



# BORAL BADGERYS CREEK REHABILITATION MANAGEMENT PLAN





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# BORAL

## BADGERYS CREEK BRICKWORKS

### Rehabilitation Management Plan

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# 1 BACKGROUND AND SITE DESCRIPTION

The Boral Badgerys Creek Brickworks (project site) is located at 235 Martin Road, Badgerys Creek within the Liverpool City Council Local Government Area (LGA). The site is currently operating as a quarry and brick-making facility under a Project Approval as issued by the NSW Department of Planning and Infrastructure on 27th September 2011.

## 1.1 PURPOSE AND OBJECTIVES OR THIS DOCUMENT

In accordance with the conditions of the Project Approval, Boral are required to develop and implement management plans and strategies for the site. Hyder have been commissioned by APP Corporation to prepare the rehabilitation management plan for the project site in line with condition of approval No. 37 which requires that:

*37. The Proponent shall prepare a Rehabilitation Management Plan for the project to the satisfaction of the Director-General. The plan must:*

*a) be submitted to the Director-General by the end of March 2012;*

*b) be prepared in consultation with OEH and NOW;*

*c) be prepared in accordance with any relevant guideline(s); (See Section 2)*

*d) achieve the Rehabilitation Objectives specified in the Rehabilitation Strategy (Condition 36); (See Section 4)*

*e) take into account any relevant strategic planning limitations in the local and regional areas; (See Section 3) and*

*f) build, to the maximum extent practicable, on the other management plans required under this approval (See Section 7).*

## 1.2 HISTORY OF THE SITE

The Badgerys Creek facility has been operational since 1976 when a Deed of Agreement was issued between Liverpool City Council (LCC) and Pacific Brick Company Pty Ltd for the extraction of materials from the site. Most recently, Boral Bricks Pty Ltd (Boral) were issued a Project Approval granted under Section 75J of the Environmental Planning and Assessment Act 1979 to enable the continuation of quarrying and brick-making operations at the project site until September 2031. A summary of the modifications and consent is provided within Table 1.

In April 2012, the proponent, Boral Clay and Concrete (NSW) announced the temporary shutdown of the quarry and brick making facility with effect from 30 March 2012. As at September 2013, the facility remained shut down. Boral will review its operations at a future stage, considering market conditions and business needs to determine when operations will recommence. During the shutdown period, activities at the facility will be limited.

**Table 1 Planning history**

Name/Item	Issued by	Description	Status	Date
Consent 1024/1976	Government Appeals Tribunal	Consent granted subject to conditions of Deed of Agreement	Approved	27 September 1976
Section 96 Mod. Consent 921/2006	LCC	Modification to 1976 consent to extend operations on the site for a further four years.	Approved	7 September 2006
DA 764/2009	LCC	Development Application (DA) for the upgrade of the brick making facility to include a new brick unloading machine (Dehacker)	Approved	31 March 2009
Section 96 Modification DA 1024/1976B	LCC	Modification to consent to allow for a further 12 months of operations at the site	Approved	NA
Project Approval	Department of Planning and Infrastructure	Environmental Assessment to continue extraction of the Badgerys Creek quarry beyond September 2010 to meet continued demand	Approved (Conditions of Approval issued by the Deputy Director-General, DoPI)	27 September 2011

## 1.3 SITE SUMMARY

The project site is currently operational with the quarrying of clay and shale for the production of bricks, continuing at the site. Features of the site include:

- Three existing quarry pits (Pits 1-3);
- A brick making facility for production and handling of bricks;
- A brick product storage area;
- Stockpiles for raw materials and un-useable materials;
- Water storage structures; and
- Access roads





Figure 1 Site Layout

## 1.4 REHABILITATION STATUS

Most parts of the site are currently operational. Consequently, some progressive rehabilitation has commenced on the site, primarily focused on maintaining site safety and maintenance of a stable landform. This rehabilitation has predominantly been undertaken in the south west of the site and has comprised a regrading of slopes, re-application of topsoil and seeding with endemic grasses resulting in revegetation to pasture and woodland.

### 1.4.1 WORKS UNDERTAKEN TO DATE

Appendix D *Rehabilitation Plan* of the AECOM Environmental Assessment (2010) presented the proposed rehabilitation works at the site for 2010/2011. These works included:

- Pit 2 Refill Area – complete filling and rehabilitation at ground level;
- Southern Stockpile – reduction of slope steepness, ripping followed by treatment with 10cm of topsoil prior to pasture seeding;
- South Eastern Stockpile – reshaping and vegetating. Treatment with 10cm of topsoil prior to pasture seeding;
- Central Stockpile – reshaping to reduce batter slopes to 1:3 prior to topsoiling and revegetating with pasture;
- Western Section of Raw Material Stockpile – rehabilitating to minimise dust generation. Partial rehabilitation for stability purposes has been undertaken in this area to date to prevent sterilisation of potential future resources;
- Other areas – maintenance and addition of new material to the Western Stockpile, rehabilitation of the elevated haul road in the south west of the site, revegetation of bund south of Pit 3, stabilisation of areas subject to traffic movements;
- South Creek – Fencing of the eastern side of South Creek (50 m from the creek bed) to allow natural regeneration and erosion control by preventing stock entering the area; and
- Badgerys Creek and tributaries – rubbish removal, soil surface preparation, weed and erosion controls, fencing to control grazing and predators, seed collection and tube stock propagation.

The progressive rehabilitation of the site has been undertaken in conjunction with on-going quarrying works. The rehabilitation works implemented aim to minimise risks to safety, stabilise the landform, minimise impacts upon water quality, maintain the land function capability and where possible, create an environment comparable to the surrounding land fabric to progressively meet the closure objectives for the site.

## 2 RELEVANT GUIDELINES

### 2.1 ANZMEC STRATEGIC FRAMEWORK

The rehabilitation process requires the establishment of a performance framework in order to measure the success of the rehabilitation process and to facilitate a consistent approach. The ANZMEC (Australian and New Zealand Minerals and Energy Council) Strategic Framework (2000) provides a framework for rehabilitation and performance assessment for mining operations.

The performance framework should cover the following:

- Rehabilitation principles and objectives, including final land use;
- Decommissioning requirements;
- Community objectives and criteria;
- Consent criteria;
- Standards and issues related to whole-of-life considerations;
- Financial costing and provisioning;
- Legal requirements;
- Environmental and social management requirements; and
- Safety considerations.

As the final end use is yet to be determined, this rehabilitation strategy will focus upon documenting a strategic approach that aligns with the requirements of the Conditions of Approval as identified within Section 1.1.

It is recommended that the review of both the rehabilitation strategy and this rehabilitation management plan take the ANZMEC strategic framework into consideration as more information becomes available.

### 2.2 NSW DEPARTMENT OF TRADE AND INVESTMENT GUIDELINES

The mine closure, rehabilitation and relinquishment processes are overseen by the Department of Trade and Investment (DT&I). DT&I Guideline EDG03 *Guidelines to the Mining, Rehabilitation and Environmental Management Process* (MREMP) provides guidance in the preparation of Mine Operations Plans (MOP), Mine Closure Plans (MCP) and Annual Environmental Management Reports (AEMR). The guideline document aims to enable mining activities throughout NSW to proceed safely, efficiently extract resources, protect the environment and deliver a rehabilitated landform at the completion of mining activities.

This Rehabilitation Management Plan aligns with the intent of the DT&I Guideline document.



## 3 REGULATORY AND STRATEGIC PLANNING FRAMEWORK

### 3.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The project was declared a 'major development' under the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and State Environmental Planning Policy (Major Development) 2005 and was subject to the provisions of Part 3A of the EP&A Act.

An Environmental Assessment for both Concept Plan and Project Application was approved in September 2011. This plan forms part of the approval requirements issued for the Project Application.

### 3.2 MINING ACT 1992

Following receipt of Project Approval, an application for a mining lease will be made in accordance with the *Mining Act 1992*. Clause 75V of the EP&A Act indicates that subject to the issue of Project Approval, a mining lease for the Project cannot be refused and must be substantially consistent with the terms of the Project Approval.

### 3.3 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) Act governs the pollution of waters land and air in NSW in addition to environmental protection and waste management.

Environment protection licence (EPL) No. 684 as issued under the POEO Act is currently held for the site. This EPL is currently being reviewed in accordance with the Project Approval and a variation to the current EPL may be made to reflect the future operations at the site.

### 3.4 PESTICIDES ACT 1999

The *Pesticides Act 1999* requires users of pesticides, which by definition include herbicides, to prepare and retain records of pesticide application and to have pesticide application by qualified personnel (e.g. Farm Chemicals Handling certificate).

### 3.5 STATE ENVIRONMENTAL PLANNING POLICY (SEPP) (MINING, PETROLEUM PRODUCTION AND EXTRACTIVE INDUSTRIES) 2007

Under the SEPP, development for the purposes of mining, on land that is, immediately before the commencement of this clause, the subject of a mining lease under the *Mining Act 1992*, is only permissible with development consent. The SEPP defines mining as including:

- (a) the construction, operation and decommissioning of associated works, and
- (b) the stockpiling, processing, treatment and transportation of materials extracted, and
- (c) the rehabilitation of land affected by mining.

The application for a mining lease is currently being undertaken by Boral.

## 3.6 STATE ENVIRONMENTAL PLANNING POLICY (GROWTH CENTRES) 2006

The rehabilitation plans developed for the project site will align with the land use and development controls and objectives identified in the Growth Centres SEPP as they become defined for the surrounding area.

These considerations would include assessing implications of development controls and objectives for:

- Environment conservation and recreation zones;
- Flood prone and major creeks land;
- Vegetation; and
- Cultural heritage landscape areas.

The rehabilitation plans would consider the implications for effecting rehabilitation on land within the zone defined for the site as well as any implication for other zones in immediate proximity to the project site.

## 3.7 LIVERPOOL LEP

The Boral Badgerys Creek Brickworks is zoned RU1 Rural – Primary Production under the Liverpool Local Environment Plan 2008 (LEP). The objectives of this zone are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To ensure that development does not unreasonably increase the demand for public services or public facilities.*
- *To ensure that development does not hinder the development or operation of an airport on Commonwealth land in Badgerys Creek.*
- *To preserve bushland, wildlife corridors and natural habitat.*

Works involving extractive industries are permitted by Council with consent. The Project has recently been granted Project Approval by the Department of Planning and Infrastructure pending meeting the Director-General requirements.

Rehabilitation of the land would align with the objectives of the LEP with the final rehabilitated site being safe and stable and compatible with the surrounding land fabric.

## 4 REHABILITATION OBJECTIVES AND THE REHABILITATION STRATEGY

A Rehabilitation Strategy was developed by Hyder on behalf of Boral in accordance with the conditions of the Project Approval. Condition 36 of the Project Approval required that Boral develop and implement a rehabilitation strategy for the site. This was submitted and approved by the DoPI in February 2012.

Rehabilitation objectives for the site, as presented within the strategy were categorised as follows:

- Safety;
- Landform Stability;
- Water Quality;
- Land Function; and
- Compatibility with the surrounding land fabric

The completion criteria for rehabilitation proposed within the strategy were established with reference to the ANZMEC Strategic Framework (2000) and aim to meet the objectives of the framework. The criteria are presented within Table 2.

**Table 2 Completion Criteria for the project site**

Rehabilitation Aspect	Rehabilitation Performance Indicator	Target
Safety	No. of site hazards	Significant hazards removed or controlled
Landform stability	Minimal rilling, erosion, sediment deposition in drains and water retention basins  Stability of voids  Diversion of water flows	No significant erosion or soil loss from site  No collapsing of voids
Water quality	No dirty water leaving the site	Any water leaving the site should meet ANZECC criteria as discussed with OEH
Land function	Land capability aligned to proposed future use  Maintenance of environmental assets currently on or within proximity to the site	Land function commensurate with the surrounding land fabric that doesn't compromise the value of the surroundings.  Works undertaken to maintain environmental assets on the site
Comparable to surrounding land fabric	Visual continuity of landscape  Consistent vegetation cover	Comparable to the future use of the surrounds

This rehabilitation management plan aims to provide guidance in the achievement of the objectives of the rehabilitation strategy for the site.

This document does not represent the Mine Closure Plan for the site. The closure plan is to be prepared separately as a standalone document for consultation and engagement with stakeholders and ultimately approval for relinquishment by DT&I.

Closure objectives and completion criteria will be proposed and confirmed as part of the early indicative closure plan and will inform initial rehabilitation requirements. It is recognised that these objectives and criteria may change over time, and the Closure Plan, and this rehabilitation management plan, would be amended to reflect and accommodate these changes.

## 5 REHABILITATION

As stated within Appendix D *Rehabilitation Plan* of the AECOM Environmental Assessment (2010):

*Quarries ideally undertake staged and progressive treatment of disturbed areas rather than undertaking large-scale rehabilitation works at the conclusion of quarrying in order to:*

- Minimise areas of potential soil erosion, dust nuisance, water contamination and aesthetic impacts and the resultant adverse off-site environmental effects;
- Spread the cost of rehabilitation throughout the life rather than one high cost clean-up event at the end of the project when cash flow is reduced;
- Reduce unnecessary rehandling of materials;
- Allow the use of topsoil which has not been stored for a long period; and
- Allow for practical trials of rehabilitation techniques (e.g. pasture and native woodland establishment) that may require refining before more widespread use.

Boral is committed to rehabilitating the project site to meet the objectives for future use of the land, once determined. In the immediate short term, rehabilitation works have been focused upon minimising dust generated by the stockpiles, sections of haul road and perimeter bunding. These interim progressive works assist in minimising the areas requiring rehabilitation at the end of the quarry life and contribute to a reduction in operational impacts.

As the future end use of the site is yet to be determined, the rehabilitation of the site would aim to preserve the opportunity for continued extraction of resources below the 35 m average depth.

### 5.1 SHUTDOWN PERIOD MANAGEMENT MEASURES

In April 2012, the proponent, Boral Clay and Concrete (NSW) announced the temporary shutdown of the quarry and brick making facility with effect from 30 March 2012. As at September 2013, the facility remained shut down. Boral will review its operations at a future stage, considering market conditions and business needs to determine when operations will recommence. During the shutdown period, activities at the facility will be limited. Hence, the opportunity for interactions with the environment during this period is limited. Notwithstanding, the following rehabilitation management measures will be employed during the shutdown.

The most recent quarrying campaign was in Pit 3 and was completed in winter 2011. Following that campaign, the Pit 3 was stabilised in accordance with the rehabilitation plan. Similarly, all raw material and overburden stockpiles are stabilised or rehabilitated. The HSE Manager will inspect the site on a weekly basis to ensure the rehabilitated areas remain stable.

During the shutdown period Boral will continue to monitor the status and effectiveness of rehabilitation measures on the site on a regular basis. As required, rehabilitation measures will be maintained to ensure effectiveness and promote ongoing compliance with Condition 36f of the project approval.

In the event that the quarrying operations do not recommence on the site the appropriateness of measures documented in this plan will be reviewed to ensure that they are aligned to the designated final land use.



## 5.2 PROPOSED WORKS 2012/2013

To avoid the need for large-scale rehabilitation across the project site at the end-of-use, progressive rehabilitation will be undertaken to work towards achieving the rehabilitation objectives for the site. Works proposed during the 2012/2013 period will work towards meeting the rehabilitation objectives for the site whilst avoiding any restriction upon current, or prospective, extraction activities. Proposed rehabilitation works for 2012/2013 are presented within Table 3.

**Table 3 Proposed Rehabilitation Works 2012/2013**

Proposed Actions	Timing	Rehabilitation Aspect
Commission a detailed ground survey to provide a baseline for the rehabilitation process	By end June 2012 and then once every 5 years	All
Further investigations Confirm stability of voids Confirm drainage across and immediately surrounding the site following results of ground survey Confirm receiving water quality criteria with NSW OEH Determine cut/fill balance	By end June 2013	Stability Water quality
Earthworks Stabilise dust generating voids and unworkable steep slopes or unused stockpiles and hardstand areas. Undertake necessary cut/fill works to stabilise site, maintaining a safe environment that minimises exposed surface areas to reduce generation of dust to the surrounds Install water management structures as required to minimise any dirty water flows exiting the site	By end June 2013	Stability Land function Water quality
Revegetation Spread clean topsoil and endemic pasture seed on remaining exposed and stabilised areas Plantings, as necessary on already stabilised and topsoil covered areas	As required from June 2012 – June 2013.	Stability Land function
Weed management to minimise weeds across the project site and onto surrounding areas (weed control activities using herbicides must be undertaken in accordance with the provisions of <i>the Pesticides Act 1999</i> )	Ongoing	Land function

Proposed Actions	Timing	Rehabilitation Aspect
Installation of fencing at access points around Badgerys Creek to restrict access by livestock	By December 2012	Land function Comparable to surrounding land fabric
Badgerys Creek Riparian – fencing, planting and weed control for the portion of Badgerys Creek and Badgerys Creek Tributary located within the site (in accordance with provisions of the <i>Water Management Act 2000</i> )	June 2013	Land function Water quality Comparable to surrounding land fabric
Monitoring and review of rehabilitation performance and outcomes	As per Table 4 and ongoing through life of operation	All

## 5.3 PROPOSED MONITORING PROGRAM

To monitor the progress of rehabilitation works towards the rehabilitation objectives of the project site, a monitoring program, as presented within Table 4, is to be implemented.

**Table 4 Proposed monitoring program and recommended frequency**

Rehabilitation Aspect	Monitoring Activity	Proposed Frequency
Safety	Visual inspection of site for hazards.	6 monthly
Landform Stability	Visual inspection of site for evidence of erosion and confirmation of performance of water management structures.	6 monthly
Water Quality	Hand held water quality testing by qualified professional at 3 locations.	Quarterly and immediately after significant events (event based) <sup>#</sup>
Land Function	Visual inspection of revegetation progress. Photographic record of progress.	6 monthly
Compatibility with surrounding land function	Visual inspection of revegetation progress. Photographic record of progress.  Visual inspection of site to confirm if any spraying, seeding of planting program has taken. Photographic record of progress.  Comparative assessments with adjoining land.	6 monthly  Once – 6 months after spraying.

<sup>#</sup> *Event based monitoring will occur one day subsequent to any significant rainfall event, defined as a 1 in 10 year storm event. Results after event based monitoring would be reviewed to determine if additional on-site monitoring might be required in the short-medium term.*

*It is recommended that three monitoring locations within Badgerys Creek (upstream, downstream and at discharge point) be identified and sampled in accordance with the regime presented in Table 4.*

This monitoring program is to be implemented from the approval of this Rehabilitation Management Plan and sustained until the mining lease (once obtained) for the project site has been relinquished (See Section 6).

### 5.3.1 MONITORING RESULTS AND REPORTING

To document the progress of the rehabilitation works towards the rehabilitation objectives for the site, the results of the monitoring program are to be presented within the AEMR for the project site. The AEMR should include detail of:

- Progressive rehabilitation works undertaken;
  - Monitoring results;
  - How these works have progressively rehabilitated the site in accordance with the rehabilitation objectives;
  - Prospective rehabilitation progress forecast for the next AEMR reporting period; and
- The completed AEMR is to be used as a point of ongoing consultation, engagement and performance reporting with key stakeholders.

## 5.4 STAKEHOLDER MEETING REQUIREMENTS

Stakeholders to be informed and consulted regarding rehabilitation works are:

- NSW Department of Trade and Investment;
- Liverpool City Council;
- NSW Office of Environment and Heritage (OEH);
- NSW Office of Water;
- NSW Rural Fire Service; and
- Local landowners and residents.

## 6 RELINQUISHMENT

This plan aims to work towards achieving the rehabilitation objectives of the project site in preparation for the ultimate relinquishment of the mining lease and end of extraction activities. Once operations at the project site are scheduled to cease, the process to relinquish the mining lease would be implemented, based on DITR *Best Practice Guidelines* (DITR, 2006).

1. Establish formal closure, sign-off and relinquishment mechanisms (Rehabilitation Management Plan, subsequent AEMR/Progress Reports);
2. Demonstrate that the site has achieved the agreed rehabilitation/closure criteria through the sign-off on a completion criteria verification report by DT&I in discussion with Boral;
3. Send letter of request to the Minister for the cancellation of Authority on the Mining Lease (once issued). This letter will be:
  - lodged with the Director-General; and
  - accompanied by a survey plan defining the areas rehabilitated and to be relinquished.
4. Establish a process to manage areas that do not meet the performance criteria.
5. Establish a financial instrument to provide for any on-going maintenance of the rehabilitated areas.

### 6.1 RELINQUISHMENT DOCUMENTATION

The DT&I Guidelines require the preparation of documentation to support relinquishment. Features and information required to be included within this documentation are:

- Natural features including swamps, rivers, creeks, streams or watercourses;
- Areas affected by mining or mining purposes by nature of disturbance during the mine life;
- Soil covered rehabilitated areas identified according to slopes; 10 degrees to 18 degrees, >18 degrees;
- Remaining voids/pits;
- Vegetation type, fauna habitat, land use, and rural land capability classification;
- Boundaries and status of all disturbed and undisturbed areas;
- Re-created areas containing threatened species and fauna habitat;
- Integrated landscape features, which show how or whether rehabilitated areas of native vegetation link with undisturbed native vegetation to provide larger areas and wildlife corridors;
- Rural land capability classification (RCC), or agricultural capability;
- Constructed drainage lines, water control structures, and water supply dams;
- Infrastructure to remain on site after mine closure;
- Features pertinent to other agency licences, approvals of other government agencies or their relinquishment;
- Fences, bunds and other public, fauna/ and stock safety features.

The NSW *Mining Regulation 2003* prescribes the format of the plans to accompany the relinquishment request. A survey plan will be commissioned for the site at the commencement (following approval of this plan) and end of rehabilitation works which will support this documentation requirement.

## 6.2 CONSULTATION REQUIREMENTS

The following consultation requirements have been identified for the relinquishment process:

- Boral to notify DT&I to inform them that the relinquishment process is to be commenced and to determine if DT&I have any specific requirements for the project site;
- Boral should notify surrounding landowners when the relinquishment process has commenced, detail of the process; and
- Notify NSW OEH and NOW of the proposed relinquishment.

## 6.3 COMPLETION CRITERIA ACHIEVEMENT

In order to obtain sign off for achievement of rehabilitation of the site, the rehabilitation criteria identified in Table 2, will need to be demonstrated, where appropriate. Sign-off will be agreed by DT&I and Boral.

In addition, the following information should be confirmed at the commencement of the relinquishment process:

**Table 5 Relinquishment Actions**

Proposed Actions	Timing	Rehabilitation Aspect
Preparation of survey plan and application for relinquishment	TBC	Mining lease relinquishment
Target date for rehabilitation and relinquishment of lease	TBC	All

## 7 INTERACTIONS WITH OTHER MANAGEMENT PLANS

The management plans required as part of the Project Approval would work in conjunction with this plan to maintain the operation at the project site and work to progressively rehabilitate the site to a final end land use and ultimate relinquishment. This section provides a summary of the purpose and goals of each of the required plans and states the rehabilitation aspects that the works proposed within each plan align.

### 7.1 NOISE MANAGEMENT PLAN

The purpose of the noise management plan for the site is to:

- Present noise mitigation measures implemented across the project site;
- Describe how commitments on noise mitigation are being met;
- Detail the noise bund construction plan and the noise monitoring program; and
- Provide detail of consultation undertaken regarding noise.

The noise management plan would work towards meeting the progressive rehabilitation objectives for the site of:

- Safety;
- Land function; and
- Preparation of a landform that is comparable with the surrounds.

Progressive rehabilitation activities can be used to complement the noise mitigation actions on site. An example includes the use of excavated topsoil to provide a growing medium over noise bunds.

### 7.2 AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

The purpose of the air quality and greenhouse gas management plan for the site is to:

- Present measures that would be implemented across the project site to comply with conditions of approval;
- Monitor how commitments made within the EA are being met;
- Include a program to minimise surface disturbance as a result of quarrying; and
- Provide an air quality monitoring program.

The air quality and greenhouse gas management plan would work towards meeting the progressive rehabilitation objectives for the site of:

- Safety;
- Land function; and
- Preparation of a landform that is comparable with the surrounds.

Implementation of this rehabilitation plan is complementary to achieving the objectives of the Air Quality and Greenhouse Gas Management Plan as progressive implementation of the

strategies in this plan will reduce the total surface area of exposed soils at any one time and provide a vegetation growth medium to further reduce the potential for dust migration from site.

## 7.3 WATER MANAGEMENT PLAN

The purpose of the water management plan for the site is to:

- Provide a reliable water supply that meets the needs of mining operations in terms of both quality and quantity;
- Protect the mining operations from excess water;
- Protect environmental values offsite; and
- Comply with environmental guidelines set by government regulations.

The water management plan would work towards meeting the progressive rehabilitation objectives for the site of:

- Water quality,
- Land function; and
- Preparation of a landform that is comparable with the surrounds.

The Water Management Plan and Rehabilitation Management Plan complement each other as the effective management of surface waters across the site can reduce the risk of landform erosion or failure and can facilitate growth of cover vegetation.

## 7.4 ABORIGINAL HERITAGE MANAGEMENT PLAN

The purpose of the Aboriginal heritage management plan is to:

- Avoid impacts upon Aboriginal items adjacent to the project site;
- Minimise impacts upon Aboriginal items within the project site, implementing a procedure to maintain and/or salvage where applicable;
- Develop a procedure to be implemented in the event that skeletal remains are encountered during the project; and
- Consult and involve the Aboriginal community in the conservation and management of Aboriginal heritage objects/sites.

The Aboriginal heritage management plan would work towards meeting the progressive rehabilitation objectives for the site of:

- Land function; and
- Maintenance of a landform that is comparable with the surrounds.

The Aboriginal heritage management plan and rehabilitation management plan complement each through early completion of structural rehabilitation elements such as berms, fencing and screening around sensitive heritage values that are not intended or permitted to be disturbed, thereby decreasing the risk of unintentional disturbance.

## 7.5 TRANSPORT MANAGEMENT PLAN

The purpose of the transport management plan is to:



- Confirm safety of project-related transport on local roads;
- Minimise impacts of project-related transport upon local residents; and
- Implement measures to conduct safe operations that minimise environmental impacts upon the surrounds.

The transport management plan would work towards meeting the progressive rehabilitation objectives for the site of:

- Safety;
- Landform stability;
- Land function; and
- Preparation of a landform that is comparable with the surrounds.

The Transport Management Plan complements the Rehabilitation Management Plan by reducing the potential disturbance impact of vehicle movements by controlling driving speeds on site and on local roads and designating vehicle haul roads or hardstand/parking and refuelling areas. Implementing these controls enables clear definition of rehabilitation expectations on and off-site and potentially reduces medium to long term maintenance costs as well as final site and road re-establishment costs.

All management plans prepared for the site will contribute to meeting the rehabilitation objectives for the site and the preparation of the land for the relinquishment of the lease and future land use.

# 8

## SUMMARY

This rehabilitation management plan provides guidance for the progressive works and documentation of the Rehabilitation of the Boral Badgerys Creek Quarry and Brickworks site.

The document presents:

- Relevant guidelines and strategic planning documentation to consider in rehabilitating the site;
- A summary of the rehabilitation objectives and rehabilitation criteria for the site;
- Proposed progressive rehabilitation works to be undertaken during 2012/2013 to work towards the rehabilitation objectives of the site;
- A monitoring program and documentation process to present and record rehabilitation undertaken;
- Detail of the Mining Lease relinquishment process; and
- Interactions of other management plans completed for the site and how these plans work towards the achievement of rehabilitation objectives for the project site.

This document is to be periodically reviewed to provide an applicable process to rehabilitate the Boral Badgerys Creek Quarry and Brickworks site. Whilst this document provides a specific rehabilitation plan for the site for 2012/2013, performance of these works does not limit flexibility in the progressive development and extraction for the site, or result in resource sterilisation, and accommodates a range of end land uses that have yet to be defined as the agreed final end land use.

## 9 REFERENCES

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