

Environmental and Rehabilitation Compliance Report Mining Lease ML1723

(Including Mining Purpose Leases 559,592,622,623,628 and 654)



Boral Berrima Cement Works 2019 Reporting Period

**Boral Cement Ltd.
Berrima Cement Works,
Taylor Avenue,
New Berrima,
NSW 2577**

February 2020

I, Greg Johnson, certify that this report is a true and accurate record of the compliance status of Berrima Shale Pit ML and associated MPLs for the period 1 January 2019 to 31 December 2019 and that I am authorised to make this statement on behalf of Boral Cement Limited.

Reporting Officer: Greg Johnson

Title: Environmental Sustainability Manager

Signature:



Date: 24 February 2020

Boral Cement Ltd., Berrima Cement Works - Environmental and Rehabilitation

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1 EXECUTIVE SUMMARY

HISTORIC BACKGROUND

The Berrima Cement Works was commissioned in 1929 and was initially supplied with shale from local quarries up until 1934 when the onsite extraction of clay shale commenced. As a large proportion of the Berrima Cement works is located on an outcrop of Ashfield Shale, extraction initially occurred adjacent to each kiln which were subsequently infilled as the cement works expanded. Annual volume of Clinker production has varied considerably in response to the wider building and construction industry as well as specific large-scale construction projects in NSW.

The shale extraction is conducted in accordance with Mining Lease No. 1723 approved on 18 December 2015 and a number of Mining Purpose leases approved for water and power access purposes. The Mining Lease covers the operation of the on-site shale quarry and supports the current Mining Lease Application number 454 (MLA 454).

OPERATIONS DURING THE 2019 REPORTING PERIOD

During the 2019 Reporting Period, a total of 127,480 tonnes of shale was extracted from the current quarry footprint. This was lower than the 162,633,000 tonnes reported as an estimate in the previous 2018 E&RCR to be extracted in during the 2019 reporting period.

During the 2019 Reporting Period, shale was extracted from the existing series of shallow benches from which 2018 operations were also conducted. There were no additional extraction or exploration operations undertaken beyond the current quarry footprint and no new rehabilitation activity was required.

Extraction from the quarry continued in the same areas as previously mined. The disturbed areas remained the same as the previous reporting period.

The remaining 15 hectares of unrehabilitated area is comprised of the existing quarry footprint which will be gradually rehabilitated as extraction operations are phased out in accordance with the MOP. The previously rehabilitated areas were the subject of ongoing inspections and maintenance during the 2019 Reporting Period which comprised of weed management, mulching and watering of as part of an internally managed program.

All shale extraction operations and environmental management activities were conducted in accordance with the MOP and Berrima Cement Works Environmental Management Plan.

This Environmental and Rehabilitation Compliance Report (E&RCR) details the shale extraction operations, production, and environmental management/compliance in the 2019 Reporting Period.

Boral Cement Works (Berrima) - Environmental and Rehabilitation

2 INTRODUCTION

2.1 REPORT PURPOSE

This Environmental and Rehabilitation Compliance Report (E&RCR) is an annual requirement under the conditions of Mining Lease No. 1723 (ML) and Mining Purpose Leases (MPLs) 559, 592, 622, 623, 628 and 654 granted to Berrima Cement (the Site) which is owned and operated by Boral Cement Limited (Boral).

This report has been prepared in general accordance with relevant Guidelines released by the NSW Department of Industry and Resources & Energy for the preparation of Annual Reports^{1&2}.

In accordance with ML Conditions 3(f) and 4(b), the E&RCR presents an annual overview of:

- Key Site activities undertaken during the 2019 Reporting Period;
- Proposed activities for the following 2020 Reporting Period;
- Compliance with ML and MPL conditions and other applicable statutory requirements;
- Mitigation undertaken to address any non-compliance identified during the 2018 Reporting Period;
- Environmental management and rehabilitation activities against the performance objectives and criteria established in the approved Mining Operations Plan (MOP); and
- Details of any significant environmental incidents including notification, response, investigation and corrective actions.

In addition to ML 1723, the E&RCR has been prepared for Mining Purpose Leases (MPLs) 559, 592, 622, 623, 628 and 654. Table 1 provides approval details of ML 1723 and the respective MPLs. The MPL 628 has been granted for the establishment of power lines to the Site and the remaining others for the purpose of access to water supply from the Wingecarribee River. No extractive operations have historically been conducted in the MPL areas or likely to be in the foreseeable future.

¹The Annual Environmental Management Report (AEMR) – Version 3: January 2006² ESG4: Guideline for Preparing an Environmental and Rehabilitation Compliance Report for Exploration (November 2016)

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Table 1: Mining Lease Activities and Approvals

Mining Leases Title	Purpose/Activity	Approval Date	Expiry Date
ML 1723	Extraction of blue shale from the quarry and rehabilitation of previously disturbed land	18/12/2016	18/12/2036
MPL 559	Water Supply Access	17/11/1926	20/09/2028
MPL 592	Water Supply Access	14/05/1927	20/09/2028
MPL 622	Water Supply Access	24/05/1928	20/09/2028
MPL 623	Water Supply Access	20/06/1929	20/09/2028
MPL 628	Power Supply	23/10/1928	20/09/2028
MPL 654	Water Supply Access	20/06/1929	20/09/2028

There were no changes to the Mining Lease Activities and Approvals in 2019.

2.2 REPORT CONSULTATION

This report has been prepared by Belinda Prideaux, Environmental Business Partner for Boral Cement at the Berrima Cement Works in consultation with Boral personnel listed in Table 2.

Table 2: Report Authors

Contact Person	Position Title	Contact Details
Rob Lasker	HSE Advisor	Tel: 0401 894 640 Em: Rob.Lasker@boral.com.au
Branko Vuleta	Production Services and Logistics Superintendent and Quarry Manager	Tel: (02) 4860 2258 Email: Branko.Vuleta@boral.com.au
Belinda Prideaux	Environmental Manager Boral Cement Ltd	Tel: 0401 893 359 Email: Belinda.Prideaux@boral.com.au
Greg Johnson	Environmental Sustainability Manager Boral Cement Ltd	Tel: (02) 9033 4916 Email: Greg.Johnson@boral.com.au

Boral Cement Works (Berrima) - Environmental and Rehabilitation

2.3 ENVIRONMENTAL ACCOUNTABILITIES and RESPONSIBILITIES

Dean Beltrame, the Berrima Cement Works Operations Manager has overall accountability and authority for ensuring that all activities reported within the quarry are undertaken in full compliance with statutory requirements and consistent with the Mine Operations Plan, the Boral Ltd. Environment Policy and HSEQ Management Systems and procedures. The day to day operations of the quarry are the responsibility of Branko Vuleta, the Production Services and Logistics Superintendent and Quarry Manager.

They are supported by Rob Lasker Health and Safety Business Partner, Belinda Prideaux, the Boral Cement Ltd Environmental Business Partner and Greg Johnson, the Boral Cement Ltd. Environmental Sustainability Manager.

All Site personnel receive employment inductions and receive periodic training on environmental statutory requirements and Boral' prescribed levels of acceptable performance. Contractors also are required to complete Site inductions and are subject to supervision and inspections to ensure acceptable levels of environmental diligence and reporting have been practiced.

3 QUARRY OPERATIONAL OVERVIEW

3.1 SITE HISTORY AND CEMENT PRODUCTION

Cement works at the Site were commissioned in 1929 and initially required shale to be supplied from local quarries up until 1934, after which the onsite extraction of clay shale commenced. As a large proportion of the Berrima Cement works is located on an outcrop of Ashfield Shale, extraction initially occurred from pits adjacent to each kiln which were subsequently infilled as the cement works expanded.

The current extraction area commenced being mined in 1977 as part of the commissioning of existing Kiln No. 6 and also supplied kilns Nos. 4 and 5 until both of which were gradually phased out. Annual shale extraction and cement production volumes at the Site has varied considerably in response to the level of building and construction industry as well as specific large-scale construction projects in NSW.

Shale is an essential component of clinker manufacture which involves kiln firing of a premixed blend of limestone, shale, iron ore and solid fuel such as coal. Once fired, the resulting material is known as clinker which is then finely ground with other additives such as gypsum to regulate setting time in order to produce cement.

Predominantly, there are two types of shale used in cement production at the Site. Shale Quarry, which is sourced from the on-site quarry and yellow shale which is brought in by road and rail with the limestone from the Marulan South Limestone Mine. Other sources of shale may be periodically imported from time to time.

3.2 QUARRY DOMAINS

The quarry has been divided into the following seven domains based on operational activities (Refer to Appendix A: Map 3):

- Domain 1 – Active Extraction Area

This is the current area of extracting blue shale and comprises of the main working bench which is ripped by dozer and a separate area where the material is pushed up into a loadable stockpile. The stockpile area continually varies as the extraction moves to the west and north along the strike of the shale.

- Domain 2 – Unshaped Overburden and Stockpiling

This domain is part of the future active extraction area and not currently subject to removal of shale. The area consists of unshaped overburden but also a bench where other raw materials have been temporarily stockpiled.

Boral Cement Works (Berrima) - Environmental and Rehabilitation

- Domain 3 – Completed Highwalls

This area consists of completed highwall in accordance with the original design. The domain extends around the active pit area but also encompasses internal drainage provisions.

- Domain 4 – Completed Rehabilitation Subject to Ongoing Maintenance

This domain consists of the original out of pit emplacement and batters which have been fully rehabilitated but subject to ongoing monitoring and maintenance. The area includes some recent tree planting areas on the northern side of the quarry as well as tree screen plantings on the southern side.

- Domain 5 – Transitional Rehabilitation

There are two separate areas of temporary rehabilitation which will be removed as part of the ongoing quarry development. The first is located due west of the quarry and represents an original topsoil/subsoil stockpile. The second area is in the northern part of the quarry which had been previously disturbed and then recently rehabilitated (2014-15). This area lies within the ultimate quarry footprint and has been the subject of temporary rehabilitation as it may be disturbed again in the later stages of the quarry development.

- Domain 6 – Water Storage

This is the in-pit water storage dam which forms part of the Cement Works Water Management Plan. Water is transferred and stored in this facility until needed by the cement plant. The floor of the dam is not at final depth but is separated from the active extraction area by an internal wall. Ultimately, this storage dam will become an integral component in the final land use comprising of an internal dam surrounded by stable and rehabilitated batters.

- Domain 7 – External Areas

This domain covers the remaining areas within the mining lease and includes:

- Clean water storage dams and channels;
- Agricultural land subject to cattle grazing and management;
- External and internal paddock fencing; and
- Access tracks.

This domain will be subject to future exploration works and progressive rehabilitation as part of the ongoing quarry development.

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3.3 SITE LAND USE

The Shale Quarry is located on Lot 1 DP582277 (125 Taylor Ave, New Berrima) in the Parish of Bong Bong, County Camden (refer to Appendix A: Maps 1-4). The land is owned by Boral along with the adjoining cement works and associated properties.

The predominant land use has been for cement manufacture, extractive industry and associated raw material stockpiling. There is also a significant buffer area of land comprising of tree screens, landscaping and improved pastures which are not directly used for cement works. Cattle grazing on paddocks immediately to the south and west of the shale quarry is conducted under lease arrangements with neighbouring agricultural property owners.

3.4 EXPLORATION AND CONSTRUCTION ACTIVITIES

No exploration works were conducted during the 2019 Reporting Period. The shale quarry resources have been previously explored and are well defined.

There may be a requirement for ongoing exploration to identify the extent and depth of the Ashfield Shale resource and the location of the Minchinbury Sandstone above and Hawkesbury Sandstone below the shale. As previously conducted, future exploration activities will include a combination of drilling and test pitting both within the existing extraction area and in advance of pre-stripping for new extraction benches. However, there are no proposed exploration activities proposed to be undertaken during the 2020 Reporting Period.

No construction activities were conducted during the 2019 Reporting Period. There are no infrastructure facilities associated with the shale quarry and none are proposed to be constructed in the foreseeable future.

4 SHALE EXTRACTION AND REHABILITATION

4.1 SHALE EXTRACTION – 2019 REPORTING PERIOD

The shale extraction operations during the 2019 Reporting Period were conducted in accordance with the MOP approved in July 2015.

During the 2019 Reporting Period, extraction continued to be conducted in Domain 1 (see Appendix A - Map 3) through a series of shallow benches by dozer ripping then pushing up the shale into stockpiles which were then loaded onto trucks for transport to the storage shed.

At the end of the 2019 Reporting Period, the bench height remained at approximately 8 metres with an intervening 5 metre berm. All shale extraction activities were undertaken with plant machinery and there was no requirement for blasting to be conducted.

The volume of shale extracted during the 2019 Reporting Period was approximately 127,480 tonnes.

4.2 FORECAST SHALE EXTRACTION - 2020 REPORTING PERIOD

Shale extraction activities are proposed to continue from Domain 1 with a forecasted 140,000 tonnes during the 2020 Reporting Period (Refer to Appendix A – Map 3).

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4.3 REHABILITATION – 2019 REPORTING PERIOD

During the 2019 Reporting Period shale extraction continued to be within the existing quarry pit. As such, no land was disturbed outside the existing quarry pit and no rehabilitation was required.

4.4 STATUS OF EXTRACTION AND REHABILITATION

Boral inspects and maintains previously rehabilitated areas which comprises of periodic health assessment of rehabilitation areas including all tree screening and vegetation planting around the entire Site. Table 3 presents previously planted species which subject to availability will continue to be utilised as part of the ongoing rehabilitation program.

Historic rehabilitation has concentrated on external bunding and disturbed areas not associated with ongoing extraction (refer to Appendix B: Photos 1 - 6). All of these areas have been previously rehabilitated and are now in monitoring and maintenance phase of the rehabilitation program detailed in the MOP. In between the quarterly Site attendances by the nursery contractors, the rehabilitation areas are periodically watered with the on-site watercart. The health and growth of plants within the rehabilitation areas remained strong throughout the 2019 Reporting Period (see Appendix B – Photos 1 to 6). Fortunately the drought conditions experienced during the reporting period has not impacted the previously rehabilitated areas.

Table 4 presents the status of shale extraction and rehabilitation activities since MLs were granted up until the end of the 2019 Reporting Period. Rehabilitation works have been concentrated in disturbed areas within ML 1723 as the MPLs were granted for purposes other than extraction. At the end of the 2019 Reporting Period, approximately 2 hectares of disturbed areas have been previously rehabilitated which is consistent with the MOP yearly estimates of 1.3 hectares respectively.

No shale extraction has been conducted in the MPL areas and rehabilitation has not been required. However, weed management is conducted as part of the overall Site activities.

There remains 15 hectares proposed for progressive rehabilitation which predominantly relates to the current active quarry pit areas.

Future rehabilitation works will be undertaken on the two far western benches once they become available as extraction operations are phased out. As the quarry extends to the east, the upper eastern benches will progressively become available for final rehabilitation towards the later stages of the quarry extraction operations.

As the resource has in excess of a 20-year life, final rehabilitation activities will be based on practical land use, regulatory approvals and community expectations. There is a known future demand for clean waste disposal facilities and it is possible that the final void will be subject to future approvals associated with waste disposal or resource recovery activities.

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Table 3: Plant Species for Rehabilitation Purposes

Canopy Species	Shrub and Understory	Groundcover
Eucalyptus radiata	Acacia melanoxylon	Hardenbergia violacea
Eucalyptus macarthurii	Acacia binervata	Lomandra longifolia
Eucalyptus pauciflora	Pittosporum undulatum	Pteridium esculentum
Eucalyptus globoidea	Indigofera australis	Themeda australis
Eucalyptus cypellocarpa	Leucopogon juniperinus	Dichelachne crinite
Eucalyptus quadrangulata	Olearia microphylla	Microlaena stipoides
Eucalyptus amplifolia	Bursaria spinose	
Eucalyptus ovata		

Table 4: Shale Extraction and Rehabilitation Status

Title and/or Activity Approval ID e.g. No. or date	Activity type	Exploration activities conducted	GPS co-ordinate of disturbance area	GPS co-ordinate of borehole/ well	Total area disturbed (m ²) (since grant)	Area rehabilitated (m ²)	Area not rehabilitated (m ²)
ML1723	Mining / quarrying	Extraction of Blue Shale	-34.513361, 150.330266	N/A	17 hectares	2 hectares Refer to Appendix C – Photos 1 - 6	15 hectares
MPL559	Dam	Nil	Nil	Nil	Nil	Nil	Nil
MPL592	Pipeline	Nil	Nil	Nil	Nil	Nil	Nil
MPL622	Pipeline	Nil	Nil	Nil	Nil	Nil	Nil
MPL623	Watercourse	Nil	Nil	Nil	Nil	Nil	Nil
MPL628	Powerline	Nil	Nil	Nil	Nil	Nil	Nil
MPL654	Dam	Nil	Nil	Nil	Nil	Nil	Nil
	Totals				17 hectares	2 hectares	15 hectares

5 ENVIRONMENTAL COMPLIANCE MANAGEMENT ACTIVITIES

5.1 BORAL POLICY AND ENVIRONMENTAL MANAGEMENT SYSTEM

Supporting the Boral Environmental Policy, is an integrated Health Safety, Environment and Quality Management System (HSEQMS) which comprises of the following nine Environmental Standards:

- Environmental Aspects and Impacts;
- Water Management;
- Land Management;
- Waste Management;
- Noise Management;
- Air Management;
- Spill Management;
- Ecosystem and Biodiversity Conservation; and
- Culture and Heritage Protection.

In accordance with the above Standards, procedures have been developed that provide the framework for a comprehensive monitoring program that collects information and data for the assessment of environmental impacts, regulatory compliance and performance against HSEQMS continual improvement objectives.

5.2 RISK MANAGEMENT

The identification and assessment of environmental risks is conducted through an Aspects and Impacts Register that forms the foundation on which Site management plans and procedures are developed to minimise the potential risk on the environment. During the 2019 Reporting Period, a review of the Site Environmental Aspects and Impacts Register was undertaken by a collaboration of Site management, operational employees and environmental advisors.

The review included risk assessments on over 150 environmental elements associated with the Site operations, equipment and materials. The Aspect and Impacts Register was revised to reflect current Site activities and statutory requirements incorporated within the ML and NSW EPA Environment Protection Licence (EPL No. 1698).

The Site operations are inherently low risk with minimal potential for material environmental harm. Through the implementation of appropriate engineered, procedural and behavioural controls, the

Boral Cement Works (Berrima) - Environmental and Rehabilitation

risk rankings have largely been reduced to lows, with very few mediums and only one high in relation to nuisance dust emissions.

5.3 ENVIRONMENTAL INSPECTIONS AND AUDITS

The Health and Safety Business Partner and Environmental Business Partner conduct periodic inspections and audits that include assessing performance against the following criteria:

- Compliance with ML, MPL and EPL conditions and other relevant statutory requirements;
- Adequacy and effectiveness of the Site environmental management, monitoring, controls and reporting;
- Conformance with HSEQMS objectives;
- Document management of environmental monitoring data, inductions and training;
- Site personnel and contractor's environmental awareness and performance;
- Management of community complaints and investigation outcomes; and
- A review and revision (if required) of the HSEQMS Standards and procedures for relevancy, adequacy and effectiveness.

6 COMPLIANCE CRITERIA

6.1 MINING LEASE CONDITIONS

Condition 4(b) of the ML and respective MPLs require a Compliance Report which must include the following information:

- The extent to which the conditions of this mining lease or any provisions of the Act or the regulations applicable to activities under this mining lease, have or have not been complied with;
- Particulars of any non-compliance with any such conditions or provisions,
- the reasons for any such non-compliance; and
- any action taken, or to be taken, to prevent any recurrence, or to mitigate the effects, of that non-compliance.

During the 2019 Reporting Period, there were no breaches of ML, MPL conditions identified. A summary of compliance to ML, MPL conditions follows:

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- *ML Condition 1: Notice to Landholders*: This condition is considered Not Applicable. Boral own all land associated with ML and MPLs and there was no requirement for the notification of external landholders;
- *ML Condition 2: Rehabilitation*: No land disturbance activities occurred during the 2019 Reporting Period requiring rehabilitation. Previously disturbed areas have been rehabilitated and are in a monitoring and maintenance phase;
- *ML Condition 3: Mining Operations Plan*: All site operations during the 2019 Reporting Period were conducted in general accordance with the MOP approved by the Department in 2015;
- *ML Condition 3: Annual Rehabilitation Report*: This E&RCR has been prepared for approval by the Department and submission is required by the due date of 28th February 2020;
- *ML Condition 4: Annual Compliance Report*: This E&RCR has been prepared for approval by the Department and submission is required by the due date of 28th February 2020;
- *ML Condition 5: Environmental Incident Report*: There were no material environmental incidents that breached either the *Mining Act 1992* or *Protection of the Environment Operations Act 1997* during the 2018 Reporting Period;
- *ML Condition 6: Resource Recovery*: Resource recovery is being conducted in accordance with the approved MOP;
- *ML Condition 7: Security*: The respective rehabilitation Security Bond amounts assessed by the Minister of for ML 1723 and Group Security for MPLs have been established as Bank Guarantees; and
- *ML Condition 8: Cooperation Agreement*: This condition is considered Not Applicable. Boral own all land associated with ML and MPLs with no overlapping titles.

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6.2 COMPLIANCE WITH EPL No. 1698

The ML also requires that the Compliance Report include information on the extent of compliance with other regulatory requirements applicable to activities under the ML (Condition 4b(i)).

The site operations are regulated under EPL No. 1698 (EPL) for the following scheduled activities:

- Cement or lime works;
- Energy recovery;
- Extractive activities;
- Resource recovery; and
- Waste storage.

The EPL comprises of key environmental compliance conditions which include: monitoring of air emissions; nuisance dust; water discharge quality; waste management; noise limits; maintenance and operation of plant and equipment; administrative and incident reporting; and activities being undertaken as part of Special Conditions such as Pollution Studies and Reduction Programs.

The Site Compliance with EPL requirements are continuously assessed through scheduled monitoring, site audits and inspections, which enable non-compliances to be identified, corrected and reported to the appropriate regulatory authorities.

A requirement of the EPL is to submit an Annual Return to the EPA comprising of a Statement of Compliance and a summary of any monitoring required by the license (including the recording of complaints). The EPL Annual Return for the period between 1 May 2018 and 30 April 2019 was received by the EPA on 28 June 2019. Non-compliances relating to emissions from the cement plant were reported however these did not relate to the shale pit mining lease area. During the remainder of the 2019 Reporting Period, between 30 April 2019 and 17 December 2019, the Site received one penalty notice on the 19th Dec for an event which occurred on 23 - 28th June. The Penalty notice was issued for failure to comply with condition 02 Maintenance of Plant and Equipment which related to a cement baghouse failure. This penalty had no relation to the shale pit mining activities. Boral Cement took this penalty very seriously, an investigation was conducted and solutions were implemented. Berrima Cement continued to operate with no other known breaches of EPL conditions.

Boral Cement Works (Berrima) - Environmental and Rehabilitation

7 CONCLUSION

Shale extraction and rehabilitation activities at the Berrima Cement Works (the Site) were conducted in compliance with the conditions of Mining Lease 1723 (and associated MPLs) and EPA Environment Protection Licence No. 1698 (EPL) during the 2019 Reporting Period.

The Site operations were conducted through the Boral integrated Health, Safety, Environment and Quality Management System (HSEQMS). The HSEQMS provided the framework for regulatory compliance through established environmental Standards, procedures and controls. Site operations were periodically inspected and audited for assessment of environmental compliance and performance.

As reported in the previous 2018 Environmental and Rehabilitation Compliance Report, shale extraction continued to be conducted within the existing quarry pit. There were no activities during the 2019 Reporting Period that required land disturbance beyond the existing quarry pit and as such no new rehabilitation works were undertaken. Rehabilitation of previously disturbed areas prior to the 2019 Reporting Period have been historically completed and are currently in monitoring and maintenance phases as part of an internal environmental management program.

Site quarrying and rehabilitation works during the 2019 Reporting Period were consistent with the proposed yearly activities presented in the Mining Operations Plan (MOP) approved in 2015.

During next years' 2020 Reporting Period, shale extraction is proposed to continue within the existing quarry pit in accordance with the MOP. As such, there are no proposed land disturbance activities that will require rehabilitation to be undertaken in 2020 Reporting Period.

Environmental inspections and audits will be conducted during the 2020 Reporting Period and the findings will be included in the next annual Environmental and Rehabilitation Compliance Report.

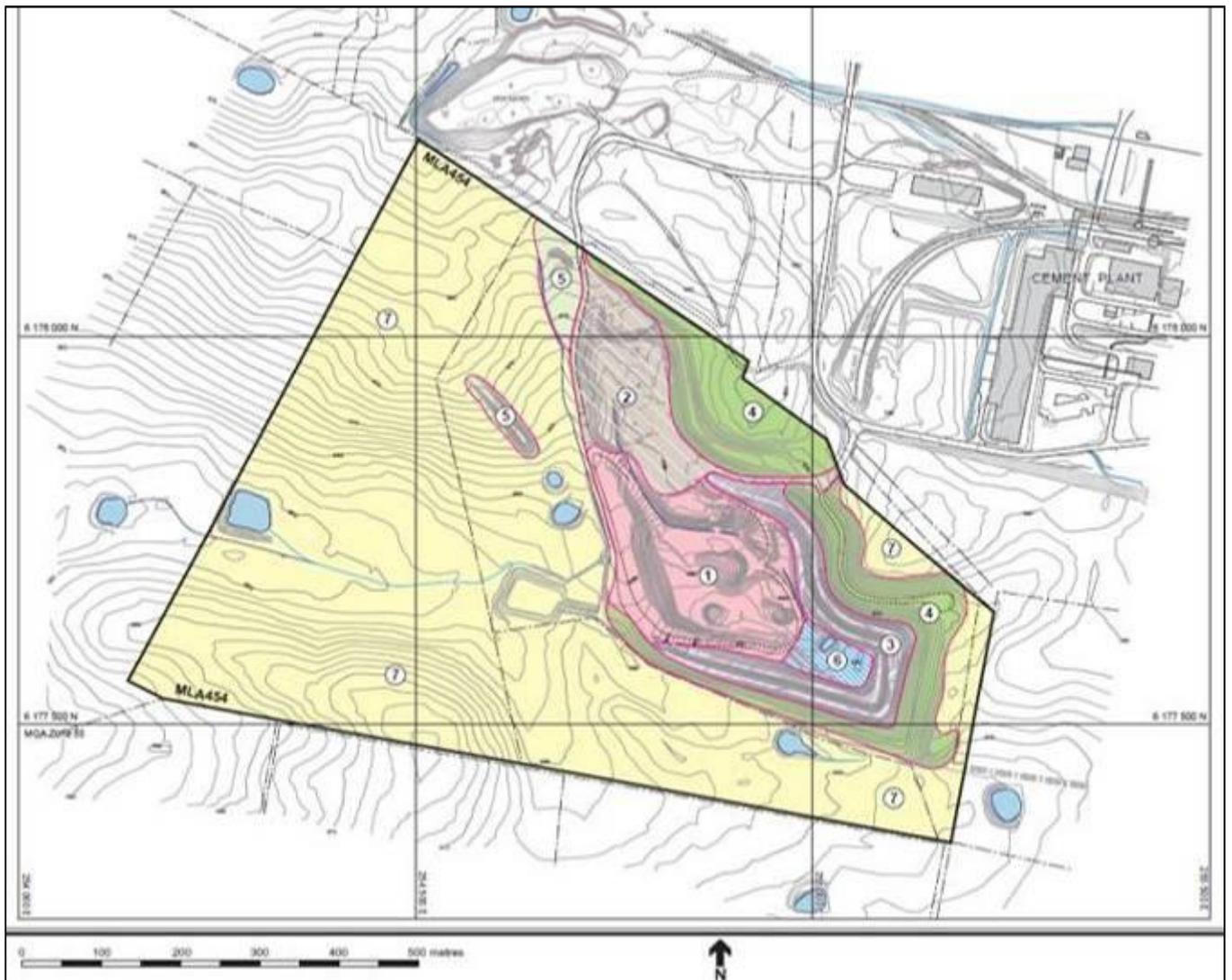
8 APPENDIX A – MAPS

Boral Cement Works (Berrima) - Environmental and Rehabilitation

Map 1. Berrima Cement Works Locality



Map 3. Berrima Cement Works - Shale Quarry



MINING DOMAINS

- Domain boundaries
- ① Active extraction area
- ② Unshaped material, storage areas and haul roads
- ③ Completed highwall awaiting rehabilitation
- ④ Completed rehabilitation subject to ongoing maintenance
- ⑤ Transitional rehabilitation (topsoil stockpiles)
- ⑥ Water storage
- ⑦ External areas

 Topographic contour (m)

 Building

 Sealed / unsealed road

 Railway

 Fence

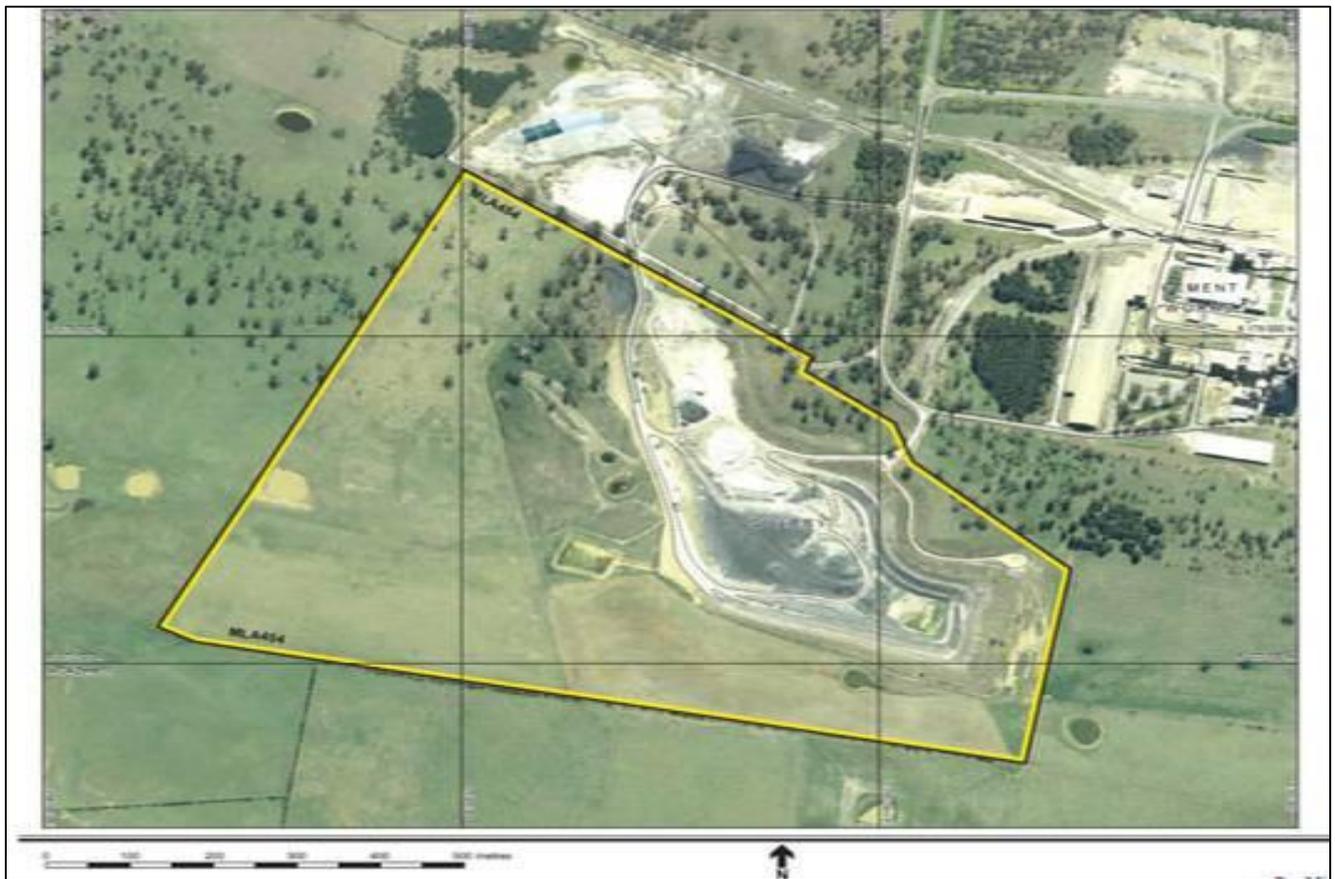
 Dam

 Mining Lease Application 454

October 2015

Boral Cement Works (Berrima) - Environmental and Rehabilitation

Map 4. Berrima Cement Works- Shale Quarry



 Topographic contour (m)

 Building

 Sealed / unsealed road

 Railway

 Fence

 Mining Lease Application 454

October 2015

9 APPENDIX B – PHOTOS

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Boral Cement Works (Berrima) - Environmental and Rehabilitation

Photos 1a, 1b, 1c & 1d 2019 Domain Planting Northern Side of Quarry



1a



1b

Boral Cement Works (Berrima) - Environmental and Rehabilitation



1c



1d

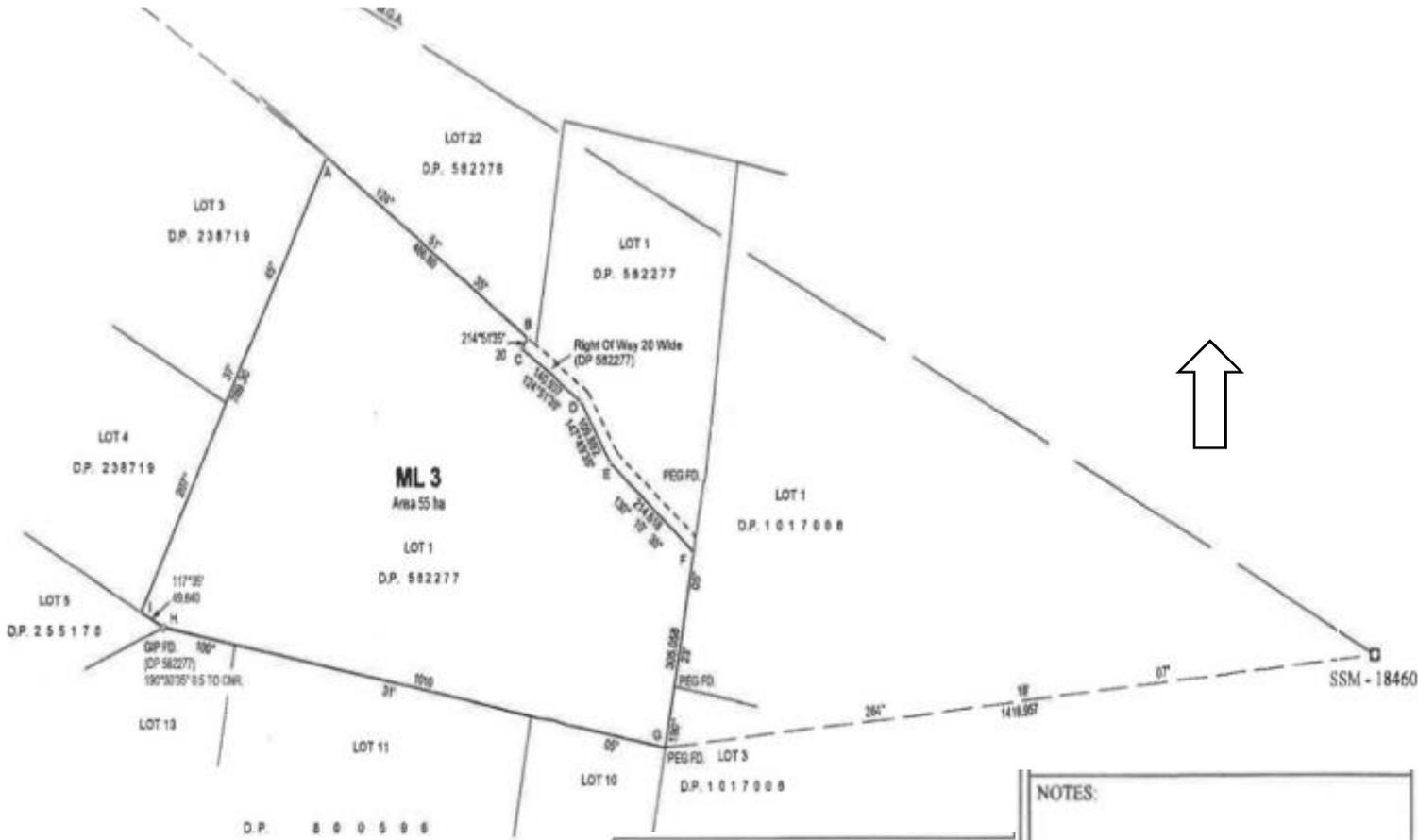
Boral Cement Works (Berrima) - Environmental and Rehabilitation

10 APPENDIX C – PLATES

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Boral Cement Works (Berrima) - Environmental and Rehabilitation

Plate 1: Survey Plan ML 1723 (Shale Pit)



D.P. 8 0 0 5 9 6

PLAN OF PORTION ML 3
PARISH: BONG BONG
COUNTY: CAMDEN
MAP SHEET No. 8928-1-N MOSS VALE
REDUCTION RATIO 1:5000 AT A1
MINING LEASE APPLICATION No. 454 (Act 1992)
MINING DIVISION: SYDNEY
APPLICANT: BORAL CEMENT LTD
APPLICATION DATE: 30/05/2013
MINING LEASE No.
STATUS:
METHOD: OPEN CUT
SURFACE EXCEPTION / DEPTH RESTRICTION
EMBRACES THE SURFACE AND SOIL BELOW THEREOF TO A DEPTH OF 30 METRES.

NOTES:
Azimuth: SSM 36351 - SSM 18460 Plans used in the course of this survey DP 582276, DP 1017008, DP 800596
Survey declared on this plan for lines between points A to I
I, MATTHEW B. SMITH of CRAVEN ELLISTON & HAYES (DAPTO) PTY LTD a surveyor registered under the Surveying and Spatial Information Act 2002 hereby certify that the survey represented in this plan is accurate and has been completed in accordance with the Surveying and Spatial Information Regulation 2012 and the Surveyor General's Direction for Mining Surveys and was completed on 03/05/2013
Signature: <i>MS</i> Surveyors Reference : D213084, Reg. No. 8175
Survey Calcs: <i>Richard Fred Smith</i> Plan Investigated: <i>MS</i> 11/11/2013 Plan Approved: <i>MS</i> 11/11/2013 Paper No : T13-1996 R17009211 D0006411350

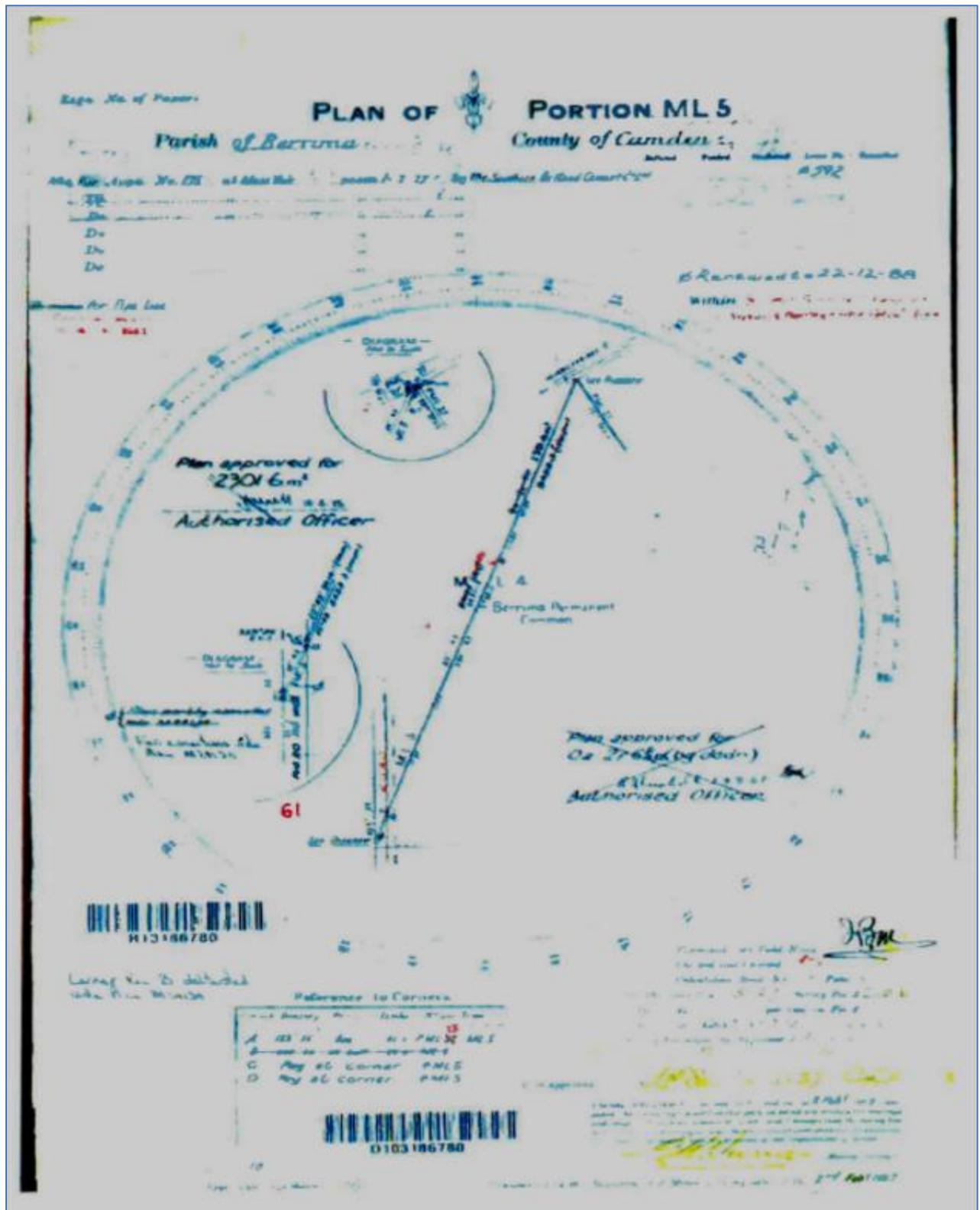
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Boral Cement Works (Berrima) - Environmental and Rehabilitation

Plate 3: Mining Purposes Lease 592



Boral Cement Works (Berrima) - Environmental and Rehabilitation

Plate 4: Mining Purposes Lease 622



Boral Cement Works (Berrima) - Environmental and Rehabilitation

Plate 6: Mining Purposes Lease 628



Boral Cement Works (Berrima) - Environmental and Rehabilitation

Plate 7: Mining Purposes Lease 654

