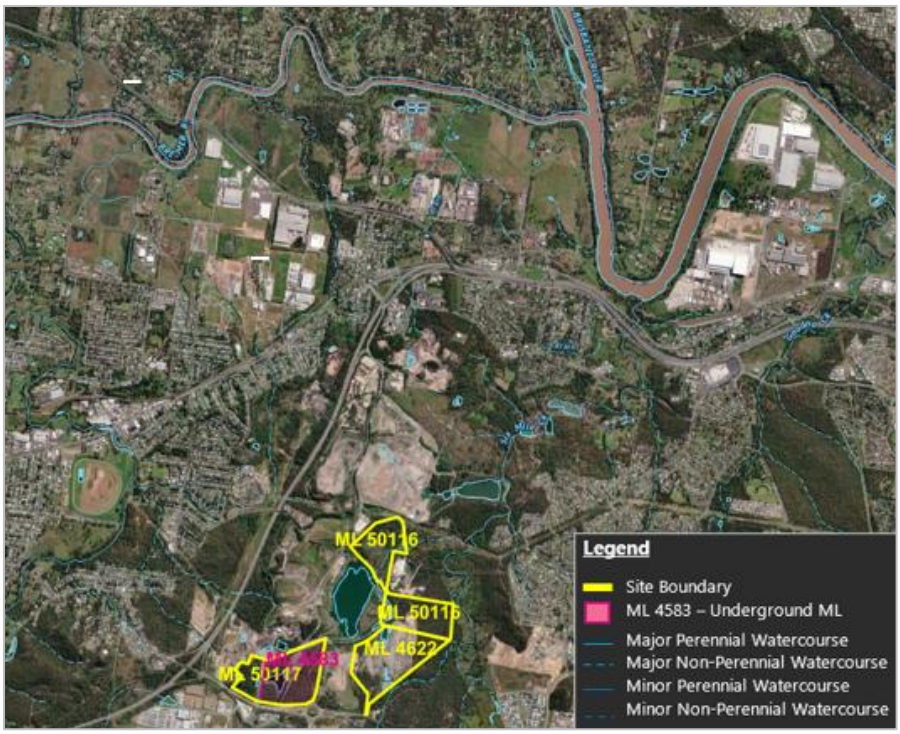


Figure 37 – Regional Watercourse Mapping: Redbank Plains

(Source: The State of Queensland (2022a))

The site is mapped as containing several lacustrine wetlands, which overlay the man-made water storages and drainage features, refer to **Figure 38 – Wetland Mapping: Redbank Plains**. Six Mile Creek is identified as riverine wetland system.

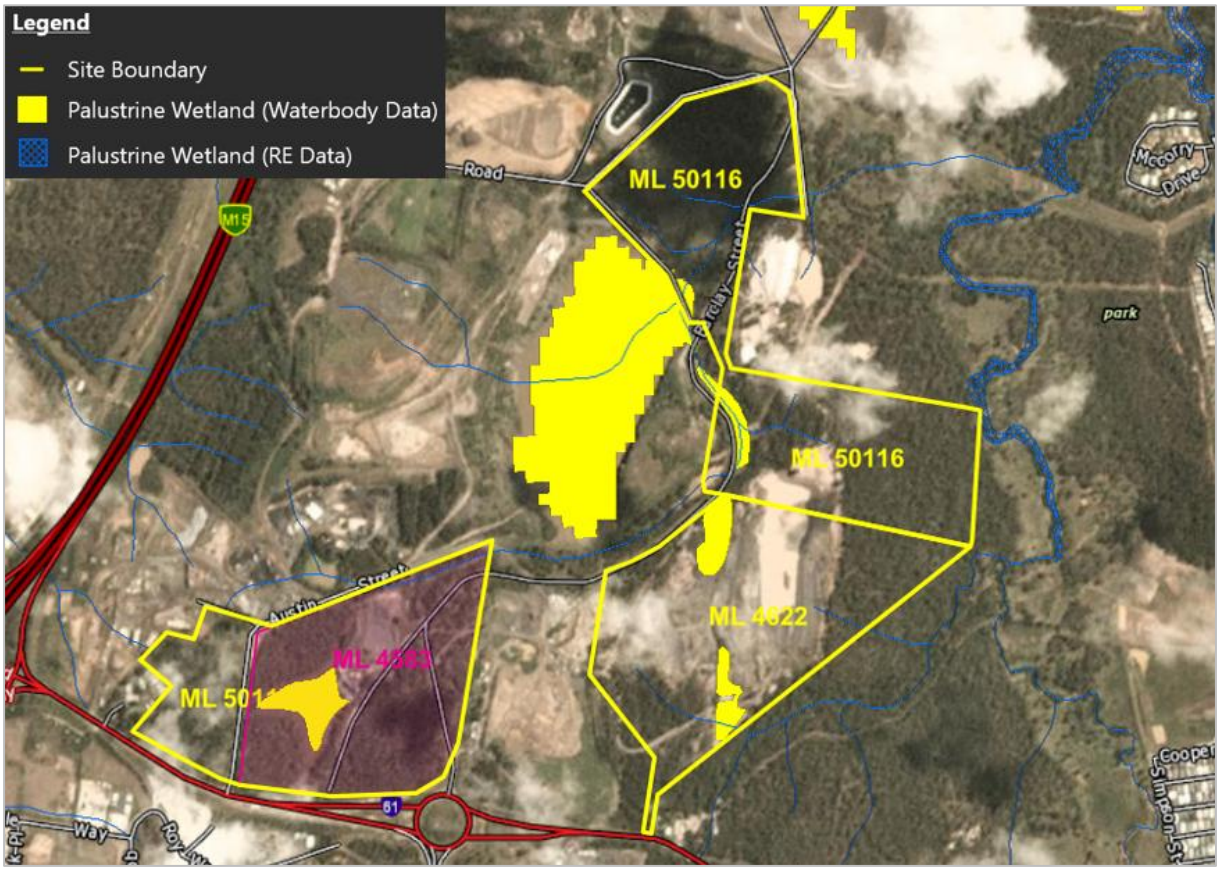


Figure 38 – Wetland Mapping: Redbank Plains

(Source: The State of Queensland (2022a))

3.4.6 Water Quality Objectives

The site shares the same catchment and receiving environment as the Greenwood Village site, refer to **Section 3.2.6 - Water Quality Objectives**.

The WQOs for the site-specific release waters as set by the EA are summarised in **Table 23 – Release Limits: Redbank Plains.**

Table 23 – Release Limits: Redbank Plains

Parameter	Objective
pH	6.5 – 8.5
TSS	50 mg/L
Conductivity	1,500 µS/cm

3.4.7 Groundwater Levels and Properties

Similar to the Greenwood cluster of Mining Leases the DNRM bores around the Redbank Plains operations did encounter groundwater at very deep levels and well below the floor of the clay pits. Importantly this area is a highly disturbed site for groundwater with the large disused coal mines both opencut and underground having an unknown impact on levels and gradients. That said, groundwater levels were encountered between 36 to 63 meters bgl, refer bores RN 181 903 (36m bgl north of site with a groundwater level at approximately -5m AHD) while south of site RN142987 encountered groundwater 63m bgl at approximately -12m AHD. The clay pits at Redbank Plains, will be 14 meters deep, and have a floor level at around 36m AHD. Additionally, inspection of the site readily shows that no groundwater impacts have been encountered to date. Figure 45 - Pit Depths and Bores Redbank Plains shows the extent and depth of the pit along with the location of the DNRM registered bores in the area.

The site is in the *Water Plan (Moreton) 2007* area, and within the Lower Brisbane River sub-catchment. **Figure 40 – Surrounding Registered Groundwater Bores – Redbank Plains** provides an illustration of registered groundwater bores in the surrounding area which have been reviewed to determine potential groundwater levels in the locality. **Table 24 – Redbank Plains Local Groundwater Levels** provides a summary of local groundwater data sourced from available bore reports for these locations.

Table 24 – Redbank Plains Local Groundwater Levels

Bore ID	Approximate Surface mAHD	Approx. Aquifer Water Level m BGL)	Comment (purpose; install date; other)
142987	50 mAHD	65.00 to 80.00 m	Monitoring; installed 2005; water level based on depth at screen was installed in bore.
142988	60 mAHD	49.10 m	Monitoring; installed 2005; water level based on monitoring records. Likely bore is for water supply.
145828	40 mAHD	19.00 to 31.00 m	Water Supply; installed 2008; water level based on installation of screen within the bore.
152447	70 mAHD	64.00 to 82.00 m	Monitoring, though likely for water supply; installed 2014; water level based on installation of screen within the bore.
152720	55 mAHD	56.20 to 62.00 m	Monitoring, though likely for water supply; installed 2014; water level based on installation of screen within the bore.
152721	30 m AHD	41.50 to 47.50m	Monitoring, though likely for water supply; installed 2014; water level based on installation of screen within the bore.
173590	60 mAHD	9 m	Monitoring; installed 2018; water level based on monitoring records

Note: Green – denotes bores likely installed to target deep aquifers for water use and supply; Yellow – denotes bores likely installed for shallow perched aquifer monitoring, and not be supply.

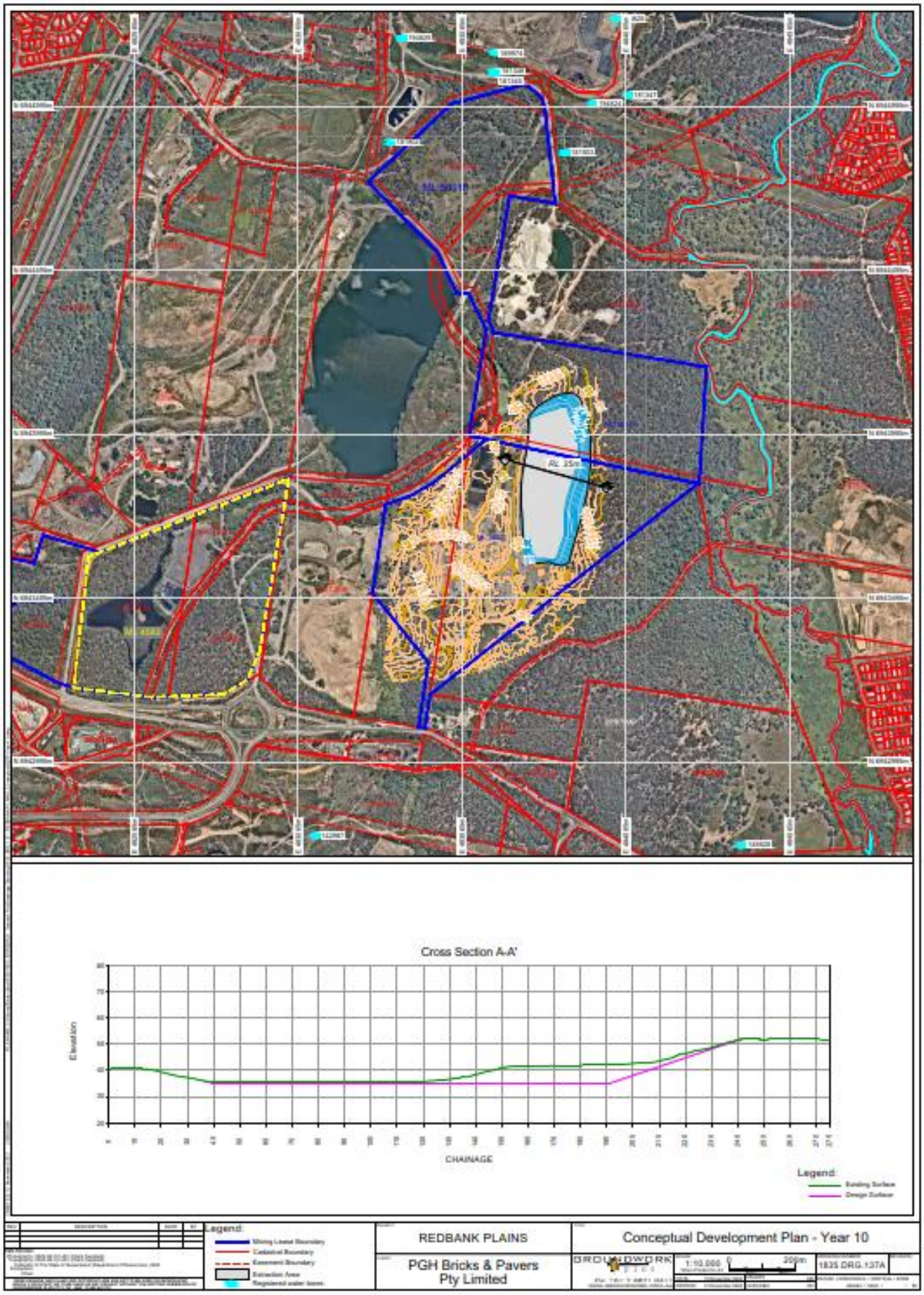


Figure 39 - Pit Depths and Bores Redbank Plains

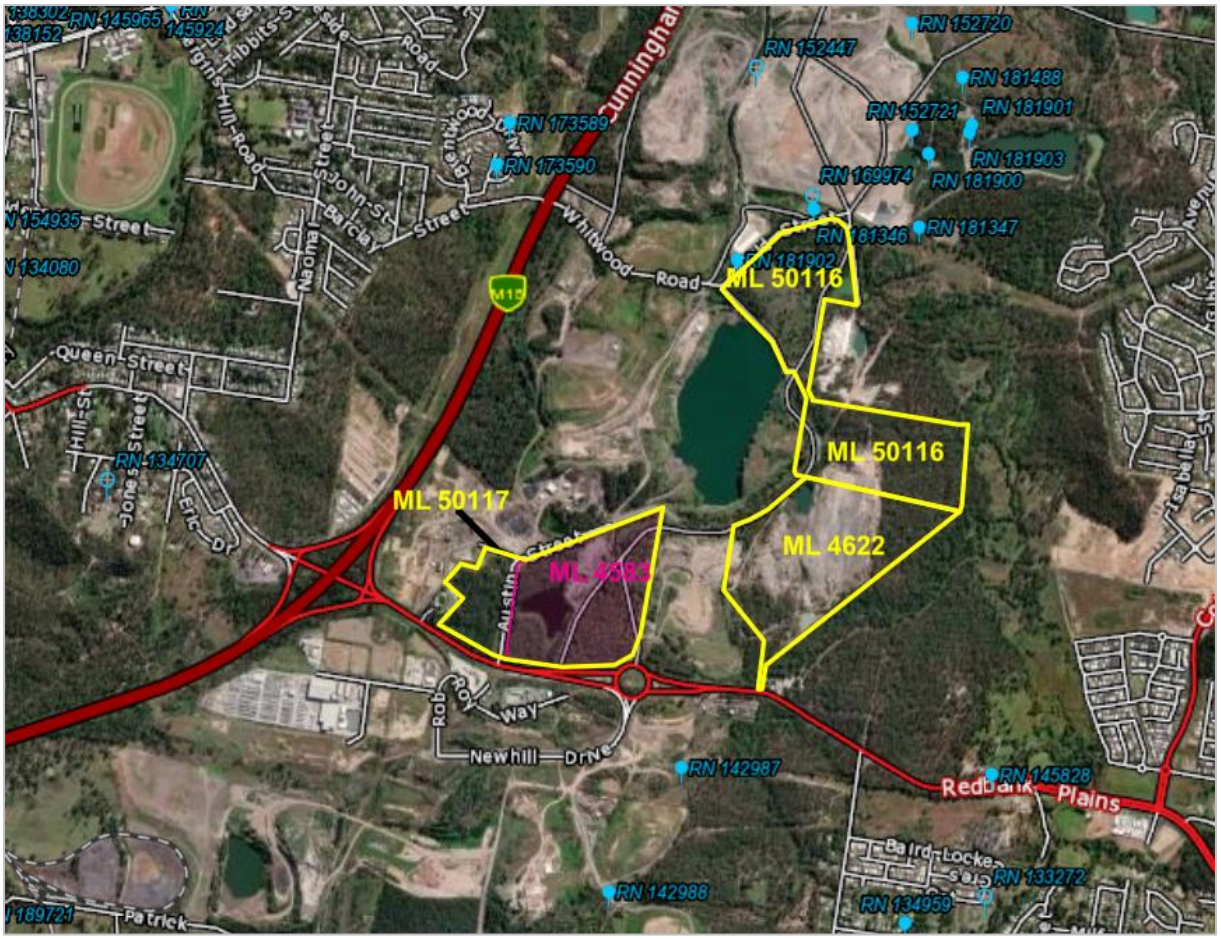


Figure 40 – Surrounding Registered Groundwater Bores – Redbank Plains

(Source: The State of Queensland (2022a))

Given that the clay pits are well above groundwater (approximately 40m), there are no anticipated impacts on groundwater from the Redbank Plains clay pits. Similar to the other sites they are neither sources nor sinks for groundwater.

3.4.8 Soils

3.4.8.1 Soil Group

The dominant entity is Ug5.14 – uniform fine cracking, smooth faced peds, dark clay horizon underlain by grey/mottled clay underlain by rock before 1.5 m (The State of Queensland 2022a).

3.4.8.2 Acid Sulfate Soils

Review of the ASS mapping provided by The State of Queensland (2022a) has confirmed that the site is not located within, or near, an area where ASS have previously been identified, or within a prospective land zone containing ASS.

3.4.8.3 Productivity

Testing has been undertaken of topsoils on site which allow for an assessment of the quality of soil available for rehabilitation at the site. No stockpiles were present on site and all sampling has been undertaken from undisturbed areas.

The soil testing locations are described as follows:

- RP2 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- RP3 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.
- RP4 – Topsoil sample from 0.1-0.3m, within an undisturbed area with decent ground coverage and vegetation density.

Analysis was undertaken for parameters typical for growth media suitability assessments. The soil on site has been described as Clay Loam/Loam soil. Results are provided in **Table 25 – Soil Quality: Redbank Plains**. Alongside the results in this table are indicative guidelines based on 'Albrecht' and 'Reams' concepts and the NEPM.

Table 25 – Soil Quality: Redbank Plains

Parameter		Soil sample			Guideline	
		RP2	RP3	RP4	Clay Loam	Loam
Soluble Calcium (mg/kg)		63	58	198	*750*	*375*
Soluble Magnesium (mg/kg)		36	150	242	*105*	*60*
Soluble Potassium (mg/kg)		25	87	120	*75*	*60*
Soluble Phosphorus (mg/kg)		<1	<1	<1	*12*	*10*
Phosphorus (mg/kg P)		3.9	3.9	3.1	*30*	*24*
		11	5.2	12	*50*	*45*
		5.3	3.1	5.8	*60*	*48*
Nitrate Nitrogen (mg/kg N)		1.3	0.46	0.46	*13*	*10*
Ammonium Nitrogen (mg/kg N)		4.1	2.8	4.5	*18*	*15*
Sulfur (mg/kg S)		5.4	5.9	11	*8.0*	*8.0*
pH		4.84	5.46	5.69	*6.5*	*6.3*
Electrical Conductivity (dS/m)		0.027	0.029	0.038	*0.150*	*0.120*
Estimated Organic Matter (% OM)		4.6	4.4	19	*>4 .5*	*> 3.5*
Exchangeable Calcium	(mg/kg)	89	89	359	*2150*	*1000*
Exchangeable Magnesium	(mg/kg)	43	208	371	*200*	*145*

Parameter		Soil sample			Guideline	
		RP2	RP3	RP4	Clay Loam	Loam
Exchangeable Potassium	(mg/kg)	<50	158	187	*190*	*150*
Exchangeable Sodium	(mg/kg)	31	41	27	*60*	*51*
Exchangeable Aluminium	(mg/kg)	192	176	46	*45*	*32*
Exchangeable Hydrogen	(mg/kg)	11	4.3	2.0	*5*	*4*
Effective Cation Exchange Capacity (ECEC) ($cmol_+/kg$)		4.3	5.1	6.1	*14.3*	*7.8*
Calcium (%)		10	8.7	29	*75.7*	*65.6*
Magnesium (%)		8.2	33	50	*11.9*	*15.7*
Potassium (%)		2.1	7.9	7.8	*3.5*	*5.2*
Sodium - ESP (%)		3.1	3.4	1.9	*1.8*	*2.9*
Aluminium (%)		50	38	8.4	*7.1*	*10.5*
Hydrogen (%)		27	8.4	3.2		
Calcium/Magnesium Ratio		1.3	0.26	0.59	*6.4*	*4.2*
Zinc (mg/kg)		1.0	3.0	6.8	*5.0*	*4.0*
Manganese (mg/kg)		4.1	3.8	8.8	*22*	*18*
Iron (mg/kg)		221	216	153	*22*	*18*
Copper (mg/kg)		0.10	0.54	2.1	*2.0*	*1.6*
Boron (mg/kg)		0.37	0.28	0.45	*1.7*	*1.4*
Silicon (mg/kg Si)		12	15	25	*45*	*40*
Total Carbon (%)		2.6	2.5	11	*> 2.6*	*> 2.0*
Total Nitrogen (%)		0.16	0.12	0.27	*> 0.25*	*> 0.20*
Carbon/Nitrogen Ratio		17	22	41	*10–12*	*10–12*
Chloride Estimate (equiv. mg/kg)		17	19	24	..	..

The above soil results have been used to understand existing soil suitability at the site, with the following comments provided.

The **pH range** for the soils on site is from 4.8 to 5.7 and are described as strongly acidic. In their current state, they will not be suited to a wide range of revegetation species. However, vegetation exists within these same soils, indicating the pH ranges on site are not hostile to some native plants (**Photo 5 - Vegetated area surrounding RP1**). The natural soils in this area have an inherently low pH and are able

to sustain a variety of vegetation. PGH will select native species that already exist on location for rehabilitation to align with the surrounding undisturbed ecosystem. As a result, ameliorating pH may not be necessary.



Photo 5 - Vegetated area surrounding RP1

The **electrical conductivity** for the soils is low. **Exchangeable sodium percentage** is slightly elevated in RP2 compared to guideline, however not at a level that is considered sodic. Soils, whilst exhibiting some limitations, are inherently capable of supporting native vegetation growth, indicating salinity and salt is not a limitation.

The **nutrient** levels within the soils, represented by the nitrogen suites of analysis, indicate the fertility of the soils to be poor in regard to nitrogen and phosphorus levels available. This isn't uncommon for soils in Australia, with native plant varieties well-conditioned to low nutrient soils. Nitrogen availability may also be affected by low pH. If necessary, fertility levels can be improved through the addition of fertilisers to ensure an additional nutrient source is made available for plant establishment, particularly in the short term of any rehabilitation program. However nutrient deficiencies have not been observed in current undisturbed land.

The soil materials at the site, although with some limitations, particularly in regard to pH and nutrient levels, are successfully supporting vegetated areas at the site. No soil ameliorants have been used in these vegetated areas. It is also noted that these limitations can be readily overcome through the addition of common ameliorants such as gypsum, lime and fertilisers if necessary.

3.4.9 Vegetation Communities

Refer to **Figure 41 – Mapped RE: Redbank Plains** for an illustration of the remnant vegetation mapping over the site. A large portion of the site is mapped as non-remnant vegetation under the VMA.

The balance of the site is mapped as containing the following remnant vegetation.

Category A or B and C or R Endangered RE:

- 12.3.3 (100%) - *Eucalyptus tereticornis* woodland on Quaternary alluvium
- 12.3.3/12.9-10.7/12.9-10.3 (60%/30%/10%):
    - E. tereticornis woodland on Quaternary alluvium
    - E. crebra +/- E. tereticornis, *Corymbia tessellaris*, Angophora spp. and E. melanophloia woodland on sedimentary rocks.
    - E. moluccana open forest on sedimentary rocks.

Category A or B and C or R Of Concern RE:

- RE 12.9-10.2 / RE 12.9-10.7 / RE 12.9-10.19 (65%/20%/15%):
    - C. citriodora subsp. variegata +/- E. crebra open forest on sedimentary rocks
    - E. crebra +/- E. tereticornis, C. tessellaris, Angophora spp. and E. melanophloia woodland on sedimentary rocks.
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments.
- RE 12.9-10.3 (100%) – E. moluccana open forest on sedimentary rocks.
- RE 12.9-10.7 (100%) – E. crebra +/- E. tereticornis, C. tessellaris, Angophora spp. and E. melanophloia woodland on sedimentary rocks

Category A or B Least concern RE:

- RE 12.9-10.19 (100%):
    - E. fibrosa subsp. fibrosa woodland +/- C. citriodora subsp. variegata, E. acmenoides or E. portuensis, A leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments.
    - RE 12.9-10.2 – C. citriodora subsp. variegata +/- E. crebra open forest on sedimentary rocks.

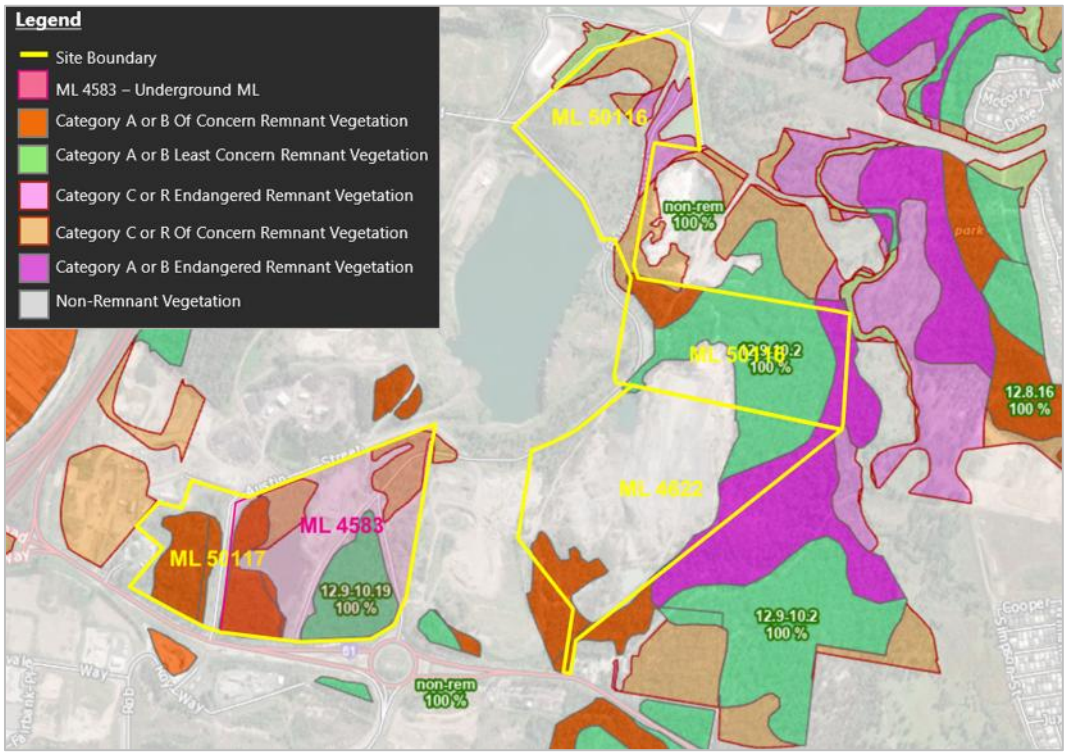


Figure 41 – Mapped RE: Redbank Plains

(Source: The State of Queensland (2022a))

3.4.10 Fauna Presence and Populations

No site fauna surveys have been carried out. In the absence of site-specific data, reference has been made to the DAWE Protected Matters Search Tool to determine the possible presence of species protected under the EPBC Act in the site locality (0 km buffer applied). A summary of the search results is provided in **Table 26 – Protected Matters Search Results: Redbank Plains**. It must be noted that this species list has not been ground-truthed, and it's likely that the actual species composition on-site will vary.

Table 26 – Protected Matters Search Results: Redbank Plains

Scientific Name	Common Name	Simple Presence*	Threatened Category
Actitis hypoleucos	Common Sandpiper	May	
Anthochaera phrygia	Regent Honeyeater	May	Critically Endangered
Apus pacificus	Fork-tailed Swift	Likely	
Argynnis hyperbius inconstans	Australian Fritillary	May	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	May	Endangered
Calidris acuminata	Sharp-tailed Sandpiper	May	-
Calidris ferruginea	Curlew Sandpiper	May	Critically Endangered
Calidris melanotos	Pectoral Sandpiper	May	

Scientific Name	Common Name	Simple Presence*	Threatened Category
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Likely	Vulnerable
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	May	Vulnerable
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	May	-
Cupaniopsis shirleyana	Wedge-leaf Tuckeroo	May	Vulnerable
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	May	Endangered
Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]	May	Endangered
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Likely	Endangered
Delma torquata	Adorned Delma, Collared Delma	Likely	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Known	Vulnerable
Falco hypoleucos	Grey Falcon	Likely	Vulnerable
Furina dunmalli	Dunmall's Snake	May	Vulnerable
Geophaps scripta scripta	Squatter Pigeon (southern)	May	Vulnerable
Grantiella picta	Painted Honeyeater	May	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Known	Vulnerable
Lathamus discolor	Swift Parrot	Likely	Critically Endangered
Macroderma gigas	Ghost Bat	May	Vulnerable
Mixophyes fleayi	Fleay's Frog	May	Endangered
Monarcha melanopsis	Black-faced Monarch	Likely	-
Motacilla flava	Yellow Wagtail	May	-
Myiagra cyanoleuca	Satin Flycatcher	Known	-
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	May	Critically Endangered
Petauroides volans	Greater Glider	Likely	Vulnerable
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Likely	Vulnerable
Petrogale penicillata	Brush-tailed Rock-wallaby	May	Vulnerable
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Known	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo (northern)	May	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-fox	Known	Vulnerable
Rhipidura rufifrons	Rufous Fantail	Known	-

Scientific Name	Common Name	Simple Presence*	Threatened Category
Rostratula australis	Australian Painted Snipe	Known	Endangered
Thesium australe	Austral Toadflax, Toadflax	May	Vulnerable

Table notes:
*Known = Known to occur within area. Likely = Likely to occur within area, May = May occur within area.

3.5 Rehabilitation Planning

3.5.1 Rehabilitation Completed to Date

The following summary of rehabilitation completed at the sites has been prepared to satisfy the requirements of Section 126C(1)(j) of the EP Act.

Mineral extraction at the primary extraction sites, being Dinmore, Greenwood Village and Redbank Plains, is typically carried out on a campaign basis in response to market demands and trends, which therefore requires broader operational areas to remain accessible for extraction. Consequently, areas available for rehabilitation are relatively limited. To date there has been limited opportunity for rehabilitation of these three sites as the operational areas and extraction voids are required to remain at the current surface area for functionality of the sites. Some areas of progressive rehabilitation have occurred, primarily through access exclusion and natural regeneration; however, resource demands may require these previously rehabilitated to be further extracted in future.

3.5.2 Progressive Rehabilitation Dinmore, Oxley and Redbank Plains

3.5.2.1 Surface MLs

Limited progressive rehabilitation of surface MLs has taken place via spreading overburden and interburden and allowing the reprofiled surface area to naturally regenerate with grass and tree species. **Photo 6 - Redbank Plains Progressive Rehabilitation** provides an illustration of an area of progressive rehabilitation at the Redbank Plains site. As is evident in the imagery, the revegetation has been successful in the absence of any treatments or additional growth media.

The location of progressive rehabilitation at the sites in accordance with the above methods is depicted in the attached figures titled **Completed Rehabilitation – Dinmore (Drawing no. 1835.DRG.125), Completed Rehabilitation – Oxley (Drawing no. 1835.DRG.126)** and **Completed Rehabilitation – Redbank Plains (Drawing no. 1835.DRG.127)**. This progressive rehabilitation is incorporated into the rehabilitation areas illustrated in the attached reference maps. It is possible that these areas may need to be redistributed for mining or operational purposes in future as demand for resource at the sites fluctuates.



Photo 6 - Redbank Plains Progressive Rehabilitation

(Photo courtesy of PGH)

3.5.3 Underground ML 4583

ML4583 is an underground tenure and does not contain surface area. ML 50117, which directly overlaps ML4583, provides PGH with surface area for mining activities in this location.

An assessment of disturbance associated with former coal mining activities on ML 4583 was undertaken and is summarised in the *Desktop Mining Study for Mining Lease 4583 – Redbank Plains Road, Redbank Plains* (Moreton Geotechnical Services Pty Ltd. 2016), included as **Attachment 3 - Desktop Mining Study for Mining Lease 4583**. The geotechnical assessment (Moreton Geotechnical Services Pty Ltd 2016 p. 6) concluded that:

- *the site has experienced both old and modern underground mining along four seams in two areas of the site. The bulk of the site has however not been impacted on by past underground or open cut coal mining activities.*
- *the proposed lease surrender area, other than one very small area, with relatively deep mining, is unaffected by past mining activities – the relatively small area with tunnel and shaft entries and two sets of shallow workings in the north east corner of the site represents the only area which has issues associated with subsidence and sinkhole activity*
- *the open tunnel entry in the north east corner of the site (Tunnel D = Noblevale No. 1 Colliery - No. 5 Tunnel) represents an immediate safety concern, whereas the other subsidence features noted require less immediate attention in our opinion*

In the case of the open tunnel entry, we recommend that the tunnel entry be plugged with approximately 10 m3 of mass concrete prior to backfilling the remaining linear void area with spoil from the adjoining mullock heap. For the remaining subsidence features, we recommend that a large

excavator (say 2 days' work) be used, to move between the trees with fill, removed from the mullock heaps, to overfill the depressional features. The recommended procedures can be discussed in more detail when required and in any case the remediation works will need to be carried out under appropriate supervision. Signage, and even fencing the area off, provide additional options for this area.

In 2017, rehabilitation of the underground lease was carried out by Neilton Pty Ltd in accordance with the above recommendations including filling and capping mine shafts with concrete, and filling of other larger holes / subsidence areas and reprofile the ground surface to achieve level profiles to the extent practicable. Photographs of the mine shaft prior to rehabilitation is provided in **Photo 7 - View of ML 4583 Mine Shaft Prior to Rehabilitation**, and photographs illustrating the completed rehabilitation as of 16 February 2017 are provided in **Photo 8 - View of reprofiled land surface following completion of shaft rehabilitation dated February 2017** and **Photo 9 - View facing of land surface following completion of shaft rehabilitation dated February 2017**.

The location of this rehabilitation is depicted in the attached figure titled **Completed Rehabilitation – Redbank Plains (Drawing no. 1835.DRG.127)**.



Photo 7 - View of ML 4583 Mine Shaft Prior to Rehabilitation



Photo 8 - View of reprofiled land surface following completion of shaft rehabilitation dated February 2017



Photo 9 - View facing of land surface following completion of shaft rehabilitation dated February 2017

4 Community Consultation

4.1 Purpose

In accordance with section 126C(1)(c)(iii) and (iv) of the EP Act, this section has been developed to provide:

- details of the consultation undertaken by the applicant in developing the proposed PRCP (refer **Section 4.2**).
- details of how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan (refer **Section 4.3**).

It must be noted that PGH are currently in the process of implementing a dedicated internal community engagement plan, which will take the place of majority of measures outlined in this section of the PRCP. At the point the internal PGH system takes effect, it will supersede this section of the plan. PGH are to ensure that where any aspects of this section are not addressed by the internal system, that measures outlined below are applied.

4.2 Community Consultation Register

Due to the historical nature of the project, and as a result pre-existing PMLUs nominated in land outcome document for the project, there has been limited recording of community consultation undertaken in relation to rehabilitation, with the exception of consultation with the Department regarding the PRCP preparation as outlined throughout this PRCP.

Included as **Attachment 4 – Community Consultation Register** is a Community Consultation Register prepared to address the requirements of this PRCP. This register is intended to be a live document and it is to be updated throughout the life cycle of the project to reflect ongoing consultation with the community regarding rehabilitation outcomes for the sites.

Going forward, community consultation is to be carried out in accordance with the Community Consultation Plan (refer **Section 4.3**).

4.3 Community Consultation Plan

4.3.1 Objectives

The primary purpose of the Community Consultation Plan is to provide a program for the engagement and consultation relevant stakeholders in relation to rehabilitation. The Community Consultation Plan is to be implemented prior to any PRCP Schedule amendments that may affect the community. The community consultation register (refer **Attachment 4 – Community Consultation Register**) is to be updated whenever consultation is undertaken.

The objectives of the Community Consultation Plan are to:

- identify key stakeholders relevant to the site.
- establish mechanisms and frequencies for formal engagement with stakeholders about the PRCP Schedule.

- provide relevant stakeholders with the information necessary to enable an understanding of the rehabilitation that will take place.
- enable a collaborative approach to work with stakeholders in relation to the rehabilitation proposed.
- establish relationships between PGH and stakeholders and enable stakeholder feedback where appropriate.
- address stakeholder interests and concerns.
- document how records of community consultation are to be kept.

4.3.2 Responsible Personnel

The personnel who are responsible for implementing this Community Engagement Plan in relation to the PRCP are identified in **Table 27 – Responsibilities and Authorities**.

Table 27 – Responsibilities and Authorities

Position	Responsibilities	Authorities
CSR Board	Provide resources to PGH to support community consultation as and when required. Represent the interests of the company to external stakeholders (including shareholders).	Authorises resource distribution. Managing broader stakeholder engagement.
Development Manager	Provide advice and support in preparing the Community Engagement Plan	Recommend the development of Community Engagement Plans for relevant sites
Raw Materials Managers	Maintain awareness of community issues for sites under their control	Manage highly contentious community issues

4.3.3 Key Stakeholder Identification

Key stakeholders are to be identified in the Community Consultation Register (refer **Attachment 4 – Community Consultation Register**).

As the key stakeholders and contact information will change over time, the register is to be a live document that must be updated where necessary to reflect any changes to the relevant stakeholders.

In summary, stakeholders general fall into the following broad stakeholder groups:

- Administering authorities relevant to the MLs and EA (limited to the Department of Environment and Science, and the Department of Resources, or subsequent Departments as renamed).
- Local government agencies.
- Local and State members of Parliament.
- Landowners for the background tenure relevant to the MLs (for both surface area and access).
- Adjacent landowners.
- Local community groups.

It should be noted that the land comprising the MLs is freehold land, and therefore Exclusive Land (100%) meaning that Native Title has been extinguished on the land.

4.3.4 Community Engagement Strategy

A summary of the proposed consultation and frequency is provided in **Table 28 - Stakeholder Consultation Requirements**.

Table 28 - Stakeholder Consultation Requirements

Stakeholder	Consultation Requirements	Proposed Consultation Frequency
Department of Environment and Science	Reporting in accordance with the EA and relevant legislative requirements of the EP Act as required.	Annually / In accordance with the frequencies prescribed under the EA and EP Act.
Department of Resources	Reporting in accordance with relevant legislative requirements of the *Mineral Resources Act 1989* ('MRA') as required.	Annually / In accordance with the frequencies prescribed under the MRA.
State / Local Members	Communicate as required in relation to the proposed rehabilitation for the sites with reference to local planning instruments applicable to the land.	Annually / As required.
Local Government	Communicate as required in relation to the proposed rehabilitation for the sites with reference to local planning instruments applicable to the land.	Annually / As required.
Landowners	Communicate as required in relation to the proposed rehabilitation for the sites.	Annually / As required.
Local Community Groups	Communicate as required in relation to the proposed rehabilitation for the sites.	Annually / As required.
Traditional Owners	Communicate as required in relation to the proposed rehabilitation for the sites.	Annually / As required.

4.3.5 Communication Methods and Information to be Released

The methods and content of information to be released will vary according to each stakeholder group's information needs. At a minimum all stakeholders will receive an annual letter comprising the following information:

- Summary of PRCP content relevant to any change of a PMLU.
- Details of any amendments to PRCP Schedule that may be required over the life of the project.
- Proactive advice and messaging to the community during progressive rehabilitation.

The letters will be delivered by mail, or through a letterbox drop.

Additional communication methods may be employed where appropriate and are outlined in **Table 29 - Communication Medium**.

These additional measures reflect the intention of PGH to ensure all stakeholders are provided the opportunity to be engaged in a meaningful way. Given that neither stakeholder groups nor the rehabilitation process are static, some flexibility in the engagement activities is required to ensure effective engagement.

Table 29 - Communication Medium

Medium	Description
Face to face meetings	Meetings with individual stakeholders such as Landowners may be carried out by on-on-on meetings where required to communicate regarding the proposed rehabilitation of the sites and to obtain feedback.
Focus groups / Workshops	This enables stakeholders with the same interest to attend a single meeting to discuss common matters / issues.
Emails	Distribution of relevant content via electronic mail to enable rapid delivery of messaging in relation to rehabilitation. Emails may be used for distribution of print materials in lieu of hard copy mail outs for efficiency and to reach a wider audience.
Print materials	This could include, but is not limited to: • letters • background information documents • flyers. Print materials are relevant for delivering specific and/or targeting messages.
Online media	This can include Facebook and company website hosting relevant project information. This enables positive messaging to stakeholders and proactive solutions via monitoring of engagement. This method has proved particularly useful for communication of rehabilitation outcomes for the Strathpine site.
Phone calls	Discussion over the phone with stakeholders to reach a mutual understanding. This offers an efficient resolution process due to the ability to obtain immediate feedback and responses.

4.3.6 Consideration of Feedback and Comments

The communication medium identified at **Section 4.3.5 - Communication Methods and Information to be Released**

will provide stakeholders with an opportunity to provide feedback regarding the rehabilitation of the project. Contact details of the nominated PGH representative are to be provided in any communication medium to enable the community to provide feedback on the project. A conceptual flow chart of the feedback and comment handling process is provided in **Diagram 1 - Feedback and Comment Handling Process**.

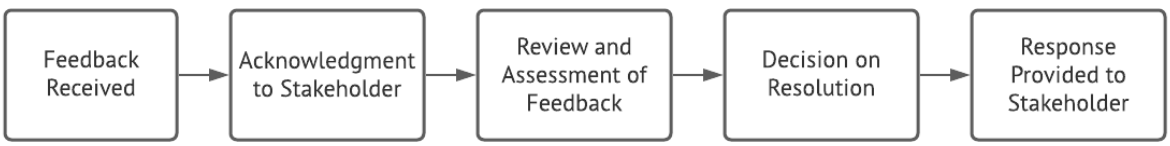


Diagram 1 - Feedback and Comment Handling Process

PGH are to carry out systematic analysis of the feedback and comments provided by the stakeholders in response to each separate consultation and/or feedback event to determine if, and how, the matters raised should be used to inform site rehabilitation activities.

The analysis is to include:

- a summary of items raised by the stakeholders.
- consideration of any relevant legislation and/or regulations relevant to the feedback.
- if applicable. potential solutions and resources required to address / resolve the feedback.

An electronic record of community feedback and comments is to be maintained (refer **Attachment 4 – Community Consultation Register** for a template).

Analysis of community feedback is to be provided to the relevant senior management team for review. Where relevant, the feedback the analysis findings are to be used by PGH to develop and implement rehabilitation activities for the sites.

PGH are to provide a response to all feedback received in line with the methods of communication outlined at **Section 4.3.5 - Communication Methods and Information to be Released**

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5 Post-Mining Land Uses

5.1 Purpose

This section has been prepared to satisfy the requirements of Section 126C(1)(d) of the EP Act to state the extent to which each PMLU in the PRCP schedule is consistent with:

- the outcome of consultation with the community in developing the plan; and,
- any strategies or plans for the land of a local government, the State, or the Commonwealth.

The PMLUs for the site have been previously addressed in the EA (the primary Land Outcome Document), and these are able to be transitioned into the PRCP schedule. As a result, PGH is not required to complete the information requirements under section 126C(1)(j) of the EP Act in this section.

5.2 Approved PMLUs

Table 30 – Approved and PMLUs summarises the PMLUs which are approved in the Land Outcome Documents relevant to the sites and the proposed PMLUs. Following consultation with the Department, it is understood that only one (1) PMLU can be nominated per rehabilitation area. The PMLU of Industrial has been identified as the most relevant PMLU for the operational and mineral extraction areas in line with the vision of the local and state planning instruments (refer **Section 5.3.2 - Government Strategies / Plans for the Land** for details). Buffer land will be Native Ecosystem.

The PMLU for Redbank Plains is proposed to be varied from the pre-approved PMLUs in the EA. Justification for the proposed PMLU for this two site is provided in **Section 5.3.3 - Redbank Plains Justification Relating to Change of PMLU**.

No Non-Use Management Areas are proposed for the sites or the PRCP Schedule.

Table 30 – Approved and PMLUs

Site	Currently Approved PMLU	PMLU
Dinmore	Industrial; or Residential; or Native ecosystem.	Industrial; and Native ecosystem.
Greenwood Village	Industrial; or Residential; or Water-filled residual void; or Native ecosystem.	Industrial; and Native ecosystem.
Oxley	Industrial; or Residential; or Water-filled residual void; or Native ecosystem.	Industrial; and Native ecosystem.

Site	Currently Approved PMLU	PMLU
Redbank Plains	Industrial (Landfill)	Industrial Buffer

It must be noted that, whilst the document titled *Report on Investigations into Rehabilitation of Disturbed Areas and Residual Voids and Acceptance Criteria* (Groundwork Plus 2008) is a Land Outcome Document for the Dinmore, Greenwood Village and Oxley sites, being over 14 years old, the document has been superseded in many aspects. This is particularly owing to the fast-paced nature of urban sprawl in the vicinity of the sites and ever-changing nature of the local planning instruments, most notably the *Brisbane City Plan 2014 v19* (and various associated Neighbourhood Development Plans), and *South East Queensland Regional Plan 2017*, all of which have been developed subsequent to the Report on Investigations. The Report on Investigations acknowledges that:

> *Due to the proximity of the sites to urban development and the increasing value of the land, the post-mining land-uses are likely to be reassessed from time to time over the life of the mine. The focus of the rehabilitation activities therefore, needs to be in accordance with all potential post-mining land-use options of the site; as long as these do not negate any local or state government planning or approval requirements for the development of that land. At present the post-mining use has not been determined for any of the six mining sites incorporated within the Environmental Authority MIM 900101302. The potential outcomes for the each of the sites, listed in the Environmental Authority are shown in TABLE 1. These are acceptable post-mining land-uses based on the planning requirements for the respective locations at the time of the issue of the Environmental Authority. The rehabilitation program at a specific quarry may incorporate one or more of these land-use options, depending on the intent of Planning Schemes or any Development Approval.* (Groundwork Plus 2008, p. 5).

At the present time, the PRCP is the appropriate document for consideration of the PMLUs, which like the Report on Investigations, will require reassessment over time as the nature of the site localities and planning instruments evolve.

5.3 PMLU Criteria Consideration

5.3.1 Outcomes of Consultation

Consultation has taken place with the Department in relation to the preparation of this PRCP since early 2020. As outlined in the introduction, the first consultation with the Department occurred on 7 February 2020 and was held with assessment officers of the Minerals and Northern Compliance unit, inclusive of the Director and Acting Director of the Department's Mineral Business Centre. During this initial meeting, the Department acknowledged the uniqueness of the sites and the need for the activities to be situated close to urban markets which require the construction materials, accepting that the PMLUs are largely planning driven. Further to this meeting, the Department provided subsequent correspondence confirming that the Department welcomed early consultation regarding the PRCP to ensure that the somewhat novel nature of the sites is captured in a way that meets the PRCP requirements whilst ensuring that PGH can continue working towards industrial outcomes in line with local Council[1].

During the initial meeting on 7 February 2020, the Department advised that Ipswich City Council had indicated that PMLUs proposing a landfill end use would not be acceptable to Council in the Redbank

Plains locality. The Department indicated that the PRCP development process allows for nominating alternative PMLUs, which would be an appropriate platform for nominating an 'Industrial' outcome (removing 'landfill'). Accordingly, a PMLU of Industrial is proposed for the Redbank Plains site through this PRCP. This matter is further discussed in **Section 5.3.3 - Redbank Plains Justification Relating to Change of PMLU**.

5.3.2 Government Strategies / Plans for the Land

5.3.2.1 Planning Scheme Considerations

Development of land within Queensland follows the planning framework established by the *Planning Act 2016*. Each local government within Queensland has prepared a Planning Scheme, which sets up the assessment benchmarks applicable when development the site, including establishing the definition of land uses. Where applicable, development may also require concurrent, or additional approvals at State government level. The following provides a summary of the relevant planning instruments applicable to each site.

5.3.2.1.1 Dinmore

Table 31 – Local Authority and Planning Instruments: Dinmore provides a summary of the LGA in which the site is situated and the overarching planning instruments applicable to the site.

Table 31 – Local Authority and Planning Instruments: Dinmore

Local Authority:	Ipswich City Council
Planning Scheme:	*Ipswich Planning Scheme 2005*
Current Zone:	Regional Business & Industry Investigation, Regional Business & Industry Buffer, and Regional Business & Industry (Medium Impact) Sub Area
SEQ Regional Plan:	Urban Footprint

The site is located within the Urban Footprint of the South East Queensland Regional Plan, which is administered by the *Planning Regulation 2017* ('Planning Reg'). The Planning Reg contains provisions to ensure particular forms of development within South East Queensland are consistent with the intent of the *ShapingSEQ* policy. The priority for developing land in the Urban Footprint is to accommodate urban growth. However, the Urban Footprint is not an urban zone and does not imply that all land can be developed for urban purposes.

The site is located within the Ipswich City Council local government area and is administered by the *Ipswich Planning Scheme 2005* ('Planning Scheme'). The Planning Scheme divides the Ipswich City Council local government area into different zones and outlines the intent and purpose for each zone. The site is mapped within the Regional Business & Industry Investigation, Regional Business & Industry Buffer and Regional Business & Industry (Medium Impact) Sub Area zones. The purpose of the Regional Business and Industry Investigation Zone is to provide regional business enterprise and industry employment opportunities subject to potential amenity impacts on nearby sensitive receptors as well as mining, flooding and availability of services. It is intended for lower impact uses on the edge of the

mapped areas with higher impact activities towards the centre. The mapped buffer area aids the separation of incompatible land uses and sensitive receptors. In situations where constraints cannot be resolved, low yield activities which have minimal building requirements are permitted, such as golf courses, driving ranges, adventure sports, motor sports, equestrian sports, water sports, nature trails, walking and cycling trails, and outdoor festivals and events. The Regional Business & Industry (Medium Impact) Sub area is land extensively affected by past undermining activities.

The following land uses are inconsistent with the Regional Business & Industry Zone and are unlikely to be supported for approval:

- Aviation use, unless helipad;
- Community use, if a crematorium, cemetery or hospital;
- Correctional centre;
- Display housing;
- Dual occupancy;
- Entertainment use, if cinema;
- Extractive industry;
- Institutional residential;
- Intensive animal husbandry, if dairy, feedlot, piggery or poultry feedlot;
- Multiple residential;
- Nuclear industry;
- Recreation use, if equestrian and coursing sports or motorsports;
- Shopping centre;
- Single residential; and
- Temporary accommodation.

The purpose of the Regional Business & Industry Buffer zone is to serve as a buffer and separate business and industry uses from sensitive receptors**. Table 32 – Consistent and Inconsistent Land Uses: Dinmore** below demonstrates the 'consistent', 'potentially consistent' (if of a type and scale suitable for the particular site circumstances) and 'inconsistent' development within the Regional Business & Industry Buffer zone.

Table 32 – Consistent and Inconsistent Land Uses: Dinmore

Consistent	Potentially Consistent	Inconsistent
• agriculture, unless turf farming or fruit farming within 8km of RAAF Base Amberley; • animal husbandry; • carrying out building work not associated with a material change of use, if building work on an existing building on site and complying with the Planning Scheme Building Matters Code; • clearing of vegetation which complies with the	• agriculture, if turf farming or fruit farming within 8km of RAAF Base Amberley; • aviation use, if helipad; • business use; • caretaker residential; • carpark; • carrying out operational work for reconfiguring a lot or in association with a material change of use; • community use, unless cemetery, crematorium or hospital; • entertainment use; • extractive industry;	• aviation use, unless helipad; • community use, if cemetery, crematorium or hospital; • correctional centre; • display housing; • dual occupancy; • institutional residential; • intensive animal husbandry, if feedlot, piggery or poultry feedlot; • multiple residential; • nuclear industry; • reconfiguring a lot, where the lot is less than 50 hectares in Sub Area 1 Swanbank;

Consistent	Potentially Consistent	Inconsistent
Vegetation Management Code; • earthworks not associated with a material change of use and which complies with the Earthworks Code; • home based activity which complies with the Home Based Activities Code; • minor building work; • minor utility; • park, if not involving illuminated sporting activities; • plant nursery (wholesale); • placing an advertising device on premises which complies with the Advertising Devices Code;	• forestry; • general industry; • general store; • intensive animal husbandry, unless feedlot, piggery or poultry feedlot; • major utility; • night court; • park, if involving illuminated sporting activities; • reconfiguring a lot, where the lot is greater than 50 hectares in Swanbank Sub Area 1; • recreation use, unless motorsports complex; • service trades use; • special industry; • temporary accommodation, if motel adjoining Precinct 3 within Sub Area RBIA1, Ebenezer Willowbank; • temporary sales office; • temporary use; • tourist facility; • wine making.	• recreation use, if motorsports complex; • shopping centre; • single residential; • temporary accommodation, unless motel adjoining Precinct 3 of Sub Area RBIA1, Ebenezer Willowbank.

The land directly to the north and north-east of the site contains sensitive land uses in the forms of dwellings and the St Peter Claver School. Any development in the north of the site (Lot 2 on RP164685) may need to be setback from these sensitive land uses and/or adopt management measures to ensure the amenity of the land is not compromised with the introduction of new industrial uses. The exact size, location and nature of any buffers to nearby sensitive land uses, or appropriate management measures would be resolved through a future development application assessed by the Council pursuant to the provisions of the planning scheme. The approved Post-Mining Land Use for the site (industrial) is consistent with the intent and purpose of the planning scheme and the South East Queensland Regional Plan however, residential land uses are inconsistent with the outcomes sought for the Regional Business & Industry Zone and the Regional Business & Industry Buffer zone.

5.3.2.1.2 Greenwood Village

Table 33 – Local Authority and Planning Instruments: Greenwood Village provides a summary of the LGA in which the site is situated and the overarching planning instruments applicable to the site.

Table 33 – Local Authority and Planning Instruments: Greenwood Village

Local Authority:	Ipswich City Council
Planning Scheme:	*Ipswich Planning Scheme 2005*

Current Zone:	Regional Business & Industry Buffer
SEQ Regional Plan:	Urban Footprint

The site is located within the Urban Footprint of the South East Queensland Regional Plan, which is administered by the *Planning Regulation 2017* ('Planning Reg'). The Planning Reg contains provisions to ensure particular forms of development within South East Queensland are consistent with the intent of the *ShapingSEQ* policy. The priority for developing land in the Urban Footprint is to accommodate urban growth. However, the Urban Footprint is not an urban zone and does not imply that all land can be developed for urban purposes.

The site is located within the Ipswich City Council local government area and is administered by the *Ipswich Planning Scheme 2005* ('Planning Scheme'). The Planning Scheme divides the Ipswich City Council local government area into different zones and outlines the intent and purpose for each zone. The site is mapped within the Regional Business & Industry Buffer zone.

The purpose of the Regional Business & Industry Buffer zone is to serve as a buffer and separate business and industry uses from sensitive receptors. **Table 34 – Consistent and Inconsistent Land Uses: Greenwood Village** demonstrates the 'consistent', 'potentially consistent' (if of a type and scale suitable for the particular site circumstances) and 'inconsistent' development within the Regional Business & Industry Buffer zone.

Table 34 – Consistent and Inconsistent Land Uses: Greenwood Village

Consistent	Potentially Consistent	Inconsistent
• agriculture, unless turf farming or fruit farming within 8km of RAAF Base Amberley; • animal husbandry; • carrying out building work not associated with a material change of use, if building work on an existing building on site and complying with the Planning Scheme Building Matters Code; • clearing of vegetation which complies with the Vegetation Management Code; • earthworks not associated with a material change of use and which complies with the Earthworks Code; • home based activity which complies with the Home Based Activities Code; • minor building work; • minor utility;	• agriculture, if turf farming or fruit farming within 8km of RAAF Base Amberley; • aviation use, if helipad; • business use; • caretaker residential; • carpark; • carrying out operational work for reconfiguring a lot or in association with a material change of use; • community use, unless cemetery, crematorium or hospital; • entertainment use; • extractive industry; • forestry; • general industry; • general store; • intensive animal husbandry, unless feedlot, piggery or poultry feedlot; • major utility; • night court; • park, if involving illuminated sporting activities;	• aviation use, unless helipad; • community use, if cemetery, crematorium or hospital; • correctional centre; • display housing; • dual occupancy; • institutional residential; • intensive animal husbandry, if feedlot, piggery or poultry feedlot; • multiple residential; • nuclear industry; • reconfiguring a lot, where the lot is less than 50 hectares in Sub Area 1 Swanbank; • recreation use, if motorsports complex; • shopping centre; • single residential; • temporary accommodation, unless motel adjoining Precinct 3 of Sub Area RBIA1, Ebenezer Willowbank.

Consistent	Potentially Consistent	Inconsistent
• park, if not involving illuminated sporting activities; • plant nursery (wholesale); • placing an advertising device on premises which complies with the Advertising Devices Code.	• reconfiguring a lot, where the lot is greater than 50 hectares in Swanbank Sub Area 1; • recreation use, unless motorsports complex; • service trades use; • special industry; • temporary accommodation, if motel adjoining Precinct 3 within Sub Area RBIA1, Ebenezer Willowbank; • temporary sales office; • temporary use; • tourist facility; • wine making.	

The surrounding land uses consist of extractive industry, heavy industry (Swanbank Power Station) and undeveloped vegetated lots. The approved Post-Mining Land Use for the site (industrial) is consistent with the intent and purpose of the planning scheme and the South East Queensland Regional Plan however, residential land uses are inconsistent with the outcomes sought for the Regional Business & Industry Buffer zone.

5.3.2.1.3 Oxley

Table 35 – Local Authority and Planning Instruments: Oxley provides a summary of the LGA in which the site is situated and the overarching planning instruments applicable to the site.

Table 35 – Local Authority and Planning Instruments: Oxley

Local Authority:	Brisbane City Council
Planning Scheme:	*Brisbane City Plan 2014 v19*
Current Zone:	Low Impact Industry and Industry (General Industry B)
Neighbourhood Plan:	Richlands-Wacol Corridor Neighbourhood Plan
Precinct:	Richlands East Precinct
SEQ Regional Plan:	Urban Footprint

The site is located within the Urban Footprint of the South East Queensland Regional Plan, which is administered by the *Planning Regulation 2017* ('Planning Reg'). The Planning Reg contains provisions to ensure particular forms of development within South East Queensland are consistent with the intent of the *ShapingSEQ* policy. The priority for developing land in the Urban Footprint is to accommodate urban growth. However, the Urban Footprint is not an urban zone and does not imply that all land can be developed for urban purposes.

The site is located within the Brisbane City Council local government area and is administered by the *Brisbane City Plan 2014* ('Planning Scheme'). The Planning Scheme divides the Brisbane City Council local government area into different zones and outlines the intent and purpose for each zone. The site is mapped within the Low Impact Industry and Industry (General Industry B) zone. The purpose of the Low Impact Industry zone is to provide for service industry, low impact industry and other uses/activities that support industry activities whilst minimising the likelihood of environmental harm and environmental nuisance on sensitive receptors. The purpose of the General Industry B zone precinct is to provide for low impact industry and medium impact industry. All development is to avoid or minimise noise and air emissions to meet the air-quality criteria at nearby sensitive receptors and protect adjacent residential and community uses from intrusion of heavy traffic. The zoning of the site is consistent with surrounding industrial land uses.

The site is also mapped within the Richlands East Precinct of the Richlands-Wacol Corridor Neighbourhood Plan. Neighbourhood Plans are identified within the Planning Scheme and address matters at a local or district level and provide more detailed planning for zones. Precincts may be identified as part of a Neighborhood Plan. The overall outcomes for the Richlands East Precinct require the area north of Freeman Road be developed for low impact industry and medium impact industry. The subject site is north of Freeman Road and therefore subject to this requirement of the Richlands-Wacol Corridor Neighbourhood Plan.

Low and medium impact industry uses are consistent with the zoning for the site and the Richlands East Precinct. Land adjacent to the site is zoned as Industry (General Industry B) with the land to the north of the Ipswich motorway being zoned Emerging Community. The predominant land use in the immediate vicinity of the site is industrial with the exception of a caravan park to the south and residential dwellings to the north of the Ipswich Motorway. Considering the zoning of the surrounding land, the existing industrial uses and the presence of the Ipswich Motorway, it is our view that the approved Post-Mining Land Use for the site (industrial) is consistent with the intent and purpose of the planning scheme and the South East Queensland Regional Plan.

5.3.2.1.4 Redbank Plains

Table 36 – Local Authority and Planning Instruments: Redbank Plains provides a summary of the LGA in which the site is situated and the overarching planning instruments applicable to the site.

Table 36 – Local Authority and Planning Instruments: Redbank Plains

Local Authority:	Ipswich City Council
Planning Scheme:	*Ipswich Planning Scheme 2005*
Current Zone:	Regional Business & Industry Investigation, Regional Business & Industry (Medium Impact) Sub Area, Special Uses, and Recreation
SEQ Regional Plan:	Urban Footprint

The site is located within the Urban Footprint of the South East Queensland Regional Plan, which is administered by the *Planning Regulation 2017* ('Planning Reg'). The Planning Reg contains provisions to ensure particular forms of development within South East Queensland are consistent with the intent of the *ShapingSEQ* policy. The priority for developing land in the Urban Footprint is to accommodate urban

growth. However, the Urban Footprint is not an urban zone and does not imply that all land can be developed for urban purposes.

The site is located within the Ipswich City Council local government area and is administered by the *Ipswich Planning Scheme 2005* ('Planning Scheme'). The Planning Scheme divides the Ipswich City Council local government area into different zones and outlines the intent and purpose for each zone. The site is mapped across the Regional Business & Industry Investigation, Regional Business & Industry (Medium Impact) Sub Area, Special Uses and Recreation Zones.

The purpose of the Regional Business and Industry Investigation Zone is to provide regional business enterprise and industry employment opportunities subject to potential amenity impacts on nearby sensitive receptors as well as mining, flooding and availability of services. It is intended for lower impact uses on the edge of the mapped areas with higher impact activities towards the centre. The mapped buffer area aids the separation of incompatible land uses and sensitive receptors. In situations where constraints cannot be resolved, low yield activities which have minimal building requirements are permitted, such as golf courses, driving ranges, adventure sports, motor sports, equestrian sports, water sports, nature trails, walking and cycling trails, and outdoor festivals and events. The Regional Business & Industry (Medium Impact) Sub area is land extensively affected by past mining activities.

The following land uses are inconsistent with the Regional Business & Industry Zone and are unlikely to be supported for approval:

- Aviation use, unless helipad;
- Community use, if a crematorium, cemetery or hospital;
- Correctional centre;
- Display housing;
- Dual occupancy;
- Entertainment use, if cinema;
- Extractive industry;
- Institutional residential;
- Intensive animal husbandry, if dairy, feedlot, piggery or poultry feedlot;
- Multiple residential;
- Nuclear industry;
- Recreation use, if equestrian and coursing sports or motorsports;
- Shopping centre;
- Single residential; and
- Temporary accommodation.

The purpose of the Special Uses zone is to primarily cater to uses and works which include land used, owned or operated by Federal, State of Local Government, or uses which by the virtue of location, intensity, operations and site characteristics, are best managed within the Special Uses zone. Land uses which are consistent with the intent of the Special Uses zone include caretaker residential, minor building work, minor and major utility, park and advertising devices.

The purpose of the Recreation zone is to provide for the development of an integrated open space network including the use of land for both active and passive recreation opportunities within parks, linear/riparian corridors as open space links and private and public sporting/recreation facilities.

Table 37 – Consistent and Inconsistent Land Uses: Redbank Plains demonstrates the 'consistent', 'potentially consistent' (if of a type and scale suitable for the particular site circumstances) and 'inconsistent' development within the Regional Business & Industry Buffer zone.

Table 37 – Consistent and Inconsistent Land Uses: Redbank Plains

Consistent	Potentially Consistent	Inconsistent
• agriculture, on lots 1 or more hectares in area, unless fruit farming or turf farming within 8km of RAAF Base Amberley; • animal husbandry, if the lot is one hectare or more in area; • caretaker residential; • clearing of vegetation which complies with the Vegetation Management Code; • community use, if a child care centre, community centre, community hall, cultural centre, gallery, information centre, library, meeting rooms, museum, senior citizens centre or youth centre within an existing building and the requisite number of parking spaces are provided for the use; • entertainment use, if a club, exhibition or trade fair within an existing building and the requisite number of parking spaces are provided for the use; • home based activity which complies with the Home Based Activities Code; • minor utility; • park; • placing an advertising device on premises which complies with the Advertising Devices Code	• agriculture, on lots less than 1 hectare in area, or fruit farming or turf farming within 8km of RAAF Base Amberley; • animal husbandry, if the lot is less than one hectare in area; • aviation use, if a helipad; • business use, if a cafe, produce/craft market, restaurant, snack bar or takeaway food premises; • carpark; • community use, if not a child care centre, community centre, community hall, cultural centre, gallery, information centre, library, meeting rooms, museum, senior citizens centre or youth centre within an existing building and the requisite number of parking spaces are not provided for the use; • entertainment use, unless a club, exhibition, or trade fair within an existing building and the requisite number of parking spaces are not provided for the use; • major utility; • night court; • park, if involving illuminated sporting activities; • plant nursery (wholesale); • reconfiguring a lot; • recreation use, unless a motor sports complex;	• aviation use, unless a helipad; • business use, unless a cafe, garden centre, produce/craft market, restaurant, snack bar or takeaway food premises; • community use, if a cemetery, crematorium, or hospital; • correctional centre; • display housing; • dual occupancy; • extractive industry; • forestry; • general industry; • general store; • institutional residential; • intensive animal husbandry; • multiple residential; • nuclear industry; • recreation use, if a motor sports complex; • service trades use; • shopping centre; • single residential; • special industry; • temporary accommodation, unless a camping ground; • temporary sales office.

Consistent	Potentially Consistent	Inconsistent
	• temporary accommodation, if a camping ground; • temporary use; • tourist facility; • wine making.	

The site is surrounded by industrial uses to the north and south, the Cunningham Highway to the west and the Six Mile Creek Wildlife Reserve to the east. Further to the east beyond the Six Mile Creek Wildlife Reserve there are residential land uses.

The current Post-Mining Land Use for the site under the Environmental Authority is Industrial (Landfill). The proposed Post-Mining Land Use for the site is Industrial. The proposed Post-Mining Land Use of Industrial is based on feedback from Ipswich City Council that would prefer new industrial land uses to be established at the site rather than a landfill.

A majority of the site is zoned as Regional Business & Industry Investigation and Regional Business & Industry (Medium Impact) Sub Area zones and the Special Uses zone. Only the eastern most portion of the site adjacent to the Six Mile Creek Wildlife Reserve is included in the Recreation Zone.

Remembering that any Post-Mining Land Use will be subject to a development application process under the Planning Act (or relevant legislative framework at the time), it is anticipated that any the Post-Mining Land Use would occur primarily within the Regional Business & Industry Investigation and Regional Business & Industry (Medium Impact) Sub Area zones, and the Special Uses Zone but not the Recreation zones because of the environmental values associated with the Six Mile Creek Wildlife Reserve.

The land use intent of the Regional Business & Industry Investigation and Regional Business & Industry (Medium Impact) Sub Area zones, and the Special Uses Zone can be summarised as regional business enterprise and industry employment opportunities subject to consideration of potential amenity impacts on nearby sensitive receptors as well as other development constraints including mining, flooding and availability of infrastructure and services.

On this basis, the current Post Mining Land Use of Industrial (Landfill) would be consistent with the land use intent of the Planning Scheme and SEQ Regional Plan. However, the proposed Post-Mining Land Use of Industrial would be more consistent with the land use intent of the Planning Scheme and SEQ Regional Plan and is the preferred outcome by Ipswich City Council in this instance.

5.3.3 Redbank Plains Justification Relating to Change of PMLU

As previously outlined, in February 2020 the Department raised concern with a PMLU proposing an 'Industrial (landfill)' end use for the Redbank Plains site, advising that Ipswich City Council no longer considers a landfill PMLU acceptable in the site locality. As a result, at the request of the Department, the PMLU for the site is proposed to be changed to a higher beneficial end use of Industrial, removing reference to '(landfill)', which was agreed during the initial meeting with the Department on 7 February 2020 in relation to the drafting of this PRCP to be a good alternative. Details of this consultation are provided in **Attachment 4 – Community Consultation Register.**

A PMLU of landfill would require a residual void to be left at end of mining, which would then be backfilled in an uncontrolled manner with putrescible and other wastes. Impacts on EVs from any such landfill activity are broad-ranging and are not limited to impacts of methane gas emissions, leachate and

contaminated stormwater, odour, waste management implications, potential long-term settlement and subsidence of the landform, capping requirements.

A change to the higher beneficial end use of Industrial will require backfilling of the voids in a controlled manner under Level 1/Level 2 geotechnical engineering supervision in accordance with AS 3798. The landform will then be occupied by various industrial premises, and ancillary infrastructure inclusive of landscaping, road networks and permanent stormwater infrastructure. An Industrial end use encourages job creation, which is a key pillar of Council's strategy for the region.

The Department's guidelines state that EVs include "for land that may be used for industrial purposes, the suitability of that industrial use" (DES 2021, p. 5). As summarised in **Section 5.3.2.1.4 - Redbank Plains**, while the current PMLU of 'Industrial (Landfill)' would be consistent with the land use intent of the Planning Scheme and SEQ Regional Plan, the proposed PMLU of Industrial would be more consistent with these planning instruments and is the preferred outcome by Ipswich City Council in this instance. Impacts to EVs for an industrial end use are assessed by Council and the State, being the relevant assessment managers for land use approvals, via the development application process.

Review of the EA has determined that there are no specific conditions prescribing rehabilitation acceptance criteria for a PMLU of Industrial (Landfill). However, the EA prescribes acceptance criteria for an Industrial PMLU. It is understood that the intent of the EA was to apply these acceptance criteria to any industrial use at the site, including landfill. Therefore, no alteration of outcomes under the EA for the site would result from

Considering the above, the PMLU of Industrial for the Redbank Plains site is considered to be substantially similar to the pre-approved PMLU of Industrial (Landfill) in accordance with provisions of the EP Act.

6 Rehabilitation and Management Methodology

6.1 Landform Design

It must be noted that, whilst the Report on Investigations (Groundwork Plus 2008) is a Land Outcome Document for the Dinmore, Greenwood Village and Oxley sites, being over 14 years old, the document has been superseded in many respects, given the fast-paced nature of urban sprawl in the vicinity of the sites and ever-changing nature of the local planning instruments. Where relevant, descriptions of the landform design contained within the Report on Investigations (Groundwork Plus 2008) have been referenced in this section; however, some aspects of the landform designs contemplated by the Land Outcome Document may no longer be applicable. The following provides a description of the final landform designs which, where relevant, contain the descriptions contain in the Report on Investigations (Groundwork Plus 2008).

6.1.1 Industrial PMLU

When considering the final landform design of the Industrial PMLUs, it must be noted that former mine disturbance may remain on land at the point of surrender; however, under this scenario, civil works are expected to have commenced under the prevailing development permits for the industrial end use, and all residual disturbed land would be retained at the point of surrender, with obligations for rehabilitation transferred to the jurisdiction of Council to regulate under conditions of Operational Works approvals.

This scenario in particular is contemplated under condition F4-2 of the EA, which states:

> *Despite condition (F4-1) and pending approval for surrender of this authority,* ***the use of significantly disturbed land and/or mine voids remaining at the end of mine life for an industrial or residential rehabilitation outcome is subject to the operation of relevant legislation*** *(eg. 'Sustainable Planning Act).*

It is understood that the intent of this condition is to recognise that the EA holder may choose not to carry out full rehabilitation of a site where the works would, in due course, be made redundant and subject to disturbance during the redevelopment of the land. In line with previous advice provided by the Department, under such a scenario, a Development Permit (e.g., operational works approval) must be in effect prior to applying to surrender the EA to ensure the continuity of management of the site's potential environmental issues[6]. **Section 7 - Rehabilitation Trials** provides instances where this approach has been accepted by the Department for previous surrender applications.

It is not possible to pre-empt at the time of preparing this PRCP which sites will be fully rehabilitated, and which sites will retain mine disturbance subject to ongoing civil works authorised under operational works approvals, as this is dictated by various factors not limited to resources available at the time, local planning instruments, stage of development assessment, etc. It is important that the flexibility allowed under the conditions of the EA in this regard is retained.

Where PGH choose to surrender a site prior to having commenced civil works under an effective development permit, the land will be fully rehabilitated and stabilised in readiness for future development once the requisite statutory approvals are in place. A minimum 70% ground cover will be implemented as an erosion control measure in line with the IECA (Australasia) Revegetation Factsheet,

[6] Courteville, M. (Department of Environment and Science). Email to Groundwork Plus Pty Ltd. 11 March 2022.

which states: "at least 70% ground cover (combined plant and mulch) is considered necessary to provide a satisfactory level of erosion control" (IECA (Australasia) 2010, P5). Additional stormwater, erosion and sediment controls will be implemented in accordance with conditions of development approvals once issued, and may include measures such as rock checks, sediment traps and diversion bunds.

The Report on Investigations (Groundwork Plus 2008, p. 13) provides the below description of the landform for Industrial PMLUs at Dinmore, Greenwood Village and Oxley. This description is most relevant to a landform wherein PGH has elected to fully rehabilitated and stabilise the site to facilitate a surrender in the absence of operational works approvals.

> *Areas that were inside the extraction limits will need to be managed during the backfilling operations to ensure that the landfill has geotechnical integrity and so able to provide effective support for structural elements without onerous foundation requirements. To achieve this standard the fill material will need to comply with the following general characteristics;*
>
> - *Competent when compacted, producing a reasonably high strength fill layer under unsaturated or saturated conditions*
> - *Not subject to settlement through consolidation (by expulsion of water) or degradation (geotechnical of biological) of the material, thereby restricting the quantities of soft soils ("muds") or organics*
> - *Not subject to significant erosion / rilling when exposed to surface water\volumetrically stable subject to moisture content variation.*
>
> *Earthworks will be carried out generally in accordance with AS3798- 2007. The land areas proposed for industrial of residential usage that was outside of the extraction limits will have only been disturbed by access roads and bunds. These areas will generally only require minor earthworks and stabilization by grass seeding if not required as beneficial assets.*

In relation to landform design plans for Industrial PMLUs, these are typically prepared for the purpose of the development application process and are not possible to develop prior to such time, as the layout is subject to provisions of the prevailing planning instruments and negotiations with the State and Council. Section 85 of the *Planning Act 2016* directs that a development approval for material change of use will lapse if not commenced within six years of the date of the decision notice being granted. Based on the timeframes previously experienced by PGH / CSR (sister company responsible for site development), the development application process to obtain a material change of use to convert land comprising a ML into urban uses (i.e., Industrial) can take in excess of four (4) years before a development approval is obtained.

Because of the lengthy timeframes experienced to obtain a development approval, and the limited time that the approval is valid before lapsing, a proponent would typically not commence works to obtain the planning approvals for a PMLU until the mine is nearing the end of life. As a consequence of these planning limitations, landform design plans for the sites that illustrate the final layout of the Industrial PMLUs are not able to be prepared at the time of this PRCP.

For all Industrial PMLUs, PGH will ensure that earthworks for the industrial developments are carried out under either Level 1 or Level 2 supervision in accordance with *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007), depending upon the location of the earthworks (for example, land underlying easements typically requires a lower level of geotechnical supervision due to the encumbrances / development restrictions over the land).

In the event that Operational Works approvals are not in effect at the time of any future surrender of the sites, the methods to determine whether the landform is geotechnically stable may include

installation of settlement plates by an SQP, and periodic review of data collected via settlement plate measurements. Geotechnical engineering sign-off is to be obtained prior to lodgement of any surrender, which is a prescribed requirement for Redbank Plains as required under condition F4-3 of the EA.

6.1.2 Native Ecosystem PMLU

The Native Ecosystem PMLUs are anticipated to be limited to the perimeters of the Industrial PMLUs. These are likely to be water-shedding (i.e., free draining), and are largely for the purpose of buffers to the operational activities, which will be retained throughout the life of the mining activities.

Where disturbance has occurred within these Native Ecosystem PMLU buffers, the final landform will be reprofiled and available topsoil and overburden will then be respread over the land surface to enable revegetation. Suitability of topsoils and overburden available on site as growth media to support regrown of native ecosystems is discussed in **Section 3.1.8** and **Section 3.2.8**.

A minimum 70% ground cover will be implemented as an erosion control measure in line with the IECA (Australasia) Revegetation Factsheet, which states: "at least 70% ground cover (combined plant and mulch) is considered necessary to provide a satisfactory level of erosion control" (IECA (Australasia) 2010, P5). Additional stormwater, erosion and sediment controls may include measures such as rock checks, sediment traps and diversion bunds.

Rehabilitation of the buffer land which remains intact and undisturbed will not require rehabilitation. These areas are to be demarcated and excluded from the final rehabilitation. Selective weed management is to be carried out to reduce weed infestation associated with edge effects in areas bordered by rehabilitated operational areas.

6.2 Hydrogeology

Sections 3.1.7, **3.2.7**, **3.3.7** and **3.4.7** provide a summary of groundwater depths and quality at the sites based on registered groundwater bores in the vicinity of the operations, Regional Geology and Site Geology, and historic drilling (where available). The adopted management approach to mining in relation to groundwater resources at the sites is avoidance, and the final landforms are not anticipated to retain voids at any of the sites which would intercept groundwater.

Pre-lodgement review comments provided by the Department on the draft PRCP confirmed that 'the extent of the information required to satisfy the hydrogeology requirements of the PRCP Guideline should consider the potential impacts to groundwater if voids are to be retained. The LOD titled Report on Investigations (Groundwork Plus 2008) contemplated that all sites nominated for an industrial end use will have all voids filled and used as hardstands pending redevelopment. This is likely to apply to all sites. As such, as no voids are proposed to be retained, the level of assessment recommended to be undertaken as part of the PRCP Guideline has not been completed nor is it seen as being necessary to be undertaken.

The mining activities the subject of this PRCP are relatively low risk when compared to other mining activities (coal, gold, copper etc.). The approach of avoiding groundwater is seen as an effective means to manage impacts on groundwater resources. The nature of the mining activity, and the target resource being Clay and Shale, means that the contaminants that may arise from the mining activity are limited. There are very limited wastes produced from the mining activity, comprised of primarily overburden, with all saleable material extracted used as either material for brick manufacturing, general fill or for allocation in rehabilitation.

In response to the Information Request issued by the Department on 11 October 2022, additional groundwater assessment of the Dinmore, Greenwood Village, Oxley and Redbank Plains Sites was undertaken by Groundwork Plus. The additional assessment comprised the a review of the following:

- Bore reports of DNRM registered Groundwater Bores in the immediate vicinity of each site.
- Regional Geology and Site Geology
- Historical drilling records (where available), and
- Current groundwater inflow rates if any conditions into the three pits at Dinmore.

Through the additional assessment, which is included in **Sections**, **3.1.7**, **3.2.7**, **3.3.7** and **3.4.7** of this report, it is confirmed that none of the sites are anticipated to result in any impacts to groundwater. A summary of the groundwater findings for each site is included in the following paragraphs.

Dinmore

No groundwater impacts are currently experienced or are likely to be encountered by the shallow clay pit operation, at Dinmore as most of the pits are less than 15 metres deep and remain well above the groundwater table. This is supported by site observations, where it is very apparent that no groundwater inflows have been recorded along with the regional bore network, which shows groundwater occurs a minimum of ten meters below the final floor of the clay pits. Additionally the clays are impervious and while they can store groundwater they do not act as aquifers to any significant degree as they are impervious materials. In practicality the clay pits do not act as either a significant source of groundwater or, a sink for groundwater as the sit above the groundwater table and have hydrogeological characteristics which preclude them from acting as a significant source of yielding groundwater.

The groundwater impacts within the Dinmore clay pits are considered non material and negligible for the following reasons.

- Groundwater occurs between 8 and 12 metres below the lowest level of the pit floor on site. In most areas the pit floor is 15-17 meters above the ground water table. When backfilled this depth differential will ensure that no impacts occur to the regional groundwater milieu.
- The clays are non-yielding and are considered impervious, having permeability rates in the order of 10^{-9} to 10^{-11}. This means they cannot host any significant volume of groundwater that could yield or flow.
- Historical drilling has not intersected groundwater with most drilling occurring to a depth off 20m AHD.
- No groundwater is recognised as occurring into the pit, with the sump collecting stormwater which is used for dust suppression purposes.
- The DNRM bores confirm groundwater occurs at levels between 20-17m AHD shallowing to the north and also having a northerly and very shallow flow vector.
- No alluvial perched aquifers are recorded on site and the perched aquifers recorded to the northwest occur in quaternary alluvium and are likely to represent ephemeral alluvial aquifers which do not occur with the Triassic claystone's of the Blackstone Formation.

Greenwood Village

Based on groundwater levels from the DNRM dataset being 40-50 metres below surface at approximately 20-30m AHD and the lack of an apparent perched aquifer (there is no available data supporting the hypothesis of a perched aquifer) it is clear the shallow clay pits which will have a maximum depth of 18 metres (floor level 52m AHD) will not impact the groundwater table as they sit 20 to 30 meters above the regional groundwater table. Resultantly the groundwater table will not be intersected and resultantly the impacts on groundwater are considered negligible. Similar to the Dimore

area this resource is clay and shale and permeability rates and storativity capacity will be very low, further negating any potential groundwater impacts. This area is neither a sink nor source for groundwater. Figure 21 - Pit Depths and Bores Greenwood Village shows the extent and depth of the pit along with the location of the DNRM registered bores in the area.

Oxley

The monitoring networks on site clearly show that groundwater occurs well below the base of extraction and that no impacts are expected resultant of the ongoing activities. Importantly there is no evidence supporting the occurrence of a perched aquifer in the clay pits in this area. Based on this information no further work is warranted because the groundwater table has not been intersected nor impacted.

Redbank Plains

Based on groundwater levels from the DNRM dataset being 36 to 63 below surface level it is clear the shallow clay pits which will have a maximum depth of 14 metres will not impact the groundwater table**.** Similar to the other sites they are neither sources nor sinks for groundwater. Additionally, inspection of the site readily shows that no groundwater impacts have been encountered to date.

Section 6.6 - Water Management provides details in relation to potential groundwater contaminants; however, these are not associated with interception of final voids with groundwater.

6.3 Flooding

To determine flood risks, reference has been made to the Ipswich City Council and Brisbane City Council overlay mapping for flood prone areas. Review of this mapping has confirmed that, with the exception of Oxley, the sites are not mapped as being subject to flooding. Copies of the flood mapping results are presented in **Figure 42 – Flood Mapping – Dinmore** to **Figure 45 – Flood Mapping – Redbank Plains**.

A small portion of the Oxley ML along the southern ML boundary is mapped as being subject to Very low likelihood (0.05% Annual Chance) flood mapping under Flood Awareness Mapping provided by Brisbane City Council, refer to **Figure 44 – Flood Mapping – Oxley**. In accordance with the description of this likelihood category provide by Brisbane City Council (2020):

> *A very unlikely flood event. Over a very long period of time an event of similar size may occur on average once every 2000 years. When an event of this size occurs it is considered to be very exceptional. A flood of this size or larger has a 0.05% chance of occurring in any year.*

The Department's *Information sheet: Voids in floodplains* (DES 2020)[7] states that, for the purpose of the PRCP development, the flood plain definition is based on a 0.1% Annual Exceedance Probability (AEP) flood event under the Australian Rainfall and Runoff Guideline (2019), which 'was selected to ensure a uniform methodology for the determination of a flood plain'. Furthermore, the Guideline states that 'a void is considered to be located in a flood plain if the flood plain modelling shows that, when all relevant activities carried out on the land have ended, the land is the same height as, or lower than, the level modelled as the peak water level 0.1% AEP for a relevant watercourse under the guideline Australian Rainfall and Runoff'.

Due to the 0.05% chance of the mapped flood occurring in a small portion of the Oxley site in any year, equivalent to a one in every 2,000 year chance, it is deemed to be extremely unlikely that a 0.1% AEP

[7] DES, (2020). *Information sheet: Voids in floodplains* Accessed 19 July 2022 via https://environment.des.qld.gov.au/__data/assets/pdf_file/0024/95442/rs-is-modelling-flood-plain.pdf

flood will impact the site. Furthermore, DES (2020) advise that flood plain modelling is only relevant to the extent that voids are to be located within a flood plain. The PMLUs nominated for the Oxley site are Industrial and Native Ecosystem, which will result in the land being backfilled to the pre-mining levels. No voids are proposed to remain at any of the sites. Consequently, flood modelling is not relevant to this PRCP.



Figure 42 – Flood Mapping – Dinmore

(Figure reprinted from https://www.ipswichplanning.com.au/flood-map-information)



Figure 43 – Flood Mapping – Greenwood Village

(Figure reprinted from https://www.ipswichplanning.com.au/flood-map-information)

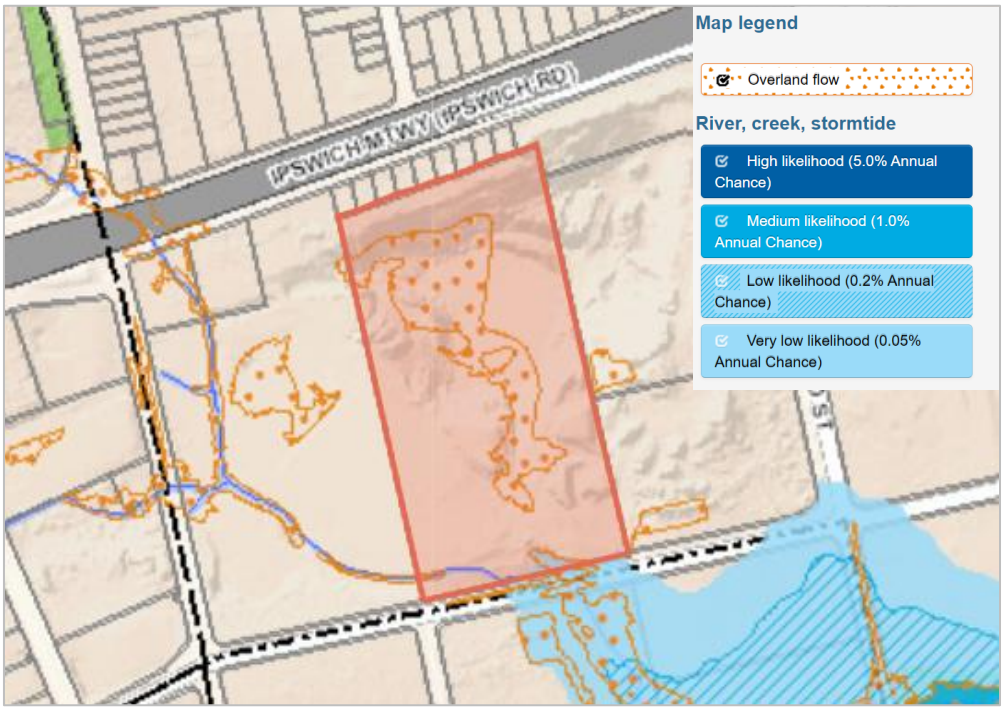


Figure 44 – Flood Mapping – Oxley

(Figure reprinted from http://floodinformation.brisbane.qld.gov.au/fio/ (2022))



Figure 45 – Flood Mapping – Redbank Plains

(Figure reprinted from https://www.ipswichplanning.com.au/flood-map-information)

6.4 Soil, Capping Material and Cover Design

6.4.1 Quality and Quantity of Backfill and Topsoil

6.4.1.1 Soil Quality

The quality of available topsoil and overburden at the sites is summarised in **Sections 3.1.8, 3.2.8** and **3.4.8** noting that no topsoils are present within the Oxley site.

Analysis of available soils within Greenwood Village, Dinmore and Redbank Plains indicated that the soils are generally low in nitrogen and phosphorus, which is relatively common for highly weathered soils in Australia[8], with many native plant varieties well-conditioned to low nutrient environments.

Nutrient enrichment on various native and semi-native plant communities which have adapted to inherently low nutrient soils has been determined to have long-term negative impacts[9]. Daw et. al. (2019) stated that, "despite this knowledge, fertiliser application is generally viewed as a necessary step in re-establishing native plant communities in post-mining restoration". In studies completed by Daws et. al. (2019), results indicated that application of fertiliser lead to slow-growing re-sprouter species being outcompeted by more vigorous understorey species. In research completed by Williams et. al (2019) it was found that the addition of fertilisers containing phosphorus in post-mining landforms has unpredictable impacts[8], which can reduce growth of some species.

As the soils within the region of the sites is inherently low in nitrogen and phosphorous, it is not proposed that amelioration for these nutrients is carried out as it is unlikely to be advantageous for the locally endemic species which have evolved to thrive in low nutrient conditions. Soils within the sites have also been determined to have low pH or elevated salinity. Liming to increase the pH of acidic soil may increase the availability of some nutrients such as phosphorous[10]; however, as previously discussed, species endemic to the region have adapted to low nutrients soils, and any attempt to increase available nutrients may not be advantageous and may cause toxicity for species which aren't adapted to higher nutrient conditions.

Prior to use on site, topsoil stockpiles will undergo testing to determine required amelioration necessary to support the vegetation to be established. This testing will be undertaken on stockpiled materials designated for use as a growth media on site. This will form the initial rehabilitation milestone prior to topsoil placement.

6.4.1.2 Available Quantities

Due to the inherent nature of the soils and geology at the sites, there is limited to negligible topsoil available at commencement (ranging anywhere from 0 mm to 500 mm). As a result, topsoil is generally comprised of a thin layer of organic matter overlying clays. Available quantities of topsoil and

[8] Williams, A., George, S., Birt, H.W., Daws, M.I. & Tibbett, M., (2019). *Sensitivity of seedling growth to phosphorus supply in six tree species of the Australian Great Western Woodlands*. Australian Journal of Botany 67(5) 390-396. Accessed 23 November 2022 via https://www.publish.csiro.au/bt/bt18247

[9] Daws, MI, Grigg, AH, Standish, RJ & Tibbett, M., (2019). 'Applied phosphorus has long-term impacts on vegetation responses in restored jarrah forest', in AB Fourie & M Tibbett (eds), *Mine Closure 2019: Proceedings of the 13th International Conference on Mine Closure*, Australian Centre for Geomechanics, Perth, pp. 693-704, https://doi.org/10.36487/ACG_rep/1915_55_Daws

[10] Department of Primary Industries and Regional Development, Western Australia. (2018). *Effects of soil acidity*. https://www.agric.wa.gov.au/soil-acidity/effects-soil-acidity?page=0%2C1

overburden, as well as estimated volumes required are included as **Table 38 - Available Topsoil and Maximum Topsoil Requirements** and **Table 39 - Available Overburden and Maximum Backfill Requirements**.

Table 38 - Available Topsoil and Maximum Topsoil Requirements

Site	Estimated Volume of Topsoil Required (m^3)	Topsoil Stockpile (m^3)	Estimated Volume of Topsoil to be Imported (m^3)
Dinmore	58,500	40,000	18,500
Greenwood Village	37,500	43,000	0
Oxley	2,250	0	2,250
Redbank Plains	144,000	182,000	0

With regard to the available topsoil, prior to use on site, topsoil stockpiles will undergo testing to determine required amelioration necessary to support the vegetation to be established. This testing will be undertaken on stockpiled materials designated for use as a growth media on site. This will form the initial rehabilitation milestone prior to topsoil placement. With regard to imported topsoil, this will also require testing at point of origin to confirm suitability for the site (per **Section 6.4.2**).

Table 39 - Available Overburden and Maximum Backfill Requirements

Site	Estimated Volume of Backfill Required (m^3)	Overburden Stockpile (m^3)	Estimated Volume of Backfill to be Imported (m^3)
Dinmore	1,300,000	281,000	1,019,000
Greenwood Village	1,000,000	0	1,000,000
Oxley	50,000	0	50,000
Redbank Plains	2,600,000	0	2,600,000

6.4.1.3 Backfill and Topsoil Requirements

The estimated backfill and topsoil volumes are based on a conceptual long-term quarry design, and represents the maximum volumes required.

This design backfills from the pit's crest at a 1:4 slope (14 degrees) to ensure a safe and stable landform suitable for the targeted PMLU. After extraction, some areas of the pit layout might be reshaped or reprofiled for stability, reducing the volume of backfill required. As the final landform is not known (particularly for the industrial PMLU), as explained in **Section 6.1.1**, **the ultimate volume of backfill materials is not known as this would be subject to change based on any proposed future development layout and design. A nominal design has been considered as part of this PRCP to demonstrate how the site is established to a safe and self-sustaining condition.**

Rehabilitation activities include the respreading of topsoil to a depth of 150mm over all areas disturbed by mining activities. It is anticipated that Greenwood Village and Redbank Plains will not require any importation of topsoil, instead relying on the confirmed topsoil stockpiles on site that will undergo improvements to ensure it is in a suitable condition to act as a primary growth media.

It is critical to note that the long-term pit design plays a pivotal role in defining the volume of backfill and topsoil and is currently at a conceptual stage. Since the final extraction limit has not been finalised, the designs remain open to future modifications. These pits represent an optimal and idealised extraction within the confines of the mining lease. However, modifying the extraction boundaries, revising long-term pit layouts, and recalibrating the necessary backfill and topsoil volumes will be crucial as mining activities progress. This will ensure alignment with PGH's extraction approach, adherence to all extraction and vegetation constraints, and adaptability to market changes. Should revisions be needed, the PRCP will be updated accordingly.

6.4.1.4 Topsoil / Subsoil Management

When available, topsoil is to be stockpiled separately for use in rehabilitation activities. The following measures are to be implemented for topsoil stripping:

- Stripping of topsoil is to be limited to the minimum area necessary.
- Materials should not be stripped when too wet or too dry.
- When stripped, materials should be used directly for rehabilitation to the maximum practicable extent or stockpiled and preserved for future use.
- Stockpiling of materials are to be shaped and revegetated to protect the soil from erosion and weed infestation.
- Stockpiles are to be maintained in a free draining condition and long-term soil saturation should be avoided.

Where topsoil is to be imported, it should be analysed prior to importation onto site, with topsoil sources limited to a combination of the following:

- Licenced quarry.
- Land that has not been disturbed. Land which has been disturbed but is not listed on the Environmental Management Register ('EMR').
- Land / soil that through detailed testing overseen by an SQP is deemed to be non-contaminant and suitable for use at the nominated site.

The following measures are to be implemented for topsoil respreading:

- Areas to be re-spread with topsoil are to be reprofiled prior to placing materials over the contoured surface.
- Equipment used to spread materials should be scheduled to avoid compaction.
- Before respreading the materials, loosen the underlying substrate to break up any compacted or surface sealing and to enable keying of the two (2) materials.
- On slopes less than 3(H):1(V), loosen lightly compacted substrate, ensuring all ripping operations occur along the contour.
- Materials are to be removed from stockpiles in a manner that avoids vehicles travelling over the stockpiles.
- Materials are to be respread in the reverse sequence to its removal so that the original upper soil layer is returned to the surface to re-establish the entrapped seed content of the soil.

6.4.2 Backfill Materials

The LOD titled Report on Investigations (Groundwork Plus 2008) contemplated that all sites nominated for an industrial end use will have all voids filled and used as hardstands pending redevelopment.

The primary PMLU for all sites is industrial which will require filling of the landscape to create the final designed layout. Where filling is to occur to the pre-mining levels, no additional approvals are required. Where filling to design levels exceeding the pre-mining landform is required, PGH will be required to obtain Operational Works for filling and bulk earthworks pursuant to the local planning instruments.

The volume of fill materials required at each site is estimated in **Table 39 - Available Overburden and Maximum Backfill Requirements**, based on a conceptual long-term quarry design. These are preliminary plans only and cannot be finalised until 6. Final extraction depths are confirmed. However, these designs represent the maximum likely disturbance and backfill requirements. Any material that is required to be imported for filling activities are to be certified as clean earth prior to importation. The final landform designs will be required to be engineered and designed in accordance with the outcomes specified in the relevant local planning scheme in place at the time of lodgement of the development application.

All filling of mine disturbance areas where the PMLU is Industrial will be subject to *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007, or most recent edition), Level 1 or Level 2 geotechnical supervision and testing.

To ensure the **Industrial** PMLU can be achieved, materials imported for backfilling must be clean earth capable of satisfying the following relevant guidelines:

- HIL D – commercial industrial premises of the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended 2013)
- *AS 4482.1-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 1 – Non-volatile and Semi-volatile compounds*.
- *AS 4482.2-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 2 – Volatile Compounds*.

Where fill materials are needed for areas that will be **Native Ecosystem** PMLUs, materials imported for backfilling must be clean earth capable of satisfying the following relevant guidelines:

- Ecological investigation levels (EILs) / Ecological screening levels (ESLs) – commercial industrial premises of the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended 2013)
- *AS 4482.1-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 1 – Non-volatile and Semi-volatile compounds*.
- *AS 4482.2-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 2 – Volatile Compounds*.

Clean earth for the purpose of the current legislation means:

> *any natural substance found in the earth that is not contaminated with waste or a hazardous contaminant e.g., clay, gravel, loam, rock, sand, soil.*

Fill materials should be analysed prior to importation onto site, or subject to random grab samples as a minimum. Where large volumes of fill materials are to be imported, grab samples at the densities required by the guidelines may be difficult to achieve, in which case a Suitably Qualified Person in

accordance with the definitions provided by the EP Act must be engaged to determine an appropriate sampling regime.

Fill sources should be limited to:

- Licenced quarry.
- Land that has not been disturbed.
- Land which has been disturbed but is not listed on the Environmental Management Register ('EMR').

Fill materials may be sourced from a site that is on the EMR provided adequate sampling and analysis has been undertaken by a SQP to determine that the materials are clean.

Fill containing inert wastes (non-putrescible wastes including bricks, pavers, ceramics, concrete, glass or steel) or general waste must not be accepted onto site unless compliant to an applicable End of Waste code pursuant to the *Waste Reduction and Recycling Act 2011*.

6.4.3 Batter Slope Stability

Typical soil friction angle can be used as a measure of shear strength parameter of soils including clayey soils such as those at the site (Geotechdata 2013). Clays of high plasticity (compacted) typically have a friction angle of 17-35°. Clay shales have a typical friction angle of 20 - 27 ° (Wyllie, D. & Norrish, N. 1996). While the EA prescribes a maximum slope angle of 20 ° over a length of 30m, previous investigations carried out for PGH at the former clay pit mine referred to as Strathpine Quarry determined that total slope angle of clay material of 26 ° is considered stable and of a low risk for slope instability[11].

"Factor of Safety" (FoS) is another common measure used in global stability assessments to express the safety margin of slopes on embankments[12]. As part of final rehabilitation of the Strathpine Quarry, Douglas Partners was engaged to carry out a *Site Stability Assessment* (Douglas Partners 2022), which stated that a factor of safety of 1.5 is considered generally suitable for permanent works.

Accordingly, it is proposed that slope angles will be in the order of 20 - 26 ° with a factor of safety of not less than 1.5 which is expected to ensure long term stability.

6.4.4 Cover Design

Cover design and capping is not required for the sites as there is no waste rock, low-grade ore, heap leach material or tailings resultant from the clay pit mining activities.

6.5 Waste Characterisation

There are no waste materials present on-site. Overburden which comprises clays suitable for the brick and paver manufacturing, this material is extracted and used as raw feed.

Overburden that is unsuitable for production is generally removed and pushed to the edge of the extraction voids at commencement of the extraction activities to form perimeter bunds of varying heights. The thickness of the overburden layer varies at each site; however, typically there is a residual

[11] Groundwork Plus, (2016). *ML1106, ML1171 and ML50183 Strathpine: Mine Development Plan*.
[12] Herza, J. Ashley, M. & Thorp, J., (2012). *Factor of Safety? - Do we use it correctly?*. Accessed 20 July 2022 via https://www.ghd.com/en/expertise/resources/PDF/ANCOLD_2017_Ashley_Factor-of-Safety-Do-we-use-it-correctly.pdf

soil layer of 0 mm to 500 mm thick. This material will be used as a fill material underlying the topsoil material. As a result, waste characterisation has not been considered further for this PRCP.

The Oxley site will undergo remediation to support the future industrial land use. As the Oxley site contains the brick plant manufacturing facilities, decommission and demolition of this will be required to aid in rehabilitation of the site to support the PMLU's. To support the rehabilitation of the Oxley site, a contaminated land and geotechnical assessment will be undertaken to inform the level and type of remediation required to address contamination, wastes and other matters. This will be undertaken prior to site rehabilitation.

6.6 Water Management

Table 40 – Potential Water Contaminants and Sources provides a summary of the potential contaminants and the possible source and pathway of these contaminants at the site. Mineral processing does not involve any chemical processes, rather, mineral processing is limited to stockpiling and physical blending of clays at the Oxley site. PGH will engage the services of SQPs to carry out site contamination assessments in relation to the contaminants identified in **Table 40 – Potential Water Contaminants and Sources**.

This material is then transferred to the Brick Plant where it is used as raw feed for the kilns. Processing of the materials at the Brick Plant is dealt with under the approvals for the Prescribed ERA of ceramic product manufacturing, and therefore largely not relevant to this PRCP.

The potential contaminants of concern for Oxley have been selected based on the Remediation Action Plan ('RAP') prepared by Prensa (2021) for the now surrendered Darra site (ML1100). These contaminants were applied based on the similarity between activities at Oxley and the Darra site prior to rehabilitation and surrender. The majority of contamination at Oxley is related with the historical manufacturing activities authorised under the EA ref. EPPR00410813 (inferred from the RAP). NEPM (2013) prescribes very limited guideline values for commercial industrial uses which would align with the Industrial PMLU, with the guideline value limited to Benzene (30,000 µg/L for clays 2-4m, and 35,000 µg/L for clays >4m).

In relation to potential contaminants that may pose a risk to groundwater resources at the mineral extraction sites, as a result of the nature of the activity and simplistic nature of the adopted mining processes, there are few contaminants produced from the activity that pose a risk to groundwater resources. This is supported by the conditions of the EA which identify pH, Turbidity, Electrical Conductivity and Total Dissolved Solids as the parameters to be monitored for surface water releases from site. There is an acceptance that stormwater interaction with these particular mining activities is low risk in being affected by hazardous contaminants. This in turn results in impacts to groundwater resources to be low potential, particularly when avoidance of groundwater is the current management strategy at the sites.

Table 40 – Potential Water Contaminants and Sources

Source and Pathway	Potential Contaminants
Mineral Extraction Sites **(Dinmore, Greenwood Village, Redbank Plains)** Extraction of clay and shale.	• pH • Turbidity • Dissolved Oxygen • Electrical conductivity.

Source and Pathway	Potential Contaminants
Oxley *	• Metals/metuloids (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc). • Organochloride / Organophosphate Pesticides (OC/OPs). • Total Recoverable Hydrocarbons (TRHs). • Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN). • Polycyclic Aromatic Hydrocarbons (PAHs)

Table notes:
*Potential contaminants sourced from the RAP (Prensa 2021).

As there will be no voids remaining at completion of mining, surface water diversions and long-term management are not anticipated to be required. The sites are anticipated to be free draining and/or engineered landforms (relevant to Industrial PMLUs). Discharge locations for surface waters will be either engineered stormwater infrastructure established through Operational Works activities, or overland sheet flow through vegetated land.

Stormwater released from site is anticipated to be limited to the runoff interacting with rehabilitated surfaces, which will be revegetated for stabilisation, or in the case of Industrial PMLUs, subject to a combination of landscaping and engineered stormwater infrastructure (e.g., drains, guttering, etc) both of which would be regulated via conditions of the overarching planning approval for the industrial end use.

To ensure that surface water flows from the are non-polluting and not cause erosion in the receiving environment, groundcover is proposed to be established. IECA (Australasia) (2010, p.5)[13] state that 'at least 70% ground cover (combined plant and mulch) is considered necessary to provide a satisfactory level of erosion control'. Therefore, 70 % groundcover will be required at all sites to mitigate sediment mobilisation through erosion. Additional stormwater, erosion and sediment controls may be implemented as appropriate pursuant to conditions of approval in effect at the time of surrender.

[13] IECA (Australia), (2010). Revegetation: Erosion control techniques. *Best Practice Erosion and Sediment Control: Book 4*. Accessed via https://www.austieca.com.au/documents/item/226

6.7 Revegetation

These revegetation measures apply to Industrial PMLUs where PGH has elected to carry out full rehabilitation and stabilisation of the land to enable a surrender of the EA, and Native Ecosystem PMLUs. As outlined in **Section 6.1 - Landform Design**, as has been previously accepted by the Department and under provisions of the current EA conditions, revegetation of the landform will not be carried out where civil works have commenced under the prevailing development permits for the industrial end use, and all residual disturbed land is required to be retained at the point of surrender.

6.7.1 Revegetation Objectives

The primary objectives of revegetation are to:

- Ensure landforms are safe, stable and non-polluting.
- Encourage species composition and density similar to the pre-mining landscape.

The species outlined in this section are not intended to be prescriptive, and any final species mix selected is to be guided by an SQP and will be subject to local availability.

6.7.2 Revegetation Methods

6.7.2.1 Assisted Natural Regeneration

The primary method of revegetation will be natural regeneration, with supplementary seeding and/or planting carried out as required. Establishment of adequate plant cover / groundcover is anticipated to reduce wind erosion, as well as increase organic matter in surface soils gradually through accumulation of leaf litter. Groundcover will also assist in soil moisture retention and soil stability. These factors are anticipated to provide improved conditions for natural recruitment and further regeneration. Groundcover densities at completion of the rehabilitation are to be 70% or more in line with the recommendations of IECA (Australasia) (2010, p.5) to mitigate potential for erosion. In accordance with the IECA (Australasia) (2010, p.5), ground cover may include plant and mulch, with mulching recommended for seeded areas.

6.7.2.2 Species Mix

While the Report on Investigations (Groundwork Plus 2008) nominates grass seed mixtures and sowing rates, some of the species nominated are now classified as Environmental Weeds for the purpose of the *Biosecurity Act 2014*. As a consequence, the grass species nominated for Industrial PMLUs that will be fully rehabilitation and stabilised have been adapted accordingly, refer to **Table 41 – Industrial PMLU Species Mix**.

Table 41 – Industrial PMLU Species Mix

Cover	Species	Rates (kg/ha)
Grasses	Barbed wire grass - Cymbopogon refractus Eight day grass - Fimbristylis dichotoma Wiry panic - Entolasia stricta Brachi hybrid (Brachiaria spp. hybrids). Brunswick grass (Paspalum nicorae).	1-15

Cover	Species	Rates (kg/ha)
Trees / shrubs	Select 2 to 3 species from tree list.	Density as required[14]

Notes:

- Table reprinted and adapted form the Report on Investigations (Groundwork Plus 2008).
- *Seeding rate is dependent upon species and should be selected according to coverage required.
- ^Seeding rate for a particular species can be altered if one or more of the species are not available.

The species composition to be used for any supplementary seeding of Native Ecosystem PMLUs is to align with the Regional Ecosystems of surrounding undisturbed areas. A broad overview of the species which may be present are provided in **Section 3.1.9 - Vegetation Communities**, **Section 3.2.9 - Vegetation Communities and Section 3.3.9 - Vegetation Communities** and **Section 3.4.9 - Vegetation Communities**. This may include any combination of species mix as outlined in **Table 42 – Native Ecosystem PMLU Approximate Species Mix**, subject to advice from a SQP and local nursery / stockist availability.

The Report on Investigations (Groundwork Plus 2008) required the following densities and diversities at the Dinmore, Greenwood Village and Oxley sites in areas nominated for Native Ecosystem outcomes:

- Plant density: > 300 stems/ ha
- Plant diversity: minimum of 12 different species per hectare including 6 canopy species, and 4 medium to small shrub species.

Table 42 – Native Ecosystem PMLU Approximate Species Mix

Site	Stratum	Species	Corresponding Regional Ecosystem (RE)
Dinmore RA2	Canopy/ sub-canopy/shrub layer	Angophora spp. Angophora leiocarpa C. citriodora subsp. variegata Corymbia intermedia C. tessellaris E. acmenoides E. crebra E. fibrosa subsp. fibrosa Eucalyptus major E. melanophloia E. pilularis E. portuensis E. racemosa subsp. racemosa E. seeana E. sideroxylon E. tereticornis	12.9-10.2 / 12.9-10.7 / 12.9-10.19
	Ground layer	Entolasia stricta Cymbopogon refractus	12.9-10.2

[14] The following densities and diversities at the Dinmore, Greenwood Village and Oxley sites in areas nominated for Native Ecosystem outcomes:

- Plant density: > 300 stems/ ha
- Plant diversity: minimum of 12 different species per hectare including 6 canopy species, and 4 medium to small shrub species.

Site	Stratum	Species	Corresponding Regional Ecosystem (RE)
		Themeda triandra Eremochloa bimaculata	
		Dichanthium sericeum, Chloris divaricata Aristida gracilipes	12.9-10.7
		Scleria sphacelata, Lomandra confertifolia subsp Pallida and Xanthorrhoea johnsonii	12.9-10.19
Greenwood Village RA4	Canopy/ sub-canopy/shrub layer	Angophora spp. A leiocarpa C. citriodora subsp. variegata C. tessellaris E. acmenoides E. crebra E. fibrosa subsp. Fibrosa E. major E. melanophloia E. molucanna E. portuensis E. sideroxylon. E. tereticornis	12.9-10.2 / 12.9-10.7 / 12.9-10.19 and 12.9-10.3
	Ground layer	Eremochloa bimaculata, Panicum simile and Aristida calycina	12.9-10.3
Redbank Plains RA8	Canopy/ sub-canopy/shrub layer	Angophora spp. A leiocarpa C. citriodora subsp. variegata C. tessellaris E. acmenoides E. crebra E. fibrosa subsp. fibrosa E. major E. melanophloia E. molucanna E. portuensis E. sideroxylon. E. tereticornis	12.3.3 / 12.9-10.7 / 12.9-10.3
	Ground layer	Eremochloa bimaculata, Panicum simile and Aristida calycina	12.9-10.3

The revegetation assessment criteria, for the areas nominated for a native ecosystem outcome is summarised below in **Table 43 – Revegetation Assessment Criteria**.

Table 43 – Revegetation Assessment Criteria

Attributes	RA2	RA4	RA8
regrowth/remnant vegetation (RE)	12.9-10.2 / 12.9-10.7 / 12.9-10.19	12.9-10.2 / 12.9-10.7 / 12.9-10.19 and 12.9-10.3	12.3.3 / 12.9-10.7 / 12.9-10.3
Native tree species richness	≥6	≥6	≥5
Native shrub species richness	≥7	≥7	≥5
tree canopy cover	≥40%	≥40%	≥40%
shrub canopy cover	≥27%	≥27%	≥9%
native perennial grass cover	≥20%	≥20%	≥40%
tree canopy height	≥21m	≥21m	≥21m
Groundcover	Minimum 70% groundcover to be achieved (organic litter + grass and forb cover)		

6.7.3 Watering

Watering frequency will be dependent upon local rainfall volumes and stage of vegetation growth.

It is recommended that revegetation projects are completed at times of the year when natural weather patterns will support growth (for example, hydroseeding should be completed in approximately November or December to benefit from wet season rains). If watering is required, watering at the frequencies shown in **Table 44 – Watering Frequency** is recommended for an initial period of three months, which may be increase or extended depending upon climatic conditions and groundcover establishment.

Table 44 – Watering Frequency

Timeframe	Watering frequency
Weeks 1 and 2	Three times per week
Weeks 3 to 6	Twice per week
Weeks 7 to 12	Once per week
12 weeks onwards	During extended dry periods only and as required to encourage native vegetation densities.

6.7.4 Access Exclusion

Areas subject to revegetation should be demarcated to exclude unauthorised entry and vehicle access to prevent impacts to plant growth.

6.7.5 Invasive Plant (Weed) Control

Ongoing removal of weeds during the initial establishment and maintenance period will be required to minimise potential for spread. Measures to minimise weed spread are as follows:

- Use short term cover crops where necessary until such time as natural recruitment has achieved a sufficient groundcover.
- Engage the services of a weed management contractor as required.
- Apply biodegradable weed matting if necessary.

6.8 Contaminated Land Remediation

No hazardous contaminant use is associated with the site activities as no mineral processing occurs on-sites. Potential land contaminant sources are anticipated to be limited to minor volumes of hydrocarbon and chemical handling and storage.

Prior to site closure, if visible signs of hydrocarbon spillage are noted such as surface staining, a contaminated land assessment by a suitably qualified person may be required. Assessment of site contamination, if required, is to be undertaken and managed in accordance with the following:

- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended 2013)
- *AS 4482.1-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 1 – Non-volatile and Semi-volatile compounds* (Standards Australia 2005a).
- *AS 4482.2-2005 - Guide to the sampling and investigation of potentially contaminated soil. Part 2 – Volatile Compounds* (Standards Australia 2005b).

Should it be identified that areas of the sites have been contaminated through the site activities, these areas are to be remediated and validated to ensure the soils are suitable for the future use in accordance with the relevant Health Investigation Levels (HILs) or Ecological Investigation Levels (EILs).

6.9 Tailings Storage Facility

Due to the inherent nature of the clay and shale mining activities, tailings storage is not applicable to the sites.

6.10 Voids

In accordance with the Department's guideline, for mine sites retaining voids, the rehabilitation planning part must include a void closure plan. As PGH will not be retaining any mine voids in the final landform, this PRCP does not include a void closure plan.

Voids at the sites will be backfilled to enable redevelopment of the site to an Industrial PMLU. This is likely to occur via bulk earthworks authorised under the prevailing planning instrument at the time of surrender. All filling of mine voids will be subject to *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007, or most recent edition), Level 1 or Level 2 geotechnical supervision and testing.

At completion of the rehabilitation, a suitably qualified geotechnical engineer is to assess the stability of the final landform. Any actions recommended by the engineer to address slope instabilities are to be actioned, and retreatment of the void batter is to occur.

6.11 Underground Mining

Although PGH hold one underground mining tenement, being ML 4583, the company has not carried out any underground mining and there are no plans to carry out any underground mining on the tenement. ML 50117 applies over the surface area of ML 4583 to provide PGH access rights to operate on the surface of the land.

As rehabilitation of the underground ML has been completed in accordance with methods prescribed by a geotechnical expert (refer **Section 3.5.3 - Underground ML 4583**), no further rehabilitation of ML 4583 is proposed in this PRCP.

6.12 Built Infrastructure

All infrastructure associated with the Oxley Brick Plant and ancillary facilities situated on ML 1102 are for the purpose of the Prescribed ERA authorised under EPPR00213613, and therefore excluded from consideration in this PRCP.

No permanent built infrastructure has been, or will be, established at the mineral extraction sites Dinmore, Greenwood Village or Redbank Plains. Temporary infrastructure comprises of:

- demountable buildings including employee amenities.
- portable storage container/s.
- gravel roads within the workings and operational areas to enable delivery trucks access and load out from the floor of the excavation.

Roads and access tracks are proposed to be left intact to provide a beneficial use and can be transition into the PMLU landscape. Other items will be demobilised from the site at cessation of the site activities. Any telecommunications, electricity, or potable water supply services will remain connected, as these features are vital for the urban end uses. A landowner statement prepared by PGH in relation to infrastructure to be retained is included as **Attachment 5 – Landowner Statement**.

A summary of easements established over the tenure areas which are used for the purpose of public infrastructure (stormwater, electricity, sewerage, drainage) is provided in

Table 45 – Easements Overlapping MLs. Any access tracks that service the easements located that were not constructed for the mining activities and are required to remain to allow easement holders' access to the various assets within their easements. The tracks provide a means of access to the infrastructure maintained by the easement holders. In accordance with the conditions of the easements, the landowner must not change any existing road within the easement area or prevent access to the easement infrastructure. The access tracks therefore need to remain in-situ. Copies of easement documents containing conditions requiring retention of access are included as **Attachment 6 – Easement Documents**.

Table 45 – Easements Overlapping MLs

ML	Easement	Registered interest
50028 (Dinmore)	A in Lot 2 RP895110	Drainage Easement – Ipswich City Council

ML	Easement	Registered interest
4628 (Greenwood Village)	A in Lot 125 S3186	Gas Pipeline - APT Petroleum Pipelines Limited
1102 (Oxley)	B in Lot 1 RP190493	Drainage – Brisbane City Council
1102 (Oxley)	B in Lot 2 RP190493	Drainage – Brisbane City Council
50116 (Redbank Plains)	A in Lot 1 SP325748	Queensland Electricity Commission

7 Rehabilitation Trials

Rehabilitation trials are limited to previous case studies of former CSR and PGH sites, namely the former Strathpine Quarry and Brendale site.

Rehabilitation activities at the site are not novel or unproven, and therefore trials are not relevant to the sites. The criteria for assessing success of progressive rehabilitation are outlined in the rehabilitation milestones include in this PRCP.

7.1 Case Study: Darra

The recently surrendered Darra ML 1100 once formed part of a broader area of mine development, including historical MLs 1158 and 50121 to the east of ML1100. ML 1100 extended over land east of the recent ML boundary, conjoining with these two additional MLs, refer **Figure 46 – Darra Former Site Extent**.

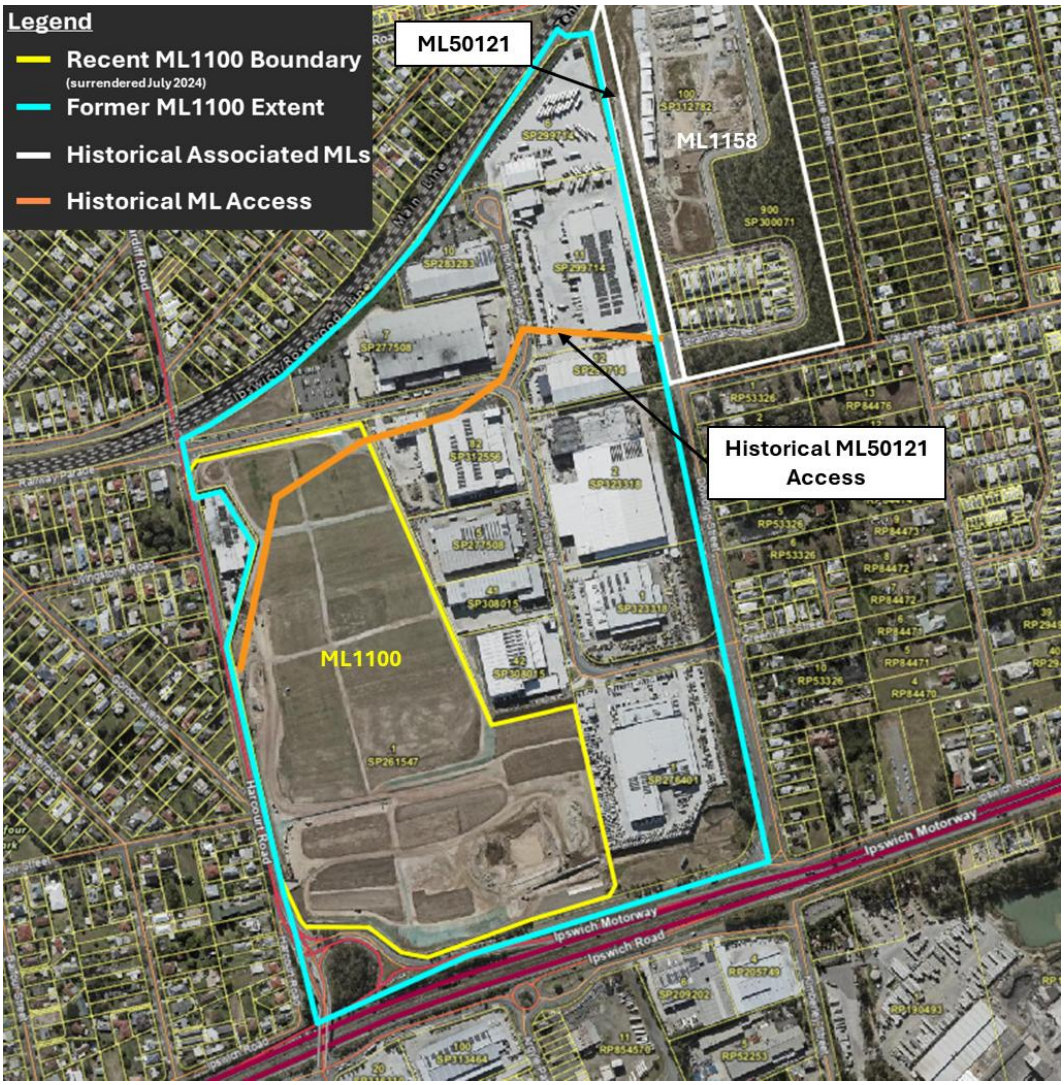


Figure 46 – Darra Former Site Extent

(Figure reprinted and adapted from The State of Queensland (2024))

Review of State records shows that the historical MLs were progressively surrendered, with the most recent being the full surrender on 12 July 2024. A summary of the progressive surrenders is provided in **Table 46 – Darra Historical ML Activities**. Aerial photographs of the site at the approximate time of each activity described in the table below are provided in **Plate 8 – Aerial of Darra Site Dated 9 August 1997** to **Plate 12 - Aerial of Darra Site Dated 3 June 2024**, cross-referenced in the below table.

Table 46 – Darra Historical ML Activities

Date	ML	Date	Plate
23-Dec-97	1100	Area surrendered 2.76 ha Lot 9 on RP100147 and Lot 2 on RP854571.	**Plate 8 – Aerial of Darra Site Dated 9 August 1997**
30-Apr-13	1158	Non-current (expired)	**Plate 9 – Aerial of Darra Site Dated 22 April 2013**
11-Dec-13	1100	Partial surrender of 30.8 ha. Area of 19.63 ha retained.	**Plate 10 – Aerial of Darra Site Dated 29 November 2013**
27-Aug-14	50121	Non-current (surrendered)	**Plate 11 – Aerial of Darra Site Dated 7 July 2014**
12-Jul-24	1101	Full Surrender	**Plate 12 - Aerial of Darra Site Dated 3 June 2024**

As illustrated, the site has progressively been surrendered as operational areas are no longer available. Former surrender applications were obtained by Boral as the former EA holder, and therefore details in relation to the applications is limited. However, review of aerial imagery shows that the land was surrendered and then subsequently rehabilitated to primarily Industrial PMLUs, with land formerly overlain by ML1158 now being partially developed into a Residential PMLU.

All rehabilitation activities at Darra have now been completed and PGH have commenced works to establish industrial activities over the site pursuant to approvals issued by Council.

CSR used both on-site materials and imported clean earth materials to fill former mine voids to create a landform comprised of predominantly low gradient areas and interspersed with batters, intersected by constructed and maintained access roads. All earthworks were carried out under Level 1 supervision in accordance with AS 3798-2007 Guidelines on earthworks for commercial and residential developments (Standards Australia 2007).

A Remediation Action Plan was prepared and enacted to address contamination in the soil (Prensa 2022). Prensa carried out validation sampling following excavation of soils to confirm that impacted soils had been removed, as well as to enable identification of additional excavations required based on visual and olfactory observations (Prensa 2022).

Vital Bon-Matt Stonewall, a water-based copolymer emulsion dust suppressant and erosion control agent, was applied to batter slopes under the guidance of Vital Environmental to ensure soil stability of batter slopes.

At completion of filling and remediation, available topsoil was respread on lower profile areas and revegetated via drill seeding with grass species. In the final stages of progressive rehabilitation, hydromulching was adopted where a shortfall of available topsoil was experienced. This was selected to encourage grass growth and protect exposed surfaces and was applied over areas which had also been drill seeded to further support vegetation growth.

CSR engaged Douglas Partners to carry out a final site inspection of in-situ batters as well as reporting to confirm the stability of the site in relation to subsidence and settlement. Douglas Partners concluded the following:

> *Based on this inspection and taking into account the details discussed above, it is considered that the slopes discussed herein and the hydromulched flatter surfaces are suitably protected from a geotechnical standpoint, for their intended duration of exposure. Should any evidence of slope instability or erosion / slumping be observed on the slopes or elsewhere in the future then it would be prudent to seek further geotechnical advice on remedial measures to be adopted.*

Groundwork Plus subsequently prepared a Final Rehabilitation Report to provide sufficient detail for the Department to assess and application for the partial surrender of the EA, comprising a full surrender of the Darra ML (Groundwork Plus 2024).

On 12 July 2024, the Department issued an approval for the full surrender of ML1100, having been satisfied that all rehabilitation activities at Darra had been completed, and the final landform was safe, stable and non-polluting.

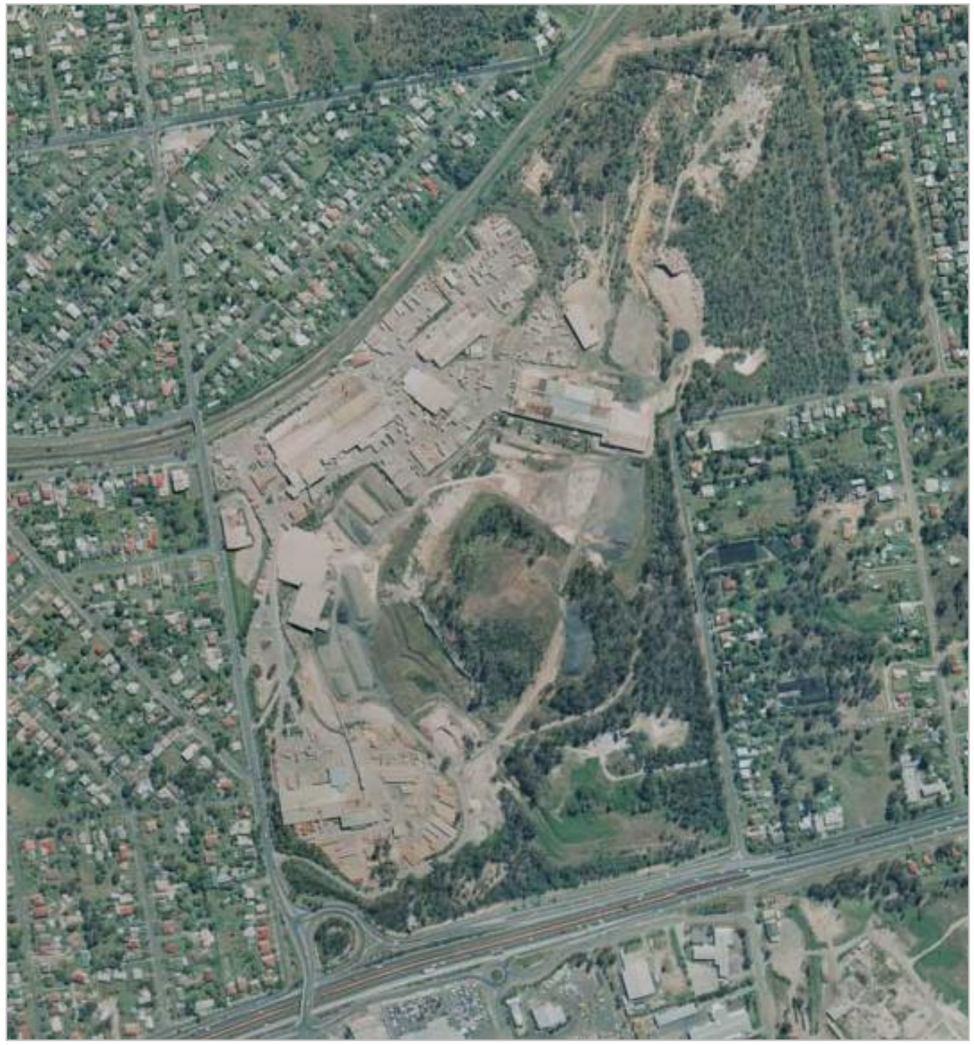


Plate 8 – Aerial of Darra Site Dated 9 August 1997

(Source: QImagery. Film QAP5558, Frame 82, Run 2, 'Beenleigh (Western Extension) 1997')



Plate 9 – Aerial of Darra Site Dated 22 April 2013

(Source: Nearmap)



Plate 10 – Aerial of Darra Site Dated 29 November 2013

(Source: Nearmap)



Plate 11 – Aerial of Darra Site Dated 7 July 2014

(Source: Nearmap)



Plate 12 - Aerial of Darra Site Dated 3 June 2024

(Source: Nearmap)

7.2 Case Study: Brendale (MLs 1168 and 1170)

Formerly, CSR Building Products Limited, a sister company to PGH, held MLs 1168 and ML 1170 situated in Brendale, Queensland. Land adjacent to ML 1170 housed CSR's Strathpine brick and paver manufacturing facility. These MLs supplied clay and shale to CSR's brick and paver manufacturing facilities at Strathpine and Oxley for a number of decades. An aerial image of ML 1168 as at 2002 when the site was operational is provided in **Figure 47 – Former ML 1168 Extent**.

The manufacturing facility at Strathpine was shut down in 2007 and supply of materials from the neighbouring leases gradually declined. The brick and paver manufacturing facility associated with the Strathpine operations has since been demolished.

The location of the Brendale MLs, together with urban development pressures, resulted in the land becoming increasingly valuable for industrial and residential development and less suitable for mineral exploitation. Extensive consultation with Moreton Bay Regional Council and various other government and non-government stakeholders ensued in the years leading up to the surrender of the MLs regarding

development of the site for residential and industrial development and various approvals for the final land use were progressively issued.

ML1168 was in an advantageous position adjacent to neighbouring residential estates. CSR commenced rehabilitation of the site to achieve a Residential PMLU in line with the requirements of the site's EA. Following grant of numerous development permits and operational works approvals, CSR, in collaboration with Defence Housing Australia ('DHA'), undertook extensive filling, landforming and infrastructure works on ML 1168 to enable the later construction of 463 home sites, being a mixture of private dwellings and defence housing. A plan showing the layout of the residential development is provided in **Figure 48 – ML 1168 Conceptual Development Layout Plan**. Aerial imagery showing the completed development as of 2022 is provided in **Figure 49 – ML 1168 and ML 1170 Completed Development** also illustrates the extensive development to Industrial and Residential PMLUs on ML 1170.

At the point of the surrenders, land within both MLs remained disturbed; however, this land was being utilised for civil works authorised under various Operational Works Development Permits for the developments. This was accepted by the Department as suitable to facilitate a surrender, as the rehabilitation of the land was transferred to the jurisdiction of Council under the conditions of the development permits. This scenario may be replicate at other sites where development permits have been advanced.

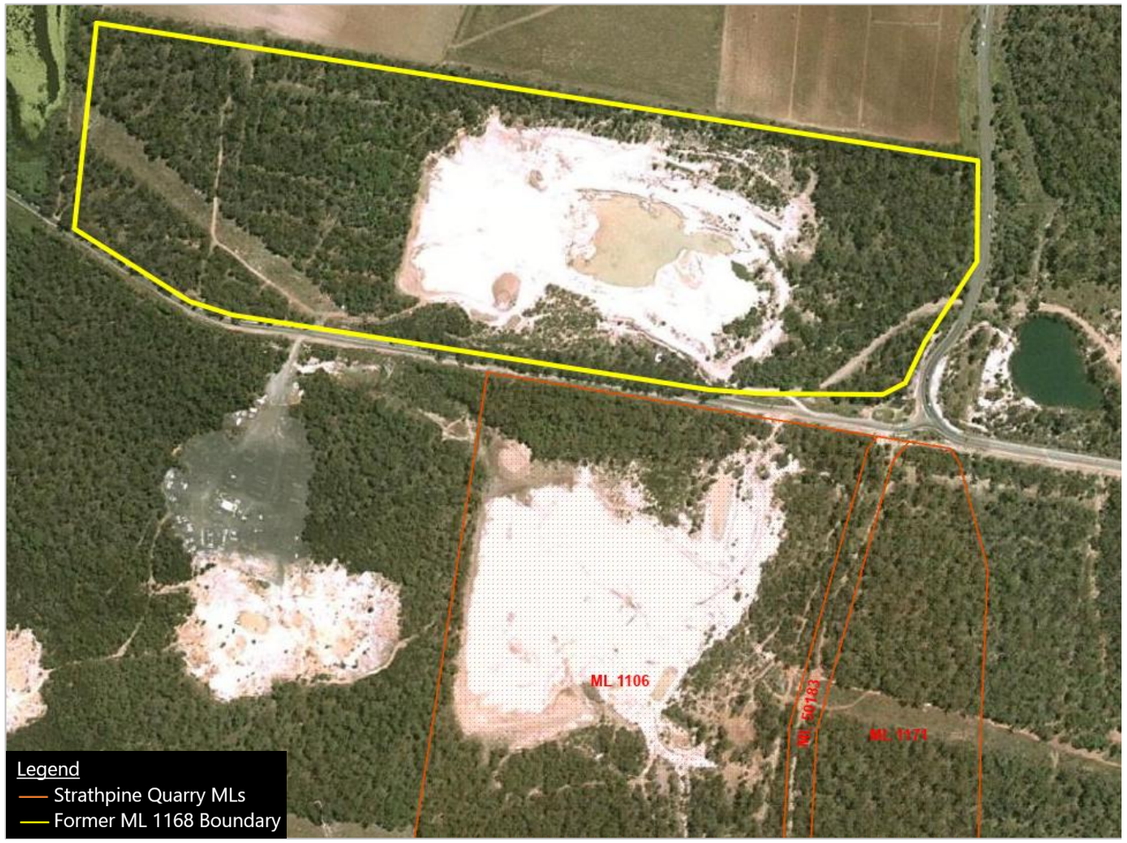


Figure 47 – Former ML 1168 Extent

(Figure reprinted and adapted Queensland Globe)



Figure 48 – ML 1168 Conceptual Development Layout Plan



Figure 49 – ML 1168 and ML 1170 Completed Development

(Source: Nearmap)

7.3 Case Study: Strathpine Quarry

The Strathpine Quarry comprised of MLs 1106, 1171 and 50186 was surrendered from the EA on 8 August 2022 (MLs 1106 and 1171) and 21 February 2019 (ML 50186) following extensive rehabilitation of the land.

CSR used both on-site overburden and imported clean fill materials to fill former mine voids to create a landform comprised of low gradient areas and gently undulating batters, intersected by appropriately constructed and maintained access roads. All earthworks were carried out under either Level 1 or Level 2 supervision in accordance with *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007) depending upon the location of the earthworks (for example, land underlying easements typically requires a lower level of geotechnical supervision due to the encumbrances / development restrictions over the land). At completion of filling, growth media was respread of the reprofiled surfaces and revegetated with grass (through a combination of turfing and seeding) and native species (planted in the southern easement corridors).

In addition to traditional revegetation methods, CSR commissioned the services of Vital Environmental, to provide guidance on appropriate stabilisation mechanisms for steeper batter slopes. Vital Environmental recommended and oversaw the application of specialised soil stabilisation products, namely Vital Strike and Vital Bon-Matt Stonewall.

Vital Bon-Matt Stonewell is a water-based copolymer emulsion dust suppressant and erosion control agent designed for applications over surfaces where strong, durable and flexible surface conditions are required. This material is a concentrated liquid emulsion which is diluted with water prior to application to create long-term binding and surface sealing.

Vital Strike is a polymer product specifically created to reduce erosion whilst increasing moisture retention and mitigating weed colonisation. The polymer contains a bonding agent to provide immediate soil stabilisation, whilst also containing a fertiliser blend to aid grass strike and establishment of revegetation.

The above options were selected by CSR as a cost efficient, immediate, and long-term soil stabilisation mechanisms. It is understood that the manufacturer provides a guarantee on the effectiveness of the above-mentioned products, inclusive of an extended warranty to remedy any defects should they arise, which will ensure that the treated surfaces will be monitored and maintained over an extended period to ensure they remain in a stable state.

The site was converted into a clean catchment and therefore no stormwater basins remain. Various erosion and sediment controls have been incorporated into the landform to mitigate potential sediment release from site, such as rock checks and diversion drains and bunds.

Areas underlying the Powerlink easement were disturbed for the purpose of stockpiling, access, and stormwater controls. When these areas were no longer needed for operational purposes, the area was mulched and planted out using various native species with the assistance of a local community group. Powerlink agreed to the rehabilitation of the easement through planting of trees, shrubs and grasses using species and planting layouts in accordance with Powerlink's instructions. Powerlink provided the following limitations on planting:

- No vegetation other than grasses are to be planted within 20m of tower footings.
- Small shrubs can be planted within 6m of the conductor shadow area.

- Trees with a mature height no greater than 3.5m can be planted within the remainder of the easement.

The final species composition agreed between CSR and Powerlink comprised of those summarised in **Table 47 – Powerlink Easement Species Composition**. In August 2021, CSR held a community planting day with Scouts Australia wherein the easement was successfully revegetated with the above-mentioned species. Additional turfing was applied within the easement where planting was not required, and areas of undisturbed turf have been left intact.

Table 47 – Powerlink Easement Species Composition

Category	**Species**
Trees (<5m)	*Eucalyptus curtisii*
Shrubs	*Acacia falcata* A. juncifolia *Daviesia ulicifolia* *Dodonaea triquetra* *Hovea acutifolia* *Leptospermum sp.* *Pultenaea villosa*
Grasses	*Cymbopogon refractus* *Hardenbergia violacea* *Lomandra longifolia* *Themeda triandra*

During the course of extraction of materials from areas adjacent to the Energex high-voltage transition tower (the 'Energex Tower') located on Easement A RP105197, a benched profile was created around this infrastructure. CSR engaged geotechnical engineers to design a battered profile to stabilise the landform around the tower. Phase 1 included the construction of a 1(V):3(H) batter profile to tie in with levels necessary for future Bulk Earthworks.

CSR engaged the services of Douglas Partners to provide engineering sign-off at completion of the Phase 1 works in the form of a Site Stability Assessment. Douglas Partners (2022) inspected the site on 9 February 2022 and observed the following:

> *the centre of the site there is an elevated 'hill' with a powerline transmission tower at the crest (at about RL 51) with slopes formed at 1V:3H and about 6m in height on the eastern and northern boundaries, and about 10 m in height on the southern and western (down to an access track) sides*

Douglas Partners (2022) observed the following during their 9 February 2022 site inspection:

> *There is a batter slope along the western boundary (refer* [**Photo 10 - View to western batter**]*) formed at about 1V:4H and a benched batter slope along the eastern boundary (refer* [**Photo 11 – View to eastern batter**]*) about 4 m in height with slopes formed at about 1V:3H to 1V:2H. The slopes had been hydromulched with varying amounts of vegetation formed at the time of*

inspection; the remaining areas (except for the unsealed access roads) were mostly covered in turf (p. 1).

Ground conditions at the slopes had been inspected during construction by DP and comprised very stiff to hard (stiff near surface) pale grey mottled red brown silty clay and extremely weathered claystone with some ironstone and conglomerate bands. Fill was placed on the western batter of the central hill; this fill comprised imported clayey gravel/gravelly clay placed and compacted under full time Level 1 inspection [in accordance with AS3798] *and testing by DP (reported separately) with a minimum dry density ratio of 98%; this fill meets the requirements to be considered as controlled fill* (p.4).



Photo 10 - View to western batter

(Photo reprinted from Douglas Partners (2022))



Photo 11 – View to eastern batter

(Figure reprinted from Douglas Partners (2022))

Douglas Partners concluded that 'factors of safety for global instability of not less than 1.5. A factor of safety of 1.5 is considered generally suitable for permanent works. Stability analysis was not required for the western and eastern slopes due to the relatively flat slope (western slope) and the benched arrangement (eastern slope) and relatively hard ground conditions' (p.4).

In relation to both the Energex Tower profiles and the eastern and western batters, Douglas Partners (2022) concluded that:

> *Based on the results of the final inspection and inspections during the earthworks, the results of the stability analysis and earthworks inspection and testing report, it is considered that the current site and its slopes can be considered as geotechnically stable in the long term with normal routine maintenance* (p. 6).

Included as **Plate 13 – Strathpine Quarry Aerial Imagery Dated 13 April 2022** is aerial imagery collected via Unmanned Aerial Vehicle (UAV) survey on 13 April 2022. Photos of the final landscape as of 13 April 2022 are provided as **Photo 12 – View northwest showing stabilised surface, dated 13 April 2022** to **Photo 16 – Photo 16 – View south west from northern boundary of site, showing reprofiled and stabilised Energex tower and grassed landform**.



Plate 13 – Strathpine Quarry Aerial Imagery Dated 13 April 2022



Photo 12 – View northwest showing stabilised surface, dated 13 April 2022



Photo 13 – View from retained western access road towards site entrance, dated 13 April 2022



Photo 14 – View west from the eastern boundary of the site showing rehabilitated landform. reprofiled and stabilised Energex tower batters in middle of photo, vegetated surface and stabilised western bank in background of photo, dated 13 April 2022



Photo 15 – View along northern boundary looking west. Retained access road and grassed area, with stabilised batter on left of photo



Photo 16 – View south west from northern boundary of site, showing reprofiled and stabilised Energex tower and grassed landform

On 27 May 2022, an additional Geotechnical Stability Review (Groundwork Plus 2022) was completed for the site to provide additional information to the Department upon request. The assessment included review of the settlement pad data, which demonstrated that settlement had ceases in the areas of deeper fill with displacement rates equivalent to the level of survey accuracy i.e., generally less than 1mm, with these levels consistent with expansion rates of a wettened soil profile. The review concluded that the site remained stable and non-polluting regarding geotechnical stability issues.

8 Final Site Design, Milestones and Monitoring

8.1 Final Site Design and Reference Maps

The following final site design plans for the sites to illustrate the maximum disturbance footprint, MLs boundaries and PMLU(s):

- **Dinmore Final Site Design (Drawing no. 1835.DRG.096R2).**
- **Greenwood Village Final Site Design (Drawing no. 1835.DRG.097R2).**
- **Oxley Final Site Design (Drawing no. 1835.DRG.098R2.**
- **Redbank Plains Final Site Design (Drawing no. 1835.DRG.099R5).**

The following reference maps have been prepared for the location of the proposed Rehabilitation Areas (RAs):

- **Reference Map 1 – Dinmore (Drawing no. 1835.DRG.120R2).**
- **Reference Map 2 – Greenwood Village (Drawing no. 1835.DRG.121R2).**
- **Reference Map 3 – Oxley (Drawing no. 1835.DRG.122R2).**
- **Reference Map 4 – Redbank Plains (Drawing no. 1835.DRG.123R2).**

Additional Concept rehabilitation plans for Greenwood Village, Redbank Plains and Dinmore are included as:

- **Greenwood Village Concept Rehabilitation Plan (Drawing no 1835.DRG.139).**
- **Redbank Plains Concept Rehabilitation Plan (Drawing no 1835.DRG.140).**
- **Dinmore Concept Rehabilitation Plan (Drawing no 1835.DRG.141).**

8.2 Selection of Rehabilitation Milestones

Table 48 – Rehabilitation Milestones provides a summary of the selected milestones, the milestone criteria and other factor relevant to achieving these milestones with references to the principles of SMART. The milestones have been adopted from the 'reference milestones' prescribed in the Guideline, with adaption to reflect the nature of PGH's operations.

The measures nominated for the rehabilitation milestone have been developed to align with the monitoring and maintenance program summarised in **Section 10 – Monitoring and Maintenance program**.

8.3 PRCP Schedule

Included as **Attachment 7 – PRCP Schedule** is the PRCP Schedule.

In accordance with Section 126D(5) of the EP Act, land is available for rehabilitation if the land is not being mined, unless:

> *(a) the land is being used for operating infrastructure or machinery for mining, including, for example, a dam or water storage facility; or*
>
> *(b) the land is identified in the proposed PRCP schedule or the application for an environmental authority for relevant activities to which the schedule relates as containing a probable or proved*

ore reserve that is to be mined within 10 years after the land would otherwise have become available for rehabilitation; or

(ba) the land is required for the mining of a probable or proved ore reserve mentioned in paragraph (b); or

(c) the land contains permanent infrastructure identified in the proposed PRCP schedule as remaining on the land for a post-mining land use

Section 126D(6) provides the following definitions to support Section 126D(5):

***mined** means mined within the meaning of the Mineral Resources Act, section 6A.*

***probable or proved ore reserve** means a probable ore reserve or proved ore reserve mentioned in the listing rules made by ASX Limited (ACN 008 624 691) for the listing of corporations on the Australian stock exchange.*

***void** means an area of land to be excavated in the carrying out of a mining activity.*

As outlined in **Section 2.2.3 - Proposed Duration of Operation**, to provide justification for the proposed duration of operations, PGH commissioned a resource investigation of the mineral extraction sites, Dinmore, Greenwood Village and Redbank Plains, which was completed in June 2022. The resource investigation classified mineral resource as Measured, Indicated and Inferred Resources in accordance with JORC Code[15] as the method recognised by the ASX. As such, probable or proved ore reserve for the purpose of Section 126D of the EP Act has been defined for the Dinmore, Greenwood Village and Redbank Plains sites. As summarised in **Table 2 – Estimated Remaining Life of Mine***, the resource remaining extends considerably beyond 10 years. As the distribution of target clay reserve is variable and often requires areas to be worked concurrently to obtain the required mix of materials, this necessitates large areas of the sites to remain available and disturbed to ensure that resource is accessible to provide the specific target materials necessary to meet market requirements (e.g., clay colours to achieve trend in brick colour, etc). As such, it is likely that land available for final rehabilitation will be limited until the point the tenures are nearing the point of surrender. This is reflected in the PRCP Schedule. Due to the considerable volume of resource remaining at the mineral extraction sites, it is proposed that the RPCP Schedule is re-assessed as the activities progress to ensure that it remains relevant and reflect any changes in land available for rehabilitation.

[15] JORC Code, (2012). *The JORC Code 2012 Edition*. Accessed 20 July 2022 via https://www.jorc.org/docs/JORC_code_2012.pdf

Table 48 – Rehabilitation Milestones

Milestone reference	Rehabilitation milestone	Milestone criteria
RM1	Infrastructure decommissioning and removal	1.1 All plant, equipment, hardstands, roads and tacks and infrastructure (including drainage) associated with the resource activity are removed where they are not approved to be retained under an agreement with the landholder. 1.2 All waste removed.
RM2	Contaminated land identification, remediation and removal	2.1 Contaminated Land Investigation Document completed in accordance with the *Environmental Protection Act 1994*, including a site investigation report, and, where required, a Validation Report and/or a draft Site Management Plan. 2.2 Contaminated and hazardous material either remediated in-situ or removed/transported to an approved landfill for disposal and waste tracking information recorded and submitted. 2.3 The Contaminated Land Investigation Document from a SQP that no contamination unsuitable for the post-mining land use remains.
RM3	Landform development and reshaping/reprofiling (Native Ecosystem)	3.1 General reshaping and pushing/trimming achieves a final landform with a factor of safety greater than 1.5. 3.2 Landform design is assessed by an AQP as being geotechnically stable with a factor of safety greater than 1.5. 3.3 Erosion and sediment control measures comprising a minimum 70% groundcover (vegetation and mulch) in line with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). 3.4 Additional stormwater, erosion and sediment controls such as rock checks, sediment traps and diversion bunds designed and installed with reference to Best Practice Erosion and Sediment Control series where required.
RM4	Landform development and reshaping/reprofiling (Industrial)	4.1 Engineering and design plans completed. 4.2 Engineering and design plans identify backfill and landform requirements consistent with good engineering practice. 4.3 Engineering and design plans achieve a landform suitable for industrial land use, with the design consistent with any local government requirements. 4.4 Backfilling has been completed in accordance with AS 3798-2007 Guidelines on earthworks for commercial and residential developments (Standards Australia 2007, or most recent edition). 4.5 Landform constructed consistent with engineering design and landform plans. 4.6 All imported fill material is either clean earth as defined under the *Environmental Protection Regulation 2019* or clean earthern materials as defined under the EA EPML03821316.
RM5	Surface preparation	5.1 All erosion and subsidence has been remediated. 5.2 Trim, rock rake and deep rip of compacted surfaces to 150 mm. 5.3 Testing and amelioration of topsoil stockpiles by AQP to achieve a primary growth media that will support the nominated vegetation to be established. 5.4 Ameliorants and/or fertiliser are applied at the rates recommended by the AQP. 5.5 Source, cart and spread growth media to a depth of 150mm. **Additional PMLU specific criteria for native ecosystem (RA2, RA4, RA6, RA8)** 5.6 Soil productivity and suitability assessment by an AQP, and gypsum, lime or fertilisers applied where deemed necessary by an AQP.
RM6	Revegetation (Native Ecosystem)	6.1 Assisted natural regeneration supported by demarcation / fencing to exclude access if required. 6.2 Soil productivity and suitability confirmed by an AQP. **6.3** Seeding at a rate of 15kg/ha with a composition mixture that is representative of the pre-cleared Regional Ecosystems (REs) as detailed in **Table 42 – Native Ecosystem PMLU Approximate Species Mix.** 6.4 Minimum 70% strike/survival rate of applied seed mix. 6.5 Appropriate weeds control measures have been implemented, as documented and determined by an AQP.
RM7	Revegetation (Industrial)	7.1 Soil productivity and suitability confirmed by an AQP. 7.2 Complete seeding using a seed mix comprising species in **Table 41 – Industrial PMLU Species Mix.**. 7.3 Seeding at a rate of 1-15 kg / ha; 7.4 Minimum 70% strike/survival rate of applied seed mix. 7.5 Appropriate weeds control measures have been implemented, as documented and determined by an AQP.
RM8	Achievement of surface requirements (Native Ecosystem)	8.1 Certification provided by an AQP that the vegetation density and composition is consistent with pre-cleared Regional Ecosystems (REs) as mapped for each RA as detailed in **Table 43 – Revegetation Assessment Criteria**. 8.2 Vegetation within each RA is on a trajectory to be is self-sustaining within the time period of this schedule. 8.3 Minimum of 70% vegetative groundcover achieved. 8.4 No active rill or gullies throughout the landform. 8.5 No more than 10% groundcover comprised of non-native and/or weed species.

Milestone reference	Rehabilitation milestone	Milestone criteria
		8.6 Soil testing of growth media indicates the following parameters are met: o Electrical Conductivity <0.15 mS/cm, o Soil pH <8.5 and >6, o Exchangeable Sodium Percentage (ESP%) <5%.
RM9	Achievement of surface requirements (Industrial)	9.1 AQP certifies conformance to engineering and design plans prepared as part of RM4. 9.2 Certification from an AQP that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. 9.3 Minimum 70% groundcover to be achieved (through revegetation with grass species, other agreed engineered solution, or combination of both). 9.4 ≥ 50% established and persistent vegetative groundcover for all slopes from 0-15%. 9.5 ≥ 80% established and persistent vegetative cover for slopes > 15%.
RM10	Achievement of post-mining land use to stable condition (Native Ecosystem)	10.1 No evidence of erosion classified as Moderate and Severe as defined by **Table 50 – Erosion Classification Framework**. 10.2 Certification provided by an AQP that the vegetation density and composition are consistent with preclear Regional Ecosystems (REs) as mapped for each RA as detailed in **Table 43 – Revegetation Assessment Criteria** 10.3 Vegetation maturity has reached a level where it is now self-sustaining. 10.4 Erosion equivalent to, or less than, natural rates for the locality as measured by an AQP. 10.5 Minimum 70% groundcover to be achieved in accordance with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). 10.6 Mortality rate of mature trees equal to, or less than, the recruitment rate of new trees. 10.7 No more than 10% groundcover comprised of non-native and/or weed species. 10.8 AQP certifies that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. 10.9 Soil testing of growth media indicates the following parameters are met: a. Electrical Conductivity <0.15 mS/cm, b. Soil pH <8.5 and >6, c. Exchangeable Sodium Percentage (ESP%) <5% . 10.10 Any rectification actions required by PRCP13(b) have been implemented. 10.11 An independent AQP certifies achievement of RM10.1 – RM10.10.
RM11	Achievement of post-mining land use to stable condition (Industrial)	11.1 No evidence of erosion classified as Moderate and Severe as defined by **Table 50 – Erosion Classification Framework** 11.2 There are no active areas of rill or gully erosion 11.3 Drainage follows appropriate drainage paths. 11.4 AQP confirms that there has been no material change with respect to the geotechnical and structural assessments. 11.5 Stormwater management assessment conducted by a AQP at completion of works to confirm site is non-polluting. 11.6 Contaminated land assessment confirms the site is non-polluting. 11.7 Planning approval granted for industrial use, as applicable. 11.8 Ownership of any remaining retained infrastructure has been transferred to the landholder. 11.9 Any rectification actions required by PRCP13(c) have been implemented. 11.10 The final landform achieves a stable condition. 11.11 An independent AQP certifies achievement of RM11.1 – RM11.10.

*Pursuant to section 316J(3) of the EP Act, an annual return including an evaluation of milestone achievement must be provided to the department. As such, compliance reporting of RM activities will be provided to the department. Further detail on auditing and annual return requirements are included as **Section 9.5 PRCP Auditing** and **Section 9.6 Annual Return.** Additional assessments may occur as required and as nominated in **Table 49 – Monitoring and Maintenance Program**.

9 Monitoring and Maintenance Program

9.1 Program Overview

This monitoring and maintenance program has been developed with reference to Section 3.8 of the Guideline. Through the information request received, the Department advised that the program should:

- Describe the proposed monitoring to determine whether intervention is required and demonstrate success of rehabilitation.
- Document a monitoring program to gather data which can be used to demonstrate a stable condition has been achieved.

Table 49 – Monitoring and Maintenance Program identifies and describes the monitoring and maintenance to be carried out to measure the progress of milestone implementation and to ensure milestone criteria are achieved.

The aim of the monitoring program is to enable collection of data to demonstrate that the milestone criteria have been achieved. PGH are to engage SQPs where necessary to complete actions outlined in the monitoring schedule.

All records and reports prepared under this monitoring and maintenance program are to be held by PGH for a period of five years following surrender of the sites.

Table 49 – Monitoring and Maintenance Program

Ref	Rehabilitation milestone	Milestone criteria	Method	Monitoring Frequency	Reporting / Records	Maintenance / Contingency
RM1	Infrastructure decommissioning and removal	• All plant, equipment, hardstands, roads and tacks and infrastructure (including drainage) associated with the resource activity are removed where they are not approved to be retained under an agreement with the landholder. • All waste removed.	Visual inspection	At decommissioning.	Inspection record. Photographs confirming removal of infrastructure. Landowner agreement for agreed items.	Any residual infrastructure identified through the final inspection which is not the subject of a landowner agreement is to be removed.
RM2	Contaminated land identification, remediation and removal	• Contaminated Land Investigation Document completed in accordance with the *Environmental Protection Act 1994*, including a site investigation report, and, where required, a Validation Report and/or a draft Site Management Plan. • Contaminated and hazardous material either remediated in-situ or removed/transported to an approved landfill for disposal and waste tracking information recorded and submitted. • The Contaminated Land Investigation Document from a SQP that no contamination unsuitable for the post-mining land use remains.	Carry out a site contamination assessment in accordance with the relevant Australian standards and NEPM guideline values to determine and remediation requirements.	At decommissioning.	Soil analytical results reported and analysed by an SQP.	Where validation testing indicates that contaminated soils required additional treatment to achieve the relevant NEPM standards, an SQP is to be engaged to determine further treatments and to carry out additional validation testing following any further treatment.
RM3	Landform development and reshaping/reprofiling (Native Ecosystem)	○ General reshaping and pushing/trimming achieves a final landform with a factor of safety greater than 1.5. ○ Landform design is assessed by an AQP as being geotechnically stable with a factor of safety greater than 1.5. ○ Erosion and sediment control measures comprising a minimum 70% groundcover (vegetation and mulch) in line with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). ○ Additional stormwater, erosion and sediment controls such as rock checks, sediment traps and diversion bunds designed and installed with reference to Best Practice Erosion and Sediment Control series where required.	Inspection of backfilled areas to assess backfill levels and batters.	During backfilling. Following completion of backfilling.	Inspection record. Photographs. Site survey to confirm final landform.	Reprofile batter slopes to achieve nominated angles.
			Erosion equivalent to adjacent undisturbed land.	At completion of reprofiling.	Assessment competed by SQP.	Reprofiling / resurfacing of erosion areas and further stabilisation with vegetation.
RM4	Landform development and reshaping/reprofiling (Industrial)	○ Engineering and design plans completed. ○ Engineering and design plans identify backfill and landform requirements consistent with good engineering practice. ○ Engineering and design plans achieve a landform suitable for industrial land use, with the design consistent with any local government requirements. ○ Backfilling has been completed in accordance with AS 3798-2007 Guidelines on earthworks for commercial and residential developments (Standards Australia 2007, or most recent edition). ○ Landform constructed consistent with engineering design and landform plans. ○ All imported fill material is either clean earth as defined under the *Environmental Protection Regulation 2019* or	Supervision of backfilling by an SQP to align with Level 1 / Level 2 AS 3798 requirements and to assess batter slopes.	Ongoing during backfilling.	Geotechnical reports.	Corrective action as per SQP recommendations. May include reprofiling of final landform if recommended by an SQP (engineer).
			Sampling and analysis of imported fill materials by an SQP to ensure material meets the relevant NEPM guideline values.	Ongoing during backfilling.	Soil analytical results reported and analysed by an SQP.	Any materials not suitable for use are segregated and removed from site.
			Engineer engaged for design planning.	At completion of works	As constructed survey to be undertaken. With as constructed engineering plans prepared.	Corrective action as per SQP recommendations.

Ref	Rehabilitation milestone	Milestone criteria	Method	Monitoring Frequency	Reporting / Records	Maintenance / Contingency
		clean earthern materials as defined under the EA EPML03821316.				
RM5	Surface preparation	○ All erosion and subsidence has been remediated. ○ Trim, rock rake and deep rip of compacted surfaces to 150 mm. ○ Testing and amelioration of topsoil stockpiles by AQP to achieve a primary growth media that will support the nominated vegetation to be established. ○ Ameliorants and/or fertiliser are applied at the rates recommended by the AQP. ○ Source, cart and spread growth media to a depth of 150mm. **<u>Additional PMLU specific criteria for native ecosystem (RA2, RA4, RA6, RA8)</u>** ○ Soil productivity and suitability assessment by an AQP, and gypsum, lime or fertilisers applied where deemed necessary by an AQP.	Topsoil volumes calculated to ensure sufficient available amounts for respreading to a depth of 150 mm across rehabilitated areas.	Prior spreading of topsoils.	Volumes recorded.	If monitoring determines insufficient volumes are available, additional topsoil is to be imported.
			Topsoil testing to be undertaken.	Prior to use of topsoil.	AQP report certifying topsoil meets specification.	Undertake amelioration and amendments of soil until AQP has certified.
			Erosion equivalent to adjacent undisturbed land.	At completion of progressive rehabilitation. At completion of final rehabilitation.	Calculation of erosion rates competed by SQP.	Reprofiling / resurfacing of erosion areas and further stabilisation with vegetation.
RM6	Revegetation (Native Ecosystem)	○ Assisted natural regeneration supported by demarcation / fencing to exclude access if required. ○ Soil productivity and suitability confirmed by an AQP. ○ Seeding at a rate of 15kg/ha with a composition mixture that is representative of the pre-cleared Regional Ecosystems (REs) as detailed in **Table 42 – Native Ecosystem PMLU Approximate Species Mix.** ○ Minimum 70% strike/survival rate of applied seed mix. ○ Appropriate weeds control measures have been implemented, as documented and determined by an AQP.	Visual inspection to ensure access has been excluded if the revegetation is in an area subject to high traffic.	At commencement of revegetation phase.	Inspection records. Photographs.	Any demarcations or fencing are to be removed.
			Soil sampling and analysis for relevant soil fertility suite.	Prior to any supplementary seeding.	Soil analytical results reported and analysed by an SQP.	Amelioration of soils to align with nutrient requirements of the native species.
			Review of records to ensure selected species mix and rate of application consistent with PRCP.	Prior to any supplementary seeding.	Document evidencing species mix.	Species mix to be adjusted to ensure appropriate composition / diversity.
			Monitoring to ensure minimum 70 % strike/survival rate of applied seed mix.	Ongoing throughout revegetation	Inspection records. Photographs.	Initial / follow up watering to assist strike. Additional seeding is to be carried out, if necessary, where strike rate / survival rate is below target percentage.
			Monitoring and control of weeds.	Ongoing to the point of surrender.	Inspection records. Contractor records where available.	Additional weed management to be carried out in the event of increased infestation and/or upon identification of higher category weeds in accordance with the *Biosecurity Act 2014*.
RM7	Revegetation (Industrial)	○ Soil productivity and suitability confirmed by an AQP. ○ Complete seeding using a seed mix comprising species in **Table 41 – Industrial PMLU Species Mix.**.	Soil sampling and analysis for relevant soil fertility suite.	Prior to any supplementary seeding.	Soil analytical results reported and analysed by an SQP.	Amelioration of soils to align with nutrient requirements of the native species.

Ref	Rehabilitation milestone	Milestone criteria	Method	Monitoring Frequency	Reporting / Records	Maintenance / Contingency
		○ Seeding at a rate of 1-15 kg / ha; ○ Minimum 70% strike/survival rate of applied seed mix. ○ Appropriate weeds control measures have been implemented, as documented and determined by an AQP.	Review of records to ensure selected species mix and rate of application consistent with PRCP.	Prior to any supplementary seeding.	Document evidencing species mix.	Species mix to be adjusted to ensure appropriate composition / diversity.
			Monitoring to ensure minimum 70 % strike/survival rate of applied seed mix.	Ongoing throughout revegetation	Inspection records. Photographs.	Initial / follow up watering to assist strike. Additional seeding is to be carried out, if necessary, where strike rate / survival rate is below target percentage.
			Monitoring and control of weeds.	Ongoing to the point of surrender.	Inspection records. Contractor records where available.	Additional weed management to be carried out in the event of increased infestation and/or upon identification of higher category weeds in accordance with the *Biosecurity Act 2014*.
RM8	Achievement of surface requirements (Native Ecosystem)	○ Certification provided by an AQP that the vegetation density and composition is consistent with pre-cleared Regional Ecosystems (REs) as mapped for each RA as detailed in **Table 43 – Revegetation Assessment Criteria**. ○ Vegetation within each RA is on a trajectory to be is self-sustaining within the time period of this schedule. ○ Minimum of 70% vegetative groundcover achieved. ○ No active rill or gullies throughout the landform. ○ No more than 10% groundcover comprised of non-native and/or weed species. ○ Soil testing of growth media indicates the following parameters are met: ○ Electrical Conductivity <0.15 mS/cm, ○ Soil pH <8.5 and >6, ○ Exchangeable Sodium Percentage (ESP%) <5%.	Monitoring to confirm species composition, maturity, species composition, recruitment, minimum groundcover, and maximum weed coverage rates nominated are achieved and sustained.	At regular intervals determined by an SQP until such time the milestone criteria is met.	Advice prepared by an SQP.	Remedial action in accordance with SQP recommendations.
RM9	Achievement of surface requirements (Industrial)	○ AQP certifies conformance to engineering and design plans prepared as part of RM4. ○ Certification from an AQP that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. ○ Minimum 70% groundcover to be achieved (through revegetation with grass species, other agreed engineered solution, or combination of both). ○ ≥ 50% established and persistent vegetative groundcover for all slopes from 0-15%. ○ ≥ 80% established and persistent vegetative cover for slopes > 15%.	Monitoring to determine whether landform is geotechnically stable where no mine disturbance will be transitioned to civil works. Monitoring may include installation of settlement plates by an SQP, and periodic review of data collected via settlement plate measurements.	At completion of backfilling.	Photographs and inspection records. Geotechnical advice prepared by an SQP. Settlement plate data.	Additional works if recommended by an SQP (engineer).

Ref	Rehabilitation milestone	Milestone criteria	Method	Monitoring Frequency	Reporting / Records	Maintenance / Contingency
			Progress and records of development permits in effect where disturbed land will remain post-surrender subject to ongoing civil works.	Ongoing throughout civil works and at point of surrender.	Development permits.	Hold point until development permits in effect.
RM10	Achievement of post-mining land use to stable condition (Native Ecosystem)	○ No evidence of erosion classified as Moderate and Severe as defined by **Table 50 – Erosion Classification Framework**. ○ Certification provided by an AQP that the vegetation density and composition are consistent with preclear Regional Ecosystems (REs) as mapped for each RA as detailed in **Table 43 – Revegetation Assessment Criteria** ○ Vegetation maturity has reached a level where it is now self-sustaining. ○ Erosion equivalent to, or less than, natural rates for the locality as measured by an AQP. ○ Minimum 70% groundcover to be achieved in accordance with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). ○ Mortality rate of mature trees equal to, or less than, the recruitment rate of new trees. ○ No more than 10% groundcover comprised of non-native and/or weed species. ○ AQP certifies that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. ○ Soil testing of growth media indicates the following parameters are met: ○ Electrical Conductivity <0.15 mS/cm, ○ Soil pH <8.5 and >6, ○ Exchangeable Sodium Percentage (ESP%) <5% . ○ Any rectification actions required by PRCP13(b) have been implemented. ○ An independent AQP certifies achievement of RM10.1 – RM10.10.	Monitoring to confirm species composition, maturity, species composition, recruitment, minimum groundcover, and maximum weed coverage rates nominated are achieved and sustained.	At regular intervals determined by an SQP until such time the milestone criteria is met.	Advice prepared by an SQP.	Remedial action in accordance with SQP recommendations.
RM11	Achievement of post-mining land use to stable condition (Industrial)	○ No evidence of erosion classified as Moderate and Severe as defined by **Table 50 – Erosion Classification Framework** ○ There are no active areas of rill or gully erosion ○ Drainage follows appropriate drainage paths. ○ AQP confirms that there has been no material change with respect to the geotechnical and structural assessments. ○ Stormwater management assessment conducted by a AQP at completion of works to confirm site is non-polluting.	SQP inspection of site for erosion.	At completion of final rehabilitation.	Calculation of erosion rates competed by SQP.	Reprofiling / resurfacing of erosion areas and further stabilisation with vegetation.
			AQP assessment of geotechnical suitability.	At completion of final rehabilitation.	AQP to review all geotechnical records during rehabilitation. Provide report confirming geotechnical condition suitable for PMLU.	If required, undertake remedial works.
			AQP inspection of stormwater management.	At completion of final rehabilitation.	AQP to review site, with survey information, to confirm appropriate stormwater controls in place.	If required, undertake remedial works.

Ref	Rehabilitation milestone	Milestone criteria	Method	Monitoring Frequency	Reporting / Records	Maintenance / Contingency
		○ Contaminated land assessment confirms the site is non-polluting. ○ Planning approval granted for industrial use, as applicable. ○ Ownership of any remaining retained infrastructure has been transferred to the landholder. ○ Any rectification actions required by PRCP13(c) have been implemented. ○ The final landform achieves a stable condition. ○ An independent AQP certifies achievement of RM11.	Carry out a site contamination assessment in accordance with the relevant Australian standards and NEPM guideline values to determine and remediation requirements.	At decommissioning.	Soil analytical results reported and analysed by an SQP.	Where validation testing indicates that contaminated soils required additional treatment to achieve the relevant NEPM standards, an SQP is to be engaged to determine further treatments and to carry out additional validation testing following any further treatment.
			Final reporting and assessment.	At completion and achievement of all RMs	Detailed report by AQP, supported relevant subject matter reporting.	Address any issue required by the AQP.

9.2 Monitoring Methodologies

9.2.1 Inspection Records

Inspection records are to record the following information at a minimum:

- Inspection Date.
- Status of rehabilitation including:
    - Extent of rehabilitated area.
    - Vegetation condition (where revegetation has occurred).
    - Weed coverage.
    - Future actions for upcoming period.
    - Any actions to rectify observed failures/areas for improvement.

The inspection record must include photographs of the rehabilitation areas taken at locations which are readily repeatable in subsequent inspections. This will enable ongoing condition assessment of rehabilitation to ensure milestone criteria are being achieved.

9.2.2 Soil Sampling

Soil samples are to be collected at representative locations where proposed seeding / planting is to occur at between 100 to 300 mm.

For all laboratory analysis, soil samples of approximately 250 – 500 grams in weight are to be placed into a sample bag immediately following collection (one bag per sample). All sample bags are to be marked with the following information:

- Unique sample ID.
- Site name.
- Date of sampling.
- Sample location.
- Sample depth.

Soil samples are to be packaged in an esky or small box along with a completed Chain of Custody / Sample Submission Form and be submitted to a Nata approved laboratory for the following analytical suite:

- Emerson class test.
- pH and EC (1:5 water).
- Available Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulphur
- Exchangeable Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity (CEC)
- Bray I and II Phosphorus
- Colwell Phosphorus
- Available Micronutrients Zinc, Manganese, Iron, Copper, Boron, Silicon
- Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio
- Basic Colour and Basic Texture.

Results are to be interpreted to identify what, if any, ameliorants are to be applied to support growth if the reference regional ecosystems (native ecosystem PMLU).

9.2.3 Contaminated Land Assessment

Where a contaminated land assessment is required, PGH are to engage the services of an SQP (contaminated land expert) to carry out sampling and reporting in accordance with:

- *AS 4482.1-2005 – Guide to the sampling and investigation of potentially contaminated soil. Part 1 – Non-volatile and Semi-volatile compounds (Standards Australia 2005a).*
- *AS 4482.2-2005 – Guide to the sampling and investigation of potentially contaminated soil. Part 2 – Volatile Compounds (Standards Australia 2005b).*

Analytical results are to be assessed by an SQP in accordance with the relevant investigation levels as prescribed under NEPM. The intent of the assessments is to ensure that the sites can be rehabilitated to a non-polluting state in accordance with the corresponding NEPM guideline values for the proposed PMLU, refer to **Section 6.8 - Contaminated Land Remediation**.

9.2.4 Geotechnical Assessments

PGH are to engage an SQP (geotechnical engineer or equivalent) as required to provide advice in relation to geotechnical stability. The method of assessment is to be determined by the SQP.

9.2.5 Erosion Assessment

Inspection of the final landform in relation to erosion is required, with no evidence of erosion classified as Moderate and Severe evident, as defined by **Table 50 – Erosion Classification Framework**.

Table 50 – Erosion Classification Framework

Erosion classification	Minor	Moderate	Severe
Sheet erosion	Shallow soil deposits downslope	Partial exposure of roots; moderate soil deposits downslope.	Loss of surface horizon; subsoil exposure; root exposure; substantial soil deposits downslope.
Rill	<15 rills/transect*	15-30 rills per transect*	>30 rills per transect*
Gully erosion	<0.3m deep	<0.3m deep	>0.3m deep
Tunnel erosion	Absent	Absent	Present
Mass movement	Absent	Absent	Present

Source: NCST (2009) Australian Soil and Land Survey Field Handbook, 3rd edition. The National Committee on Soil and Terrain. CSIRO Publishing, Collingwood, Australia.

*Transect 100 m across the contour (Source: Tongway, D. J. and Hindley, N. L. 2005. Landscape Function Analysis: Procedures for Monitoring and Assessing Landscapes. CSIRO Publishing, Canberra, Australia.

9.2.6 Water Quality Monitoring

With respect to surface water the following must be demonstrated prior to surrender:

a) Surface water quality must not exceed the limits specified in **Table 52 – Surface Water Quality Limits** within the two-year period immediately prior to surrender or the actions outlined in (b) or (c) apply for individual sample events that exceed a limit;
b) If the surface water quality exceeds criteria PRCP13a), the applicable upstream site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream site16.
c) Where the surface water quality at the downstream site exceeds the upstream site result (PRCP13(b)), an independent AQP must complete an assessment of the risk of rehabilitation not achieving a stable condition within the schedule timeframe and:
    - Where there is no risk to achieving a stable condition from the mining tenure (ML1102, ML4552, ML4604, ML4628, ML4629, ML4632, ML4639, ML4640, ML4643, ML4654, ML4706, ML4713, ML50028, ML50144, ML4622, ML50116, ML50117 and ML4583), then no further action is to be taken; or
    - Where there is a risk to achieving a stable condition, then an assessment of potential environment harm and any changes or rectification actions to rehabilitation activities must be determined and implemented.

Surface water monitoring locations are summarised below in **Table 51 – Surface water monitoring locations.**

Table 51 – Surface water monitoring locations

Site	Receiving waters location description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream monitoring locations			
Greenwood Village	Tributary of Six Mile Creek	-27.661	1452.832
Redbank Plains	Drainage line	-27.630	152.824
Downstream monitoring locations			
Oxley	Little Doris Creek	-27.573	152.97
Dinmore	Drainage line north west corner of site	-27.5997	152.837
Greenwood Village	Tributary of Six Mile Creek	-27.651	152.838

[16] For pH, the quality result measured at the downstream location must be within the prescribed range. However, where pH at the downstream location is greater-than (>) the highest limit in the range, the pH at the applicable upstream location must be greater-than or equal-to (≥) the downstream location. Conversely, where pH at the downstream location is less than (<) the lowest limit in the range, the upstream pH at the applicable upstream location must be less-than or equal-to (≤) the downstream location.

Site	Receiving waters location description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Redbank Plains	Drainage line north east corner of ML4583/ML50117	-27.630	152.828
Redbank Plains	Drainage line west of ML50116	-27.626	152.834
Redbank Plains	Drainage line east of ML50116	-27.621	152.836

Table 52 – Surface Water Quality Limits

Quality Characteristic	Limit	Comment
pH	6.5 – 8.0	WQO
Electrical conductivity (µS/cm) – Oxley	Low flow – 380 High flow – 310	Lower Oxley Creek Fresh Waters,
Electrical conductivity (µS/cm) – Greenwood Village and Redbank Plains	Low flow – 380 High flow – 290	Six Mile Creek lowland freshwaters – moderately disturbed
Electrical conductivity (µS/cm) - Dinmore	Low flow – 1500 High flow – 600	Lower Bremer River Fresh Waters Section 2 - lowland fresh waters
Turbidity (NTU) - Dinmore	Low flow – 5 Hogh flow – 14	Lower Bremer River Fresh Waters Section 2 - lowland fresh waters
Turbidity (NTU) – Oxley	Low flow – 6 High flow – 11	Lower Oxley Creek Fresh Waters - lowland fresh waters
Turbidity (NTU) – Greenwood Village and Redbank Plains	Low flow – 11 High flow – 14	Upper and Lower Six Mile Creek - lowland fresh waters
Dissolved Oxygen (% sat)	85-110	WQO
Arsenic - dissolved (µg/L)*	13	ANZG 2018
Cadmium - dissolved (µg/L)*	0.2	ANZG 2018
Chromium - dissolved (µg/L)*	1	ANZG 2018
Copper - dissolved (µg/L)*	1.4	ANZG 2018
Lead- dissolved (µg/L)*	3.4	ANZG 2018
Mercury- dissolved (µg/L)*	0.06	ANZG 2018
Nickel - dissolved (µg/L)*	11	ANZG 2018
Zinc - dissolved (µg/L)*	8	ANZG 2018
Total recoverable hydrocarbons (C6-C9) (µg/L)*	20	
Total recoverable hydrocarbons (C10-C36) (µg/L)*	100	
Major ions (mg/L) Calcium, chloride, potassium, magnesium, sodium, bicarbonate, carbonate	For interpretation purposes only	

Notes:

- *Metals, metalloids and hydrocarbons apply to Oxley site only
- All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample) and total (unfiltered).
- Limits for metals and metalloids apply to dissolved results.
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Oxley Creek Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.des.qld.gov.au/__data/assets/pdf_file/0030/273639/oxley-creek-ev-wqo.pdf
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Sandy, Six Mile, Wolston, Woogaroo, and Goodna Creeks Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.desi.qld.gov.au/__data/assets/pdf_file/0026/273644/sandy-six-mile-wolston-woogaroo-goodna-creeks-ev-wqo.pdf
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Bremer River Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.des.qld.gov.au/__data/assets/pdf_file/0024/273624/bremer-river-ev-wqo.pdf

9.3 Contingency Measures

The necessary contingency measures will be dictated by the results of ongoing monitoring. The contingency measures which may be required is included in **Table 49 – Monitoring and Maintenance Program** and are summarised below. These will be adapted as necessary based on the findings of the ongoing monitoring:

- Any residual infrastructure identified through the final inspection which is not the subject of a landowner agreement is to be removed.
- Where validation testing indicates that contaminated soils require additional treatment to achieve the relevant NEPM standards, a SQP is to be engaged to determine further treatments and to carry out additional validation testing following any further treatment.
- Reprofiling of final batters as required to achieve nominated angles.
- Reprofiling of final landform is recommended by a SQP (engineer).
- Reprofiling / resurfacing of erosion areas and further stabilisation with vegetation.
- Further revegetation as required where species composition or density does not achieve the applicable regional ecosystem.
- Additional works if recommended by an SQP (engineer).
- If monitoring determines insufficient volumes are available, additional topsoil is to be imported.
- Remedial action in accordance with SQP recommendations.

9.4 Risk Register

PGH must maintain a risk register that identifies the risks to not achieving a stable condition for post-mining land uses, and how the risks are being managed or minimised. The risk register must be reviewed annually and include consideration of the outcomes of PRCP monitoring data.

9.5 PRCP Auditing

Pursuant to section 285 of the EP Act:

- the holder of a PRCP schedule must commission an audit of the schedule by a rehabilitation auditor for the following periods (each an audit period):
  a) the 3-year period starting on the day the schedule takes effect
  b) each 3-year period starting on the day after the previous audit period ended.

- the holder must, within 4 months after the end of each audit period, give the administering authority
  a) the rehabilitation auditor's report (an audit report) about the audit that complies with section 286 of the EP Act, and
  b) a declaration for the audit report that complies with section 285 of the EP Act.

9.6 Annual Return

Pursuant to section 316J(3) of the EP Act, an evaluation must be provided with each annual return which includes details on:

- Actions taken in relation to each rehabilitation milestone or management milestone under the schedule.
- The environmental management carried out under the schedule.
- Whether any milestones to be completed under the PRCP Schedule during the year have been met.
- Whether the conditions imposed on the PRCP Schedule have been complied with.

Spatial information must be submitted with the annual return which identifies the location of rehabilitation areas.

10 Risk Assessment

10.1 Risk Assessment Purpose

The purpose of this risk assessment is to satisfy the requirements of Section 126C(1)(f) of the EP Act by identifying the potential risks of a stable condition for the land not being achieved, and how these risks will be managed or minimised.

10.2 Risk Assessment Methodology

This risk assessment methodology has been adopted from the process for risk management as set out in Clause 6 of the *AS ISO 31000:2018 Risk management - Guidelines* (Standards Australia 2018). The risk assessment follows the following process:

- Risk Identification (source activity and potential impact).
- Risk Analysis (risk level = likelihood x consequence).
- Risk Evaluation (commentary on risk / management measures proposed).

The risk treatment outlines the controls / management measures that can be implemented to reduce the level of risk to as low as reasonably possible.

The risk analysis qualitatively estimates the level of risk based on the likelihood of an environmental impact or event occurring (**Table 53 – Definitions of Likelihood**), and the consequences of the occurrence (**Table 54 – Definitions of Consequence**).

Table 53 – Definitions of Likelihood

Rating	Descriptor	Score
Rare	May occur only in exceptional circumstances	1
Unlikely	Could occur but doubtful	2
Possible	Might occur at some time in the future	3
Likely	Will probably occur	4
Almost Certain	Is expected to occur in most circumstances	5

Table 54 – Definitions of Consequence

Rating	Descriptor	Score
Negligible	Impacts not requiring any treatment or management action	1
Minor	Nuisance or insignificant environmental harm requiring minor management action	2
Moderate	Serious environmental impacts, readily manageable at low cost	3

Rating	Descriptor	Score
Major	Substantial environmental impacts, manageable but at considerable cost and some disruption	4
Severe	Severe environmental impacts with major consequent disruption and heavy cost	5

The consequence and likelihood scores are plotted on the risk vs consequence matrix (**Table 55 – Risk Assessment Matrix**) and the final risk level assigned is a product of the likelihood and consequence scores, which equals the magnitude of the impacts. The higher the risk score, the higher the priority is for management.

Table 55 – Risk Assessment Matrix

Likelihood		Consequence				
		Negligible	**Minor**	**Moderate**	**Major**	**Severe**
		1	**2**	**3**	**4**	**5**
Almost Certain	**5**	5 Medium	10 High	15 High	20 Very High	25 Very High
Likely	**4**	4 Low	8 Medium	12 High	16 High	20 Very High
Possible	**3**	3 Low	6 Medium	9 Medium	12 High	15 High
Unlikely	**2**	2 Low	4 Low	6 Medium	8 Medium	10 High
Rare	**1**	1 Low	2 Low	3 Low	4 Low	5 Medium

Table 56 – Indicative Management Option for Each Risk Assessment Rating describes the possible actions required for each risk assessment rating.

Table 56 – Indicative Management Option for Each Risk Assessment Rating

Risk Rating	Risk Rating Scores	Indicative Management Option
Very High	**17 – 25**	Manage by implementing site management and emergency procedures, plant design controls and regular monitoring.

Risk Rating	Risk Rating Scores	Indicative Management Option
High	**10 – 16**	Manage by implementing site management procedures, specific monitoring and may require some operation/plant design controls.
Medium	**5 – 9**	Manage by implementing specific monitoring or response procedures.
Low	**1 – 4**	Manage by routine procedures, unlikely to need specific application of resources.

10.3 Credible Risk Events and Assessment

Under the EP Act residual risks are either or both of the following:

- The risk that, although the land has been rehabilitated and appropriately managed, remedial action will need to be carried out in relation to the land in the foreseeable future.
- The risk that ongoing management activities will need to be carried out in relation to the land, including:
- monitoring the condition of the land or site features of the land; and,
- taking action to prevent or minimise environmental harm caused by the land or site features of the land.

For the purpose this PRCP, credible risk events have been selected based on the reasonable likelihood that that they may occur in future with a known consequence. The likelihood and consequence of each credible risk event has then been qualified to determine the level of residual risk. The outcomes of this assessment are presented in **Table 57 – Assessment of Residual Risk**. Reporting and monitoring requirements for risk treatments are summarised in **Section 10 – Monitoring and Maintenance Program**.

Where disturbed land is to remain at the point of surrender and is transferred to the jurisdiction of Council under prevailing development permits, environmental risks will be regulated under conditions of the planning approval (e.g., conditions of the operational works approvals). This is solution which is accepted by the Department. In this scenario, risks outlined in **Table 57 – Assessment of Residual Risk** would cease to apply to the mining activities at the point a site becomes civil works authorised under operational works, and therefore the credible risks would not be applicable in such a scenario.

Table 57 – Assessment of Residual Risk

Source Activity	Credible Risk Event	Control / Treatment	Responsibility	Resource Requirements	Timing of Treatment	Residual Risk Rating
Remediation of contaminated land	Failure to adequately treat and / or manage land contaminated by site activities.	• Engage a SQP to provide management responses for contaminated land as required. • Where contamination is identified, achieve relevant HIL guideline values for commercial / industrial purposes. • If necessary, treatment of the contaminated soils through methods such as land-farming and offsite disposal of affected soils.	PGH.	Application of financial resources by PGH and technical resources by their selected contractors.	At completion of mining.	2 x 2 = 4 (**Low**)
Final Landform	Exposed soils resulting in potential impacts to water quality as a result of erosion and sediment loss.	• Reduce disturbed catchment areas through installation of erosion and sediment controls and stabilisation with a groundcover (≥70 % cover) • Native Ecosystem PMLUs only - revegetate via seeding with suitable native species. • Industrial PMLUs - stabilise the landform in readiness for redevelopment to an industrial PMLU (can be achieved through temporary cover crop or erosion and sediment controls suitable for construction sites).	PGH.	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	Progressively as areas become available and/or at final rehabilitation.	2 x 2 = 4 (**Low**)
	Final landform geotechnical instability.	<u>Industrial PMLUs</u> • Rehabilitation via bulk earthworks to complete filling and reprofiling of the landform. • Batter slopes as per engineered designs or a maximum of 20 - 26 º with a factor of safety of not less than 1.5 which is expected to ensure long term stability. • All bulk earthworks are to be quality controlled in accordance the requirements of *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007). • Geotechnical reports to be prepared to verify the stability. • Where planning approvals are not in place, rehabilitation to a safe, stable and non-polluting landform. <u>Native Ecosystem PMLUs</u> • Slopes to be battered to achieve a maximum angle of friction of 27º (where filling is required). • Groundcover achieves ≥70 % cover. • Quality control in accordance with *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007) (only if directed to do so by a suitably qualified person to implement Rural Residential PMLU at Redland Bay). • Geotechnical reports to be prepared to verify the stability.	PGH and selected contractors.	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	Progressively as areas become available and/or at final rehabilitation.	2 x 2 = 4 (**Low**)

Source Activity	Credible Risk Event	Control / Treatment	Responsibility	Resource Requirements	Timing of Treatment	Residual Risk Rating
	Subsidence and sinkhole activity along tunnel entry lines and mine shafts	• Backfill any tunnel entries under supervision of an SQP. • Ensure tunnel entries and mine shafts are made stable with no subsidence. • Maintain level profiles of ground surface above mine shafts and tunnels. • Reduce potential disturbance of overlaying backfill material through the installation of erosion and sediment controls and stabilisation with a groundcover (≥70 % cover)	PGH and Selected Contractors.	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	Continuous until handover of land.	2 x 2 = 4 (**Low**)
Revegetation	Prolonged drought impacting upon groundcover success.	• Where required, increase watering regime to increase success. • Carry out follow-up monitoring and maintenance until plants are self-sustaining.	PGH.	Application of financial resources and technical resources by PGH.	As required in response to weather events.	2 x 2 (**Low**)
	Infestation / spread of environmental weeds or declared weeds in the rehabilitated areas.	• Weed control to be undertaken on an as needs basis (note -future long term weed control will be responsibility of the landowner).	PGH.	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	Continuous until handover of land.	2 x 2 (**Low**)
	Soil erosion resulting in the failure of plant establishment over eroded surfaces.	• Establish adequate plant cover / groundcover to reduce wind erosion, increase organic matter in surface soils through leaf litter fall, increase soil moisture retention and soil stability.	PGH.	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	Progressively as areas become available and/or at final rehabilitation.	2 x 2 (**Low**)
Flood risks associated with Oxley rehabilitation	Impacts to final landform.	• Landform implemented in accordance with recommendations of flood modelling (refer **Section 6.3 – Flooding**). • Maintain pre-existing landform in the minor mapped flood affected areas. • All bulk earthworks are to be quality controlled in accordance the requirements of *AS 3798-2007 Guidelines on earthworks for commercial and residential developments* (Standards Australia 2007). • Geotechnical reports to be prepared to verify the stability.	PGH	Application of financial resources by PGH and technical resources by PGH and/or their selected contractors.	At final rehabilitation.	2 x 2 = 4 (**Low**)
Infrastructure	Failure to decommission infrastructure.	• Where the landowner has not agreed to retention of infrastructure, the infrastructure must be removed, and the underlying area rehabilitated by ripping and direct seeding.	PGH.	Application of financial and technical resources by PGH.	At cessation of operations.	2 x 2 = 4 (**Low**)

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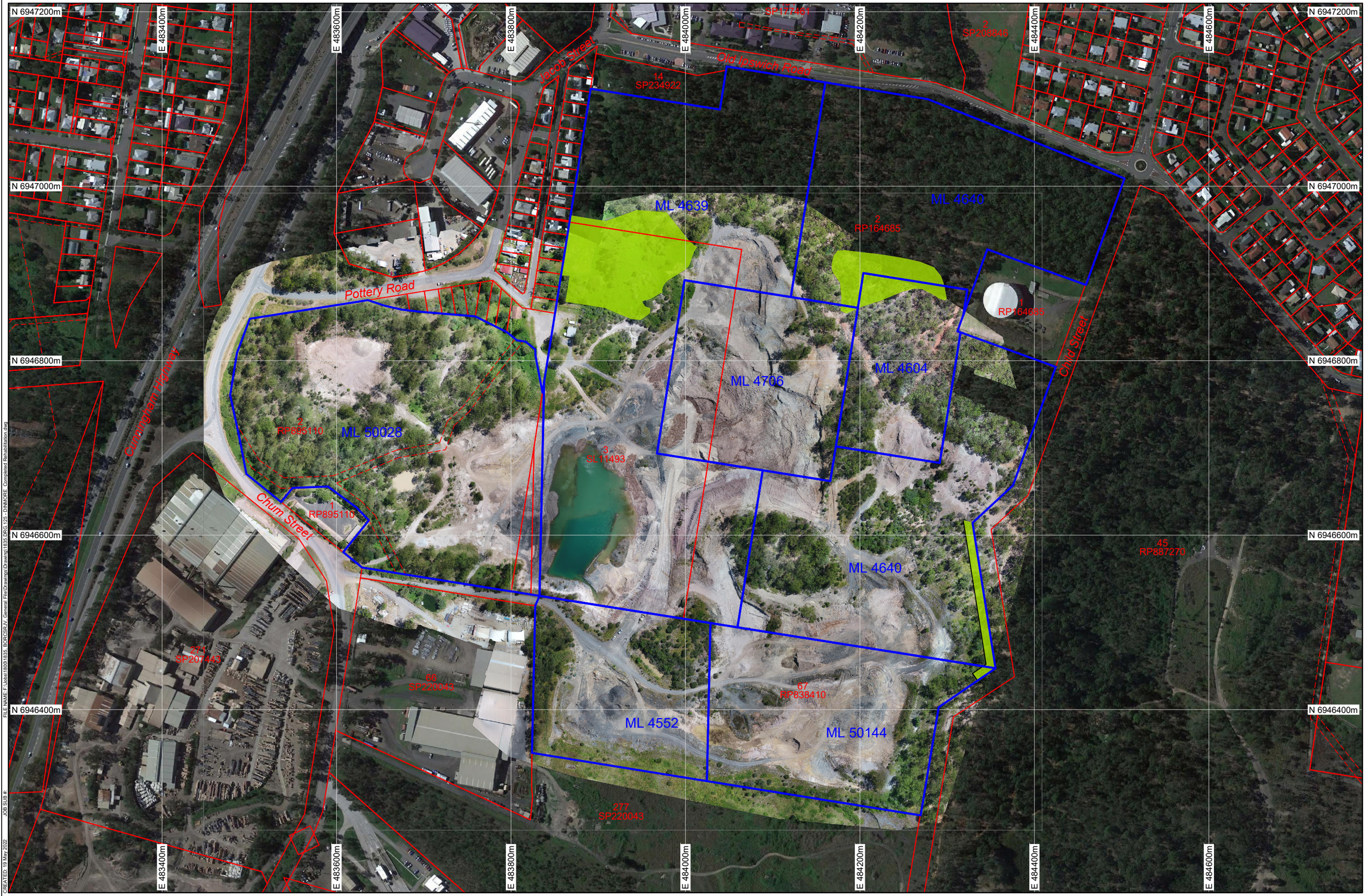
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REFERENCE MAPS



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JOB SUB #
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Data Sources:
Photography: Taylor Mining Services Pty Ltd - UAV Survey 16 February 2022
Topography:
Cadastre: QLD Spatial Catalogue, Ipswich DCDB Extract 2019-May-08
Ecosystem:
Other:

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Completed / Undergoing Rehabilitation

PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Completed Rehabilitation - Dinmore

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JOB SUB #
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Data Sources:
Photography: Nearmap Image_Captured 2022-02-09
Topography:
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Ecosystem:
Other:

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Completed / Undergoing Rehabilitation

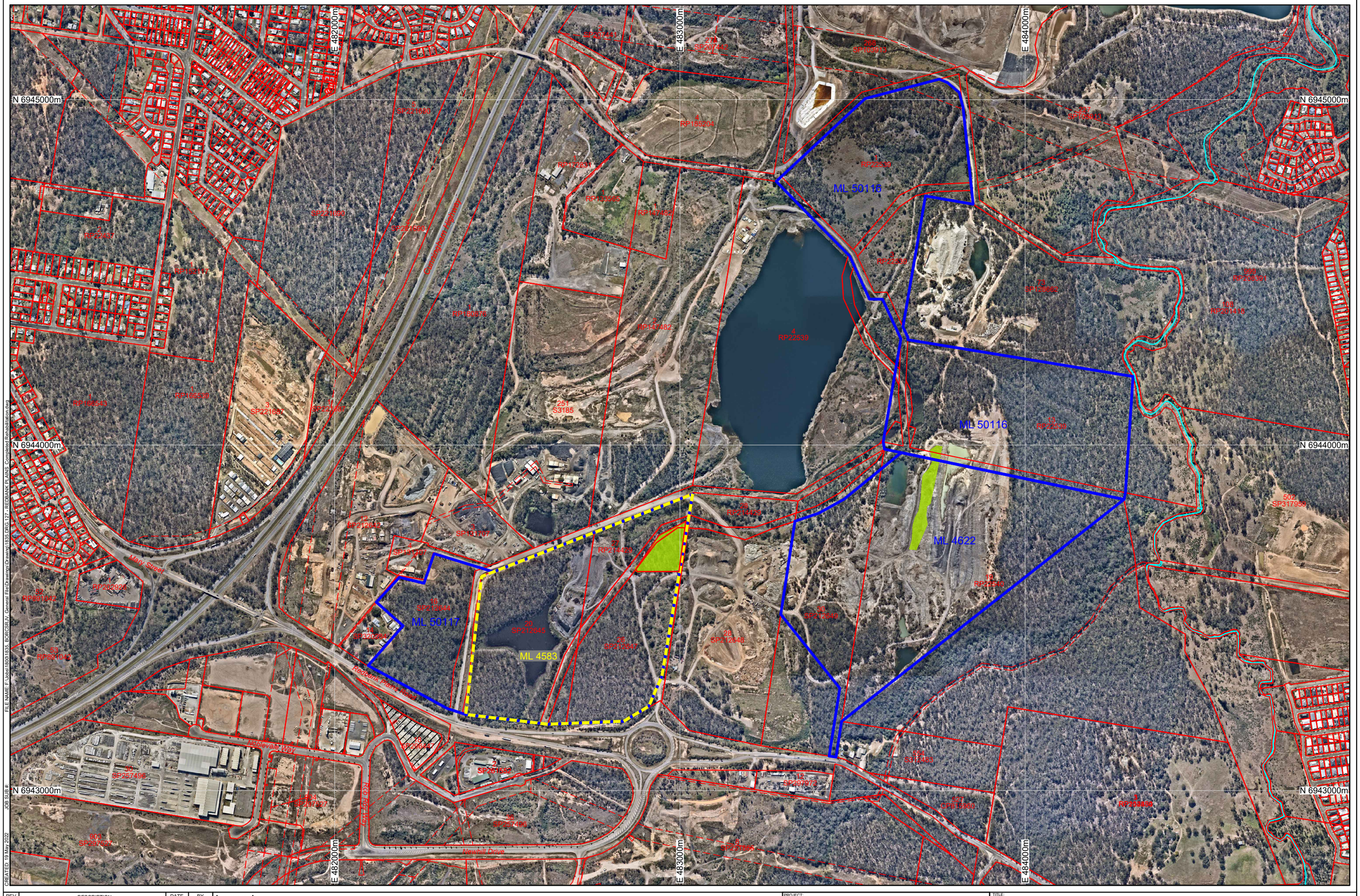
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JOB SUB #
CREATED: 19 May 2022

REV	DESCRIPTION	DATE	BY

Data Sources:
Photography: Nearmap Image_Captured 2021-08-27
Topography:
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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Completed / Undergoing Rehabilitation

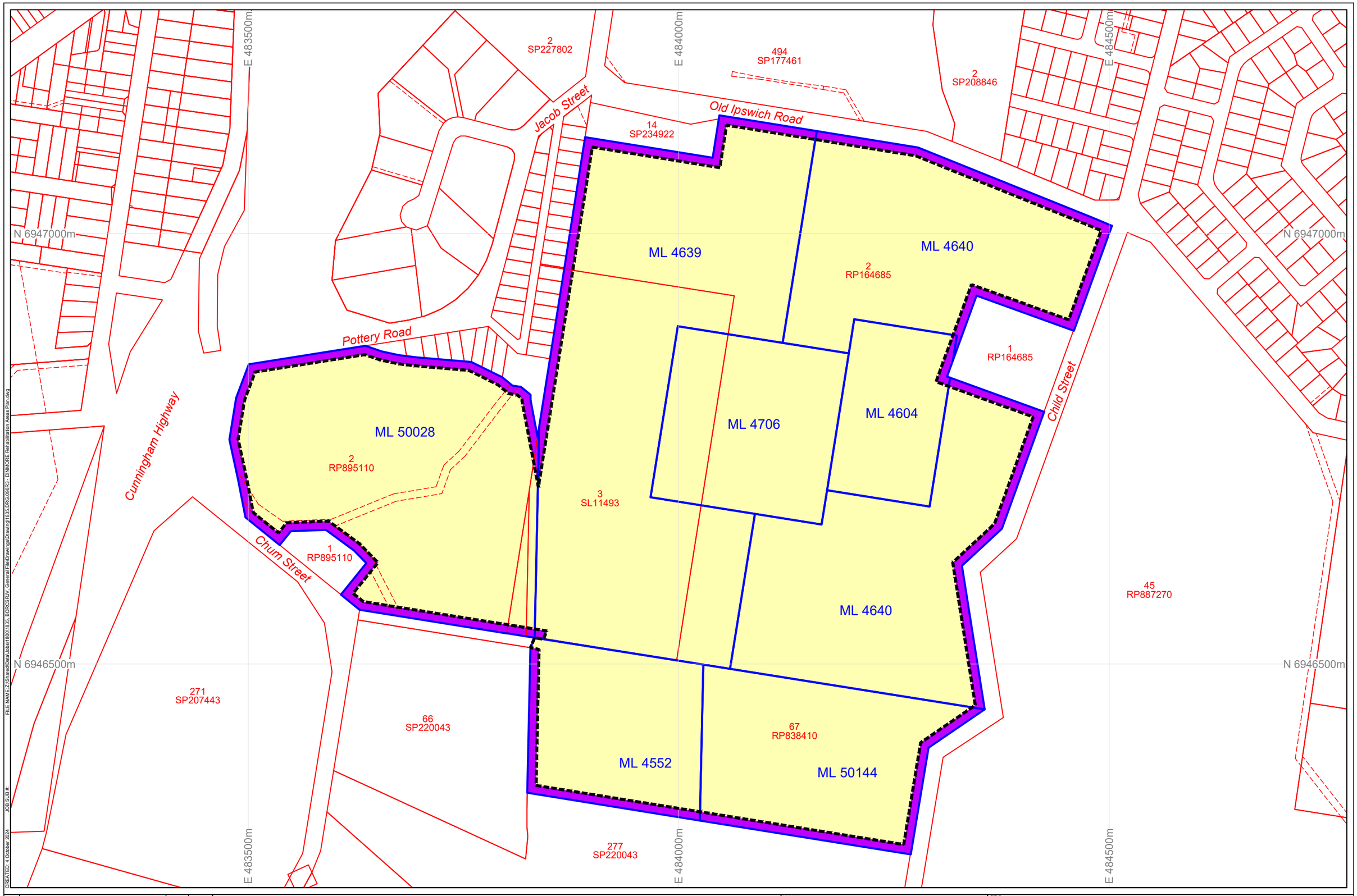
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JOB SUB #
CREATED: 4 October 2024

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2	Maximum Disturbance Footprint added	28/07/22	MR
3	Domain name changed	04/10/24	GL

Data Sources:
Photography:
Topography:
Cadastre: QLD Spatial Catalogue, Ipswich DCDB Extract 2019-May-08
Ecosystem:
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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Maximum Disturbance Footprint
- Industrial
- Non-mining Area

PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Dinmore Final Site Design

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DRAWN: Geoff.long
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CHECKED: OE
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MGA / / 56

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Maximum Disturbance Footprint
- Industrial
- Buffer
- Non-mining Area

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JOB SUB #:
CREATED: 10 October 2024

REV	DESCRIPTION	DATE	BY
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2	Maximum Disturbance Footprint added	28/07/22	MR
3	Changes to domains	10/10/24	GL

Data Sources:
Photography:
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Cadastre: QLD Spatial Catalogue, Ipswich DCDB Extract 2019-May-08
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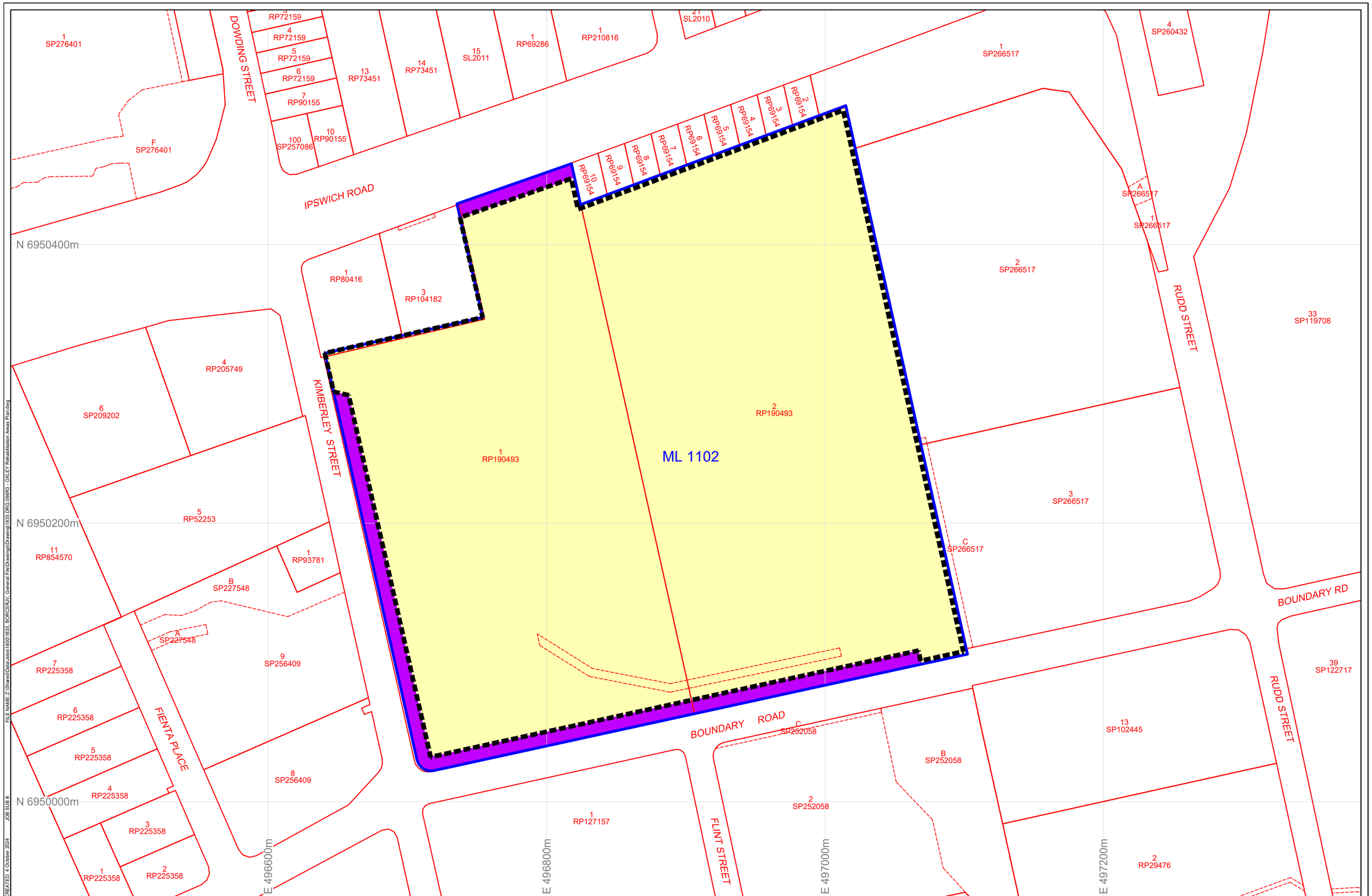
PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Greenwood Village Final Site Design

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2	Maximum Disturbance Footprint added	28/07/22	MR
3	Domain name changed	04/10/24	GL

Data Sources:
Photography: © Google 2020, Captured 2017-10-27
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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Maximum Disturbance Footprint
- Industrial
- Non-mining Area

PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Oxley Final Site Design

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DATUM: HORIZONTAL / VERTICAL / ZONE
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JOB SUB #
CREATED: 10 October 2024

REV	DESCRIPTION	DATE	BY
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5	Maximum Disturbance Footprint revised	26/07/24	GL
6	Domain name changed	04/10/24	GL

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Photography:
Topography:
Cadastre: QLD Spatial Catalogue, Ipswich City DCDB Extract_2020-11-01 (publication)
Ecosystem:
Other:

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Legend:

- Mining Lease Boundary
- Mining Lease Boundary (Underground tenure)
- Cadastral Boundary
- Easement Boundary
- Industrial
- Buffer
- Non-mining Area
- Maximum Disturbance Footprint

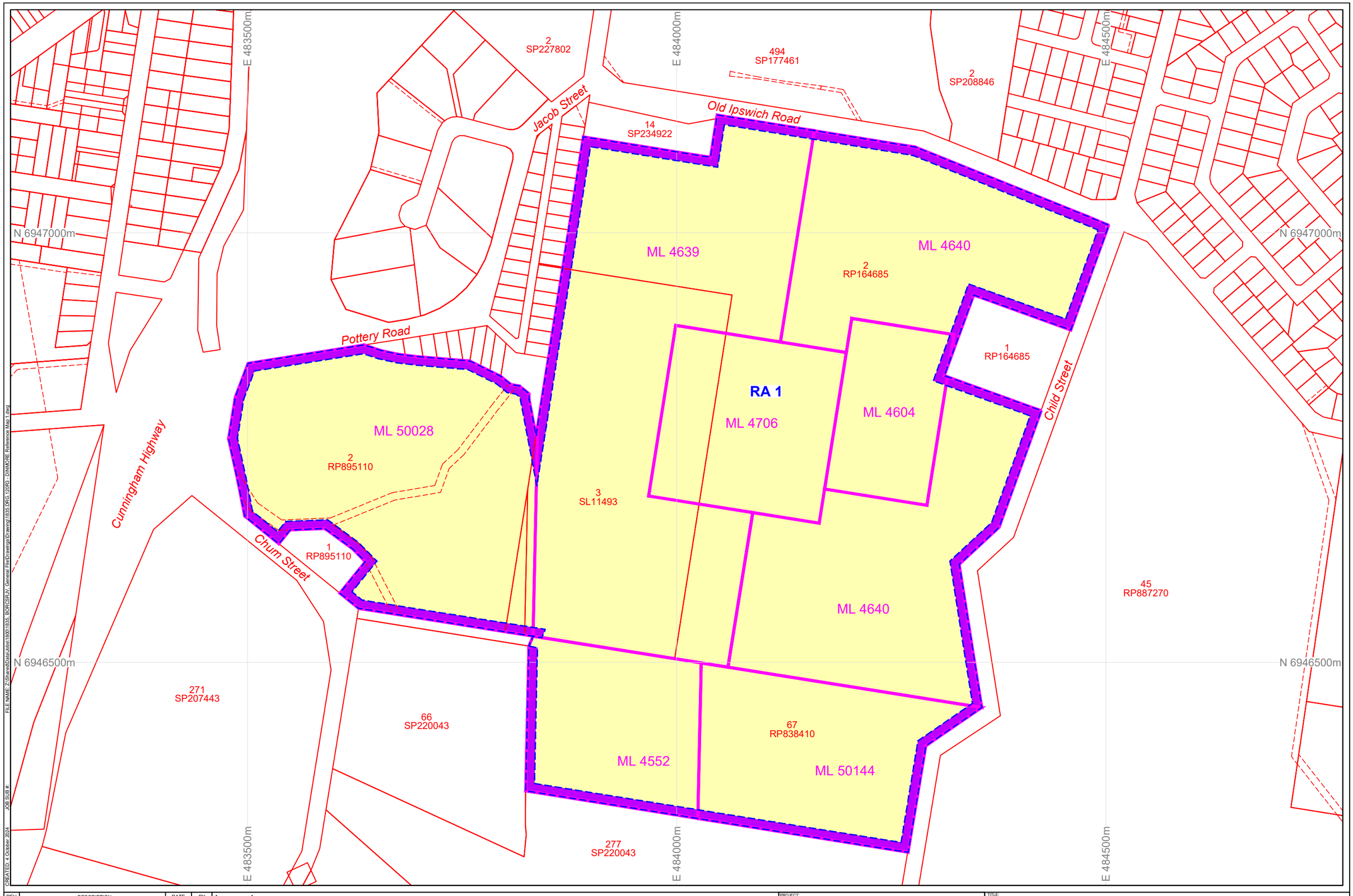
PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Redbank Plains Final Site Design

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JOB SUB #

CREATED: 4 October 2024

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2	Amendments to rehabilitation numbering	25/07/2024	GL
3	Domain name changed	04/10/2024	GL

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Ecosystem:
Other:

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Legend:

- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Rehabilitation Area
- Industrial
- Non-mining Area

PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Reference Map 1 - Dinmore

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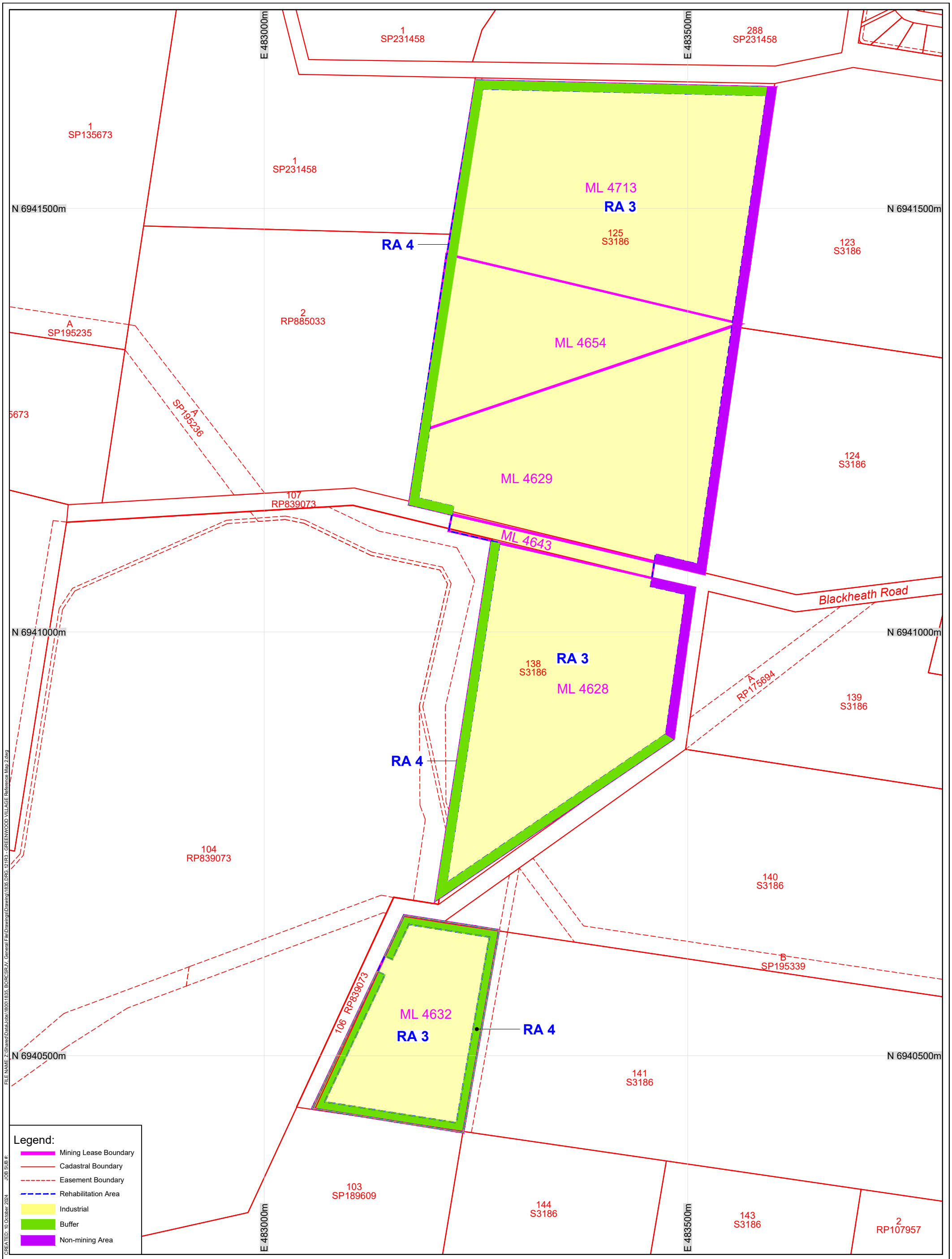
SCALE: 1:4,000 When Printed On A3 — 0 — 80m

DRAWING NUMBER: 1835.DRG.120 REVISION: 3

DATE: 4 October 2024 DRAWN: Geoff.long

PRINTED: 4 October 2024 CHECKED: OE

DATUM: HORIZONTAL / VERTICAL / ZONE MGA / / 56



FILE NAME: Z:\Shared Data\Jobs\1800\1835.BORCSR.JV_General Files\Drawings\Drawing\1838.DRG.121R3 - GREENWOOD VILLAGE Reference Map 2.dwg
JOB SUB #:
CREATED: 10 October 2024

REV	DESCRIPTION	DATE	BY
1	Notes/annotations revised	01/08/2022	MR
2	Amendments to rehabilitation numbering	25/07/2024	GL
3	Changes to domains	10/10/2024	GL

Data Sources:
Photography:
Topography:
Cadastre: QLD Spatial Catalogue, Ipswich DCDB Extract 2019-May-08
Ecosystem:
Other:

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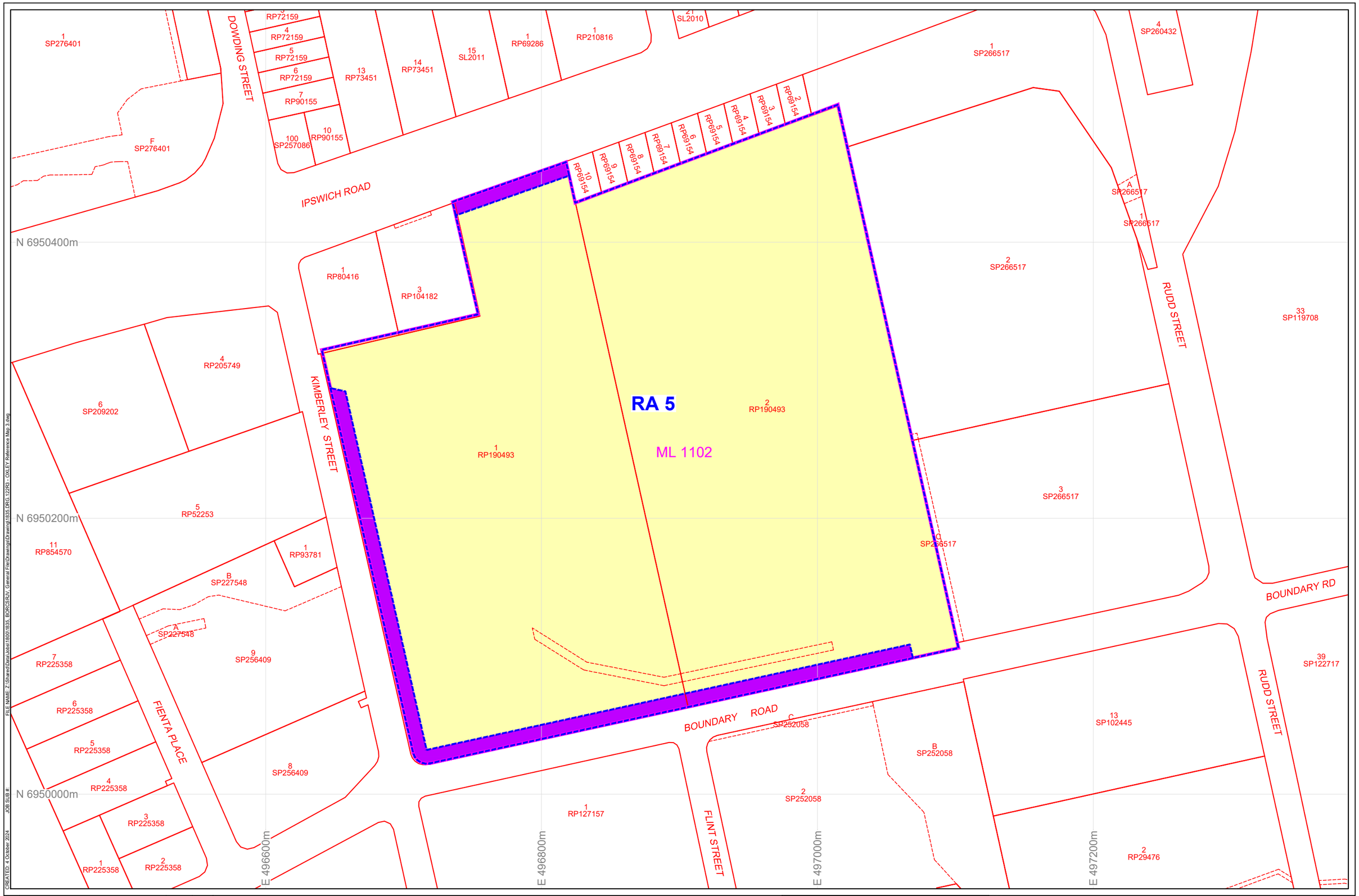
PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Reference Map 2 - Greenwood Village

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PH: +61 7 3871 0411
WWW.GROUNDWORK.COM.AU

SCALE: 1:4,000 When Printed On A3	0 80m	DRAWING NUMBER: 1835.DRG.121	REVISION: 3
DATE: 10 October 2024	DRAWN: GEOFF.LONG	DATUM: HORIZONTAL / VERTICAL / ZONE	
PRINTED: 10 October 2024	CHECKED: OE	MGA / / 56	



FILE NAME: Z:\Shared\Data Jobs\1800\1835, BORCS\RJV, General File\Drawings\Drawing\1835.DRG 122R3 - OXLEY Reference Map 3.dwg
JOB SUB #
CREATED: 4 October 2024

REV	DESCRIPTION	DATE	BY
1	Notes/annotations revised	01/08/2022	MR
2	Amendment to rehabilitation numbering	25/07/2024	GL
3	Domain name changed	04/10/2024	GL

Data Sources:
Photography: © Google 2020, Captured 2017-10-27
Topography:
Cadastre: © The State of Queensland (DNRME) 2019
Ecosystem:
Other:

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Rehabilitation Area
- Industrial
- Non-mining Area

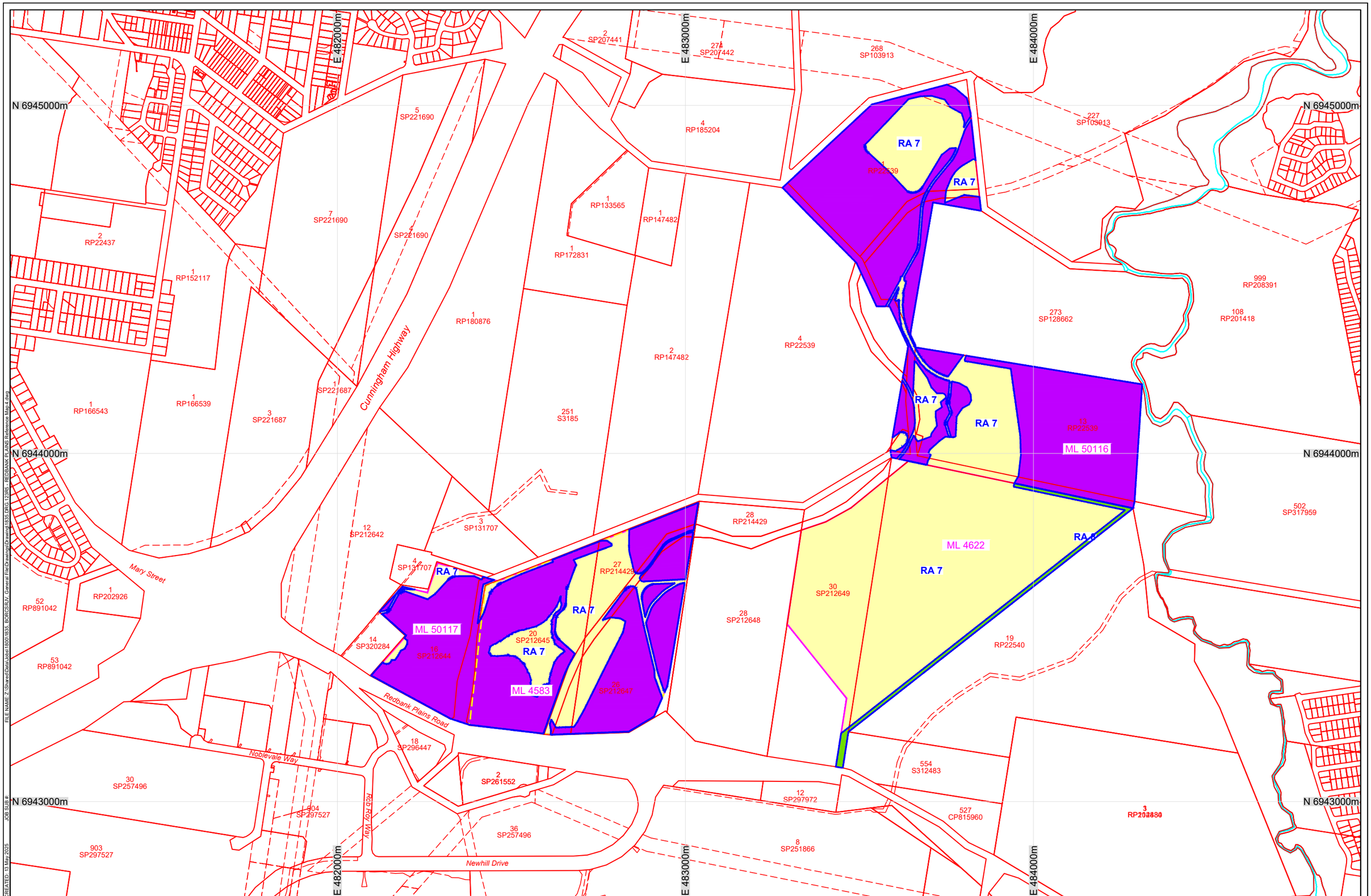
PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Reference Map 3 - Oxley

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PH: +61 7 3871 0411
WWW.GROUNDWORK.COM.AU

SCALE: 1:2,500 When Printed On A3 — 0 50m
DRAWING NUMBER: 1835.DRG.122
REVISION: 3
DATE: 9 October 2024 DRAWN: GEOFF.LONG
PRINTED: 9 October 2024 CHECKED: OE
DATUM: HORIZONTAL / VERTICAL / ZONE: MGA / / 56



REV	DESCRIPTION	DATE	BY
3	Disturbance Footprint revised & amendment to rehabilitation numbering	25/07/2024	GL
4	Domain name changed	09/10/2024	GL
5	Disturbance footprint revised	13/05/2025	GL

Data Sources:
Photography:
Topography:
Cadastre: QLD Spatial Catalogue, Ipswich City DCDB Extract_2020-11-01 (publication)
Ecosystem:
Other:

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Legend:

- Mining Lease Boundary
- Mining Lease Boundary (Underground tenure)
- Cadastral Boundary
- Easement Boundary
- Industrial
- Buffer
- Non-mining Area
- Rehabilitation Area

PROJECT: Progressive Rehabilitation and Closure Plan

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Reference Map 4 - Redbank Plains

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SCALE: 1:10,000 When Printed On A3 — 0 — 200m
DRAWING NUMBER: 1835.DRG.123
REVISION: 5
DATE: 13 May 2025
DRAWN: Geoff.long
PRINTED: 13 May 2025
CHECKED: OE
DATUM: HORIZONTAL / VERTICAL / ZONE
MGA / / 56

FILE NAME: Z:\Shared\Data\Jobs\1800\1835. BORCS\RJV General File\Drawings\Drawing\1835.DRG.123.dwg
JOB SUB #
CREATED: 13 May 2025



FILE NAME:F:\Jobs\1800\1835_BORC\SRJV_General File\Drawings\Drawing\1835.DRG.139 - GREENWOOD VILLAGE - Concept Rehabilitation Plan.dwg
CREATED: 14 November 2023 JOB SUB #:

REV	DESCRIPTION	DATE	BY

Data Sources:
Photography: 2023-08-10 UAV (Client Supplied)
Topography: 2023-08-10 UAV (Client Supplied)
Cadastre: © The State of Queensland (Department of Resources), 2020
Ecosystem:
Other: © 2023 Nearmap, 2022-06-10

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Rehabilitated Landform

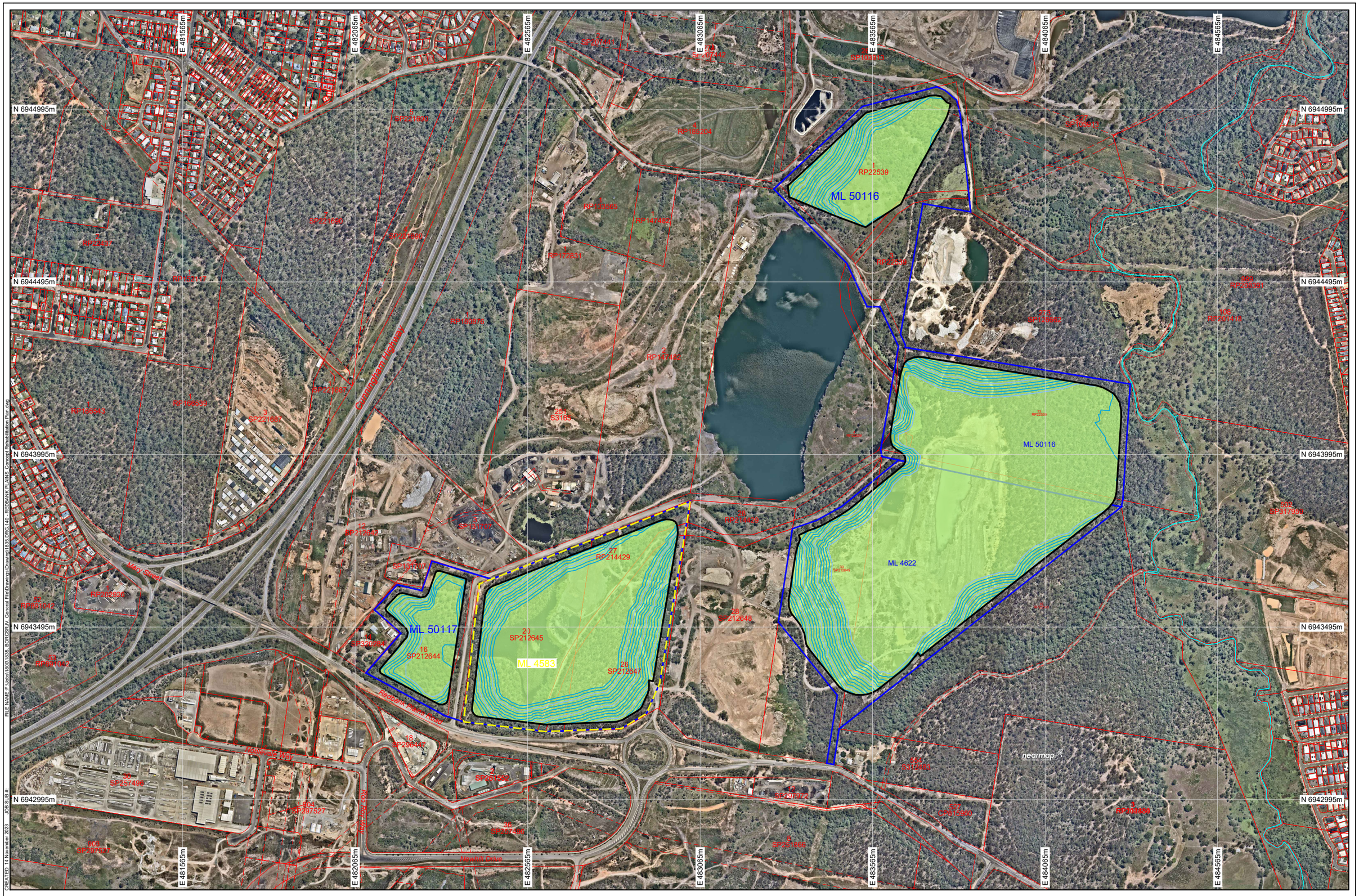
PROJECT: Greenwood Village

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Concept Rehabilitation Plan

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SCALE: 1:4,000 When Printed On A3 — 0 — 80m
DRAWING NUMBER: 1835.DRG.139
REVISION:
DATE: 14 November 2023
DRAWN: MR
DATUM: HORIZONTAL / VERTICAL / ZONE
PRINTED: 14 November 2023
CHECKED: RH
GDA94 / MGA / / 56



FILE NAME: P:\Jobs\1800s\1835_BORGSR\JV_General File\Drawings\Drawings\1835.DRG.140 - REDBANK PLAINS Concept Rehabilitation Plan.dwg
JOB SUB #:
CREATED: 14 November 2023

REV	DESCRIPTION	DATE	BY

Data Sources:
Photography: © 2023 Nearmap, 2023-02-11
Topography: 2023-08-10 UAV (Client Supplied)
Cadastre: © The State of Queensland (Department of Resources), 2020
Ecosystem:
Other:

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Rehabilitated Landform

PROJECT: REDBANK PLAINS

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Concept Rehabilitation Plan

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SCALE:	1:10.000 When Printed On A3 (0 – 200m)	DRAWING NUMBER:	1835.DRG.140
DATE:	14 November 2023	DRAWN:	Jvivash
PRINTED:	14 November 2023	CHECKED:	RH
REVISION:		DATUM:	HORIZONTAL / VERTICAL / ZONE
			GDA94 / MGA / AHD / 56



FILE NAME: F:\Jobs\1800s\1835_BORC\SR\JV_General File\Drawings\Drawings\1835.DRG.141 - DINMORE Concept Rehabilitation Plan.dwg
JOB SUB #
CREATED: 14 November 2023

REV	DESCRIPTION	DATE	BY

Data Sources:
Photography: © 2023 Nearmap, Captured 2023-09-09
Topography: 2023-08-11 UAV (Client Supplied)
Cadastre: © The State of Queensland (Department of Resources), 2020
Ecosystem:
Other:

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Legend:
- Mining Lease Boundary
- Cadastral Boundary
- Easement Boundary
- Rehabilitated Landform

PROJECT: DINMORE

CLIENT: PGH Bricks & Pavers Pty Limited

TITLE: Concept Rehabilitation Plan

GROUNDWORK plus
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WWW.GROUNDWORK.COM.AU

SCALE: 1:6,000 When Printed On A3 — 0 — 120m
DRAWING NUMBER: 1835.DRG.141
REVISION:
DATE: 14 November 2023 DRAWN: MR
PRINTED: 14 November 2023 CHECKED: RH
DATUM: HORIZONTAL / VERTICAL / ZONE
GDA94 / MGA / / 56

ATTACHMENTS

GROUNDWORK plus

Attachment 1

ASIC Historical Details for ABN 68 168 794 821

Australian Government
Australian Business Register

ABN Lookup

Historical details for ABN 68 168 794 821

ABN details

Entity name	From	To
PGH BRICKS & PAVERS PTY LIMITED	05 Nov 2016	(current)
BORAL CSR BRICKS PTY LIMITED	05 Feb 2015	05 Nov 2016
CSR DJD PTY LIMITED	28 Mar 2014	05 Feb 2015

ABN Status	From	To
Active	28 Mar 2014	(current)

Entity type

Australian Private Company

Good & Services Tax (GST)	From	To
Registered	28 Mar 2014	(current)

Main business location	From	To
NSW 2113	31 May 2016	(current)
NSW 2113	28 Mar 2014	31 May 2016

Business name(s)

Business name	From	To
PGH Bricks and Pavers	03 Nov 2016	(current)
PGH Bricks and Pavers	03 Nov 2016	(current)
P G H CLAY BRICKS & PAVERS	15 Jun 2015	25 Oct 2018
PGH BRICKS	15 Jun 2015	25 Oct 2018
PGH BRICKS AND PAVERS	15 Jun 2015	25 Oct 2018
pgh nsw	15 Jun 2015	25 Oct 2018

ASIC registration - ACN or ARBN

168 794 821 View record on the ASIC website

Deductible gift recipient status

Not entitled to receive tax deductible gifts

Disclaimer
The Registrar makes every reasonable effort to maintain current and accurate information on this site. The Commissioner of Taxation advises that if you use ABN Lookup for information about another entity for taxation purposes and that information turns out to be incorrect, in certain circumstances you will be protected from liability. For more information see disclaimer

Attachment 2

Dinmore Area Bore Reports

Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
194827	Sub-Artesian Facility	Existing		Brisbane	3960 - IPSWICH C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	BH06		
Driller Name			
Drill Company			
Const Method			
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date		**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-36-31	**Basin**	1430
Longitude	152-50-00	**Sub-area**	
GIS Latitude	-27.6085611005	**Lot**	268
GIS Longitude	152.8332921309	**Plan**	SP103913
Easting	483550		
Northing	6946147	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	5	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

3 ***records for RN*** **194827**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/01/2008	1	0.00	70.50	Plastic Casing			100
A	01/01/2008	2	46.50	70.50	Perforated or Slotted Casing			100
X	01/01/2008	3	7.00	70.50	Gravel Pack			

Strata Logs

2 ***records for RN*** **194827**

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	27.00	FILL
2	27.00	70.50	SILTSTONE

Stratigraphies

0 *records for RN* **194827**

Aquifers

1 *records for RN* **194827**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.00	70.50	SSTO - Siltstone						Y	FR	

Pump Tests Part 1

0 *records for RN* **194827**

Pump Tests Part 2

0 *records for RN* **194827**

Bore Conditions

0 *records for RN* **194827**

Elevations

1 *records for RN* **194827**

Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
A	01/01/2008	47.49	SVY	Surveyed	AHD - Aust. Height Datum	R	Reference Point	

Water Analysis Part 1

0 *records for RN* **194827**

Water Analysis Part 2

0 *records for RN* **194827**

Water Levels

120 *records for RN* **194827**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	31/07/2008		-44.19	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	01/12/2008		-40.15	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/02/2009		-38.99	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/06/2009		-36.69	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/09/2009		-41.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/12/2009		-41.90	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/03/2010		-40.23	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/06/2010		-40.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/10/2010		-39.98	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/12/2010		-38.60	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/03/2011		-35.92	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/06/2011		-37.24	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/09/2011		-37.21	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/12/2011		-37.12	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/03/2012		-36.70	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/06/2012		-36.94	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/09/2012		-36.83	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/12/2012		-36.27	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/03/2013		-35.29	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/08/2013		-36.18	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/10/2013		-35.95	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/12/2013		-35.95	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/03/2014		-35.70	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	11/06/2014		-35.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/09/2014		-35.68	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/11/2014		-35.91	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	03/03/2015		-34.93	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/06/2015		-35.41	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	22/09/2015		-35.58	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/12/2015		-35.39	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	17/03/2016		-35.38	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/06/2016		-35.20	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/09/2016		-35.63	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/12/2016		-35.41	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/03/2017		-35.18	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/03/2017		-35.18	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/07/2017		-35.29	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/09/2017		-35.39	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/12/2017		-34.80	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/05/2018		-35.26	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/08/2018		-35.16	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/11/2018		-34.47	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/12/2018		-34.31	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/01/2019		-34.19	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/02/2019		-34.32	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/02/2019		-34.35	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/02/2019		-34.35	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/11/2019		-32.83	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/02/2020		-31.87	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/07/2020		-29.50	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/09/2020		-29.35	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	01/12/2020		-29.12	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/04/2021		-26.71	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/06/2021		-26.30	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/09/2021		-27.02	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/04/2022		-23.43	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/05/2022		-24.48	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	16/05/2022		-22.27	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	17/05/2022		-22.11	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/05/2022		-22.13	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	19/05/2022		-22.08	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/05/2022		-22.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	21/05/2022		-22.10	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	22/05/2022		-22.06	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/05/2022		-22.05	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	24/05/2022		-22.05	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	25/05/2022		-22.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	26/05/2022		-22.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/05/2022		-22.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/05/2022		-22.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/05/2022		-22.09	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	30/05/2022		-22.13	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	31/05/2022		-22.14	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/06/2022		-22.17	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/06/2022		-22.21	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/06/2022		-22.22	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	04/06/2022		-22.21	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/06/2022		-22.26	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/06/2022		-22.30	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/06/2022		-22.31	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/06/2022		-22.30	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/06/2022		-22.31	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/06/2022		-22.33	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	24/06/2022		-22.73	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/07/2022		-22.91	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/07/2022		-23.01	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/07/2022		-23.06	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/07/2022		-23.11	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	11/07/2022		-23.15	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/07/2022		-23.19	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/07/2022		-23.22	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/07/2022		-23.27	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/07/2022		-23.33	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	16/07/2022		-23.38	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	17/07/2022		-23.42	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/07/2022		-23.45	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	19/07/2022		-23.49	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/07/2022		-23.54	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	21/07/2022		-23.57	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	22/07/2022		-23.58	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/07/2022		-23.62	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	24/07/2022		-23.66	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	25/07/2022		-23.69	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	26/07/2022		-23.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/07/2022		-23.78	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/07/2022		-23.83	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/07/2022		-23.86	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	30/07/2022		-23.90	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	31/07/2022		-23.94	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/08/2022		-23.97	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/08/2022		-24.00	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/08/2022		-24.04	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/08/2022		-24.07	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/08/2022		-24.10	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/08/2022		-24.13	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/08/2022		-24.17	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/08/2022		-24.21	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/08/2022		-24.25	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/08/2022		-24.30	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	11/08/2022		-24.34	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **194827**

Field Measurements

0 ***records for RN*** **194827**

Special Water Analysis

0 ***records for RN*** **194827**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
194823	Sub-Artesian Facility	Existing	20/08/2022	Brisbane	3960 - IPSWICH C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	HOPKINS, MICHAEL		
Drill Company	NUMAC DRILLING SERVICES		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	21/09/2022	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-36-20	**Basin**	1430
Longitude	152-50-29	**Sub-area**	
GIS Latitude	-27.6055555556	**Lot**	2
GIS Longitude	152.8413888889	**Plan**	RP164685
Easting	484348		
Northing	6946480	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **194823**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	20/08/2022	1	0.00	22.50	Polyvinyl Chloride	5.000	WT - Wall Thickness	60
A	20/08/2022	2	13.50	22.50	Perforated or Slotted Casing	0.050	AP - Aperture Size	60
X	20/08/2022	3	0.00	1.00	Grout			150
X	20/08/2022	4	1.00	13.00	Grout			127
X	20/08/2022	5	13.00	22.50	Gravel Pack			127

Bore Report

From Year:

Strata Logs

2 *records for RN* **194823**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	FILL
2	1.00	22.50	SANDSTONE, BROWN TO GREY

Stratigraphies

0 *records for RN* **194823**

Aquifers

0 *records for RN* **194823**

Pump Tests Part 1

0 *records for RN* **194823**

Pump Tests Part 2

0 *records for RN* **194823**

Bore Conditions

0 *records for RN* **194823**

Elevations

0 *records for RN* **194823**

Water Analysis Part 1

0 *records for RN* **194823**

Water Analysis Part 2

0 *records for RN* **194823**

Water Levels

0 *records for RN* **194823**

Wire Line Logs

0 *records for RN* **194823**

Field Measurements

0 *records for RN* **194823**

Special Water Analysis

0 *records for RN* **194823**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
194752	Sub-Artesian Facility	Existing	10/02/2022	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	JOHNSON, MATTHEW		
Drill Company	NUMAC DRILLING SERVICES		
Const Method	AUGER, ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	01/03/2022	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-34-10	**Basin**	1430
Longitude	152-57-38	**Sub-area**	
GIS Latitude	-27.5694477363	**Lot**	1
GIS Longitude	152.9605513294	**Plan**	SP261547
Easting	496106		
Northing	6950490	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **194752**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	10/02/2022	1	0.00	14.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	50
A	10/02/2022	2	14.00	20.00	Perforated or Slotted Casing			50
X	10/02/2022	3	0.00	13.00	Grout			150
X	10/02/2022	4	13.00	13.50	Bentonite Seal			150
X	10/02/2022	5	13.50	20.00	Grout			150

Bore Report

From Year:

Strata Logs

4 *records for RN* **194752**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	FILL- FILL/BRICKS AND ROCKS
2	1.00	6.00	STIFF CLAY/ FILL (BRICKS)
3	6.00	20.00	STIFF CLAY/ GREYS
4			MONITORING BORE- NO WATER STRUCK

Stratigraphies

0 *records for RN* **194752**

Aquifers

0 *records for RN* **194752**

Pump Tests Part 1

0 *records for RN* **194752**

Pump Tests Part 2

0 *records for RN* **194752**

Bore Conditions

0 *records for RN* **194752**

Elevations

0 *records for RN* **194752**

Water Analysis Part 1

0 *records for RN* **194752**

Water Analysis Part 2

0 *records for RN* **194752**

Water Levels

0 *records for RN* **194752**

Wire Line Logs

0 *records for RN* **194752**

Field Measurements

0 *records for RN* **194752**

Special Water Analysis

0 *records for RN* **194752**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181903	Sub-Artesian Facility	Existing	24/06/2020	Brisbane	3960 - IPSWICH C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name	BH20		
Driller Name	LUCHT, GRAEME		
Drill Company	GEO DRILL AUSTRALIA		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No	515/000(216)P23	**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	07/07/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-36-54	**Basin**	1430
Longitude	152-50-28	**Sub-area**	
GIS Latitude	-27.6202506858	**Lot**	227
GIS Longitude	152.8366442273	**Plan**	SP103913
Easting	484324		
Northing	6945421	**Map Scale**	103 - 1: 10 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **181903**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	25/06/2020	1	0.00	44.00	Polyvinyl Chloride			50
A	25/06/2020	2	11.00	44.00	Perforated or Slotted Casing	0.400	AP - Aperture Size	50
X	25/06/2020	3	0.00	9.00	Grout			110
X	25/06/2020	4	9.00	10.00	Bentonite Seal			99
X	25/06/2020	5	10.00	44.00	Gravel Pack			99

Bore Report

From Year:

Strata Logs

4 ***records for RN*** **181903**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.00	FILL
2	3.00	5.00	CLAY
3	5.00	9.00	DESCRIPTION NOT CLEAR
4	9.00	44.00	SILTSTONE

Stratigraphies

0 ***records for RN*** **181903**

Aquifers

1 ***records for RN*** **181903**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	36.00	44.00	SSTO - Siltstone						Y	PS	

Pump Tests Part 1

0 ***records for RN*** **181903**

Pump Tests Part 2

0 ***records for RN*** **181903**

Bore Conditions

0 ***records for RN*** **181903**

Elevations

1 ***records for RN*** **181903**

Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
A	01/07/2020	30.06	SVY	Surveyed	AHD - Aust. Height Datum	R	Reference Point	

Water Analysis Part 1

0 ***records for RN*** **181903**

Water Analysis Part 2

0 ***records for RN*** **181903**

Water Levels

87 ***records for RN*** **181903**

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	02/07/2020		-3.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/09/2020		-4.11	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/12/2020		-4.22	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/03/2021		-4.77	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/06/2021		-3.71	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/09/2021		-3.79	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/12/2021		-4.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	24/05/2022		-2.75	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	25/05/2022		-2.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	26/05/2022		-2.73	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/05/2022		-2.71	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/05/2022		-2.69	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/05/2022		-2.67	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	30/05/2022		-2.66	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	31/05/2022		-2.66	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/06/2022		-2.68	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/06/2022		-2.73	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/06/2022		-2.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/06/2022		-2.71	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/06/2022		-2.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/06/2022		-2.70	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/06/2022		-2.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/06/2022		-2.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/06/2022		-2.78	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/06/2022		-2.76	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	11/06/2022		-2.76	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/06/2022		-2.76	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/06/2022		-2.79	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/06/2022		-2.81	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/06/2022		-2.81	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	16/06/2022		-2.80	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	17/06/2022		-2.80	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/06/2022		-2.82	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	19/06/2022		-2.83	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/06/2022		-2.82	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	21/06/2022		-2.83	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	22/06/2022		-2.85	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/06/2022		-2.85	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	24/06/2022		-2.79	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	25/06/2022		-2.72	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	26/06/2022		-2.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/06/2022		-2.73	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/06/2022		-2.75	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/06/2022		-2.75	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	30/06/2022		-2.75	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/07/2022		-2.74	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/07/2022		-2.71	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/07/2022		-2.70	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/07/2022		-2.70	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/07/2022		-2.69	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	06/07/2022		-2.67	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/07/2022		-2.78	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/07/2022		-2.93	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/07/2022		-2.89	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/07/2022		-2.90	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	11/07/2022		-2.92	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	12/07/2022		-2.90	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	13/07/2022		-2.87	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	14/07/2022		-2.90	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	15/07/2022		-2.96	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	16/07/2022		-2.98	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	17/07/2022		-2.97	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	18/07/2022		-2.93	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	19/07/2022		-2.95	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	20/07/2022		-2.97	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	21/07/2022		-2.96	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	22/07/2022		-2.93	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	23/07/2022		-3.02	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	24/07/2022		-3.03	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	25/07/2022		-2.97	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	26/07/2022		-2.80	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	27/07/2022		-2.82	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	28/07/2022		-2.85	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	29/07/2022		-2.85	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	30/07/2022		-2.88	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	31/07/2022		-2.88	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	01/08/2022		-2.86	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	02/08/2022		-2.86	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	03/08/2022		-2.86	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	04/08/2022		-2.84	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	05/08/2022		-2.82	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	06/08/2022		-2.82	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	07/08/2022		-2.84	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	08/08/2022		-2.86	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	09/08/2022		-2.88	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	10/08/2022		-2.91	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality
A	11/08/2022		-2.92	R	Reference Point		ACT	Actual	PR	MA	Manual/Hand	PR	130	Data is of unknown quality

Wire Line Logs

0 ***records for RN*** **181903**

Field Measurements

0 ***records for RN*** **181903**

Special Water Analysis

0 ***records for RN*** **181903**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181793	Sub-Artesian Facility	Existing	05/04/2020	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	DAVIES, DOUGLAS		
Drill Company	ALL TECH DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515/000(0216)P23	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	20/04/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-33-55	**Basin**	1430
Longitude	152-57-29	**Sub-area**	
GIS Latitude	-27.5653048139	**Lot**	1
GIS Longitude	152.958216487	**Plan**	SP261547
Easting	495859		
Northing	6950952	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **181793**

Strata Logs

1 ***records for RN*** **181793**

Rec	Top (m)	Bottom (m)	Strata Description
1			MONITORING BORE 11.5M DEEP

Stratigraphies

0 ***records for RN*** **181793**

Aquifers

0 ***records for RN*** **181793**

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**181793**
Pump Tests Part 2	**0**	*records for RN*	**181793**
Bore Conditions	**0**	*records for RN*	**181793**
Elevations	**0**	*records for RN*	**181793**
Water Analysis Part 1	**0**	*records for RN*	**181793**
Water Analysis Part 2	**0**	*records for RN*	**181793**
Water Levels	**0**	*records for RN*	**181793**
Wire Line Logs	**0**	*records for RN*	**181793**
Field Measurements	**0**	*records for RN*	**181793**
Special Water Analysis	**0**	*records for RN*	**181793**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181791	Sub-Artesian Facility	Existing	05/04/2020	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	DAVIES, DOUGLAS		
Drill Company	ALL TECH DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515/000(0216)P23	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	20/04/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-34-11	**Basin**	1430
Longitude	152-57-46	**Sub-area**	
GIS Latitude	-27.5699843734	**Lot**	1
GIS Longitude	152.9628725874	**Plan**	SP261547
Easting	496326		
Northing	6950460	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **181791**

Strata Logs

1 ***records for RN*** **181791**

Rec	Top (m)	Bottom (m)	Strata Description
1			MONITORING BORE 18M DEEP

Stratigraphies

0 ***records for RN*** **181791**

Aquifers

0 ***records for RN*** **181791**

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**181791**
Pump Tests Part 2	**0**	*records for RN*	**181791**
Bore Conditions	**0**	*records for RN*	**181791**
Elevations	**0**	*records for RN*	**181791**
Water Analysis Part 1	**0**	*records for RN*	**181791**
Water Analysis Part 2	**0**	*records for RN*	**181791**
Water Levels	**0**	*records for RN*	**181791**
Wire Line Logs	**0**	*records for RN*	**181791**
Field Measurements	**0**	*records for RN*	**181791**
Special Water Analysis	**0**	*records for RN*	**181791**

Bore Report

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181791	Sub-Artesian Facility	Existing	05/04/2020	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	DAVIES, DOUGLAS		
Drill Company	ALL TECH DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515/000(0216)P23	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	20/04/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-34-11	**Basin**	1430
Longitude	152-57-46	**Sub-area**	
GIS Latitude	-27.5699843734	**Lot**	1
GIS Longitude	152.9628725874	**Plan**	SP261547
Easting	496326		
Northing	6950460	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **181791**

Strata Logs

1 ***records for RN*** **181791**

Rec	Top (m)	Bottom (m)	Strata Description
1			MONITORING BORE 18M DEEP

Stratigraphies

0 ***records for RN*** **181791**

Aquifers

0 ***records for RN*** **181791**

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**181791**
Pump Tests Part 2	**0**	*records for RN*	**181791**
Bore Conditions	**0**	*records for RN*	**181791**
Elevations	**0**	*records for RN*	**181791**
Water Analysis Part 1	**0**	*records for RN*	**181791**
Water Analysis Part 2	**0**	*records for RN*	**181791**
Water Levels	**0**	*records for RN*	**181791**
Wire Line Logs	**0**	*records for RN*	**181791**
Field Measurements	**0**	*records for RN*	**181791**
Special Water Analysis	**0**	*records for RN*	**181791**

Bore Report

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181790	Sub-Artesian Facility	Existing	05/04/2020	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	DAVIES, DOUGLAS		
Drill Company	ALL TECH DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515/000(0216)P23	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	20/04/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-33-55	**Basin**	1430
Longitude	152-57-36	**Sub-area**	
GIS Latitude	-27.5654910807	**Lot**	1
GIS Longitude	152.9601681604	**Plan**	SP261547
Easting	496051		
Northing	6950952	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **181790**

Strata Logs

1 ***records for RN*** **181790**

Rec	Top (m)	Bottom (m)	Strata Description
1			MONITORING BORE 8M DEEP

Stratigraphies

0 ***records for RN*** **181790**

Aquifers

0 ***records for RN*** **181790**

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**181790**
Pump Tests Part 2	**0**	*records for RN*	**181790**
Bore Conditions	**0**	*records for RN*	**181790**
Elevations	**0**	*records for RN*	**181790**
Water Analysis Part 1	**0**	*records for RN*	**181790**
Water Analysis Part 2	**0**	*records for RN*	**181790**
Water Levels	**0**	*records for RN*	**181790**
Wire Line Logs	**0**	*records for RN*	**181790**
Field Measurements	**0**	*records for RN*	**181790**
Special Water Analysis	**0**	*records for RN*	**181790**

Bore Report

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
181789	Sub-Artesian Facility	Existing	05/04/2020	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	6000 - NO LONGER USED		
Original Name			
Driller Name	DAVIES, DOUGLAS		
Drill Company	ALL TECH DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515/000(0216)P23	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	20/04/2020	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-34-05	**Basin**	1430
Longitude	152-57-31	**Sub-area**	
GIS Latitude	-27.568295833	**Lot**	1
GIS Longitude	152.9588314921	**Plan**	SP261547
Easting	495914		
Northing	6950644	**Map Scale**	
Zone	56	**Map Series**	
Accuracy	GPS	**Map No**	
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

0 ***records for RN*** **181789**

Strata Logs

1 ***records for RN*** **181789**

Rec	Top (m)	Bottom (m)	Strata Description
1			MONITORING BORE 18.8M DEEP

Stratigraphies

0 ***records for RN*** **181789**

Aquifers

0 ***records for RN*** **181789**

Bore Report

From Year:

Pump Tests Part 1	**0**	*records for RN*	**181789**
Pump Tests Part 2	**0**	*records for RN*	**181789**
Bore Conditions	**0**	*records for RN*	**181789**
Elevations	**0**	*records for RN*	**181789**
Water Analysis Part 1	**0**	*records for RN*	**181789**
Water Analysis Part 2	**0**	*records for RN*	**181789**
Water Levels	**0**	*records for RN*	**181789**
Wire Line Logs	**0**	*records for RN*	**181789**
Field Measurements	**0**	*records for RN*	**181789**
Special Water Analysis	**0**	*records for RN*	**181789**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
169124	Sub-Artesian Facility	Existing	17/02/2015	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	3722 - OXLEY		
Original Name			
Driller Name	GREGORY, PAUL		
Drill Company	AN DRILLING		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	06/03/2015	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-04	**Basin**	1430
Longitude	152-57-57	**Sub-area**	
GIS Latitude	-27.5678391928	**Lot**	10
GIS Longitude	152.965716075	**Plan**	RP53326
Easting	496616		
Northing	6950668	**Map Scale**	253 - 1: 25 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	9442-11
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **169124**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	17/02/2015	1	0.00	41.00	Polyvinyl Chloride	4.850	WT - Wall Thickness	100
A	17/02/2015	2	24.00	30.00	Perforated or Slotted Casing	4.000	AP - Aperture Size	100
A	17/02/2015	3	35.00	41.00	Perforated or Slotted Casing	4.000	AP - Aperture Size	100
X	17/02/2015	4	0.00	5.00	Grout			170
X	17/02/2015	5	5.00	41.00	Gravel Pack			170

Bore Report

From Year:

Strata Logs

9 *records for RN* **169124**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	TOPSOIL
2	1.00	5.00	BLACK CLAY
3	5.00	8.00	SANDY CLAY
4	8.00	9.00	SAND
5	9.00	11.00	WHITE CLAY
6	11.00	12.00	SAND
7	12.00	24.00	BLACK GREY CLAY
8	24.00	26.50	MEDIUM COARSE SAND & PEA GRAVEL
9	26.50	41.00	GREY CLAY

Stratigraphies

1 *records for RN* **169124**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	41.00	DARRA FORMATION

Aquifers

1 *records for RN* **169124**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	26.50		SAGR - Sand and Gravel	17/02/2015	-24.00	N	800 PPM	0.13	Y	UC	DARRA FORMATION

Pump Tests Part 1

0 *records for RN* **169124**

Pump Tests Part 2

0 *records for RN* **169124**

Bore Conditions

0 *records for RN* **169124**

Elevations

0 *records for RN* **169124**

Bore Report

From Year:

Water Analysis Part 1

0 *records for RN* **169124**

Water Analysis Part 2

0 *records for RN* **169124**

Water Levels

1 *records for RN* **169124**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	17/02/2015		-24.00	N	Natural Surface		ACT	Actual	PR	MA	Manual/Hand		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **169124**

Field Measurements

0 *records for RN* **169124**

Special Water Analysis

0 *records for RN* **169124**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
154777	Sub-Artesian Facility	Existing	02/02/2015	Gatton	3960 - IPSWICH C.

Details

Description			
Parish	2092 - GOODNA		
Original Name			
Driller Name	HALLIDAY, RICHARD		
Drill Company	NUMAC DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515 000 0188	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	04/02/2015	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-35-56	**Basin**	1431
Longitude	152-49-54	**Sub-area**	
GIS Latitude	-27.5988103765	**Lot**	67
GIS Longitude	152.8317691371	**Plan**	RP221959
Easting	483399		
Northing	6947226	**Map Scale**	253 - 1: 25 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	9442-14
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **154777**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	02/02/2015	1	0.00	8.80	Polyvinyl Chloride	5.000	WT - Wall Thickness	60
A	02/02/2015	2	8.80	11.80	Screen	0.400	AP - Aperture Size	60
X	02/02/2015	3	0.00	7.30	Grout			145
X	02/02/2015	4	7.30	8.30	Bentonite Seal			145
X	02/02/2015	5	8.30	11.80	Gravel Pack			145

Bore Report

From Year:

Strata Logs

6 *records for RN* **154777**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOPSOIL/GRAVELS
2	0.50	1.50	DARK BROWN CLAYS
3	1.50	4.00	REDDISH/GREY CLAYS
4	4.00	7.50	REDDISH/BROWN CLAYS
5	7.50	9.00	LIGHT BROWN SANDY CLAYS
6	9.00	11.80	RED SANDY CLAYS

Stratigraphies

1 *records for RN* **154777**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	11.80	QUATERNARY - UNDEFINED

Aquifers

1 *records for RN* **154777**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	9.00		SANC - Sandy Clay	02/02/2015	-7.00	N	BRACKISH	0.10	Y	UC	QUATERNARY - UNDEFINED

Pump Tests Part 1

0 *records for RN* **154777**

Pump Tests Part 2

0 *records for RN* **154777**

Bore Conditions

0 *records for RN* **154777**

Elevations

0 *records for RN* **154777**

Water Analysis Part 1

0 *records for RN* **154777**

Water Analysis Part 2

0 *records for RN* **154777**

Bore Report

From Year:

Water Levels

1 *records for RN* **154777**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	02/02/2015		-7.00	N	Natural Surface		ACT	Actual	PR	MA	Manual/Hand	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **154777**

Field Measurements

0 *records for RN* **154777**

Special Water Analysis

0 *records for RN* **154777**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
154776	Sub-Artesian Facility	Existing	02/02/2015	Gatton	3960 - IPSWICH C.

Details

Description			
Parish	2092 - GOODNA		
Original Name			
Driller Name	HALLIDAY, RICHARD		
Drill Company	NUMAC DRILLING		
Const Method	AUGER		
Bore Line			
D/O File No	515 000 0188	**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	04/02/2015	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-35-54	**Basin**	1431
Longitude	152-49-58	**Sub-area**	
GIS Latitude	-27.5984130384	**Lot**	2
GIS Longitude	152.8328041674	**Plan**	RP54524
Easting	483500		
Northing	6947271	**Map Scale**	253 - 1: 25 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	9442-14
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

5 ***records for RN*** **154776**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	02/02/2015	1	0.00	7.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	60
A	02/02/2015	2	7.00	10.00	Screen	0.400	AP - Aperture Size	60
X	02/02/2015	3	0.00	5.50	Grout			145
X	02/02/2015	4	5.50	6.50	Bentonite Seal			145
X	02/02/2015	5	6.50	10.00	Gravel Pack			145

Bore Report

From Year:

Strata Logs

7 ***records for RN*** **154776**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.50	TOPSOIL
2	0.50	1.50	DARK BROWN CLAYS
3	1.50	3.00	GREY/RED CLAYS
4	3.00	6.50	REDDISH/BROWN CLAYS
5	6.50	7.00	LIGHT BROWN CLAYS
6	7.00	8.50	LIGHT BROWN SANDY CLAYS
7	8.50	10.00	RED SANDY CLAYS

Stratigraphies

1 ***records for RN*** **154776**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	10.00	QUATERNARY - UNDEFINED

Aquifers

1 ***records for RN*** **154776**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	7.50		SANC - Sandy Clay	02/02/2015	-5.00	N	BRACKISH	0.10	Y	UC	QUATERNARY - UNDEFINED

Pump Tests Part 1

0 ***records for RN*** **154776**

Pump Tests Part 2

0 ***records for RN*** **154776**

Bore Conditions

0 ***records for RN*** **154776**

Elevations

0 ***records for RN*** **154776**

Water Analysis Part 1

0 ***records for RN*** **154776**

Bore Report

From Year:

Water Analysis Part 2

0 *records for RN* **154776**

Water Levels

1 *records for RN* **154776**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project		Quality
A	02/02/2015		-5.00	N	Natural Surface		ACT	Actual	PR	MA	Manual/Hand		130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **154776**

Field Measurements

0 *records for RN* **154776**

Special Water Analysis

0 *records for RN* **154776**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
152505	Sub-Artesian Facility	Existing	14/02/2014	Brisbane	1000 - BRISBANE C.

Details

Description			
Parish	3722 - OXLEY		
Original Name			
Driller Name	DIPPEL, KENNETH ALLAN		
Drill Company	KA & LC DIPPEL		
Const Method	ROTARY AIR & CABLE TOOL		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	05/03/2014	**Data Owner**	
Roles	Water Supply		

Location

Latitude	27-34-13	**Basin**	1430
Longitude	152-58-33	**Sub-area**	
GIS Latitude	-27.57029269	**Lot**	33
GIS Longitude	152.9759631	**Plan**	SP119708
Easting	497627		
Northing	6950397	**Map Scale**	253 - 1: 25 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	9442-11
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

10 ***records for RN*** **152505**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	14/02/2014	1	0.00	48.50	Polyvinyl Chloride	7.500	WT - Wall Thickness	125
A	14/02/2014	2	48.50	57.60	Screen	0.650	AP - Aperture Size	119
X	14/02/2014	3	0.00	5.00	Grout			230
X	14/02/2014	4	5.00	18.00	Cuttings or other fill between casing and hole wall			230
X	14/02/2014	5	18.00	26.70	Bentonite Seal			230

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	14/02/2014	6	26.70	27.50	Bentonite Seal			175
X	14/02/2014	7	27.50	44.50	Gravel Pack			175
X	14/02/2014	8	44.50	46.50	Bentonite Seal			175
X	14/02/2014	9	46.50	57.60	Gravel Pack	2.000	GR - Gravel Size	175
X	14/02/2014	10	45.00	57.60	Centraliser			

Strata Logs

22 ***records for RN*** **152505**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.30	HARD TOPSOIL
2	0.30	0.90	CLAY
3	0.90	5.00	SILTY FINE SILTY CLAY
4	5.00	7.00	BROWN CLAY
5	7.00	20.80	DARK GREY CLAY & SOME LIGHT GREY
6	20.80	25.60	GREY SANDSTONE
7	25.60	29.90	GREY CLAY
8	29.90	39.80	GREY & BROWN CLAY
9	39.80	41.50	YELLOWISH BROWN CLAY
10	41.50	46.00	GREY CLAY
11	46.00	48.30	FINE SILTY SANDY GREY CLAY
12	48.30	49.70	FINE GREY SANDSTONE
13	49.70	51.00	CLAYEY FINE GREY SANDSTONE
14	51.00	51.80	CLEAN SOFTER SAND & GRAVEL CONGLOMERATE
15	51.80	53.50	HARDER GREY SANDSTONE
16	53.50	54.00	COARSE CLEAN SAND & GRAVEL CONGLOMERATE

Bore Report

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
17	54.00	54.50	FINE SAND & GRAVEL
18	54.50	55.20	SAND & GRAVEL - CLAYEY
19	55.20	56.30	COARSE HARD GRAVEL - CLAYEY
20	56.30	56.80	SOFTER SANDSTONE - GREY
21	56.80	57.30	HARDER SANDSTONE - GREY
22	57.30	57.50	DARK GREY CLAY

Stratigraphies

2 *records for RN* **152505**

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	20.80	QUATERNARY - UNDEFINED
DNR	2	20.80	57.50	DARRA FORMATION

Aquifers

2 *records for RN* **152505**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	20.80	25.60	SDST - Sandstone			N	SALTY	4.04	N	PS	DARRA FORMATION
2	48.30		SDST - Sandstone	14/02/2014	-13.50	N	1456 US/CM	1.64	Y	PS	DARRA FORMATION

Pump Tests Part 1

0 *records for RN* **152505**

Pump Tests Part 2

0 *records for RN* **152505**

Bore Conditions

0 *records for RN* **152505**

Elevations

0 *records for RN* **152505**

Water Analysis Part 1

0 *records for RN* **152505**

Bore Report

From Year:

Water Analysis Part 2

0 *records for RN* **152505**

Water Levels

1 *records for RN* **152505**

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	14/02/2014		-13.50	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded	130	Data is of unknown quality

Wire Line Logs

0 *records for RN* **152505**

Field Measurements

1 *records for RN* **152505**

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	14/02/2014		1456							BA	Bailer - Other	GB	Groundwater - from Bore

Special Water Analysis

0 *records for RN* **152505**

Bore Report

From Year:

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Bore Report

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
142987	Sub-Artesian Facility	Existing	10/11/2004	Brisbane	3960 - IPSWICH C.

Details

Description			
Parish	2092 - GOODNA		
Original Name			
Driller Name	DICKSON, KEITH JOHN		
Drill Company	BELLDALE ENTERPRISES		
Const Method	ROTARY AIR		
Bore Line			
D/O File No		**Polygon**	
R/O File No		**Equipment**	
H/O File No		**RN of Bore Replaced**	
Log Received Date	27/05/2005	**Data Owner**	
Roles	Sub-Artesian Monitoring		

Location

Latitude	27-38-21	**Basin**	1430
Longitude	152-49-44	**Sub-area**	
GIS Latitude	-27.63904251	**Lot**	5
GIS Longitude	152.828887	**Plan**	SP242338
Easting	483120		
Northing	6942770	**Map Scale**	253 - 1: 25 000
Zone	56	**Map Series**	M - Metric Series
Accuracy	GPS	**Map No**	9442 13
GPS Accuracy	10	**Map Name**	
Checked	Yes	**Prog Section**	

Casing

7 ***records for RN*** **142987**

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	10/11/2004	1	0.00	80.00	Polyvinyl Chloride		WT - Wall Thickness	60
A	10/11/2004	2	65.00	80.00	Perforated or Slotted Casing	0.500	AP - Aperture Size	60
X	10/11/2004	3	0.00	4.00	Grout			128
X	10/11/2004	4	4.00	5.00	Grout			112
X	10/11/2004	5	5.00	59.00	Cuttings or other fill between casing and hole wall			112

Bore Report

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
X	10/11/2004	6	59.00	60.00	Bentonite Seal			112
X	10/11/2004	7	60.00	80.00	Gravel Pack	2.000	GR - Gravel Size	112

Strata Logs

10 *records for RN* **142987**

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	BROWN CLAY
2	1.00	5.00	BROWN DECO SANDSTONE
3	5.00	8.00	GREY SANDSTONE, SHALE BANDS
4	8.00	12.00	DARK SILTSTONE
5	12.00	32.00	DARK SANDSTONE
6	32.00	39.00	GREY SANDSTONE
7	39.00	61.00	GREY SANDSTONE & SILTSTONE BANDS
8	61.00	63.00	SHALE
9	63.00	73.00	COAL AND SHALE BANDS (DAMP)
10	73.00	80.00	SHALE AND SILTSTONE

Stratigraphies

0 *records for RN* **142987**

Aquifers

1 *records for RN* **142987**

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	63.73		COAL - Coal SHLE - Shale			N			Y	FR	BLACKSTONE FORMATION

Pump Tests Part 1

0 *records for RN* **142987**

Pump Tests Part 2

0 *records for RN* **142987**

Bore Report

From Year:

Bore Conditions	**0**	***records for RN***	**142987**
Elevations	**0**	***records for RN***	**142987**
Water Analysis Part 1	**0**	***records for RN***	**142987**
Water Analysis Part 2	**0**	***records for RN***	**142987**
Water Levels	**0**	***records for RN***	**142987**
Wire Line Logs	**0**	***records for RN***	**142987**
Field Measurements	**0**	***records for RN***	**142987**
Special Water Analysis	**0**	***records for RN***	**142987**

Bore Report

From Year:

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Attachment 3

Desktop Mining Study for Mining Lease 4583

MORETON GEOTECHNICAL SERVICES PTY. LTD.

PO Box 915 Ipswich 4305

Telephone (07) 3294 6988
Facsimile (07) 3294 6988
Email mgs@gil.com.au

A.C.N. 055 833 120
A.B.N. 24 055 833 120

Ref. 2016/59

14 October 2016

Boral CSR Bricks Pty Ltd
c/o Groundwork Plus
P.O. Box 1779
Milton
4064

Att. Mr. Rob Preslmaier

Re: **DESKTOP MINING STUDY FOR MINING LEASE 4583 - REDBANK PLAINS ROAD, REDBANK PLAINS**

1.0 INTRODUCTION

The work in this study was carried out in conjunction with Taylor Mining Services P/L for Boral CSR Bricks P/L on behalf of Groundworks Plus.

It is understood that PGH and Boral have formalised a joint venture arrangement called "Boral CSR Bricks Pty Ltd" in relation to proposed clay extraction activities within mining lease ML 4583. This lease is also understood to be a stand-alone environmental authority recently issued by the Department of Environment and Heritage Protection. It is in addition understood that this report is required to assist in establishing the financial liability that may exist in relation to any remediation works associated with past coal mining activities that may have taken place within the boundary of ML 4583.

The aim of the study is to establish the facts on the bedrock geology and past coal mining activities so that a report can be prepared that outlines the key findings, with particular emphasis on any issues associated with the known tunnel and shaft entries.

Work in this study has included obtaining mine plans, researching available reports and publications, a site inspection with Mr Hugh Taylor of Taylor

Mining Services P/L on 13 October 2016, preparation of plans in electronic format and reporting by the undersigned Engineering Geologist. Taylor Mining Services P/L have assisted in the study.

The following A3 size plans at 1:4,000 scale are attached to this report:

1. a site plan
2. an aerial plan
3. a contour plan
4. a geology plan
5. a U/G mine plan - Striped Bacon Seam workings
6. a U/G mine plan - Rob Roy Bottom Seam workings
7. a U/G mine plan - Cochrane Seam workings
8. a U/G mine plan - Livermore Seam workings
9. a tunnels and shafts plan
10. a mine lease plan
11. a constraints plan

2.0 INVESTIGATION RESULTS

2.1 SITE

Plan 1 attached shows the area fronting Redbank Plains Road and Austin Street that is encompassed by ML 4583. From the plan it can be seen that Lot 7 RP 22540, Lot 20 SP 212645 and Lot 26 SP 212647 comprise the bulk of the area, whereas the abandoned rail easement, now removed, (Lot 6 RP 22540 and Lot 22 SP 212646) as well as other small lots, comprise the rest of the area.

Plan 2 attached shows that most of the site is covered by trees whereas a 'V' shaped water feature and a bare (stockpiled shale) area comprises the rest of the site.

Plan 3 attached shows that the site ranges in elevation between 53m AHD and 74m AHD with the most elevated areas near the south east, south west and north west corners.

The targeted inspection, which confirmed the general site conditions described above, also noted the presence of tunnel and shaft entries near the north east corner of the site. This is discussed in more detail further on in this report.

2.2 GEOLOGY

Plan 4 attached shows that most of the site is underlain by sedimentary rocks of the Cooneana Stage of the Ipswich Coal Measures whereas sedimentary rocks of the Blackstone Stage of the Ipswich Coal Measures (blue) extend into the eastern boundary of the site. The sedimentary rocks in both stages include sandstone, shale and coal.

The site is located on the eastern flank of the Bundamba Anticline with the result that the beds dip to the east in the order of 10 degrees. Significant structural discontinuities (faults) are not known to occur under the site area, although the geology plan shows the north west to south east trending Noblevale Fault terminating close to the eastern boundary in the Blackstone Stage of the coal measures. Recent underground mining (1970's to 1990's) in the Cochrane and Livermore Seams discovered a zone of faulting that appears to be an extension of the Noblevale Fault.

Coal seams of past economic importance, in increasing age and depth, include, in descending order, the Striped Bacon and Rob Roy Seams (of the Blackstone Formation) and the Cochrane and very closely spaced Taylor, Livermore and Matthews Seams of the Cooneana Formation.

2.3 MINING

Plan 5 attached shows the Welsh bord and pillar mining that took place along the Striped Bacon Seam from the Noblevale No. 1 Colliery - No. 4 Tunnel. These workings, including the tunnel and air shafts are located just inside the eastern boundary in the north east corner of the site.

Plan 6 attached shows the Welsh bord and pillar Rob Roy Seam underground workings from the Noblevale No. 1 Colliery - No. 5 Tunnel. These workings immediately underlie the Striped Bacon Seam workings with a seam separation in the order of 10m. Extensive pillar extraction works have taken place in this mine.

Plan 7 attached shows the 1970's to 1980's Cochrane Seam bord and pillar workings that extended under the site from the MW Haenke No. 1 Colliery. Some pillar splitting works have been carried out in part of the mine workings within this site.

Plan 8 attached shows the 1980's to 1990's Livermore Seam bord and pillar

workings that extended under this site from the MW Haenke No. 2 Colliery. Some roadway stripping (purple shading) is shown to the north of the site whereas the pillars are shown to be intact under the site.

Plan 9 attached shows the tunnel and shaft entries that are known to exist in the north east sector of the site.

The site inspection (see letters and numbers on Plan 9) revealed irregular ground with spoil mounds and the following:

A. Noblevale No. 1 Colliery No. 4 Tunnel - Ventilation Tunnel:- a linear depression over the collapsed tunnel line
B. Noblevale No. 1 Colliery No. 4 Tunnel - Man & Supply Tunnel:- a linear depression over the collapsed tunnel line. A 3m diameter by 1.0m deep sinkhole depression was noted down dip (east) of the linear depression.
C. Noblevale No. 1 Colliery No. 5 Tunnel - Ventilation Tunnel:- a linear depression at the base of a mullock heap along the eastern edge of the abandoned rail easement.
D. Noblevale No. 1 Colliery No. 5 Tunnel - Man & Supply Tunnel:- an open hole into the tunnel. The tunnel was not entered due to the near-vertical (2m) highly fractured shale roof rock and overlying coalstone. The tunnel entry from the parallel prop lines was estimated to be approximately 1.5m high by 3.0m wide although the tunnel line appeared to open out with depth. A 1.0m diameter shallow depression was noted down dip (east) of the tunnel entry hole.

1. Noblevale No. 1 Colliery No. 4 Tunnel - Air Shaft:- a 10m long linear depression was noted extending into a 2.0m diameter by 1.5m deep depression. A 6.0m diameter x 2.0m deep sinkhole depression was also noted below this shaft location along the eastern edge of the abandoned rail easement. The sinkhole is probably from the shallow Striped Bacon or Rob Roy Seam workings.
2. Noblevale No. 1 Colliery No. 4 Tunnel - Shaft in Tunnel A:- no obvious depression or mound
3. Noblevale No. 1 Colliery No. 5 Tunnel - Air Shaft:- no obvious depression or mound
4. Trial Shaft:- under a large spoil stockpile from 1970's adjoining open cut mine
5. Trial Shaft:- a mound with an old rusted barbed wire enclosure. No obvious depression.
6. Trial Shaft:- no obvious depression however a part mound was noted

It should be noted that a large sinkhole is known to have occurred near the north east corner of the site approximately 70 years ago. The sinkhole, over either the Striped Bacon or Rob Roy Seam workings, was backfilled using a truck which inadvertently reversed into the hole during the backfill operations.

Plan 10 attached shows the mine lease area, also the proposed surrender area.

3.0 COMMENT

In summary, available information indicates that the site has been partially undermined by bord and pillar methods along four seams, also that four tunnel entries and six shafts are located in the north eastern sector of the site. Surface disturbances in the form of stockpiled shale, mullock heaps at tunnel entries and overspill from past open cut mining across the eastern boundary of the site also exists.

Plan 11 attached has been constructed with a view to rationalising the mining issues on this site. An influence zone, on the basis of an assumed 30 degree draw angle, has also been included around the mine workings. From the plan it can be seen that the bulk of the site has not been impacted on by past underground mining. This also includes all, but an extremely small area of the proposed lease surrender area. The plan also shows that the underground mining is located in two areas, i.e. along the western boundary with Austin Street where the two levels of mine workings (each 2.0m to 2.5m high) are located in the order of 30m to 75m depth. By comparison, the larger area of mining under the north eastern sector of the site has very locally up to four levels of mining (each 1.5m to 2.5m high) which are located in the order of 10m to 20m depth near the eastern boundary and in the order of 50m to 195m depth under the remaining areas.

The pillars in the modern Cochrane and Livermore Seams are generally expected to be long term stable so regional subsidence from these mines is not anticipated. Some regional type subsidence may however occur over those parts where some pillar splitting has occurred in the shallower Cochrane Seam workings, at depths of 35m and 110m. Potential sinkhole activity, due to collapsing of the roof over the intersection of roadways in the same modern workings, is also not anticipated as sinkholes in the Ipswich region are known to occur when the cover depth to worked height ratios are up to 4 and 7 and occasionally up to 10 for 'soft' overlaying geology where Quaternary or Tertiary rocks exist. For example, 7 x 2.5m high workings =

17.5m cover depth which is much less than the cover depths of the modern workings.

The issue on this site is the tunnel and shaft entries around the shallow Striped Bacon and Rob Roy Seam workings in the north east corner of the site. These have a demonstrated history of subsidence along tunnel entry lines and some sinkhole activity over one shaft and the shallowest workings. The open tunnel entry represents the only immediate safety issue that was observed in this area whereas the tunnel and sinkhole depressions noted represent a lesser concern. In the case of Trial Shaft 5, the backfilling has remained stable for probably more than 50 years judging by the state of rusted barbed wire.

In conclusion, the work in this report has found that :

- the site has experienced both old and modern underground mining along four seams in two areas of the site. The bulk of the site has however not been impacted on by past underground or open cut coal mining activities.

- the proposed lease surrender area, other than one very small area, with relatively deep mining, is unaffected by past mining activities

- the relatively small area with tunnel and shaft entries and two sets of shallow workings in the north east corner of the site represents the only area which has issues associated with subsidence and sinkhole activity

- the open tunnel entry in the north east corner of the site (Tunnel D = Noblevale No. 1 Colliery - No. 5 Tunnel) represents an immediate safety concern, whereas the other subsidence features noted require less immediate attention in our opinion

In the case of the open tunnel entry, we recommend that the tunnel entry be plugged with approximately 10 m^3 of mass concrete prior to backfilling the remaining linear void area with spoil from the adjoining mullock heap. For the remaining subsidence features, we recommend that a large excavator (say 2 days' work) be used, to move between the trees with fill, removed from the mullock heaps, to overfill the depressional features. The recommended procedures can be discussed in more detail when required and in any case the remediation works will need to be carried out under appropriate supervision. Signage, and even fencing the area off, provide additional options for this area.

Finally it should be noted that the recommendations provided above are on the basis that the site is only used for clay extraction as intended and that access to the north east corner of the site is restricted to the public.

4.0 LIMITATIONS

This report, which may contain attachments in the form of plans, borehole record sheets, laboratory test results etc, must be read in its entirety.

The work in this report was produced for Boral CSR Bricks P/L and Groundwork Plus and their Associates on the basis of information available at the time of writing. This report will not contain sufficient information for other parties and purposes.

While care has been taken in producing this report, it needs to be said that there will always be some risk associated with carrying out activities in these settings. Recommendations put forward in this report are aimed at minimising the risk.

This company accepts no responsibility for works which do not fully comply with the recommendations in this report.

MORETON GEOTECHNICAL SERVICES PTY LTD



K. B. GRUBB
M.App.Sc., MIE Aust., CP Eng., RPEQ 2811

Attachment 4

Community Consultation Register

Table A.1 - Community Consultation Register

Relevant Site	Stakeholder Name	Role	Contact Information	Information Provided	Main Expectations / Issues	Issues Considered / Outcomes of Engagement / Commitments Made	Consultation Date(s)
Darra Dinmore Greenwood Village Oxley Redbank Plains Strathpine	Department of Environment and Science (DES); Groundwork Plus Pty Ltd; PGH Bricks & Pavers.	Ayla Turner (Senior Env Officer, DES) Marie Courteville (Senior Env Officer, DES) Kate Rutherford (Acting Manager, DES) Dean Sharpe (Acting Director, DES) Ingrid Fomiatti Minnesma (Director, DES) Dominic Carnovale (Development Manager, CSR Limited) Greg White (Raw Materials Manager QLD, PGH) Yoland Dowling (Environmental Consultant, Groundwork Plus) Tegan Smith(Director, Groundwork Plus)	Level 3, 5b Sheridan St, Cairns, QLD 4870 PO Box 7230, Cairns QLD 4870	Pre-lodgement meeting including presentation titled Brisbane Mining Leases Progressive Rehabilitation and Closure Planning.	Clarification on content requirement of PRCP and transition timeframe.	DES acknowledged uniqueness of the sites and the need to be located close to urban markets. DES accepted that the PMLUs are largely planning driven, acknowledging CSR/PGH's intent that rehabilitation outcomes remain as flexible as possible. DES acknowledged that the Guideline: Progressive rehabilitation and closure plans content requirements had been born from the coal and metals industry.CSR/PGH raised the PRCP guideline content with DES to the extent that it is written to cover all operations. DES acknowledged this observation. PGH sought confirmation that some flexibility would be afforded to ensure that any PRCP content requirements would be commensurate to risk and reflect the low risk nature of operations. DES advised that they would only require what is reasonable and related to the operation and that the scope of the PRCP could be worked through together, facilitated by a pre-lodgement process DES raised concern regarding the Redbank Plains ML rehabilitation outcome which is currently "Industrial (landfill)". DES inquired as to whether PGH would consider a change to the current rehabilitation outcome in the EA if a landfill is not envisaged longer-term. DES advised that PGH will need to amend the land outcome from landfill as they understand Ipswich City Council is no longer giving approval for landfills over former MLs. DES was asked if retaining "Industrial" and removing the reference to "landfill" would be appropriate. DES agreed that this would be a good alternative. DES indicated that the PRCP allows for nominating PMLU, which would be a platform for nominating the 'industrial' outcome (removing 'landfill').	7-Feb-20
Darra Dinmore Greenwood Village Oxley Redbank Plains Strathpine	Department of Environment and Science (DES); Groundwork Plus Pty Ltd.	Ayla Turner (Senior Env Officer, DES) Tegan Smith (Director, Groundwork Plus)	Level 3, 5b Sheridan St, Cairns, QLD 4870 PO Box 7230, Cairns QLD 4870	Follow-up correspondence regarding PRCP.	-	Acknowledgement of novel nature of sites and recommendation to commence early discussion with DES to ensure PGH can work towards industrial outcomes in line with Council.	10-Feb-20
Darra Dinmore Greenwood Village Oxley Redbank Plains Strathpine	Department of Environment and Science (DES); Groundwork Plus Pty Ltd.	Marie Courteville (Senior Env Officer) Danielle Tela (Team Leader) Lachlan Mcquire (PRCP Team) Yoland Dowling (Senior Environmental Consultant)	Level 3, 5b Sheridan St, Cairns, QLD 4870 PO Box 7230, Cairns QLD 4870	Pre-lodgement meeting in response to draft PRCP lodgement.	Clarification on content requirement of PRCP and transition timeframe.	Agenda included: PRCP Transition Process Overview PGH Bricks and Pavers - PRCP Planning Overview Review/discuss transition/feedback: - Feedback on draft PRCP - LODs - Information requirements - Transition timeframe considerations	2-Mar-21
Darra Dinmore Greenwood Village Oxley Redbank Plains Strathpine	Department of Environment and Science (DES); Groundwork Plus Pty Ltd. PGH Bricks & Pavers	Marie Courteville (Senior Env Officer) Danielle Tela (Team Leader) Lachlan Mcquire (PRCP Team) Chris Wake (PRCP Team) Dean Sharpe (Acting Director, DES) Dominic Carnovale (Development Manager, CSR Limited) Greg White (Raw Materials Manager QLD, PGH) Yoland Dowling (Senior Environmental Consultant)	Level 3, 5b Sheridan St, Cairns, QLD 4870 PO Box 7230, Cairns QLD 4870	Draft PRCP feedback	Clarification on content requirement of PRCP.	Advice provided 'Comments on PGH Bricks PRCP – 8 March 2021' providing feedback on draft PRCP to enable preparation of final.	8-Mar-21
Darra Dinmore Greenwood Village Oxley Redbank Plains Strathpine	Department of Environment and Science (DES); Groundwork Plus Pty Ltd.	Marie Courteville (Senior Env Officer) Danielle Tela (Team Leader) Lachlan Mcquire (PRCP Team) Dean Sharpe (Acting Director, DES) Yoland Dowling (Senior Environmental Consultant)	Level 3, 5b Sheridan St, Cairns, QLD 4870 PO Box 7230, Cairns QLD 4870	Draft PRCP feedback	Clarification on content requirement of PRCP.	Further clarification provided by DES regarding methods to demonstrate justifying alternative PMLUs are 'substantially similar' for the purpose of the Environmental Protection Act 1994. Aspects identified by DES: •Have impacts and aspects to Environmental Values changed •Does the community/surrounding landholders have any objections •How does the local govt Planning Scheme consider the old and new outcome. Are both outcomes on the same overlay in the planning scheme for that particular lot. •Will the new PMLU require substantially different rehab methodology to achieve.	18-Mar-21
Darra	State Assessment and Referral Agency ('SARA'); Department of Transport and Main Roads; CSR; Wolter Group.					Pre-lodgement meeting was conducted with the SARA and TMR.	Feb-20
Darra	•Brisbane City Council. •CSR. •Wolter Group.					Pre-lodgement meeting was conducted with BCC to discuss CSR's plans to redevelop the site for a new industrial estate, accommodating a mix of low to medium impact industrial development.	26-Feb-20
Darra	Manager – Development Services (Brisbane City Council); CSR.					Email briefing of the project to the Manager – Development Services	2020
Darra	•Ms Jessica Pugh, State Member of Parliament (Mt Ommaney Electorate). •CSR. •Wolter group.					•Brief on the forthcoming development application, its purpose and the ultimate intended outcome. •Brief on the works that CSR would be undertaking on the site as part of its remediation obligations. •Provide information tabout CSR's business and its history on the site and in South East Queensland more broadly.	Apr-22
Darra	•Councillor Sarah Hutton (Jamboree Ward). •CSR. •Wolter group.					•Brief on the forthcoming development application, its purpose and the ultimate intended outcome. •Brief on the works that CSR would be undertaking on the site as part of its remediation obligations. •Provide information tabout CSR's business and its history on the site and in South East Queensland more broadly.	Apr-22

Attachment 5

Landowner Statement

Further to this, I declare that:

- I am authorised to sign on behalf of the landowner for land described above.
- The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the *Environmental Protection Act 1994* to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that all information supplied in this statement may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977.*

Signature: 

Name: Joe Gauci
Position of Signatory: National Raw Materials Manager

Date: 13/3/17

Landowner Statement – EPML03821316

Department of Environment and Heritage Protection
GPO Box 2454
Brisbane QLD 4001

Dear Sir/ Madam,

I, Frank Klostermann, Director of GFA HOLDINGS PTY LTD, being the entity recognised as the landowner of the properties described as:

- Lot 141 S3186

confirm that the items of infrastructure including, but not limited to:

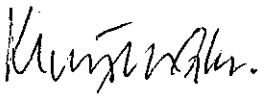
- internal haulage roads; and
- sediment retention dams / water storages;

are to be retained for ongoing use by GFA HOLDINGS PTY LTD as the landowner following cessation of the resource activity.

Further to this, I declare that:

- I am authorised to sign on behalf of the landowner being GFA HOLDINGS PTY LTD for land described above.
- The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the Environmental Protection Act 1994 to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that all information supplied in this statement may be disclosed publicly in accordance with the Right to Information Act 2009 and the Evidence Act 1977.

Name: Frank Klostermann
Position of Signatory: Director

Signature: 

Date: 21.04.2016

frank.klostermann11@gmail.com
60 Ayres Rd, St Ives NSW 2075

Environmentally Relevant Activity Details
Environmental Authority EPML00912113
Mining Lease ML4632

Department of Environment and Heritage Protection
GPO Box 2454
Brisbane QLD 4001

Dear Sir/ Madam,

RE: LANDOWNER STATEMENT – ENVIRONMENTAL AUTHORITY EPML03821316

I, Joe Gauci, National Raw Materials Manager, as a representative of Boral CSR Bricks Pty Limited (ACN 168 794 821), being the entity recognised as the landowner of the properties described as:

- Lot 1 and 2 RP190493
- Lot 67 RP838410
- Lot 2 RP164685
- Lot 3 SL11493
- Lot 1 and 2 RP22534
- Lot 125 S3186
- Lot 1 SP261547
- Lot 6 RP22540
- Lot 7 RP22540
- Lot 20 SP212645
- Lot 22 SP212646
- Lot 24 SP212646
- Lot 26 SP212647
- Lot 1 RP22539
- Lot 2 RP22539
- Lot 3 RP22539
- Lot 8 RP22539
- Lot 9 RP22539
- Lot 10 RP22539
- Lot 11 RP22539
- Lot 12 RP22539
- Lot 13 RP22539
- Lot 16 SP212644
- Lot 3 SP174984
- Lot 4 SP174985
- Lot 2 RP895110

confirm that items of infrastructure including, but not limited to:

- holding sheds;
- stockpile yards;
- brick hardstand yards;
- internal haulage roads;
- sediment retention dams / water storages;
- site buildings (demountable and fixed); and
- processing plant, manufacturing facilities, and associated infrastructure and services

are to be retained for ongoing use by Boral CSR Bricks Pty Limited (ACN 168 794 821) as the landowner following cessation of the resource activity.

Further to this, I declare that:

- I am authorised to sign on behalf of the landowner for land described above.
- The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the *Environmental Protection Act 1994* to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that all information supplied in this statement may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977.*

Signature:



Name: Joe Gauci
Position of Signatory: National Raw Materials Manager

Date: 15/3/17

Contact Details
Triniti 3, 39 Delhi Road,
North Ryde, NSW 2113
Locked Bag 1345,
North Ryde, NSW 1670

Department of Environment and Heritage Protection
GPO Box 2454
Brisbane QLD 4001

Dear Sir / Madam,

RE: LANDOWNER CONSENT FOR FILLING OF VOIDS FOR EPML03821316

I, Joe Gauci, National Raw Materials Manager, as a representative of Boral CSR Bricks Pty Limited (ACN 168 794 821), being the entity recognised as the landowner of the properties described as:

- Lots 1 and 2 RP190493
- Lot 67 RP838410
- Lot 2 RP164685
- Lot 3 SL11493
- Lot 1 and 2 RP22534
- Lot 125 S3186
- Lot 1 SP261547
- Lot 6 RP22540
- Lot 7 RP22540
- Lot 20 SP212645
- Lot 22 SP212646
- Lot 24 SP212646
- Lot 26 SP212647
- Lot 1 RP22539
- Lot 2 RP22539
- Lot 3 RP22539
- Lot 8 RP22539
- Lot 9 RP22539
- Lot 10 RP22539
- Lot 11 RP22539
- Lot 12 RP22539
- Lot 13 RP22539
- Lot 16 SP212644
- Lot 3 SP174984
- Lot 4 SP174985
- Lot 2 RP895110.

provide this landowner consent for the filling of voids on the land by the operator in accordance with the Environmental Authority EPML03821316 (EA) Condition (F3-3).

Attachment 6

Easement Documents

ML 50028 Dinmore

GROUNDWORK plus

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 41200400
Search Date: 30/05/2022 07:51 Title Reference: 50142675
Date Created: 02/10/1996

Previous Title: 16760159

REGISTERED OWNER

Dealing No: 716898074 19/11/2015

BORAL CSR BRICKS PTY LTD A.C.N. 168 794 821

ESTATE AND LAND

Estate in Fee Simple

LOT 2 REGISTERED PLAN 895110
Local Government: IPSWICH

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10222149 (POR 261)

2. EASEMENT IN GROSS No 701561674 20/09/1996 at 15:04
burdening the land to
IPSWICH CITY COUNCIL
over
EASEMENT A ON RP895110

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2022]
Requested By: D-ENQ DYE & DURHAM

FORM 9 Version 2
Land Title Act 1994 and Land Act 1994

EASEMENT

QUEENSLAND LAND REGISTRY
Page 1 of 1

701561674
$87.00
$87.00
20/09/1996 15:04
IH 601 EAS IN GROSS

Stamp Duty Imprint

Queensland Stamp Duty Paid
13A : CONV : 31
16396
$1.50 | 1W3

-2 OCT 1996
EXAM. INITS

1. Grantor
CLAYPAVE PTY LTD (ACN 010 551 309)

Lodger Name, address & phone number — Lodger Code
Ipswich City Council
50 South Street
Ipswich Qld 4305
Ph: 3810 6234 F.48-1753-0002-41
68

2. Description of Easement/Lot Servient Tenement (burdened land) — County — Parish — Title Reference

Easement A in Lot 2 on RP 895110 — Stanley — Goodna — 50142615 ~~16760159~~

*Dominant Tenement (benefited land)

* not applicable if easement in gross

3. Interest being burdened
Fee Simple

*4. Interest being benefited

* not applicable if easement in gross

5. Grantee — Given names — Surname/Company name and number — (include tenancy if more than one)
Ipswich City Council

6. Consideration
In compliance with the conditions of approval imposed by the Ipswich City Council in respect of Registered Plan 895110.

7. Purpose of easement
Drainage

8. Grant/Execution

The Grantor for the above consideration grants to the Grantee the easement over the servient tenement for the purpose stated in item 7 and the Grantor and Grantee covenant with each other in terms of #the attached schedule #the attached schedule and document no..... #document no.....

Witnessing Officer — Execution Date — Grantor's Signature

JUSTICE OF THE PEACE ATTORNEY-GENERALS DEPARTMENT QUALIFIED

13/9/96

.....signature
.....full name
.....qualification
as per Schedule 1 of Land Title Act 1994 (eg Legal Practitioner, JP, C.Dec)

CLAYPAVE PTY. LTD. ACN 010 551 309 Director Director

Witnessing Officer — Execution Date — Grantee's Signature

COMMISSIONER FOR DECLARATIONS REG. No. 8316 TIMOTHY JAMES SHEEHAN

20/9/96

.....signature
.....full name
.....qualification
as per Schedule 1 of Land Title Act 1994 (eg Legal Practitioner, JP, C.Dec)

Mayor Chief Executive Officer City Solicitor

© Queensland Titles Registry Pty Ltd 2022

SCHEDULE

This is the Schedule referred to in * Easement dated the 20th day of September 1996

Subject to the reservations hereinafter contained the Grantee shall be permitted the full and free right and liberty at all times and from time to time to use the said land in common with the Grantor and all other persons having the like right FOR THE PASSAGE OR CONVEYANCE OF WATER, STORM WATERS AND FOR ANY OTHER PURPOSE CONNECTED WITH DRAINAGE and for that purpose at all times and from time to time through or under the said land to have construct and thereafter forever to use and maintain an underground pipe or pipes for the passage or conveyance of stormwater through or under the said land and all equipment and fittings in connection therewith and appurtenant thereto including surface manholes, vents, marker posts and plates and thereafter at all times to have full free and uninterrupted access to the said underground pipe or pipes equipment and fittings from the surface of the said land and for the purposes aforesaid and for the purpose of patrolling, inspecting, replacing, cleansing, amending, enlarging, repairing and removing any such underground pipe or pipes, equipment and fittings full free and uninterrupted right and liberty at all times by day and by night in time of emergency and from time to time to enter upon and to go pass and repass over along and under the said land or any part or parts thereof with or without engineers, surveyors, workmen, servants, agents, contractors or any of them and with or without vehicles, plant and equipment of any description, laden or unladen, and to dig into, sink shafts in, erect scaffolding upon and to open and break up the soil of the said land or any part or parts thereof as well the subsurface as the surface thereof and to bring and place in and upon the said land or any part or parts thereof and remove such materials, machinery, equipment, tools and other articles and to do such other incidental works and things in the premises as the Grantee shall in its discretion think fit doing as little damage as may be and being responsible and held liable to make good or compensate the Grantor for damage sustained by the Grantor by reason of the exercise and performance by the Grantee of any of its rights and liberties herein granted AND THE GRANTOR DOES HEREBY COVENANT with the Grantee that notwithstanding anything by the Grantor made done or excepted or knowingly suffered the Grantor has full power to make the grant hereby made and that such grant shall remain to and be quietly held and enjoyed and taken by the Grantee and every person or corporation deriving title under the Grantee and the benefit thereof shall be received and taken accordingly without any interruption or disturbance by the Grantor or any person rightfully claiming or to claim by through under or in trust for the Grantor and freed and discharged from or otherwise by the Grantor sufficiently indemnified against all such estates, encumbrances, claims or demands as either before or after the date hereof have been or shall be made, occasioned or suffered by the Grantor or any person rightfully claiming by through under or in trust for the Grantor AND FURTHER that the Grantor and every other person having or rightfully claiming any estate or interest in the said land will from time to time and at all times hereafter on the request and at the cost of the Grantee and of any person or corporation deriving title under it execute and do all such lawful assurances and things for the further and more perfectly assuring the said grant and the rights thereby given to the Grantee and those deriving title under the Grantee as by them or any of them shall be reasonably required AND FURTHER that the foregoing GRANT and COVENANT is made subject to and shall be read as one with the special conditions hereafter contained in paragraphs 1 to 6.

1. All pipes, drains, equipment and fittings installed in or placed upon the said land in pursuance of this agreement shall remain the property of the Grantee.

2. It shall be the duty of the Grantee to reinstate to the satisfaction of the Grantor the said land and all fences, roads and paved surfaces where the same have been damaged by the Grantee in the exercise and performance of any of its rights and liberties granted herein.

3. For the purpose of gaining access to the said land the Grantee shall be entitled to pull down or break open any fencing on or adjacent to the said land provided that where livestock are contained within the fenced area sufficient notice shall be given to the Grantor to enable the said livestock to be securely held.

4. In lieu of reinstating any fence pulled down in accordance with Clause 3 herein, the Grantee may install a gate the quality of the materials and workmanship of which except with the Grantor's consent shall be not less than the quality of the materials and workmanship in the existing fence. All such gates shall become the property of the owner of the fence in which the gate is installed and thereafter shall be maintained by the said owner.

5. The Grantor covenants with the Grantee that the Grantor will refrain from any action likely to jeopardise or prejudicially affect the safety or reliable working of any pipes, mains, equipment or fittings installed in or placed upon the said land in pursuance of this agreement and that the Grantor will at all times refrain from using the said land in a manner likely to obstruct or unreasonably hinder access thereto by the Grantee; and without limiting the Grantor's responsibility herein it is expressly agreed that the Grantor may on the said land place or erect any building, structure, pavement, road, filling, refuse, drain, fence or plant any tree or excavate any hole, well, bore or tunnel only with the prior consent in writing of the Grantee.

In considering any such proposal for consent, the Grantee may -

(a) consent to the proposal; or
(b) refuse to consent to the proposal; or
(c) consent to the proposal subject to such conditions as the Grantee thinks fit

6. The Grantee indemnifies and at all times agrees to indemnify the Grantor against any claims, demands or actions which may be made or brought against the Grantor as a result of the installation, maintenance and use of the pipes, drains, equipment and fittings aforesaid.

Words importing the singular number include the plural number and vice versa and words importing any gender include the other genders and words importing only persons include corporations and/or associations and/or bodies and vice versa in each respective case.

ML 4628
Greenwood Village

GROUNDWORK plus

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 41200445
Search Date: 30/05/2022 08:00 Title Reference: 50086191
Date Created: 24/08/1995

Previous Title: 16089074

REGISTERED OWNER

Dealing No: 717297763 07/06/2016

BORAL CSR BRICKS PTY LIMITED A.C.N. 168 794 821

ESTATE AND LAND

Estate in Fee Simple

LOT 125 CROWN PLAN S3186
Local Government: IPSWICH

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10328159 (POR 125)

2. EASEMENT IN GROSS No 706325106 03/02/2003 at 16:24
burdening the land
APT PETROLEUM PIPELINES LIMITED A.C.N. 009 737 393
over
EASEMENT A ON SP142045

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2022]
Requested By: D-ENQ DYE & DURHAM

$525

FORM 9 Version 2
Land Title Act 1994 and Land Act 1994

EASEMENT

QUEENSLAND LAND REGISTRY
Page 1 of 2

706325106

$100.00
03/02/2003 16:24

BE 600

Stamp Duty Imprint
QLD DUTY - BNE
1150076469-2
04/12/2002 10:15:45
$525.00 TRFR
$18.50 UTI
~~$543.50~~ TOT

1. **Grantor**
Monier PGH Holdings Limited
(ACN 008 631 356)

Lodger Name, address & phone number
CARTER NEWELL Lawyers
Level 20, ADC House
215 Adelaide Street
Brisbane Qld 4000
(07) 3000 8300

Lodger Code 183

2. **Description of Easement/Lot** Servient Tenement (burdened land)	**County**	**Parish**	**Title Reference**
Easement A in Lot 125 on S3186 on SP142045	Stanley	Bundamba	50086191
*Dominant Tenement (benefited land)			

* not applicable if easement in gross

3. **Interest being burdened**
Fee Simple

*4. **Interest being benefited**

* not applicable if easement in gross

5. **Grantee** Given names | Surname/Company name and number | (include tenancy if more than one)
APT Petroleum Pipelines Limited
(ACN 009 737 393)

6. **Consideration**
$30,000.00

7. **Purpose of easement**
Gas Pipeline

8. **Grant/Execution**
The Grantor for the above consideration grants to the Grantee the easement over the servient tenement for the purpose stated in item 7 and the Grantor and Grantee covenant with each other in terms of the attached schedule.

Witnessing Officer | **Execution Date** | **Grantor's Signature**

signature / /
full name
qualification

See enlarged panel

as per Schedule 1 of *Land Title Act 1994* (eg Legal Practitioner, JP, C.Dec)

Witnessing Officer | **Execution Date** | **Grantee's Signature**

signature / /
full name
qualification

See enlarged panel

as per Schedule 1 of *Land Title Act 1994* (eg Legal Practitioner, JP, C.Dec)

14/08/01 8:02:47 : G:\ATB\CS Energy\8 EASEMENT ACQUISITION & LANDHOLDERS\8.5 Easement Acquisitions & Landholders Corres\Easements\Moniereasement.doc

© Queensland Titles Registry Pty Ltd 2022

Title Reference 50086191

Item 8 Grant/Execution

Grantee's Signature

Execution Date: 4/6/02

EXECUTED by **APT PETROLEUM PIPELINES LIMITED** without using a common seal by signature of a director and another person who is a secretary or director.

Secretary/~~Director~~

Austin James
Name

Director

Michael McCormack
Name

Grantor's Signature

Execution Date: 11/13/2001

THE COMMON SEAL of **MONIER PGH HOLDINGS LIMITED** being affixed to this document in the presence of:

Secretary/~~Director~~

FRANCIS GOLLINS
Name

MONIER PGH HOLDINGS LIMITED A.C.N. 009 657 555 Common Seal

Director

ROBERT ELLIOT
Name

WITNESSING OFFICER

SIGNATURE

SANDRA McDONALD
FULL NAME.

JUSTICE OF THE PEACE
#8804579
QUALIFICATION.

Title Reference 50086191

1. Grant of Easement

The Landowner grants to the Pipeline Owners and every person authorised by the Pipeline Owners the right and liberty to:

1.1 construct, use, maintain, upgrade, duplicate and remove the Pipeline and all equipment, fittings and appurtenances as may be useful or convenient in connection with the Pipeline, in through under and across the Easement Area, for the passage or conveyance of natural gas and other gaseous hydrocarbons and any products or by-products and any other substance which may be transported by pipeline;

1.2 have the right of support of the Pipeline;

1.3 enter on and pass over the Land with or without its servants, agents and others authorised by the Pipeline Owners, together with all vehicles, equipment, machinery, tools and materials considered necessary by the Pipeline Owners for access to the Easement Area or for any of the above purposes;

1.4 do all things as may be necessary or incidental to any of the above purposes.

2. Rights of the Pipeline Owners

The Pipeline Owners have the right to:

2.1 use such lands of the Landowner, immediately adjacent to either side of the Easement Area, as may reasonably be required in connection with the construction, operation and maintenance of the Pipeline;

2.2 erect and maintain gates and fences crossing the Easement Area as considered necessary.

3. Obligations of the Pipeline Owners

The Pipeline Owners shall:

3.1 promptly repair any damage caused to the Land;

3.2 compensate the Landowner for damage done to the Land by the Pipeline Owners or their servants, agents, licensees or others authorised by the Pipeline Owners in connection with the construction, operation and maintenance of the Pipeline.

4. Obligations of Landowner

4.1 The Landowner shall not, without the prior written consent of the Pipeline Owners, which will not be unreasonably withheld:

4.2 excavate, drill or erect on or under the Easement Area any roadway, pavement, pipeline, fence, cable or other improvement.

4.3 alter or disturb the present grades and contours of the Easement Area;

Title Reference 50086191

4.4 take onto the Easement Area any vehicles or equipment weighing in excess of the maximum legal loading for such vehicles or equipment on Queensland Public roads.

4.5 The Landowner shall not erect any building or structure on the Easement Area.

5. Rights of Landowner

5.1 Subject to clause 4, the Landowner shall have the right to use the Easement Area for cultivation and grazing purposes including:

5.1.1 normal cultivation for cereal, oil seed or other crops, orchards and market gardens;

5.1.2 normal grazing of cattle, sheep and other animals;

5.1.3 carry out noxious weed control and eradication programs;

5.1.4 carry out top dressing and pasture seeding;

5.1.5 pasture growth;

5.1.6 carry on normal burning practice except within 20 metres of valve or scraper stations.

5.2 If the Landowner wishes to use the Easement Area for any other purpose not specified in clause 5.1 the Landowner must obtain the prior written consent of the Pipeline Owners, which will not be unreasonably withheld.

6. Transfer by the Pipeline Owners

The Pipeline Owners may, with prior written notice to the Landowner, transfer the whole or part of their respective interests in the Easement. The Landowner will execute every such deed, instrument or assurance and do all things as may be necessary to give effect to the transfer, at the cost of the Pipeline Owners.

7. Grant of replacement Easement

Where the Landowner is the registered lessee and obtains a grant in fee simple or any new lease from the Crown of the Land, or any part of it, the Landowner will, if required by the Pipeline Owners, and subject to obtaining the consent of the Minister for Natural Resources, grant to the Pipeline Owners an easement on the like terms, so far as applicable, as contained in the Easement.

8. Pipeline not a fixture

Notwithstanding any rule of law or equity, the Pipeline will at all times remain the property of the Pipeline Owners even though it may be annexed or affixed to the Land and the Landowner will not acquire any interest in the Pipeline. The Pipeline Owners may remove the whole or part of the Pipeline at any time.

Title Reference 50086191

9. Further Assurances and Power of Attorney

9.1 The Landowner will execute every such deed, instrument or assurance and do all such things as may be necessary to secure the rights of the Pipeline Owners conferred by the Easement, including obtaining the consent of any person necessary.

10. Notice

Any notice or other document required to be given by any or either party to another party shall be forwarded by registered mail to the following addresses or other addresses as may be nominated:-

- **The Pipeline Owners**

  APT Petroleum Pipelines Limited, Level 7, 300 Ann Street, Brisbane, Qld, 4000.

- **Landowner**

  CSR Property, Level 6, 9 Help Street, Chatswood, NSW, 2067

11. Consent of the Minister for Natural Resources

This Easement shall have no force or effect until it has received the consent, where required by law, of the Minister for Natural Resources.

12. GST

12.1 In this Clause

(a) "**GST**" means the goods and services tax payable under the GST Act.

(b) "**the GST Act**" means A New Tax System (Goods and Services Tax) Act 1999 as amended and includes any regulations and rulings issued pursuant to the GST Act. The terms used in this Easement have the meanings defined in the GST Act.

12.2 Any money payable by the Pipeline Owners under this Easement have been calculated without regard to GST and are exclusive of GST.

12.3 Each payment by the Pipeline Owners for a Taxable Supply made by the Landowner to the Pipeline Owners must have added to it an additional amount equal to the GST.

12.4 The Landowner will issue to the Pipeline Owners tax invoices in a form which complies with the GST Act.

13. Definitions

13.1 **The Pipeline Owners** means the entities identified in Item 5 of Form 9 and their respective successors and assigns and their officers, servants, employees, agents, contractors, invitees and others authorised by the Pipeline Owners.

Title Reference 50086191

13.2 **Landowner** means the person identified in Item 1 of Form 9 and its successors, executors, administrators and assigns and the lessee or lessees, occupier or occupiers for the time being of the Land.

13.3 **Land** means the land described in Item 2 of Form 9 by either the real property description or special lease description.

13.4 **Pipeline** means the pipeline or pipelines and all ancillary equipment, fittings and structures, including valve stations and scraper stations necessary or connected with the pipeline or pipelines.

13.5 **Easement Area** means the land described in Item 2 of the Form 9.

ML 1102 Oxley

GROUNDWORK plus

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 41200473
Search Date: 30/05/2022 08:07 Title Reference: 16606201
Date Created: 17/05/1984

Previous Title: 13719007

REGISTERED OWNER

Dealing No: 717297763 07/06/2016

BORAL CSR BRICKS PTY LIMITED A.C.N. 168 794 821

ESTATE AND LAND

Estate in Fee Simple

LOT 1 REGISTERED PLAN 190493
Local Government: BRISBANE CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10003022 (POR 36)

2. EASEMENT IN GROSS No 602540862 (H342527) 19/07/1984
BURDENING THE LAND
TO BRISBANE CITY COUNCIL
OVER EASEMENT B ON RP190495

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2022]
Requested By: D-ENQ DYE & DURHAM

H342527

NO.

Memorandum of encumbrances, liens and interests

MEMORANDUM OF TRANSFER
OF EASEMENT

Stamp Duties Office
20 JUN 1984
— BRISBANE —

ACMIL LIMITED

Grantor

BRISBANE CITY COUNCIL

Grantee

602540862

H342527 EAS IN GROSS

overpaid Refund $5.00

Particulars entered in the Register Book, Volume 6606 Folio 201+202 the

28 AUG 1984

S. 22 - 2

Registrar of Titles.

Plan noted

Received 2 deed mentioned herein.

X

24/9/84

14307 $146.00

5.00 overpaid

51.00

$146

FILED 9 AM '84 TITLES

B.P. O'Brien,
City Solicitor,
Brisbane Administration Centre,
69 Ann Street,
BRISBANE.

D.H.
(8)223/30-KD350/2472

19.8.84

Attention (Typewritten) Deeds
D.J. McNAMARA,
C/o ACMIL LTD.,
BOX 104,
ALDERLEY

$ SHORT PSE
$5 — REGISTRATION FEE
21 AUG 1984
Paid Vide No. F68176

© Queensland Titles Registry Pty Ltd 2022

$1.50

MEMORANDUM OF TRANSFER OF EASEMENT

ACMIL LIMITED of Brisbane in the State of Queensland (hereinafter called "the Grantor") being the registered proprietor of an estate in fee simple SUBJECT HOWEVER to such encumbrances, liens and interests as are notified by memorandum endorsed hereon in all that piece or parcel of land described in the First Schedule hereto:

THE FIRST SCHEDULE

County of Stanley, Parish of Oxley
City of Brisbane

STAMP DUTIES OFFICER

Certificate of Title No.	Vol.	Fol.	Description	Area
	6606	201	Lot 1 on Registered Plan No. 190493	7.037 hectares
	6606	202	Lot 2 on Registered Plan No. 190493	7.835 hectares

IN CONSIDERATION of the sum of One dollar ($1.00) paid to it by BRISBANE CITY COUNCIL (hereinafter called "the Grantee") the receipt of which sum is hereby acknowledged DO HEREBY GRANT AND TRANSFER to the Grantee its successors and assigns the full and free right and liberty at all times and from time to time to have, lay, construct and thereafter forever to use and maintain on, over, through or under that part of the aforesaid piece of land situate in the County and Parish aforesaid, and described in the Second Schedule hereunder:

THE SECOND SCHEDULE

Certificate of Title No.	Vol.	Fol.	Description	Area
part	6606	201	Easement B in Lot 1 on Registered Plan No. 190493 on Registered Plan No. 190495	693 square metres
	6606	202	Easement A in Lot 2 on Registered Plan No. 190493 on Registered Plan No. 190495	672 square metres

Servient

(which land is hereinafter referred to as "the said land") underground drain or drains or pipe or pipes for the passage or conveyance of rain water and waste or foul liquids and all manholes, manhole chambers, inlets, equipment and fittings in connection therewith or for the accommodation of any adjoining or neighbouring property or properties or otherwise in the execution of its drainage powers and for the purposes aforesaid and for the purpose of obtaining free and uninterrupted access to the said drain or drains, pipe or pipes, manholes, manhole chambers, inlets, equipment and fittings from the surface of the said land and for the purposes of changing the size and number of, operating, inspecting, patrolling, altering, removing, replacing, reconstructing and/or repairing the said drain or drains, pipe or pipes, manholes, manhole chambers, inlets, equipment and fittings as aforesaid, full free and uninterrupted right and liberty at all times by day and by night and from time to time to enter upon and to go, pass and

repass over, along and under the said land or any part or parts thereof with or without engineers, surveyors, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by the Grantee and with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things, laden or unladen, and to dig into, sink shafts in, erect scaffolding upon and to open and break up the soil of the said land or any part or parts thereof as well the subsurface as the surface thereof and to bring and place in and upon the said land or any part or parts thereof and remove such materials, machinery, equipment, tools and other articles and to do such other incidental works and things in the premises as the Grantee shall in its discretion think fit doing as little damage as may be but being responsible or held liable only for such damage or inconvenience to the owners or occupiers for the time being of any part or parts of the land described in the First Schedule or any subdivisions or subdivision thereof as may be caused or suffered by reason only of the neglect or default of the Grantee and its successors and its and their contractors, agents, servants and employees and also the full and free right at all times and from time to time to the uninterrupted flow of rain water and drainage of all kinds inclusive of stormwater run off flowing in concentration either intermittently or occasionally (all of which is hereinafter called "stormwater drainage") over and along the surface of the said land without

(1) any obstruction, interruption, impeding, hampering or interference, diversion, scouring, change or alteration in or to the flow or escape of stormwater drainage or its or their natural outlet (if any) or

(2) any ponding of waters

caused by or consequent upon

(a) any use to which the said land may be put or

(b) the erection, raising, making, placing or suffering to stand or to remain of any building, fence, wall, structure (whether of the class just mentioned or not) paving or vegetation (except grass which is kept properly mown at all times) or thing whatsoever upon the said land or

(c) any alteration in level or gradient of the said land or any change to the surface of the said land or to the natural or artificial features of the said land which contain or assist in containing the flow of stormwater drainage over the said land

other than as is or are permitted in writing by the Grantee or the permanent head for the time being of the Department of Works of the Grantee and only on such terms and conditions as the Grantee or the said permanent head may impose or stipulate in the event of such permission being granted

with power for the Grantee and its contractors, agents and servants (but without prejudice to any other powers or remedies of the Grantee) at the cost to the owner or owners, registered proprietor or registered proprietors or occupier or occupiers from time to time and for the time being of the said land or any of them

(i) to demolish, remove or otherwise dispose of any building, fence, wall, structure (whether of the class just mentioned or not) paving or vegetation (except grass which is kept properly mown at all times) or thing whatsoever at any time on or in the

said land in contravention of the foregoing provisions and

(ii) to perform any works necessary for restoring or reinstating the said land (including the grass thereon) and the natural or artificial features containing or assisting in containing the flow of stormwater drainage over the said land to their former state and condition and also

(iii) to alter, grade, pave, prepare, grass, fertilize or mow the surface of the said land or place, install, establish or construct and keep any earthworks and any other works whatsoever (whether of the class just mentioned or not) thereon or therein for the purpose of the exercise of the rights hereinbefore given or incidental thereto or for the purpose of forming the surface of the said land in such a way as to contain the flow of stormwater drainage or for the purpose of rectifying or alleviating any scouring of the said land due to the flow of stormwater drainage thereover

and for the purposes aforesaid and for the purpose of obtaining free and uninterrupted access to the said land and any works or things thereon or therein full, free and uninterrupted right and liberty at all times by day and by night to enter upon and to go, pass and repass over, along and under the said land or any part or parts thereof with or without engineers, surveyors, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by the Grantee and with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things laden or unladen and to dig into, sink shafts in, erect scaffolding upon and to open and break up the soil of the said land or any part or parts thereof as well the subsurface as the surface thereof and to bring and place in and upon the said land or any part or parts thereof and remove such materials, machinery, equipment, tools and other articles and to do such other incidental works and things in the premises as the Grantee shall in its discretion think fit.

IT IS HEREBY MUTUALLY COVENANTED AND AGREED by and between the Grantor and the Grantee that for all or any purposes aforesaid the Grantee, its surveyors, engineers, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by it together with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things laden or unladen, shall have the right to use such land of the Grantor immediately adjacent to the said land as may reasonably be required by the Grantee in connection with all or any of the purposes aforesaid and shall have the right of ingress, egress, and regress to and from the said land over the land of the Grantor or adjacent to the said land to permit access to and from the public road named Boundary Road or to such other point on the land of the Grantor as the Grantee shall consider convenient or necessary to enable the Grantee, its surveyors, engineers, servants, agents, licensees, contractors,

subcontractors, workmen and others authorised by it together with all equipment and materials considered necessary by the Grantee to obtain access to and from the said land.

Notwithstanding the generality of the foregoing the following provisions shall apply:

(i) The Grantor shall at all times maintain and keep the said land reasonably grassed and properly mown.

(ii) The Grantor shall at all times maintain and keep the surface of the said land formed so as to contain the stormwater drainage within a defined course if and as directed by the permanent head of the Department of Works of the Grantee from time to time.

(iii) The Grantor shall not erect any buildings, fences, walls, structures, (whether of the class just mentioned or not) or pavings (hereinafter called "obstructions") nor permit nor suffer to grow or remain any vegetation (other than grass which is kept properly mown at all times) on the said land nor shall the Grantor erect permit or suffer to remain any obstructions or vegetation other than grass which is kept properly mown at all times on the land of the Grantor immediately adjacent to the said land whereby the rights of the Grantee set out herein are unreasonably restricted or diminished unless and to the extent only that any such obstructions or vegetation are permitted in writing by the Grantee or the permanent head for the time being of the Department of Works of the Grantee and only on such terms and conditions as the Grantee or the said permanent head may impose or require in the event of such permission being granted.

AND IT IS HEREBY FURTHER AGREED AND DECLARED that the expression "the Grantor" shall where the context so admits or requires include Acmil Limited and the respective transferees and assigns of the Grantor and the registered proprietor or proprietors owner or owners (and their and each of their respective successors, executors, administrators and assigns as the case may be) and the occupier or occupiers for the time being of the said land and the expression "the Grantee" shall where the context so admits or requires include Brisbane City Council and the successors transferees and assigns of the Grantee.

Words importing the singular number include the plural number and vice versa and words importing any gender include the other genders and words importing only persons include corporations and/or associations and/or bodies and vice versa in each respective case.

IN WITNESS WHEREOF the parties hereto have executed these presents as hereinafter set forth.

The Common Seal of ACMIL LIMITED was hereunto affixed this 6th day of July 1984 by authority of a resolution of the Board of Directors in the presence of Ian Leslie Fraser a Director and Robert Clifford Giacometti a Director/ Secretary and in the presence of:

Director

Director/Secretary

A Justice of the Peace.

The Seal of BRISBANE CITY COUNCIL)
was hereunto affixed this)
26th day of JUNE)
1984, by me, Neil Macpherson, I)
being the proper officer to affix) Deputy Town Clerk
such Seal, in the presence of:)

J. Casson J.P.

A Justice of the Peace.

Correct for the purpose of registration

City Solicitor
Solicitor for the Grantee

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 41200517
Search Date: 30/05/2022 08:15 Title Reference: 16606202
Date Created: 17/05/1984

Previous Title: 13719007

REGISTERED OWNER

Dealing No: 717297763 07/06/2016

BORAL CSR BRICKS PTY LIMITED A.C.N. 168 794 821

ESTATE AND LAND

Estate in Fee Simple

LOT 2 REGISTERED PLAN 190493
Local Government: BRISBANE CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10003020 (POR 35)

2. EASEMENT IN GROSS No 602540862 (H342527) 19/07/1984
BURDENING THE LAND
TO BRISBANE CITY COUNCIL
OVER EASEMENT A ON RP190495

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2022]
Requested By: D-ENQ DYE & DURHAM

H342527

NO.

Memorandum of encumbrances, liens and interests

MEMORANDUM OF TRANSFER
OF EASEMENT

Stamp Duties Office
20 JUN 1984
— BRISBANE —

ACMIL LIMITED

Grantor

BRISBANE CITY COUNCIL

Grantee

602540862

H342527 EAS IN GROSS

overpaid Refund $5.00

Particulars entered in the Register Book, Volume 6606 Folio 201+202 the

28 AUG 1984

S. 22 - 2

Registrar of Titles.

Plan noted

Received 2 deed mentioned herein.

X

24/9/84

14307 $146.00

5.00 overpaid

51.00

$146

FILED 9 AM '84 TITLES

B.P. O'Brien,
City Solicitor,
Brisbane Administration Centre,
69 Ann Street,
BRISBANE.

D.H.
(8)223/30-KD350/2472

19.8.84

Attention (Typewritten) Deeds
D.J. McNAMARA,
C/o ACMIL LTD.,
BOX 104,
ALDERLEY

$ SHORT PSE
$5 — REGISTRATION FEE
21 AUG 1984
Paid Vide No. F68176

© Queensland Titles Registry Pty Ltd 2022

$1.50

MEMORANDUM OF TRANSFER OF EASEMENT

ACMIL LIMITED of Brisbane in the State of Queensland (hereinafter called "the Grantor") being the registered proprietor of an estate in fee simple SUBJECT HOWEVER to such encumbrances, liens and interests as are notified by memorandum endorsed hereon in all that piece or parcel of land described in the First Schedule hereto:

THE FIRST SCHEDULE

County of Stanley, Parish of Oxley
City of Brisbane

STAMP DUTIES OFFICER

Certificate of Title No.	Vol.	Fol.	Description	Area
	6606	201	Lot 1 on Registered Plan No. 190493	7.037 hectares
	6606	202	Lot 2 on Registered Plan No. 190493	7.835 hectares

IN CONSIDERATION of the sum of One dollar ($1.00) paid to it by BRISBANE CITY COUNCIL (hereinafter called "the Grantee") the receipt of which sum is hereby acknowledged DO HEREBY GRANT AND TRANSFER to the Grantee its successors and assigns the full and free right and liberty at all times and from time to time to have, lay, construct and thereafter forever to use and maintain on, over, through or under that part of the aforesaid piece of land situate in the County and Parish aforesaid, and described in the Second Schedule hereunder:

THE SECOND SCHEDULE

Certificate of Title No.	Vol.	Fol.	Description	Area
part	6606	201	Easement B in Lot 1 on Registered Plan No. 190493 on Registered Plan No. 190495	693 square metres
	6606	202	Easement A in Lot 2 on Registered Plan No. 190493 on Registered Plan No. 190495	672 square metres

Servient

(which land is hereinafter referred to as "the said land") underground drain or drains or pipe or pipes for the passage or conveyance of rain water and waste or foul liquids and all manholes, manhole chambers, inlets, equipment and fittings in connection therewith or for the accommodation of any adjoining or neighbouring property or properties or otherwise in the execution of its drainage powers and for the purposes aforesaid and for the purpose of obtaining free and uninterrupted access to the said drain or drains, pipe or pipes, manholes, manhole chambers, inlets, equipment and fittings from the surface of the said land and for the purposes of changing the size and number of, operating, inspecting, patrolling, altering, removing, replacing, reconstructing and/or repairing the said drain or drains, pipe or pipes, manholes, manhole chambers, inlets, equipment and fittings as aforesaid, full free and uninterrupted right and liberty at all times by day and by night and from time to time to enter upon and to go, pass and

repass over, along and under the said land or any part or parts thereof with or without engineers, surveyors, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by the Grantee and with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things, laden or unladen, and to dig into, sink shafts in, erect scaffolding upon and to open and break up the soil of the said land or any part or parts thereof as well the subsurface as the surface thereof and to bring and place in and upon the said land or any part or parts thereof and remove such materials, machinery, equipment, tools and other articles and to do such other incidental works and things in the premises as the Grantee shall in its discretion think fit doing as little damage as may be but being responsible or held liable only for such damage or inconvenience to the owners or occupiers for the time being of any part or parts of the land described in the First Schedule or any subdivisions or subdivision thereof as may be caused or suffered by reason only of the neglect or default of the Grantee and its successors and its and their contractors, agents, servants and employees and also the full and free right at all times and from time to time to the uninterrupted flow of rain water and drainage of all kinds inclusive of stormwater run off flowing in concentration either intermittently or occasionally (all of which is hereinafter called "stormwater drainage") over and along the surface of the said land without

(1) any obstruction, interruption, impeding, hampering or interference, diversion, scouring, change or alteration in or to the flow or escape of stormwater drainage or its or their natural outlet (if any) or

(2) any ponding of waters

caused by or consequent upon

(a) any use to which the said land may be put or

(b) the erection, raising, making, placing or suffering to stand or to remain of any building, fence, wall, structure (whether of the class just mentioned or not) paving or vegetation (except grass which is kept properly mown at all times) or thing whatsoever upon the said land or

(c) any alteration in level or gradient of the said land or any change to the surface of the said land or to the natural or artificial features of the said land which contain or assist in containing the flow of stormwater drainage over the said land

other than as is or are permitted in writing by the Grantee or the permanent head for the time being of the Department of Works of the Grantee and only on such terms and conditions as the Grantee or the said permanent head may impose or stipulate in the event of such permission being granted

with power for the Grantee and its contractors, agents and servants (but without prejudice to any other powers or remedies of the Grantee) at the cost to the owner or owners, registered proprietor or registered proprietors or occupier or occupiers from time to time and for the time being of the said land or any of them

(i) to demolish, remove or otherwise dispose of any building, fence, wall, structure (whether of the class just mentioned or not) paving or vegetation (except grass which is kept properly mown at all times) or thing whatsoever at any time on or in the

said land in contravention of the foregoing provisions and

(ii) to perform any works necessary for restoring or reinstating the said land (including the grass thereon) and the natural or artificial features containing or assisting in containing the flow of stormwater drainage over the said land to their former state and condition and also

(iii) to alter, grade, pave, prepare, grass, fertilize or mow the surface of the said land or place, install, establish or construct and keep any earthworks and any other works whatsoever (whether of the class just mentioned or not) thereon or therein for the purpose of the exercise of the rights hereinbefore given or incidental thereto or for the purpose of forming the surface of the said land in such a way as to contain the flow of stormwater drainage or for the purpose of rectifying or alleviating any scouring of the said land due to the flow of stormwater drainage thereover

and for the purposes aforesaid and for the purpose of obtaining free and uninterrupted access to the said land and any works or things thereon or therein full, free and uninterrupted right and liberty at all times by day and by night to enter upon and to go, pass and repass over, along and under the said land or any part or parts thereof with or without engineers, surveyors, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by the Grantee and with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things laden or unladen and to dig into, sink shafts in, erect scaffolding upon and to open and break up the soil of the said land or any part or parts thereof as well the subsurface as the surface thereof and to bring and place in and upon the said land or any part or parts thereof and remove such materials, machinery, equipment, tools and other articles and to do such other incidental works and things in the premises as the Grantee shall in its discretion think fit.

IT IS HEREBY MUTUALLY COVENANTED AND AGREED by and between the Grantor and the Grantee that for all or any purposes aforesaid the Grantee, its surveyors, engineers, servants, agents, licensees, contractors, subcontractors, workmen and others authorised by it together with or without horses, carts, drays, motor cars, lorries, waggons, trucks, trollies, cranes, earthmoving equipment and other vehicles and things laden or unladen, shall have the right to use such land of the Grantor immediately adjacent to the said land as may reasonably be required by the Grantee in connection with all or any of the purposes aforesaid and shall have the right of ingress, egress, and regress to and from the said land over the land of the Grantor or adjacent to the said land to permit access to and from the public road named Boundary Road or to such other point on the land of the Grantor as the Grantee shall consider convenient or necessary to enable the Grantee, its surveyors, engineers, servants, agents, licensees, contractors,

subcontractors, workmen and others authorised by it together with all equipment and materials considered necessary by the Grantee to obtain access to and from the said land.

Notwithstanding the generality of the foregoing the following provisions shall apply:

(i) The Grantor shall at all times maintain and keep the said land reasonably grassed and properly mown.

(ii) The Grantor shall at all times maintain and keep the surface of the said land formed so as to contain the stormwater drainage within a defined course if and as directed by the permanent head of the Department of Works of the Grantee from time to time.

(iii) The Grantor shall not erect any buildings, fences, walls, structures, (whether of the class just mentioned or not) or pavings (hereinafter called "obstructions") nor permit nor suffer to grow or remain any vegetation (other than grass which is kept properly mown at all times) on the said land nor shall the Grantor erect permit or suffer to remain any obstructions or vegetation other than grass which is kept properly mown at all times on the land of the Grantor immediately adjacent to the said land whereby the rights of the Grantee set out herein are unreasonably restricted or diminished unless and to the extent only that any such obstructions or vegetation are permitted in writing by the Grantee or the permanent head for the time being of the Department of Works of the Grantee and only on such terms and conditions as the Grantee or the said permanent head may impose or require in the event of such permission being granted.

AND IT IS HEREBY FURTHER AGREED AND DECLARED that the expression "the Grantor" shall where the context so admits or requires include Acmil Limited and the respective transferees and assigns of the Grantor and the registered proprietor or proprietors owner or owners (and their and each of their respective successors, executors, administrators and assigns as the case may be) and the occupier or occupiers for the time being of the said land and the expression "the Grantee" shall where the context so admits or requires include Brisbane City Council and the successors transferees and assigns of the Grantee.

Words importing the singular number include the plural number and vice versa and words importing any gender include the other genders and words importing only persons include corporations and/or associations and/or bodies and vice versa in each respective case.

IN WITNESS WHEREOF the parties hereto have executed these presents as hereinafter set forth.

The Common Seal of ACMIL LIMITED was hereunto affixed this 6th day of July 1984 by authority of a resolution of the Board of Directors in the presence of Ian Leslie Fraser a Director and Robert Clifford Giacometti a Director/ Secretary and in the presence of:

Director

Director/Secretary

A Justice of the Peace.

The Seal of BRISBANE CITY COUNCIL)
was hereunto affixed this)
26th day of JUNE)
1984, by me, Neil Macpherson, I)
being the proper officer to affix) Deputy Town Clerk
such Seal, in the presence of:)

J. Casson J.P.

A Justice of the Peace.

Correct for the purpose of registration

City Solicitor
Solicitor for the Grantee

ML 50116 Redbank Plains

GROUNDWORK plus

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 41200855
Search Date: 30/05/2022 08:49 Title Reference: 51261589
Date Created: 02/09/2021

Previous Title: 51261586

REGISTERED OWNER

Dealing No: 720952082 20/07/2021

BORAL CSR BRICKS PTY LIMITED A.B.N. 68 168 794 821

ESTATE AND LAND

Estate in Fee Simple

LOT 1 SURVEY PLAN 325748
Local Government: IPSWICH

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10300175 (POR 275)

2. EASEMENT IN GROSS No 601234352 (E71607) 03/08/1971
BURDENING THE LAND
TO QUEENSLAND ELECTRICITY COMMISSION
OVER EASEMENT A IN SUB 1 ON RP126792

3. TRANSFER No 703440185 08/07/1999 at 08:19
EASEMENT IN GROSS: 601234352 (E71607)
QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED
A.C.N. 078 849 233

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2022]
Requested By: D-ENQ DYE & DURHAM

NO. E 71607

MEMORANDUM OF ENCUMBRANCES

LIENS AND INTERESTS

REQUEST FOR REGISTRATION
OF PROCLAMATION

EASEMENT No. E71607 Is vested In The Queensland Electricity Generating Board No. H232070 PRODUCED 24 May 1984 REGD.

22 JUN1984

REGISTRAR OF TITLES

Particulars entered in the Register Book Volume 879 Folio 184 the 6 day of Aug 1971, at 12-45 p

Registrar of Titles.

601234352

E71607 EAS IN GROSS

$4-00

RECEIVED
REGR. OF TITLES
AUG 3 3 48 PM '71

THYNNE & MACARTNEY,
SOLICITORS,
BRISBANE.

© Queensland Titles Registry Pty Ltd 2022

AUG--2-71 18935 A S/BLST 3$0****1.25

STAMP DUTIES OFFICE BRISBANE QLD. COMMISSIONER

To -

The Registrar of Titles,
BRISBANE.

Sir,

Please record this Resumption in terms of the within Proclamation under "The Southern Electric Authority of Queensland Acts, 1952 to 1964" and the "Acquisition of Land Act 1967-1969" of all those pieces or parcels of land described as follows :-

(1) Easement A in Subdivision 1 of Portion 275 as shown on Registered Plan No. 126792 County of Stanley Parish of Goodna containing 1 acre 3 roods 31.4 perches and being part of the land contained in Certificate of Title No. 141944 Volume 879 Folio 184.

DATED this Sixteenth day of July, 1971.

The Southern Electric Authority of
Queensland
By its Solicitors

.....

S.G.I.O. Building,
Albert and Turbot Streets,
BRISBANE.

STAMP DUTIES OFFICE
111813 -2.AUG.1971
BRISBANE

A PROCLAMATION

By the Honourable MOSTYN HANGER, Chief Justice of the State of Queensland, Deputy for and on behalf of His Excellency the Honourable Sir ALAN JAMES MANSFIELD, Knight Commander of the Most Distinguished Order of Saint Michael and Saint George, Knight Commander of the Royal Victorian Order, Governor in and over the State of Queensland and its Dependencies, in the Commonwealth of Australia.

[L.S.]
MOSTYN HANGER,
Deputy Governor.

IN pursuance of the powers and authorities in me vested under the provisions of the *Acquisition of Land Act* 1967–1969 and in pursuance of all other the powers and authorities, in me vested, I, MOSTYN HANGER, the Deputy Governor aforesaid, acting by and with the advice of the Executive Council, do, by this my Proclamation, notify and declare that over the land described in the Schedule hereto an easement is taken by The Southern Electric Authority of Queensland as from the Nineteenth day of June, 1971, for the purpose of an Electric Line including full and free liberty and right to convey electricity over and across the said land in accordance with "*The Southern Electric Authority of Queensland Acts*, 1952 *to* 1964" (or any Act or Acts amending or in substitution for the same), by means of electric lines with full power to the Authority, its agents, servants, workmen, linesmen and others authorised by it to:—

1. Construct and erect on in over across or through the said land the electric lines hereinbefore described and for such purpose to erect on the said land cables, steel towers, poles, ground stays and supports and to inspect maintain and repair, renew, replace and/or reconstruct such electric lines, cables, steel towers, poles, ground stays and supports as shall be required for so conveying electricity and at any time to remove and carry away the whole or any part or parts of the said electric lines, cables, steel towers, poles, ground stays and supports.

2. Clear and keep clear the said land by spraying or by other means and to cut and remove timber trees and undergrowth from the said land and to burn off on the said land all such timber trees and undergrowth.

3. Construct and maintain such access tracks, gates and other works as the Authority shall consider necessary on the said land.

4. Permit and allow structures or buildings existing on the said land at the date hereof to remain but to prevent the making or causing to be made any alterations or additions to such structures or buildings affecting their overall dimensions without the written consent of the Authority unless such alterations or additions are to buildings or structures not over seven (7) feet in height from ground level and have not a floor area in excess of 240 square feet and provided that such alterations or additions do not increase the height above ground level of such buildings and structures beyond seven (7) feet or the floor area beyond 240 square feet.

5. Permit the use of the said land for any purpose not inconsistent with the rights mentioned herein and not likely to cause interference with or endanger the electric lines, towers, poles, ground stays, supports, access tracks or appurtenant works erected on in over or across the said land.

6. Prevent:—

(*a*) The erection of any additional structure or building to a height exceeding seven (7) feet from ground level or any building or structure having a floor area in excess of 240 square feet on the said land;

(*b*) The stockpiling of any soil, sand, gravel, other substance or material on the said land or the construction of any roads, dam walls or other earthworks on the said land which would in any way reduce below the statutory requirement the height of the conductors above ground level;

(*c*) The removal or stockpiling of any soil, sand, gravel, clay or other substance from or on the said land within ten (10) feet either side of the centre line of the said land;

(*d*) Removal or stockpiling of any soil, sand, gravel or other substance within a distance of ninety-nine (99) feet from the centre of the base of any steel tower, pole, ground stay or support on or in the said land;

(*e*) The inundation of the said land where any towers, poles, ground stays or supports are erected or located;

(*f*) The inundation of the said land which would in any way reduce below the statutory requirement the height of the conductors;

(*g*) The laying of any metal pipes or the installation or erection of metal pickets or any metal fence within a distance of thirty (30) feet from the base of any steel tower, pole, ground stay or support;

(*h*) The growing of any sugarcane on the said land.

And also with full power for the Authority, its agents, servants, workmen, linesmen, contractors and others authorised by it with or without vehicles, plant and equipment of any description to enter upon and remain pass and repass on and over the said land for all or any of the purposes aforesaid.

L.A.B. 391.

Given under my Hand and Seal at Government House, Brisbane, this seventeenth day of June, in the year of our Lord, one thousand nine hundred and seventy-one, and in the twentieth year of Her Majesty's reign.

By Command, V. B. SULLIVAN.

GOD SAVE THE QUEEN!

THE SCHEDULE

(By way of Easement)

Constructing Authority.—The Southern Electric Authority of Queensland

THE IPSWICH LAND AGENT'S DISTRICT

County of Stanley, parish of Goodna

Land over which Easement is taken.—Subdivision 1 of portion 275.

Area over which Easement is taken.—An area of 1 acre 3 roods 31·4 perches, being Easement A on Registered Plan No. 126792 deposited in the Titles Office, Brisbane, and being part of the land contained in Certificate of Title No. 141944, volume 879, folio 184.

Attachment 7

PRCP Schedule

PRCP schedule

Environmental Protection Act 1994

PRCP schedule P-PRCP-100726381

This is the approved form for a PRCP schedule issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

PRCP schedule: P-PRCP-100726381

PRCP schedule holder(s)

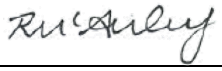
Name(s)	Registered address
PGH Bricks & Pavers Pty Ltd	Level 5, Triniti 3, 39 Delhi Road NORTH RYDE NSW 2113

Location details

Location(s)
Mining Lease (ML) 1102, ML4552, ML4604, ML4628, ML4629, ML4632, ML4639, ML4640, ML4643, ML4654, ML4706, ML4713, ML50028, ML50144, ML4622, ML50116, ML50117 and ML4583

Take effect

In accordance with section 202B of the *Environmental Protection Act 1994* (EP Act), the PRCP schedule has effect on the day the environmental authority for carrying out relevant activities on land to which the schedule relates takes effect. Pursuant to section 202C of the EP Act, a PRCP schedule continues in force until the environmental authority for the relevant activities to which the PRCP schedule relates is cancelled or surrendered, even if the resource tenure expires or is cancelled and even if the relevant environmental authority is suspended under Chapter 5, part 11 or 11A of the EP Act.

Signature	Date
	26 September 2025

Rebecca McAuley
Department of the Environment, Tourism, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Minerals Business Centre
PO Box 7230, Cairns QLD 4870
Phone: 07 4222 5352
Email: ESCairns@detsi.qld.gov.au

Queensland Government

Obligations under the *Environmental Protection Act 1994*

Pursuant to section 202E of the EP Act, if there is an inconsistency between an environmental authority and a PRCP schedule, the environmental authority prevails to the extent of the inconsistency.

Pursuant to section 285 of the EP Act:

- the holder of a PRCP schedule must commission an audit of the schedule by a rehabilitation auditor for the following periods (each an audit period) —

  (a) the 3-year period starting on the day the schedule takes effect

  (b) each 3-year period starting on the day after the previous audit period ended.

- the holder must, within 4 months after the end of each audit period, give the administering authority -

  (a) the rehabilitation auditor's report (an audit report) about the audit that complies with section 286 of the EP Act, and

  (b) a declaration for the audit report that complies with section 285 of the EP Act.

In addition to the requirements found in the conditions of this PRCP schedule, the holder must also meet their obligations under the environmental authority, the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the EP Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443).

PRCP schedule

The PRCP schedule incorporates the following sections:

- Section A - Conditions of PRCP schedule
- Section B - Final site design and reference maps
- Section C - Post mining land uses

Section A - Conditions of PRCP schedule

Pursuant to section 206A of the EP Act:

- it is a condition of this PRCP schedule that, in carrying out a relevant activity under the schedule, the holder must comply with a requirement stated in the environmental authority relevant to carrying out the activity.
- it is a condition of this PRCP schedule that the holder must comply with the following matters stated in the schedule -

  (a) each rehabilitation milestone and management milestone

  (b) when each rehabilitation milestone and management milestone is to be achieved

General conditions

PRCP1 All mining disturbance authorised under EA EPML03821316 must have an associated rehabilitation outcome provided in this schedule.

PRCP2 The holder must for each rehabilitation area achieve the rehabilitation milestone criteria (milestone reference):

(a) for the cumulative area available specified in this schedule; and

(b) by the milestone completion date specified in this schedule.

PRCP3 Where land becomes ‘available for rehabilitation’ earlier than the date nominated in this schedule, the holder must:

(a) Notify the administering authority in writing within 30 days of the land becoming ‘available for rehabilitation’. The written notification must include precise details of the relevant land area and the date when that land became ‘available for rehabilitation’; and

(b) Unless otherwise agreed to by the administering authority in writing, within 90 days of the land becoming ‘available for rehabilitation’, apply to the administering authority to amend this schedule in a way that maximises the progressive rehabilitation of the land to a stable condition.

Note: reference to "earlier than the date nominated in this schedule" means a date that is greater than 1 year prior to the date nominated in this schedule.

PRCP4 Where an area achieves a rehabilitation milestone, the holder must continue to achieve the milestone criteria until a surrender is approved.

PRCP5 The holder must maintain a risk register that identifies the risks to not achieving a stable condition for post-mining land uses, and how the risks are being managed or minimised. The risk register must be reviewed annually and include consideration of the outcomes of PRCP monitoring data.

PRCP6 The holder must undertake monitoring and maintenance as described in this schedule and the rehabilitation planning part for the activity. Where there is any inconsistency between this schedule and the rehabilitation planning part the schedule criteria prevail to the extent of the inconsistency.

PRCP7 The holder must make and keep up to date records on:

(a) Achievement and maintenance of achievement of each rehabilitation milestone criteria of this schedule.

(b) Rehabilitation activities and the results of those activities (including but not limited to, actions taken, date, location, methods, data collected, QA/QC, photos, waste tracking and disposal records, appropriately qualified person details and assumptions)**;**

(c) Maintenance of rehabilitation and the results of maintenance activities;

(d) Monitoring of rehabilitation and the results of monitoring;

(e) Details and results of rehabilitation trials;

(f) Designs, drawings, specifications and any similar documents developed in accordance with good professional practice in relation to rehabilitation milestones or milestone criteria;

(g) All documents in relation to the requirements of this schedule, including reports (e.g. site investigation report), statements (e.g. site suitability statement), certifications, assessments, investigations, inspections, audits or any similar documents developed in relation to rehabilitation milestones or milestone criteria;

(h) Landholder agreements;

(i) Details of community consultation in the community consultation register relating to rehabilitation and closure activities.

PRCP8 Records made under PRCP7 must be kept until the relevant environmental authority has been surrendered.

PRCP9 Records made under PRCP7 must be provided to the administering authority in the specified format within 10 business days of a written request.

PRCP10 The holder must progressively analyse and report on PRCP monitoring data relating to surface water quality with the findings incorporated into the risk register under PRCP5.

PRCP11 All AQP designs, specifications, certifications, assessments and any similar documents developed in accordance with good professional practice must include documented consideration of any relevant guideline or publication material.

PRCP12 Surface water quality must be monitored monthly during flow, and not limited to, the locations specified in Table 5 - Surface water monitoring locations.

Note: water quality monitoring may commence during RM8 and RM9 of this schedule.

PRCP13 With respect to surface water the following must be demonstrated prior to surrender:

(a) Surface water quality must not exceed the limits specified in Table 6 - Surface Water Quality Limits within the two-year period immediately prior to surrender or the actions outlined in (b) or (c) apply for individual sample events that exceed a limit;

(b) If the surface water quality exceeds criteria PRCP13a), the applicable upstream site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream site[1].

(c) Where the surface water quality at the downstream site exceeds the upstream site result (PRCP13b), an AQP must complete an assessment of the risk of rehabilitation not achieving a stable condition within the schedule timeframe and:

[1] For pH, the quality result measured at the downstream location must be within the prescribed range. However, where pH at the downstream location is greater-than (>) the highest limit in the range, the pH at the applicable upstream location must be greater-than or equal-to (≥) the downstream location. Conversely, where pH at the downstream location is less than (<) the lowest limit in the range, the upstream pH at the applicable upstream location must be less-than or equal-to (≤) the downstream location.

1. Where there is no risk to achieving a stable condition from the mining tenure (ML1102, ML4552, ML4604, ML4628, ML4629, ML4632, ML4639, ML4640, ML4643, ML4654, ML4706, ML4713, ML50028, ML50144, ML4622, ML50116, ML50117 and ML4583), then no further action is to be taken; or
2. Where there is a risk to achieving a stable condition, then an assessment of potential environment harm and any changes or rectification actions to rehabilitation activities must be determined and implemented.

PRCP14 The assessment/s under PRCP13(c) must be completed and provided to the administering authority within 3 months of receiving the relevant sampling results.

PRCP15 For areas of land where the PMLU identified in Section B and Section C is described as industrial, local and state government land use approvals must be obtained and current for the industrial use.

Definitions

Appropriately qualified person (AQP)	Means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods or literature.
Activity (EP Regulation)	Includes that part, if any, of an activity relating to the following— (a) preparing a place for the activity before carrying out the activity. (b) rehabilitating a place after it has been used for carrying out the activity.
Growth media	Is defined as all soil and soil-like material that will support the final vegetation cover. This includes the topsoil and subsoil where these materials are applied independently. Where the topsoil is incorporated into the underlying subsoil/spoil, topsoil refers to the depth of incorporation and the remaining depth is regarded as subsoil. The total depth of growth media is nominally considered to be the effective plant root zone.
Rehabilitation activity	Means any activity that the holder is required to carry out in relation to this PRCP schedule.
Stable	In relation to land, means landform dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation. Land is in a stable condition if: a) the land is safe and structurally stable, and b) there is no environmental harm being caused by anything on or in the land, and c) the land can sustain a post mining land use (PMLU).
Suitably qualified and experienced person (SQP)	Suitability qualified person for performing a regulatory function under chapter 7, part 8 (Contaminated Land) of the EP Act or another function prescribed under a regulation, means a person who— (a) has qualifications and experience relevant to performing the function; and (b) if a regulation prescribes an organisation for this paragraph—is a member of the organisation.

END OF CONDITIONS

Section B - Final site design and reference maps

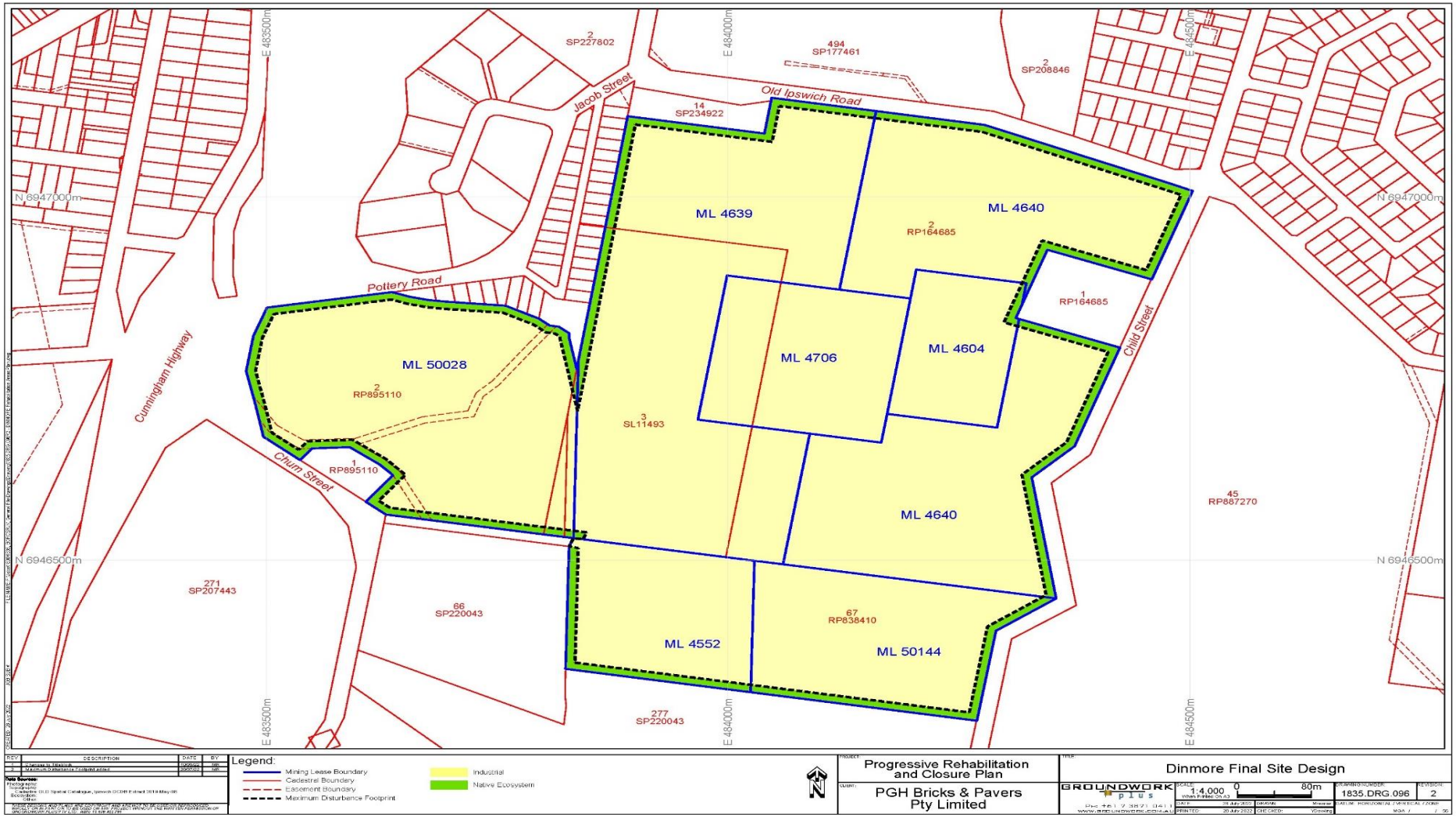


Figure 1 - PRCP Schedule - Final Landform Dinmore[2] Site

[2] Dinmore: ML4552, ML4604, ML4639, ML4640, ML4706, ML50028 and ML50144.

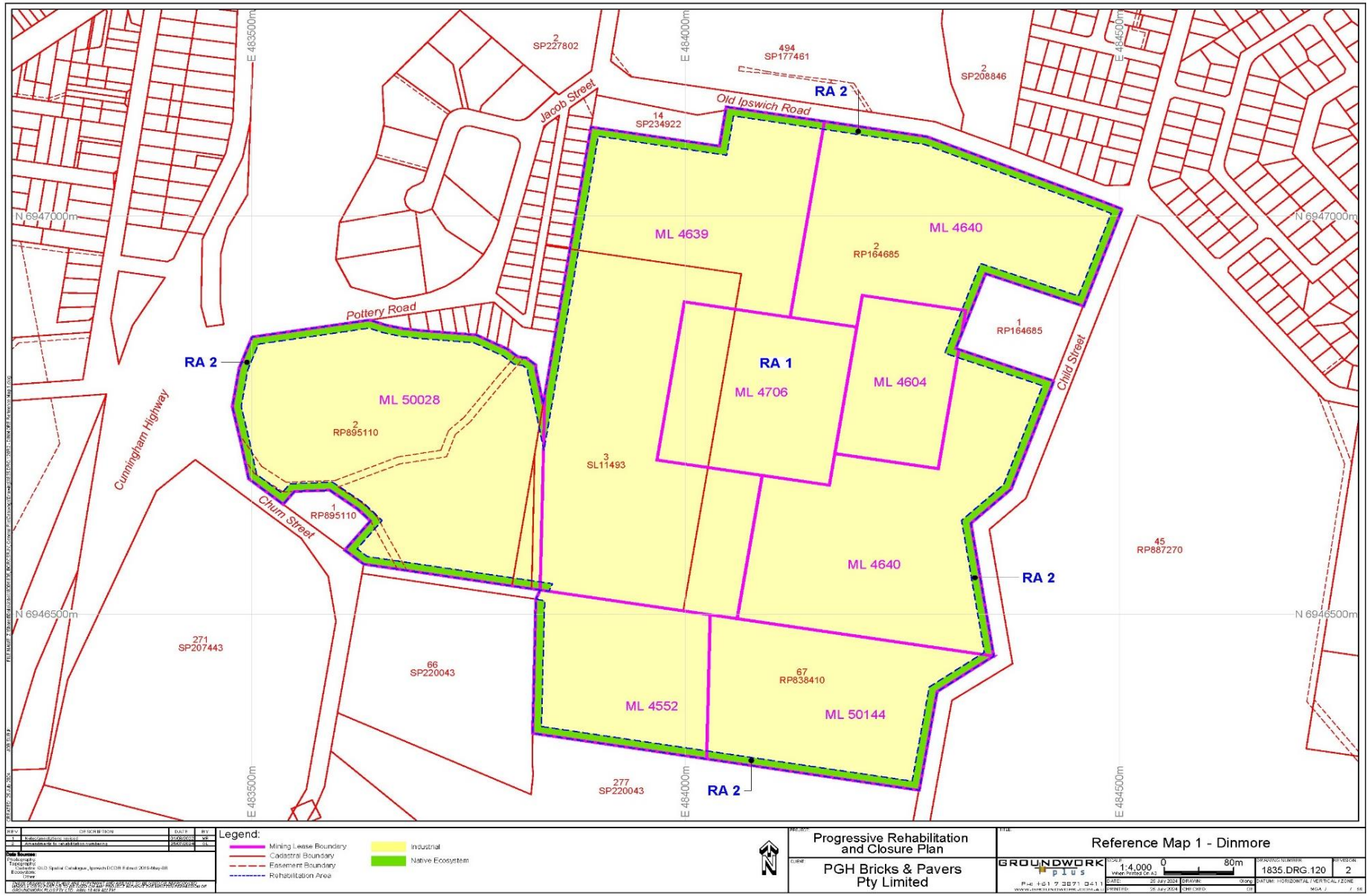


Figure 2 - PRCP Schedule - Dinmore - Rehabilitation Area

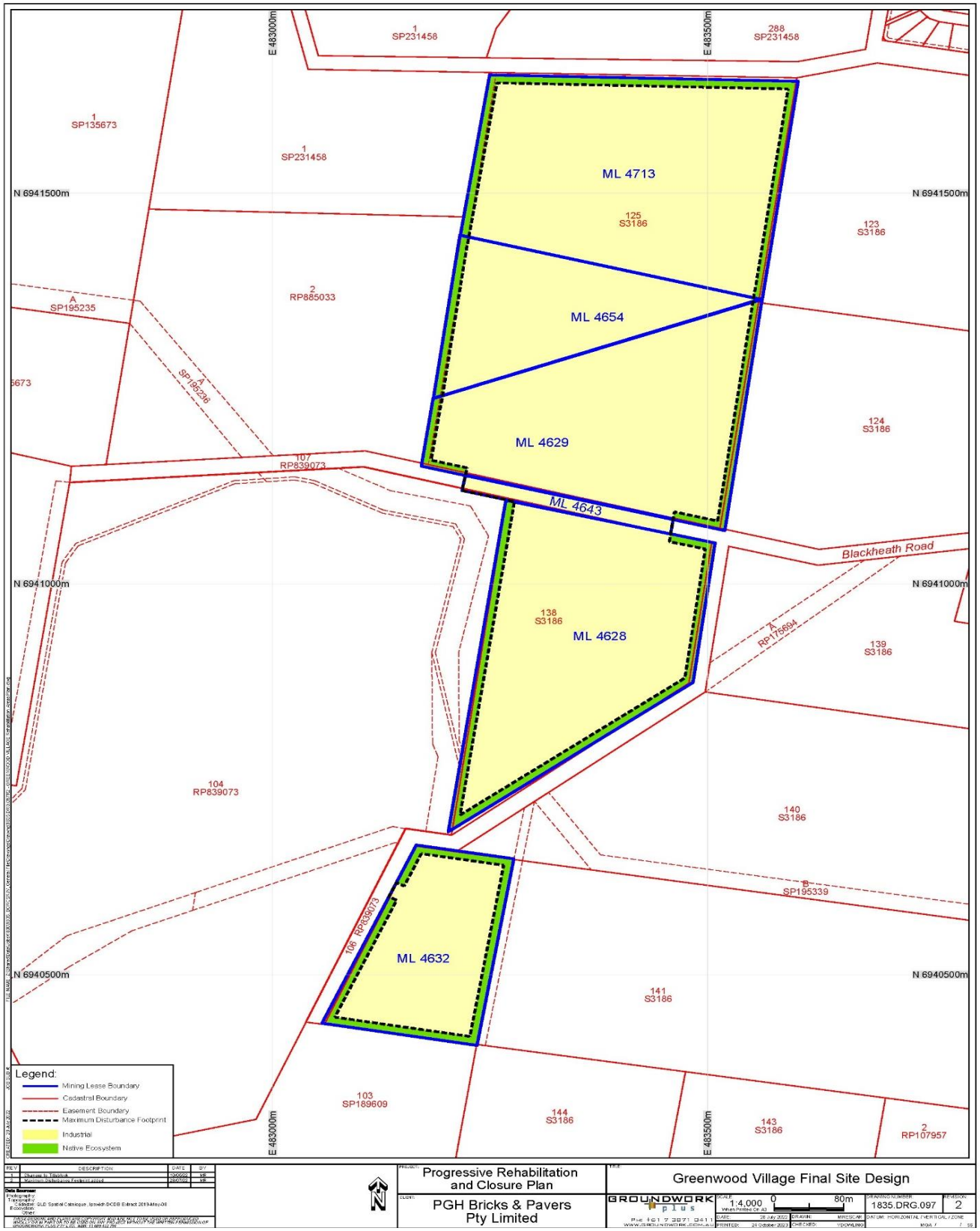


Figure 3 - PRCP Schedule - Final Landform Greenwood Village[3] Site

[3] Greenwood village: ML4628, ML4629, ML4632, ML4643, ML4654 and ML4713.

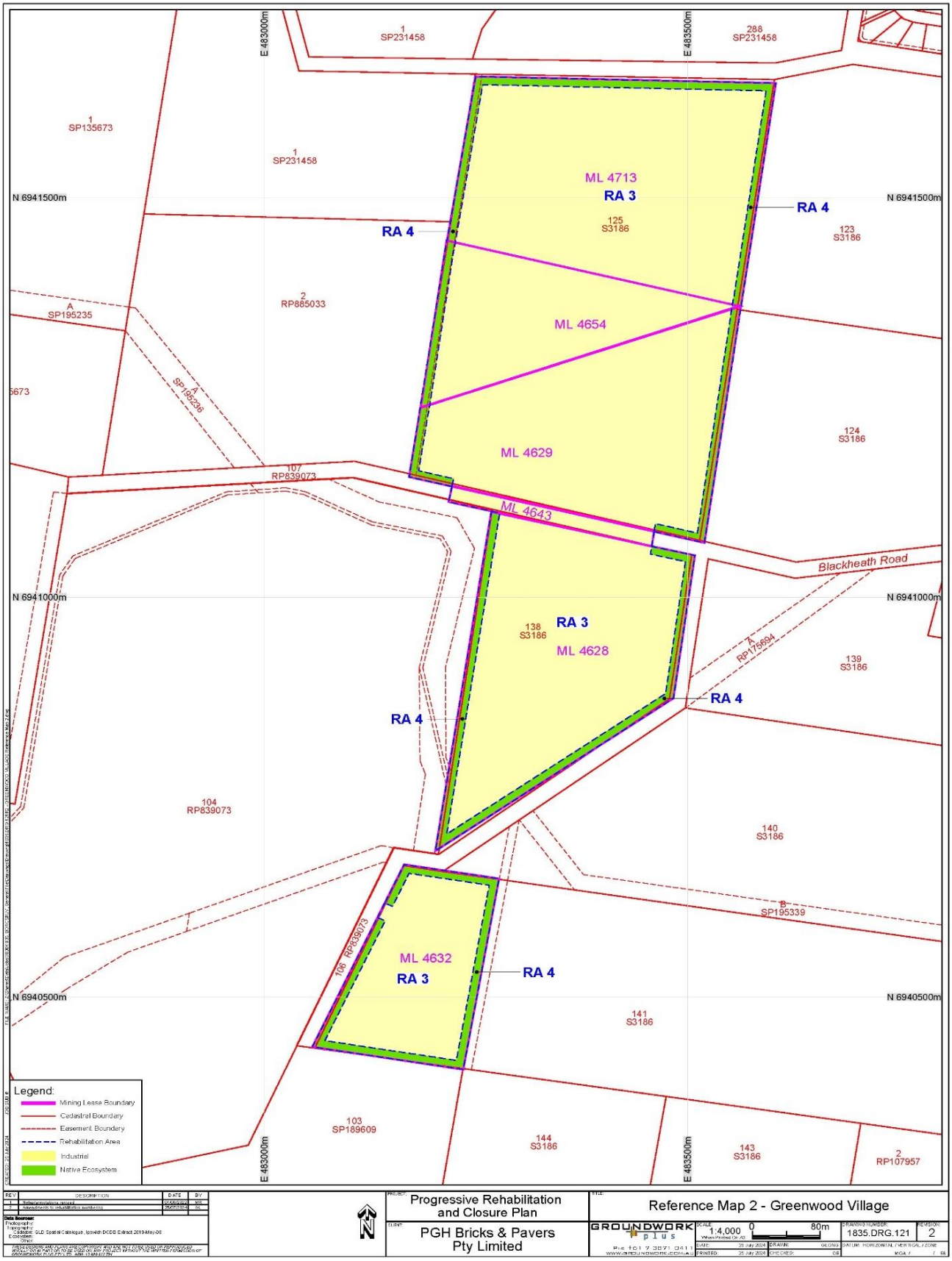


Figure 4 - PRCP Schedule – Greenwood village - Rehabilitation Area

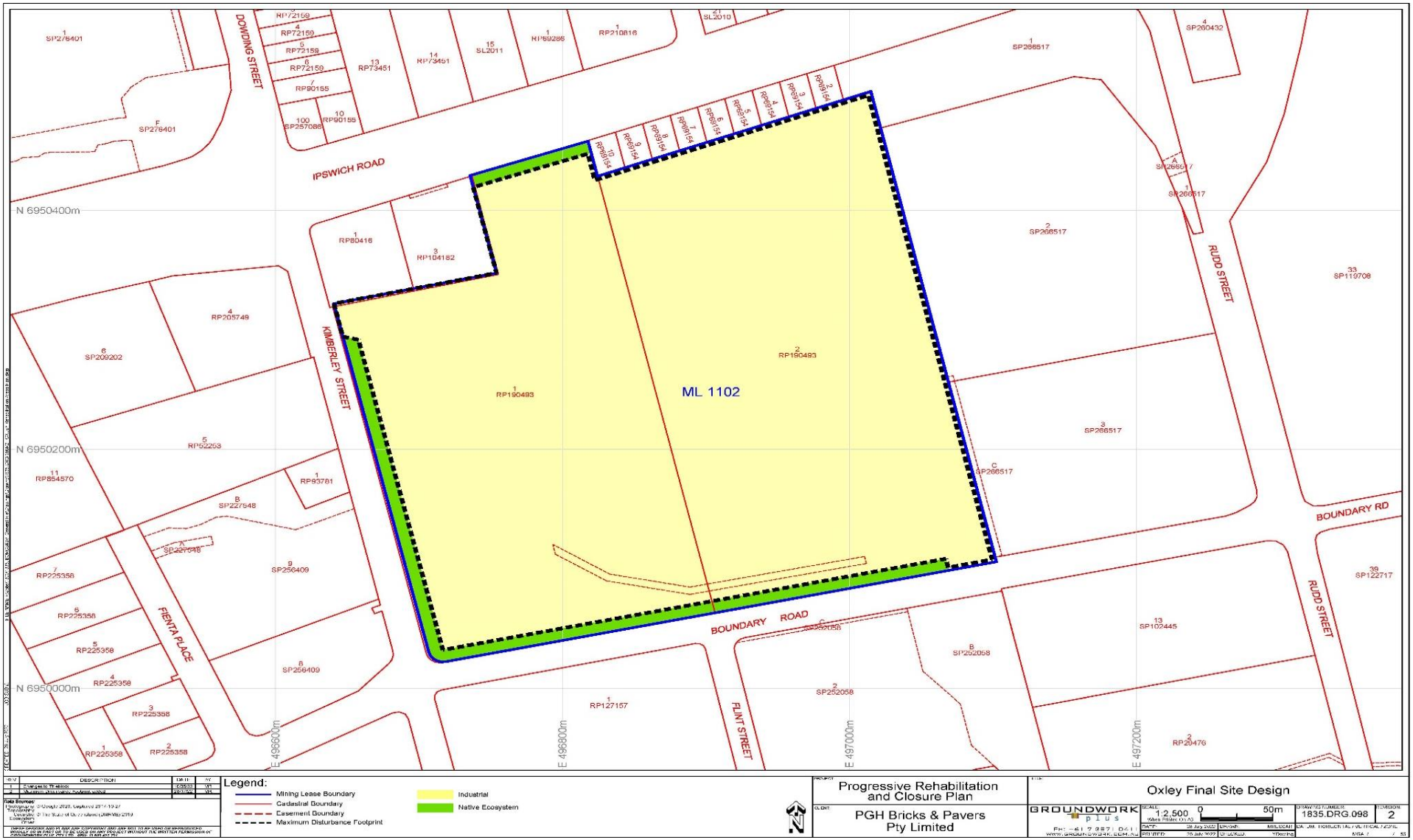


Figure 5. PRCP Schedule - Final Landform Oxley[4] Site

[4] Oxley: ML1102.

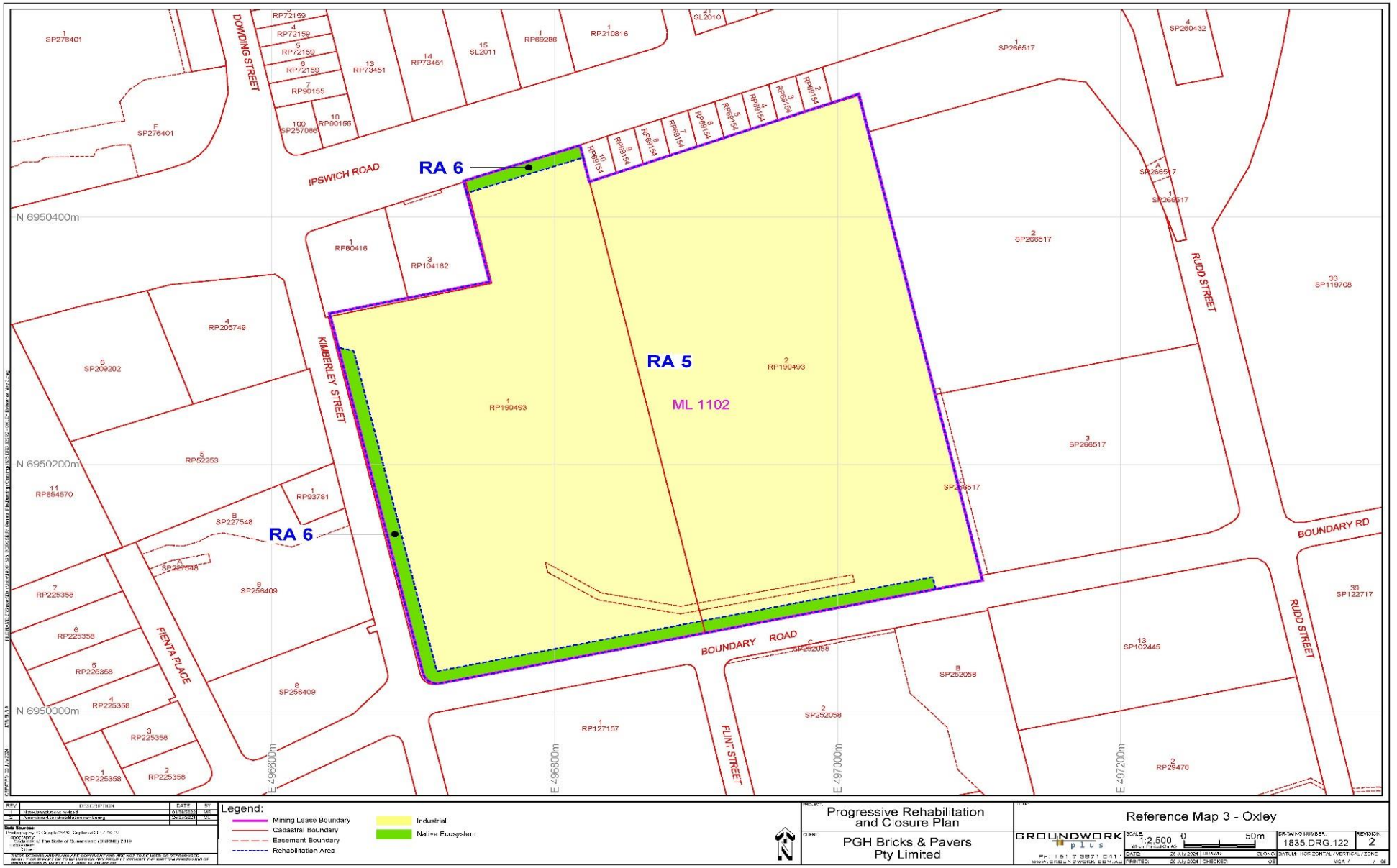


Figure 6 - PRCP Schedule - Oxley - Rehabilitation areas

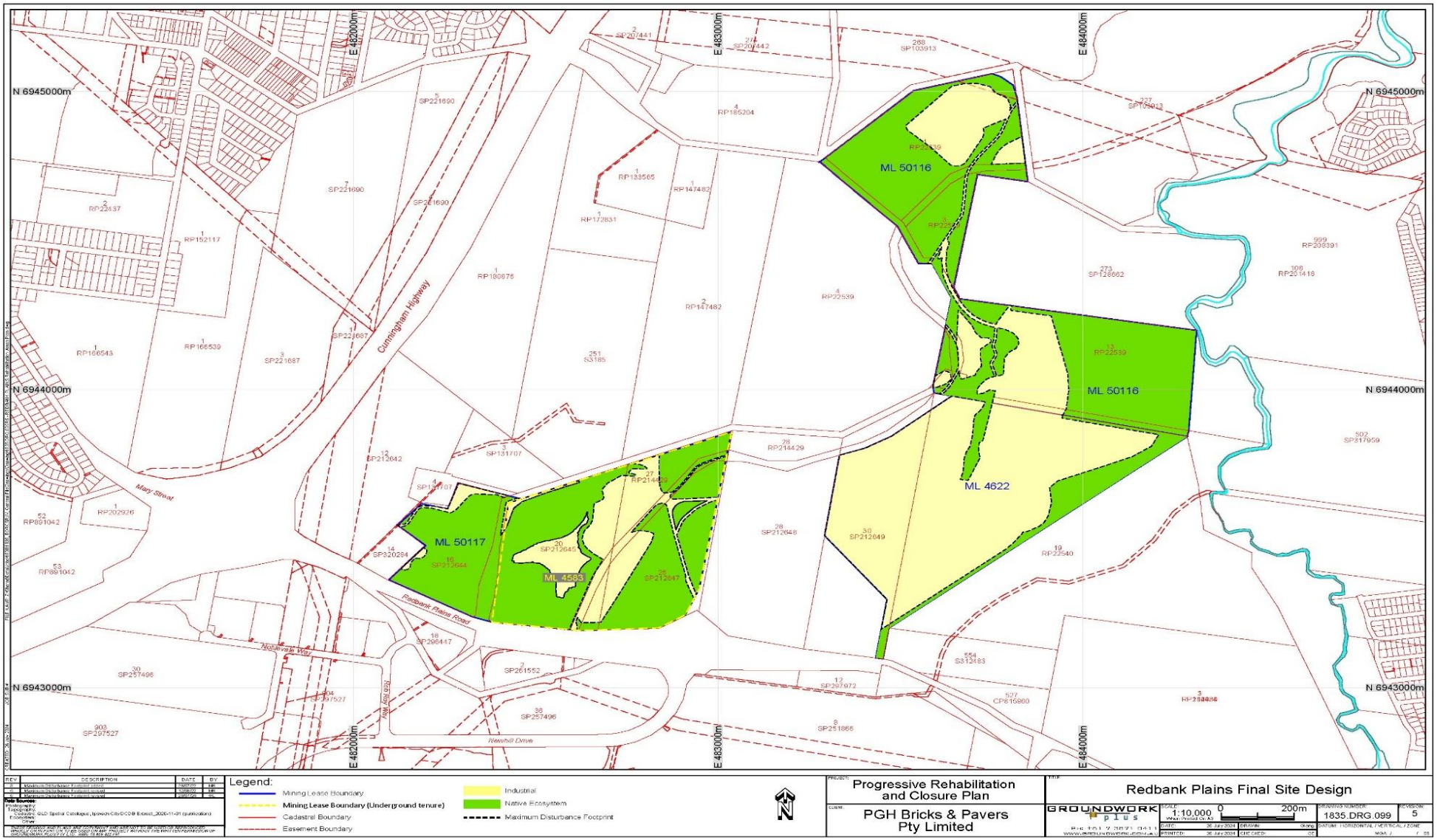


Figure 7 - PRCP Schedule - Final Landform Redbank Plains[5] site

[5] Redbank Plains: ML4622, ML50116, ML50117 and ML4583.

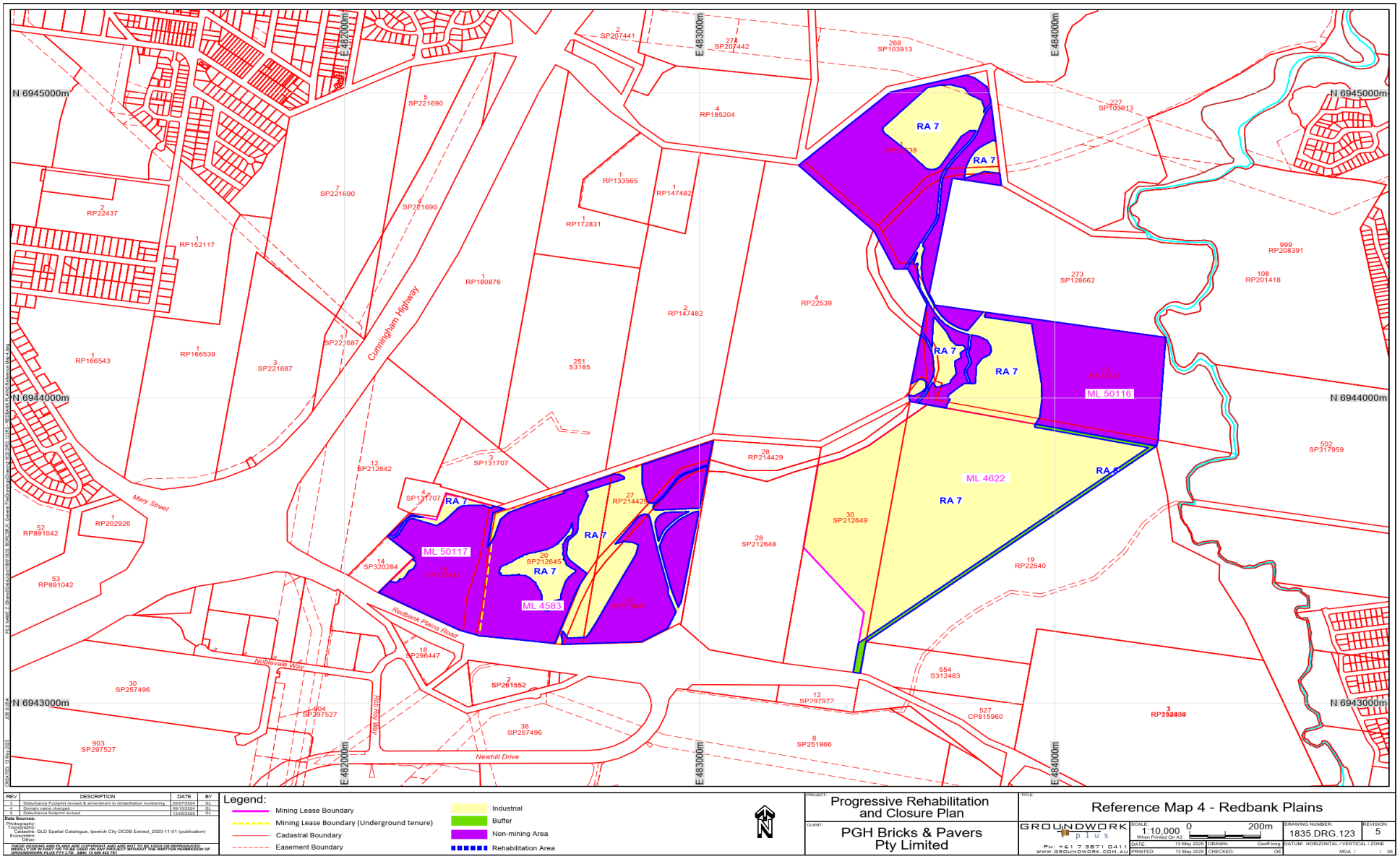


Figure 8 - PRCP Schedule - Redbank Plains - Rehabilitation Area

Section C – Post mining land uses

(RA1) Rehabilitation area 1

Post-mining land uses (PMLU)			
Rehabilitation area	RA1 - Dinmore		
Relevant activities	Mine disturbance area		
Total rehabilitation area size (ha)	47.053		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Industrial		
Date area is available	10/12/2046	10/12/2047	10/12/2050
Cumulative area available (ha)	47.053	47.053	47.053
Milestone completed by	10/12/2047	10/12/2050	10/12/2053
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	47.053		
RM2	47.053		
RM4		47.053	
RM5		47.053	
RM7		47.053	
RM9		47.053	
RM11			47.053

(RA2) Rehabilitation area 2

Post-mining land uses (PMLU)			
Rehabilitation area	RA2 - Dinmore		
Relevant activities	Buffer		
Total rehabilitation area size (ha)	3.734		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Native Ecosystem		
Date area is available	10/12/2046	10/12/2047	10/12/2050
Cumulative area available (ha)	3.734	3.734	3.734
Milestone completed by	10/12/2047	10/12/2050	10/12/2053
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	3.734		
RM2	3.734		
RM3	3.734		
RM5	3.734		
RM6	3.734		
RM8		3.734	
RM10			3.734

(RA3) Rehabilitation area 3

Post-mining land uses (PMLU)			
Rehabilitation area	RA3 – Greenwood village		
Relevant activities	Mine disturbance area		
Total rehabilitation area size (ha)	27.69		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Industrial		
Date area is available	10/12/2046	10/12/2047	10/12/2052
Cumulative area available (ha)	27.69	27.69	27.69
Milestone completed by	10/12/2047	10/12/2052	10/12/2055
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	27.69		
RM2	27.69		
RM4		27.69	
RM5		27.69	
RM7		27.69	
RM9		27.69	
RM11			27.69

(RA4) Rehabilitation area 4

Post-mining land uses (PMLU)			
Rehabilitation area	RA4 – Greenwood village		
Relevant activities	Buffer		
Total rehabilitation area size (ha)	2.36		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Native Ecosystem		
Date area is available	10/12/2046	10/12/2047	10/12/2050
Cumulative area available (ha)	2.36	2.36	2.36
Milestone completed by	10/12/2047	10/12/2050	10/12/2053
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	2.36		
RM2	2.36		
RM3	2.36		
RM5	2.36		
RM6	2.36		
RM8		2.36	
RM10			2.36

(RA5) Rehabilitation area 5

Post-mining land uses (PMLU)			
Rehabilitation area	RA5 - Oxley		
Relevant activities	Mine disturbance area		
Total rehabilitation area size (ha)	14.138		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Industrial		
Date area is available	10/12/2046	10/12/2047	10/12/2052
Cumulative area available (ha)	14.138	14.138	14.138
Milestone completed by	10/12/2047	10/12/2052	10/12/2055
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	14.138		
RM2	14.138		
RM4		14.138	
RM5		14.138	
RM7		14.138	
RM9		14.138	
RM11			14.138

(RA6) Rehabilitation area 6

Post-mining land uses (PMLU)			
Rehabilitation area	RA6 - Oxley		
Relevant activities	Buffer		
Total rehabilitation area size (ha)	0.722		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Native Ecosystem		
Date area is available	10/12/2046	10/12/2047	10/12/2052
Cumulative area available (ha)	0.722	0.722	0.722
Milestone completed by	10/12/2047	10/12/2052	10/12/2055
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	0.722		
RM2	0.722		
RM3		0.722	
RM5		0.722	
RM6		0.722	
RM8		0.722	
RM10			0.722

(RA7) Rehabilitation area 7

Post-mining land uses (PMLU)			
Rehabilitation area	RA7 - Redbank Plains		
Relevant activities	Mine disturbance area		
Total rehabilitation area size (ha)	62.22		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Industrial		
Date area is available	10/12/2046	10/12/2047	10/12/2052
Cumulative area available (ha)	62.22	62.22	62.22
Milestone completed by	10/12/2047	10/12/2052	10/12/2055
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	62.22		
RM2	62.22		
RM4		62.22	
RM5		62.22	
RM7		62.22	
RM9		62.22	
RM11			62.22

(RA8) Rehabilitation area 8

Post-mining land uses (PMLU)			
Rehabilitation area	RA8 – Redbank Plains		
Relevant activities	Buffer		
Total rehabilitation area size (ha)	1.57		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Native Ecosystem		
Date area is available	10/12/2046	10/12/2047	10/12/2050
Cumulative area available (ha)	1.57	1.57	1.57
Milestone completed by	10/12/2047	10/12/2050	10/12/2053
Milestone Reference	**Cumulative area achieved (ha)**		
RM1	1.57		
RM2	1.57		
RM3		1.57	
RM5		1.57	
RM6		1.57	
RM8		1.57	
RM10			1.57

Rehabilitation area milestones

Milestone reference	Rehabilitation milestone	Milestone criteria
RM1	Infrastructure decommissioning and removal	1.1 All plant, equipment, hardstands, roads and tacks and infrastructure (including drainage) associated with the resource activity are removed where they are not approved to be retained under an agreement with the landholder. 1.2 All waste removed.
RM2	Contaminated land identification, remediation and removal	2.1 Contaminated Land Investigation Document completed in accordance with the *Environmental Protection Act 1994*, including a site investigation report, and, where required, a Validation Report and/or a draft Site Management Plan. 2.2 Contaminated and hazardous material either remediated in-situ or removed/transported to an approved landfill for disposal and waste tracking information recorded and submitted. 2.3 The Contaminated Land Investigation Document from a SQP that no contamination unsuitable for the post-mining land use remains.
RM3	Landform development and reshaping/reprofiling (Native Ecosystem)	3.1 General reshaping and pushing/trimming achieves a final landform with a factor of safety greater than 1.5. 3.2 Landform design is assessed by an AQP as being geotechnically stable with a factor of safety greater than 1.5. 3.3 Erosion and sediment control measures comprising a minimum 70% groundcover (vegetation and mulch) in line with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). 3.4 Additional stormwater, erosion and sediment controls such as rock checks, sediment traps and diversion bunds designed and installed with reference to Best Practice Erosion and Sediment Control series where required.
RM4	Landform development and reshaping/reprofiling (Industrial)	4.1 Engineering and design plans completed. 4.2 Engineering and design plans identify backfill and landform requirements consistent with good engineering practice. 4.3 Engineering and design plans achieve a landform suitable for industrial land use, with the design consistent with any local government requirements.

Milestone reference	Rehabilitation milestone	Milestone criteria
		4.4 Backfilling has been completed in accordance with AS 3798-2007 Guidelines on earthworks for commercial and residential developments (Standards Australia 2007, or most recent edition). 4.5 Landform constructed consistent with engineering design and landform plans. 4.6 All imported fill material is either clean earth as defined under the *Environmental Protection Regulation 2019* or clean earthern materials as defined under the EA EPML03821316.
RM5	Surface preparation	5.1 All erosion and subsidence has been remediated. 5.2 Trim, rock rake and deep rip of compacted surfaces to 150 mm. 5.3 Testing and amelioration of topsoil stockpiles by AQP to achieve a primary growth media that will support the nominated vegetation to be established. 5.4 Ameliorants and/or fertiliser are applied at the rates recommended by the AQP. 5.5 Source, cart and spread growth media to a depth of 150mm. **<u>Additional PMLU specific criteria for native ecosystem (RA2, RA4, RA6, RA8)</u>** 5.6 Soil productivity and suitability assessment by an AQP, and gypsum, lime or fertilisers applied where deemed necessary by an AQP.
RM6	Revegetation (Native Ecosystem)	6.1 Assisted natural regeneration supported by demarcation / fencing to exclude access if required. 6.2 Soil productivity and suitability confirmed by an AQP. 6.3 Seeding at a rate of 15kg/ha with a composition mixture that is representative of the pre-cleared Regional Ecosystems (REs) as detailed in Table 1. 6.4 Minimum 70% strike/survival rate of applied seed mix. 6.5 Appropriate weeds control measures have been implemented, as documented and determined by an AQP.
RM7	Revegetation (Industrial)	7.1 Soil productivity and suitability confirmed by an AQP. 7.2 Complete seeding using a seed mix comprising species in Table 2. 7.3 Seeding at a rate of 1-15 kg / ha; Table 2.

Milestone reference	Rehabilitation milestone	Milestone criteria
		7.4 Minimum 70% strike/survival rate of applied seed mix. 7.5 Appropriate weeds control measures have been implemented, as documented and determined by an AQP.
RM8	Achievement of surface requirements (Native Ecosystem)	8.1 Certification provided by an AQP that the vegetation density and composition is consistent with pre-cleared Regional Ecosystems (REs) as mapped for each RA as detailed in Table 3. 8.2 Vegetation within each RA is on a trajectory to be is self-sustaining within the time period of this schedule. 8.3 Minimum of 70% vegetative groundcover achieved. 8.4 No active rill or gullies throughout the landform. 8.5 No more than 10% groundcover comprised of non-native and/or weed species. 8.6 Soil testing of growth media indicates the following parameters are met: ○ Electrical Conductivity <0.15 mS/cm, ○ Soil pH <8.5 and >6, ○ Exchangeable Sodium Percentage (ESP%) <5%.
RM9	Achievement of surface requirements (Industrial)	9.1 AQP certifies conformance to engineering and design plans prepared as part of RM4. 9.2 Certification from an AQP that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. 9.3 Minimum 70% groundcover to be achieved (through revegetation with grass species, other agreed engineered solution, or combination of both). 9.4 ≥ 50% established and persistent vegetative groundcover for all slopes from 0-15%. 9.5 ≥ 80% established and persistent vegetative cover for slopes > 15%.
RM10	Achievement of post-mining land use to stable condition (Native Ecosystem)	10.1 No evidence of erosion classified as Moderate and Severe as defined by Table 4. 10.2 Certification provided by an AQP that the vegetation density and composition are consistent with preclear Regional Ecosystems (REs) as mapped for each RA as detailed in Table 3. 10.3 Vegetation maturity has reached a level where it is now self-sustaining.

Milestone reference	Rehabilitation milestone	Milestone criteria
		10.4 Erosion equivalent to, or less than, natural rates for the locality as measured by an AQP. 10.5 Minimum 70% groundcover to be achieved in accordance with the IECA (Australasia) Revegetation Factsheet (IECA (Australasia) 2010, P5). 10.6 Mortality rate of mature trees equal to, or less than, the recruitment rate of new trees. 10.7 No more than 10% groundcover comprised of non-native and/or weed species. 10.8 AQP certifies that the landform is geotechnically and structurally stable and achieved a factor of safety 1.5. 10.9 Soil testing of growth media indicates the following parameters are met: a. Electrical Conductivity <0.15 mS/cm, b. Soil pH <8.5 and >6, c. Exchangeable Sodium Percentage (ESP%) <5% . 10.10 Any rectification actions required by PRCP13(b) have been implemented. 10.11 An independent AQP certifies achievement of RM10.1 – RM10.10.
RM11	Achievement of post-mining land use to stable condition (Industrial)	11.1 No evidence of erosion classified as Moderate and Severe as defined by Table 4. 11.2 There are no active areas of rill or gully erosion. 11.3 Drainage follows appropriate drainage paths. 11.4 AQP confirms that there has been no material change with respect to the geotechnical and structural assessments. 11.5 Stormwater management assessment conducted by a AQP at completion of works to confirm site is non-polluting. 11.6 Contaminated land assessment confirms the site is non-polluting. 11.7 Planning approval granted for industrial use, as applicable. 11.8 Ownership of any remaining retained infrastructure has been transferred to the landholder. 11.9 Any rectification actions required by PRCP13(c) have been implemented. 11.10 The final landform achieves a stable condition. 11.11 An independent AQP certifies achievement of RM11.1 – RM11.10.

Table 1: Native Ecosystem Revegetation Species Mix

Site	Stratum	Species	Corresponding Regional Ecosystem (RE)
Dinmore RA2	Canopy/ sub-canopy/shrub layer	• Angophora spp. • Angophora leiocarpa C. citriodora subsp. variegata • Corymbia intermedia C. tessellaris • E. acmenoides • E. crebra • E. fibrosa subsp. fibrosa • Eucalyptus major • E. melanophloia • E. pilularis • E. portuensis • E. racemosa subsp. racemosa • E. seeana • E. sideroxylon • E. tereticornis	12.9-10.2 / 12.9-10.7 / 12.9-10.19
	Ground layer	• Entolasia stricta • Cymbopogon refractus • Themeda triandra • Eremochloa bimaculata	12.9-10.2
		• Dichanthium sericeum, • Chloris divaricata • Aristida gracilipes	12.9-10.7
		• Scleria sphacelata, • Lomandra confertifolia subsp • Pallida and Xanthorrhoea johnsonii	12.9-10.19
Greenwood Village RA4	Canopy/ sub-canopy/shrub layer	• Angophora spp. • A leiocarpa • C. citriodora subsp. variegata	12.9-10.2 / 12.9-10.7 / 12.9-10.19 and 12.9-10.3

Site	Stratum	Species	Corresponding Regional Ecosystem (RE)
		• C. tessellaris • E. acmenoides • E. crebra • E. fibrosa subsp. Fibrosa • E. major • E. melanophloia • E. molucanna • E. portuensis • E. sideroxylon. • E. tereticornis	
	Ground layer	• Eremochloa bimaculata, • Panicum simile and • Aristida calycina	12.9-10.3
Redbank Plains RA8	Canopy/ sub-canopy/shrub layer	• Angophora spp. • A leiocarpa • C. citriodora subsp. variegata • C. tessellaris • E. acmenoides • E. crebra • E. fibrosa subsp. fibrosa • E. major • E. melanophloia • E. molucanna • E. portuensis • E. sideroxylon. • E. tereticornis	12.3.3 / 12.9-10.7 / 12.9-10.3
	Ground layer	• Eremochloa bimaculata, • Panicum simile and • Aristida calycina	12.9-10.3

Notes:

Species composition for Oxley (RA) is to be determined by an AQP.

Table 2: Industrial PMLU Species Mix

Cover	Species	Rates (kg/ha)
Grasses	• Barbed wire grass - Cymbopogon refractus • Eight day grass - Fimbristylis dichotoma • Wiry panic - Entolasia stricta • Brachi hybrid (Brachiaria spp. hybrids). • Brunswick grass (Paspalum nicorae).	1-15
Trees / shrubs	Select 2 to 3 species from tree list.	Density as required[6]

Notes:

- Table reprinted and adapted form the Report on Investigations (Groundwork Plus 2008).
- *Seeding rate is dependent upon species and should be selected according to coverage required.
- ^Seeding rate for a particular species can be altered if one or more of the species are not available.

Table 3: Revegetation Assessment Criteria

Attributes	RA2	RA4	RA8
regrowth/remnant vegetation (RE)	12.9-10.2 / 12.9-10.7 / 12.9-10.19	12.9-10.2 / 12.9-10.7 / 12.9-10.19 and 12.9-10.3	12.3.3 / 12.9-10.7 / 12.9-10.3
Native tree species richness	≥6	≥6	≥5
Native shrub species richness	≥7	≥7	≥5
tree canopy cover	≥40%	≥40%	≥40%
shrub canopy cover	≥27%	≥27%	≥9%
native perennial grass cover	≥20%	≥20%	≥40%
tree canopy height	≥21m	≥21m	≥21m

[6] The following densities and diversities at the Dinmore, Greenwood Village and Oxley sites in areas nominated for Native Ecosystem outcomes:

- Plant density: > 300 stems/ ha
- Plant diversity: minimum of 12 different species per hectare including 6 canopy species, and 4 medium to small shrub species.

Attributes	RA2	RA4	RA8
Groundcover	Minimum 70% groundcover to be achieved (organic litter + grass and forb cover)		

Table 4: Erosion classification framework

Erosion classification	Minor	Moderate	Severe
Sheet erosion	Shallow soil deposits downslope	Partial exposure of roots; moderate soil deposits downslope.	Loss of surface horizon; subsoil exposure; root exposure; substantial soil deposits downslope.
Rill	<15 rills/transect*	15-30 rills per transect*	>30 rills per transect*
Gully erosion	<0.3m deep	<0.3m deep	>0.3m deep
Tunnel erosion	Absent	Absent	Present
Mass movement	Absent	Absent	Present

Source: NCST (2009) *Australian Soil and Land Survey Field Handbook, 3rd edition*. The National Committee on Soil and Terrain. CSIRO Publishing, Collingwood, Australia.
*Transect 100 m across the contour (Source: Tongway, D. J. and Hindley, N. L. 2005. Landscape Function Analysis: Procedures for Monitoring and Assessing Landscapes. CSIRO Publishing, Canberra, Australia.

Table 5: Surface water monitoring locations

Site	Monitoring Locations	Receiving waters location description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream monitoring locations				
Greenwood Village		Tributary of Six Mile Creek	-27.661	1452.832
Redbank Plains		Drainage line	-27.630	152.824
Downstream monitoring locations				
Oxley		Little Doris Creek	-27.573	152.97
Dinmore		Drainage line north west corner of site	-27.5997	152.837
Greenwood Village		Tributary of Six Mile Creek	-27.651	152.838
Redbank Plains		Drainage line north east corner of ML4583/ML50117	-27.630	152.828

Redbank Plains		Drainage line west of ML50116	-27.626	152.834
Redbank Plains		Drainage line east of ML50116	-27.621	152.836

Table 6: Surface water quality limits

Quality Characteristic	Limit	Comment
pH	6.5 – 8.0	WQO
Electrical conductivity (µS/cm) – Oxley	Low flow – 380 High flow – 310	Lower Oxley Creek Fresh Waters,
Electrical conductivity (µS/cm) – Greenwood Village and Redbank Plains	Low flow – 380 High flow – 290	Six Mile Creek lowland freshwaters – moderately disturbed
Electrical conductivity (µS/cm) - Dinmore	Low flow – 1500 High flow – 600	Lower Bremer River Fresh Waters Section 2 - lowland fresh waters
Turbidity (NTU) - Dinmore	Low flow – 5 Hogh flow – 14	Lower Bremer River Fresh Waters Section 2 - lowland fresh waters
Turbidity (NTU) – Oxley	Low flow – 6 High flow – 11	Lower Oxley Creek Fresh Waters - lowland fresh waters
Turbidity (NTU) – Greenwood Village and Redbank Plains	Low flow – 11 High flow – 14	Upper and Lower Six Mile Creek - lowland fresh waters
Dissolved Oxygen (% sat)	85-110	WQO
Arsenic - dissolved (µg/L)*	13	ANZG 2018
Cadmium - dissolved (µg/L)*	0.2	ANZG 2018
Chromium - dissolved (µg/L)*	1	ANZG 2018
Copper - dissolved (µg/L)*	1.4	ANZG 2018
Lead- dissolved (µg/L)*	3.4	ANZG 2018
Mercury- dissolved (µg/L)*	0.06	ANZG 2018
Nickel - dissolved (µg/L)*	11	ANZG 2018
Zinc - dissolved (µg/L)*	8	ANZG 2018
Total recoverable hydrocarbons (C6-C9) (µg/L)*	20	

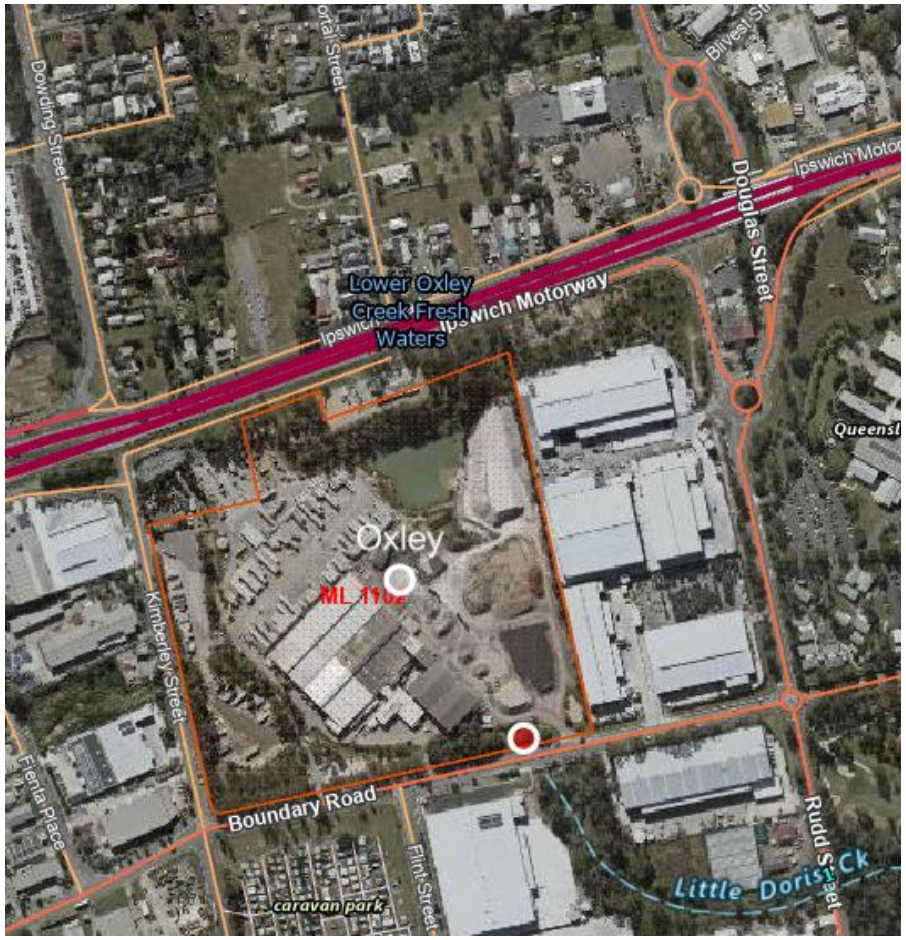
Quality Characteristic	Limit	Comment
Total recoverable hydrocarbons (C10-C36) (µg/L)*	100	
Major ions (mg/L) Calcium, chloride, potassium, magnesium, sodium, bicarbonate, carbonate	For interpretation purposes only	

Notes:

- *Metals, metalloids and hydrocarbons apply to Oxley site only
- All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample) and total (unfiltered).
- Limits for metals and metalloids apply to dissolved results.

- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Oxley Creek Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.des.qld.gov.au/__data/assets/pdf_file/0030/273639/oxley-creek-ev-wqo.pdf
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Sandy, Six Mile, Wolston, Woogaroo, and Goodna Creeks Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.desi.qld.gov.au/__data/assets/pdf_file/0026/273644/sandy-six-mile-wolston-woogaroo-goodna-creeks-ev-wqo.pdf
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Bremer River Environmental Values and Water Quality Objectives Part of Basin 143. June 2022. https://environment.des.qld.gov.au/__data/assets/pdf_file/0024/273624/bremer-river-ev-wqo.pdf

Attachment 1: Surface water monitoring locations









END OF PRCP SCHEDULE