

# NEWNES KAOLIN

Mine & Quarry

## Mine Operations Plan

**Construction Phase only – no mining activities to be conducted under this MoP**

## Mine Operations Plan: 2020 – 2023

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Prepared for:

### **NEWNES KAOLIN P/L**

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**Name of Mine**                      **Newnes Kaolin Sand & Kaolin Mine**  
**Location: Sandham Road - Off the Bells Line of Road at Newnes Junction**

**MoP Commencement Date**      **March 2020**

**MoP Purpose**                      **Construction of mine infrastructure only – no mining activities will be conducted under this MoP**

**MoP Completion Date**          **2023 – estimate only**

**Name of Mine Operator**          **Newnes Kaolin P/L**

**Mining Authorisations**

**Reporting Officer**                      \_\_\_\_\_

**Title**    \_\_\_\_\_

**Signature**                                      \_\_\_\_\_

**Date**    \_\_\_\_\_



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## 1.0 Compiling a Mining Operations Plan

### 1.1 Introduction

This Mining Operations Plan (MoP) is the second MoP prepared and submitted for the Newnes Kaolin Sand and Kaolin Mine located at Newnes Junction in the Blue Mountains off the Bells Line of Road approximately 10 kms east of Lithgow.

The term of this MoP is from March 2020 to December 2023. This MoP will cover the construction phase of the project only.

A third MoP addressing the mining activities will be submitted prior to the commencement of any mining activities on the site.

A mine Closure Plan will be prepared approximately mid-way through the proposed life of the mine which is approximately 21 years.

This MoP has been prepared in accordance with the Department of Trade & Investment MoP guidelines.

The website for the project is found at [www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com).

#### 1.1.1 History of Operations

Newnes Kaolin Pty Ltd, trading as Sydney Construction Materials (SCM), proposes to develop an open pit operation to extract friable quartzose sandstone at Newnes Junction, on the Newnes Plateau approximately 10 km east of Lithgow.

SCM proposes to transport the sandstone off-site by rail for processing of the constituent minerals – kaolin and silica sand. Off-site processing will yield fully graded construction sand for the manufacture of ready-mixed concrete, a range of high-purity silica specialty sands, and a range of refined kaolin products. The general layout of the operation is shown on the plan contained in **Appendix 1**.

With total estimated reserves of over 20Mt, the pit life is expected to exceed 21 years. Approximately 1.1Mt per annum will be extracted on average, with a maximum expected of 1.4Mtpa. Areas adjacent to the proposed quarry have been extensively quarried/mined for construction sands and coal.

The quarry operation will be located on the ridgeline between the Rocla Quarry (adjacent to the south) and the Clarence Colliery pit top (adjacent to the northwest). The proposed disturbance area is approximately twenty-five (25) hectares. Bordering the east of the site is the Blue Mountains National Park (BMNP), which is part of the Greater Blue Mountains World Heritage Area, containing the headwaters of the Wollangambe and Coli Rivers wilderness areas. The proximity to, and importance of, the BMNP has been a driver for conservative and sustainable water and soil management for the development. This resulted in the principle underlying design criteria set by SCM to protect potential receiving waters.

Development Consent for the proposed operation of a kaolin mining and sand quarrying operation was issued in 2006 under Section 80 of the *Environmental Planning and Assessment Act 1979*. The resulting Rehabilitation and Landscape Management Plan has been prepared to comply with Conditions 31, 32, 33 and 34 of the Development Consent (DA 329-7-2003 23).

### 1.1.2 Overview of Operations

The resource at the site comprises friable sandstone which breaks down readily into its constituent minerals, including kaolin, silica and for the most part, sand. The operation is an open cut sand/kaolin mining operation on a 25 hectare portion of the site. The operation includes the following key components:

- Extracting up to 20.6 million tonnes of friable sandstone;
- Utilisation of a surface miner and self-loading scrapers for material extraction;
- Delivery of the material to the Clarence rail loop for transport to Sydney for crushing and processing/kaolin recovery;
- Producing 1.4 million tonnes of extracted material a year, including up to 1.28 million tonnes (Mt) of sand and 119,000Mt of kaolin a year (only sand will be produced in the first 5 years).
- Operating the mine/quarry for a period of approximately 20 years;
- Creation of an acoustic barrier between the operation and the township of Newnes Junction; and
- Progressively rehabilitating the pit benches, and ultimately rehabilitating the open cut void to free-draining wetland.

From the Clarence Colliery rail loop, the raw material is to be transported by rail to an industrial site in the Greater Sydney Metropolitan area – most likely Glenlee near Campbelltown in south west Sydney for crushing, processing and recovery of products including building sand, specialty sands, gravels and kaolin.

### 1.1.3 Project Timeline – progress to date

The project is proceeding through a number of stages:

- Groundwater monitoring bores in place from 2004;
- DA consent – completed – approved March 2006;
- Initial Commonwealth EPBC approval – 2006;
- Trial mining works on site at Newnes Junction – completed in 2009;
- Draft Environmental Management Strategy circulated to stakeholders – Dec 2010;
- First meeting of the Newnes Kaolin Community Consultative Committee – Dec 2010;
- Physical commencement works on site at Newnes Junction – completed - March 2011;
- Revised Commonwealth EPBC approval - March 2012;
- Approval of the project Environment Management Plan – September 2011;
- Environmental Protection Licence 13389 – March 2012;

- Draft Pollution Incident Response Management Plan – April 2015;
- Draft Mine Operations Plan – March 2016
- First Annual Environmental Management Plan - 2015 – including annual monitoring for
  - Groundwater
  - Surface water
  - Air quality
  - Flora & fauna
- 2<sup>nd</sup> AEMR – 2016
- 3<sup>rd</sup> AEMR – 2017
- 4<sup>th</sup> AEMR – 2018
- 5<sup>th</sup> AEMR – 2019
- Review of Draft PIRMP - 2020

At time of writing – July 2020

- Review date for Environmental Protection Licence 13389 – January 2020;
- DA consent for raw material processing at Glenlee, Sydney South – EIS & DA will be lodged by early 2021;
- Construction of mine infrastructure at Newnes Junction – estimated in 2023;
- Construction of processing infrastructure at Glenlee – 2023/2024;
- Commencement of mining operations at Newnes Junction – 2023/2024.

#### 1.1.4 Current Consents, Authorisations and Licences

The development was approved under the *Environmental Planning and Assessment Act 1979 (EP&A)* in DA 329-7-2003 which was approved by the Minister for Planning on 14<sup>th</sup> March 2006 (Development Consent).

The original Environmental Impact Statement, dated May 2003, was prepared by SCM, and submitted to DIPNR in May 2004. Supplementary information was prepared and lodged in April 2005.

Subsequent to the issue of the development consent in 2006, additional investigations and reports have been prepared to support this EMS. Refer to the project website for more details.

Project website: [www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com) .

The Commonwealth Government consent for the project under the *Environmental Protection & Biodiversity Conservation Act 1999* (EPBA 2002/620) was approved on 22<sup>nd</sup> August 2006 with additional requirements approved in 2011.

#### 1.1.5 Land Ownership and Land-Use

The site of the development is approximately 25 hectares in area, located approximately 10kms east of Lithgow, north of the railway and the Bells Line of Road.

The site is vacant crown land. The Project has a Mining Lease – ML 1654 – and a Sand Extraction Licence – No R1 480745 – Department reference 10/19542.

The description of the land over which the development will be undertaken is described as:

- Lot 7005 DP 10220664
- Lot 24 DP 751631; and
- Lot 1 DP 108485

The site is bounded by Clarence Colliery to the northwest, The Blue Mountains National Park to the east, the former Rocla quarry to the south and Sandham Road, including the village of Newnes Junction and the main railway lie to the south and southwest and the existing rail loop to the west.

The village of Newnes Junction, which includes approximately 6 dwellings, is located approximately 100 metres southwest of the proposed quarry.

The site falls from the southwest at approximate RL 1070 AHD, to the north east at approximate RL 990 AHD. A locality plan is contained in **Appendix 1**.

### 1.1.6 Stakeholder Consultation

The Newnes Kaolin Community Consultative Committee first met in December 2010 and has met twice a year since then.

The Community Consultative Committee's draft terms-of-reference are as follows:

- Establish and maintain a good working relationship between Newnes Kaolin Sandmine, the community and other stakeholders in relation to Newnes Kaolin activities;
- Provide comment on the mine's environmental performance, discuss community concerns and oversee the resolution of community complaints;
- Provide advice on how best to communicate relevant information on the mine; and
- Work together towards outcomes of benefit to the mine, immediate neighbours and the local community.

Composition of the Newnes Kaolin Community Consultative Committee consists of:

- Chairperson: Ms Sue Graves of Lithgow;
- Local Residents: Col Hunter, Kevin McCosker, Karen McLaughlin;
- Councillor on Lithgow City Council: TBC;
- Clarence Colliery Environmental Officer: Robert Setter;
- Newnes Kaolin General Manager: Ron Goldbery
- Newnes Kaolin Environmental Manager: Tony Proust
- Representative of Lithgow City Council: Ms Lauren Stevens

Minutes of the meeting are posted on the Project website: [www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com) .

General contact is Ron Goldbery – 0410 692 404

Complaints are to be directed to Tony Proust – 0425 285 782

## 2.0 Proposed Mining Activity

### 2.1 Project Description

The purpose of the mine or quarry is for the extraction of friable sandstone for processing into building materials. Specialty sands and kaolin. The mine design is based on maintaining substantial buffers to the Newnes Junction residents and National Park, reducing disturbance to the Newnes Plateau Shrub Swamp vegetation to the southwest of the site, and having sufficient area for the required infrastructure. The pit depth is variable as it is located on the side of a hill and ranges from 80 m on its western wall to only a few metres in the east. The maximum pit dimensions are 750m in length north-south by 460m in width. The final wall slope has a 2m wide berm every 3m in vertical height providing regular terraces for planting of vegetation as part of the progressive rehabilitation and eventual screening of walls.

With total estimated reserves of over 20Mt, the pit life is expected to exceed 21 years. Approximately 1.1Mt per annum will be extracted on average with a maximum expected of 1,4Mtpa. Areas adjacent to the quarry have been extensively quarried/mined for construction sands and coal.

The site development will take place in three stages: site preparation and construction; quarry development and operations; and final rehabilitation. The main activities of each of these are described below.

#### 2.1.1 Trial Mining Works

In 2009 Newnes Kaolin completed a trial mining exercise to test the proposed mining methods using a surface miner machine. A photographic record of the trial mining exercise is contained in **Appendix 6**.

In 2010 following the successful trial mining exercise, the site was rehabilitated.

#### 2.1.2 Physical Commencement Works

In March 2010 the following works were completed in accordance with the DA consent:

- Clearing of approximately 2400m<sup>2</sup> for future stockpile area and site office;
- Excavation of detention pond – 16 x 16 x 0.8m - at the low point;
- Maintenance of temporary access track for access to site; and
- All work in accordance with the approved Erosion and Sediment Control Plan which is contained in **Appendix 3**.

No more construction work has been undertaken on site since March 2011.

In October 2019 the future stockpile area and site office were routinely maintained by removing recent regrowth.

The site was burnt out by bushfire in early 2020 and routine tidy up was undertaken including removal of trees blocking the access track.

No mining activities have been undertaken on the site to date.

Aerial and site photos illustrating the above are contained in **Appendix 5**.

### 2.1.3 Proposed construction works

It is anticipated that the mine construction works will begin in 2023/2024 and will include work as follows:

- Construction of overhead conveyor and associated works;
- Rail loading facilities;
- Water management infrastructure including main and lower retention ponds;
- Clear water diversion works;
- Stockpile storage areas;
- Access road;
- Acoustic barrier;
- Site Office; and
- Clean water pipeline.

A Plan of proposed mine infrastructure is contained in **Appendix 2** and Clean Water Diversion Works are contained in **Appendix 4**.

### 2.1.4 Proposed mine extraction schedule

The proposed mine and quarry will have a projected life of 20 years. An extraction schedule plan is contained in **Appendix 8**.

### 2.1.5 Proposed site rehabilitation

Once operations have ceased, all buildings and infrastructure will be removed from the pit. These areas will be reshaped and ripped where necessary for topsoiling and revegetation. It is proposed that the haul road will remain in use in the ongoing management of the site for fire-fighting purposes. The pit floor will be vegetated with appropriate native species to create a stable, free-draining wetland. The free-draining wetland will be formed as a shallow depression with the low point in the location of the final retention pond in the north east corner of the pit. A Final Rehabilitation Plan is contained in **Appendix 9**.

## 2.2 Asset Register

The project has the following:

- Mining Lease ML 1654;
- Sand Extraction Licence; and
- Exploration Licence

## 2.3 Activities over the MoP term

- This MoP is for the construction of the mine infrastructure only.
- There will be no mining activities undertaken under this MoP.
- A new MoP will be prepared for the mine operations.

## 3.0 Environmental Issues Management

### 3.1 Environmental Risk Assessment

The proponent has adopted a proactive approach to the environmental management strategy with the objective of creating a long-term sustainable development.

By undertaking both engineering and environmental investigations concurrently, the proponent had ensured that the environmental studies have been incorporated into the design of the open pit and the quarry proposal overall.

Consequently, effective mitigation measures have been incorporated into the project from the outset, limiting the environmental impacts associated with the development.

Given that the crushed sandstone will be transported off-site by rail, there will be little requirement to store or manage process water on-site. No groundwater will exit the pit during active mining operations since the water-table gradient will be directed toward the pit. Ultimate steady-state groundwater conditions will be reached within a year or so once the 21-year pit floor depth has been achieved.

The EMS has been prepared in response to the approved consent to ensure the development is undertaken in close accordance with the conditions of consent.

There will be no mining activities undertaken during the period of this MoP. Consequently there are no specific environmental matters to be considered in this MoP.

### 3.2 Environmental Risk Management

Extract from the Project EMP is as follows:

Development consent, Schedule 5 Condition 1 of the consent requires that prior to carrying out any development, the applicant shall prepare and subsequently implement an Environmental Management Strategy for the development. Specifically the strategy must:

- a) ***provide the strategic context for environmental management of the development***

Response: The site is located at Newnes Junction in the Blue Mountains and adjoins the Greater Blue Mountains World Heritage Area (WHA) to the east. The site falls from the south-west to the north-west and is upstream from the WHA. The site is vegetated crown land and is zoned 1(a) Rural under the Lithgow City Council LEP.

**b) identify all statutory requirements that apply to the development**

Response: The development was approved by development consent DA 329-7-2003 issued under Section 80 of the EP&A Act.

The development was also approved under the EPBC Act, Reference 2002/620.

The development is subject to Environmental Protection Licence No. 13389 issued under the *Protection of the Environment Operations Act 1997* (POEO Act).

**c) describe in general how the environmental performance of the development would be monitored and managed during the development**

Response: The Environmental Monitoring Program details a six part monitoring program addressing surface water, ground water, noise, air quality, flora and fauna and Aboriginal cultural heritage.

Schedule 5 Condition 5 of the consent specifies that the applicant shall prepare and submit an Annual Environmental Management Report (AEMR) each year, to the Director General and the relevant agencies.

Schedule 3 Condition 23 of the consent states that the AEMR shall be prepared each year from the date of the consent.

Condition 5 of the Commonwealth EPBC consent specifies that an independent audit of compliance be prepared and submitted to the Minister. The independent auditor and the audit criteria must be approved by the Minister prior to the commencement of the audit.

Schedule 5 Conditions 6, 7 & 8 of the NSW consent specify that within 1 year of the commencement of operations and every 2 years thereafter, the applicant shall commission an Independent Environmental Audit (IEA).

**d) describe the procedures that would be implemented to:**

**\* keep the local community and relevant agencies informed about the operation and environmental performance of the development**

Response: The Newnes Kaolin Community Consultative Committee first met in December 2010 followed by the second meeting in March 2011. The Committee is chaired by an independent chairperson with two community representatives and two representatives from the Project. Lithgow City Council have a representative on the Committee as well. Minutes of meetings are available on the Project website: [www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com).

**\* receive, handle, respond to, and record complaints**

Response: The Environmental Protection Licence specifies that the project must keep a record of all complaints, with full details of each complaint, for at least 4 years, to be produced to any authorised officer of the EPA who asks to see them. The EPL requires the project to operate a telephone complaints line during the operating hours and that the proponent must notify the public of the complaints line telephone number. A public notice was published in the Lithgow Mercury notifying the telephone number and associated details.

**\* respond to any non-compliance**

Response: Newnes Kaolin P/L will respond to any non-compliance as follows:

- Carry out an immediate investigation and take whatever action is required to ensure compliance as soon as reasonably possible; and
- Notify the Environmental Protection Authority of NSW and the Australia Government Department of the Environment, Water, Heritage and the Arts with 24 hours and by written report within 7 days.

**\* manage cumulative impacts**

Response: *In relation to* the identification and management of possible cumulative impacts of the development, the AEMR will, among other matters, identify trends in the monitoring results over the life of the development and seek to identify opportunities for continuous improvement in accordance with Schedule 3 Condition 12.

**\* respond to emergencies**

Response: Newnes Kaolin P/L will prepare and implement a Site Emergency Procedures Manual prior to commencement of mining and/or quarry operations.

- e) ***describe the role, responsibilities, authority and accountability of all key personnel involved in environmental management of the development.***

Response:

- Newnes Kaolin General Manager: Overall project responsibility; reports to Newnes Kaolin P/L Board of Directors
- Newnes Kaolin Environmental Manager: responsible for the environmental management of the project including the preparation of the AEMR, organisation and facilitation of Community Consultative Committee meetings, and the commissioning of the Independent Environmental Audit; reports to the Newnes Kaolin P/L General Manager

- Newnes Kaolin Site Supervisor/Mine Manager: responsible for the day-to-day activities on-site including all mining/quarry operations and associated activities; reports to the Newnes Kaolin P/L General Manager

### 3.3 Annual Environmental Management Report

The development consent Schedule 5, Condition 5, specifies that the applicant shall prepare and submit an AEMR to the Director General and the relevant agencies on an annual basis.

Schedule 3 Condition 23 of the consent states that the AEMR shall be prepared each year from the date of the consent. Consequently, the project AEMR must be prepared by the 31<sup>st</sup> of March each year.

The AEMR must:

- (a) Identify the standards and performance measures that apply to the development;
- (b) Describe the works carried out in the last 12 months;
- (c) Describe the works that will be carried out in the next 12 months;
- (d) Include a summary of the complaints received during the past year and compare this to the complaints received in the previous years;
- (e) Include a summary of the monitoring results for the development during the past year;
- (f) Include an analysis of these results against the relevant:
  - a. Impact assessment criteria
  - b. Monitoring results from previous years; and
  - c. Predictions in the EIS and Supplementary Report
- (g) Identify any trends in the monitoring results over the life of the development
- (h) Identify any non-compliance during the previous year
- (i) Describe what actions were or Are bring taken to ensure compliance

Additional information to be included in the AEMR includes:

- (j) Continuous improvement – investigate and report on ways to reduce noise generated by the development including rail noise (Schedule 3, Condition 12)

- (k) Report on the results of the groundwater monitoring program, (Schedule 3, Condition 23)
- (l) Report on waste management and minimisation (Schedule 3, Condition 48)
- (m) Provide annual production data (Schedule 3, Condition 53)

The first AEMR was submitted in December 2015 and was approved in January 2016. An approval letter from the Department of Resources and Energy (DRE) is contained in **Appendix 7**.

**The AEMR includes reports as follows:**

- **Groundwater and surface water reports by PSM, North Ryde NSW – ph 98125000**
- **Air Quality data review by Todoroski Air Sciences – Eastwood – ph 98742123**
- **Flora & Fauna monitoring report – Consulting & Environmental Services – Lithgow – Ph 0407-990613**
- **Collection of annual data by ALS Laboratory Group – Lithgow – ph 63507400**

**Subsequently the AEMR has been prepared and lodged each year as required.**

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**Site monitoring details:**

**Groundwater**

There are three ground water monitoring bores – deep and shallow - at the northwest, northeast and southern corners of the site

NW60 (GW1A) & NW17.5 (GW1B)

NE60 (GW2A) & NE17.5 (GW2B)

S54 (GW3A) & S17.5 (GW3B)

**Surface water**

There are two surface water monitoring sites on the two creeks exiting the site discharging east into the National Park

SW1 – southern creek

SW2 – northern creek

**Air quality**

Meteorological station – located on the hill top approx. 300m west of the mine site

Dust gauge 1 - adjacent to the met stn

Dust gauge 2 – adjacent to SW1

Dust Gauge 3 – adjacent to SW2

Groundwater, surface water, Met station and dust gauge data collected by ALS Lithgow

## Flora and Fauna

There are 10 flora and fauna monitoring sites all to the east of the mine site within the adjacent National Park



**Meteorological station**



**Typical dust monitoring gauge**

## 4.0 Post Mining Land-Use

### 4.1 Regulatory Requirements

The development consent 329-7-2003 specifies that the project must prepare an Environmental Management Plan which includes a Rehabilitation and Landscape Management Plan.

### 4.2 Post Mining Land-Use Goal

The vegetation of the area currently supports an open eucalyptus woodland forest. The broad rehabilitation objective for the post-quarry landform is to establish a similar land-use. The topography of the final landform will consist of a large number of small, stepped sandstone benches formed in an amphitheatre configuration, each with a revegetated bench.

The void will be some 450m wide and 400m long at its western edge, and 650m long at its eastern edge. Until such time as the extraction has ceased, rehabilitation will occur around the perimeter of the pit only along the sandstone benches, and will not involve the pit floor.

Once operations have ceased, all buildings and infrastructure will be removed from the pit. These areas will be reshaped and ripped where necessary, for topsoiling and revegetation. It is proposed that the haul road will remain for use in the ongoing management of the site and for fire-fighting purposes. The pit floor will be vegetated with appropriate native species to create a stable, free-draining wetland. The wetland will be formed as a shallow depression with the low point in the location of the final retention pond in the north-east corner of the pit.

It is anticipated that sedges and other wetland plants endemic to the area will colonise the wetland area to form a swamp ecosystem analogous to that in Gooch's Crater.

<https://www.bushexplorers.com.au/encyclopaedia/goochs-crater>

Gooch's Crater is a natural feature in the nearby National Park – inspiration for the rehabilitation of the final void. It is located 1.5kms to the north-east of the proposed mine site.



Above is an image of a quarry with terraced sandstone benches as is proposed for the Newnes Kaolin site.

### 4.3 Rehabilitation Objectives

The objectives of the Rehabilitation and Landscape Management Plan are to:

- meet the requirements of the Development Consent relevant to the operations at SCM;
- establish objectives for the rehabilitation of disturbed land that will result from mining at the SCM operations;
- achieve acceptable post-disturbance land-use suitability;
- create a stable post-disturbance landform;
- preserve downstream water quality; and
- re-establish vegetation habitats that will support fauna communities

The Project website ([www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com)) contains the EMP and the Rehabilitation and Landscape Management Plan. The Plan includes information in relation to the main components of the proposed rehabilitation, including the:

- Rehabilitation Management Plan;
- Final Void Management Plan; and
- Mine Closure Plan.

## 5.0 Rehabilitation Planning and Management

### 5.1 Domain Selection

Mining activities have yet to begin on site.

### 5.2 Domain Rehabilitation Objectives (Level 1 Mines only)

Newnes Kaolin is a State Significant Development

### 5.3 Rehabilitation Phases

#### 5.3.1 Trial Mining Site

In 2009 Newnes Kaolin conducted a trial mining exercise on site to test the effectiveness of the surface mining machine and to further test the raw material. The trial mining site was approximately 25m x 70m<sup>2</sup> (1750m<sup>2</sup>) excavated to a depth of 3m.

The location of the trial mining/excavation site is illustrated in **Appendix 2**. The trial mining exercise was completed in 2010 and the site fully rehabilitated later that year. Aerial photo #2 within **Appendix 5** shows the disturbed area after the trial mining exercise and **Appendix 9** contains the record of the trial mining process.

## 6.0 Performance Indicators and Completion / Relinquishment Criteria

### 6.1 Environmental Performance Indicators

Development Consent, Schedule 5, Conditions 2 and 3 of the DA specify that prior to carrying out any development the applicant shall prepare an Environmental Monitoring Plan which must consolidate the various monitoring requirements in Schedule 3 of the consent, into a single document. This includes the following Monitoring Programs:

- Surface Water
- Groundwater
- Noise
- Air Quality
- Flora & Fauna
- Aboriginal Cultural Heritage

The Project website ([www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com)) contains the EMP. Particular note should be taken of Appendix 13 of the EMP.

The EMP was approved in 2011.

### 6.2 Post-Closure Monitoring and Measurement

Not applicable at this stage.

### 6.3 Current Monitoring and Measurement Programs

**Schedule 3** of the development consent 329-7-2003 SCM specifies requirements for implementing operational monitoring and measure programs at the site. These include the following monitoring programs:

- Surface Water
- Groundwater
- Noise

- Flora & Fauna
- Air Quality, and
- On-site Meteorological Monitoring

## 6.4 Decommissioning Monitoring and Measurement Programs

Following closure of the quarry, the existing monitoring network will be maintained until all decommissioning and rehabilitation works at the site have been completed. At this point those elements of the network that related specifically to the quarry operation will be reviewed and rationalised in consultation with the appropriate authorities and in accordance with Development Consent 329-7-2003.

Notwithstanding this, there may be the need to establish some additional monitoring sites depending on the nature of the decommissioning works, and in response to finding possible sources of pollutants to the environment that currently may not be known.

The type and location of this monitoring will be determined during the decommissioning phase of the mine site.

## 6.5 Post-Closure Monitoring and Measurement Programs

Whilst the post-closure monitoring and measurement program will be similar to that undertaken during operation of the mine, it will be scaled back to focus on those aspects of the site that have the potential to cause pollution or are being used as an indicator to verify the success or failure of the rehabilitation works.

The Rehabilitation and Landscape Management Plan includes a summary of the recommended post-closure monitoring and measurement for specific areas across the site. It is recommended that the monitoring program be undertaken until such times that the data from monitoring demonstrates that the site is no longer contributing to, or has the potential to contribute to, the surrounding environment, and that the landform and established vegetation is stable and sustainable.

A Mining Closure Plan will be prepared and implemented, approximately mid-way through the life of the project, in accordance with the Rehabilitation and Landscape Management Plan, which can be accessed via the project website: [www.sydneyconstructionmaterials.com](http://www.sydneyconstructionmaterials.com)

## 7.0 Rehabilitation Implementation

### 7.1 Status of MoP Commencement

This MoP is for the construction phase only.

### 7.2 Proposed Rehabilitation Activities During the MoP Term

There are no mining activities anticipated in this MoP. Consequently, there will be no rehabilitation activities proposed under this MoP, except for the ongoing monitoring of the trial mining site which was rehabilitated in 2010.

### 7.3 Summary of Rehabilitation Areas During the MoP Term

Not applicable.

### 7.4 Relinquishment Phase Achieved During the MoP Term

Not applicable

### 7.5 Rehabilitation Cost Estimate

The estimated cost of the final rehabilitation is \$265,000. This is a nominal cost only. A more detailed cost estimate of the final rehabilitation will be provided in the MoP likely to be prepared prior to commencement of mining operations in 2023/2024.

## 8.0 Rehabilitation Monitoring and Research

### 8.1 Rehabilitation Monitoring

Throughout the operational phase of the project, there will be progressive rehabilitation of disturbed areas around the open cut. The nature of the friable sandstone requires relatively shallow ripping and selective extraction from horizontal benches to optimise grade separation. Consequently, the quarry will be developed with very shallow benches and rehabilitated as the pit progresses. This progressive rehabilitation technique means there will be very little rehabilitation required on the final void at closure, apart from the pit floor.

The nominal bench height within the pit will be 3m high. A 2m berm will be created on each bench during the extraction of the bench below it. This method of extraction will allow for the 2m berm to be revegetated as the bench is extracted, enabling progressive rehabilitation of the mine walls. In normal hard rock quarries, the bench heights are usually 5 times higher, rendering rehabilitation work difficult and impossible to commence until the later stages and/or completion of extraction. The benching process is described below in greater detail.

Once the edges of the first bench have been taken, a 2m wide area around the perimeter of the excavated area can be rehabilitated adjacent to the 3m pit wall, while extraction continues on this area and the next bench.

The rehabilitation will occur progressively and will involve the following:

- Surface preparation of the area by ripping;
- Placement of at least 10cm of topsoil on a 2m wide area of the bench around the edge of the pit; and
- Planting of native shrubs and trees on the topsoiled bench. It is proposed to undertake some tree planting in the early stages of the project. These rehabilitated areas will assist in minimising the visual impacts of the mining activities from the adjacent National Park. By the time open pit operations have reached an advanced stage, these rehabilitated areas will be well-established and these terraces will form part of the final landform.

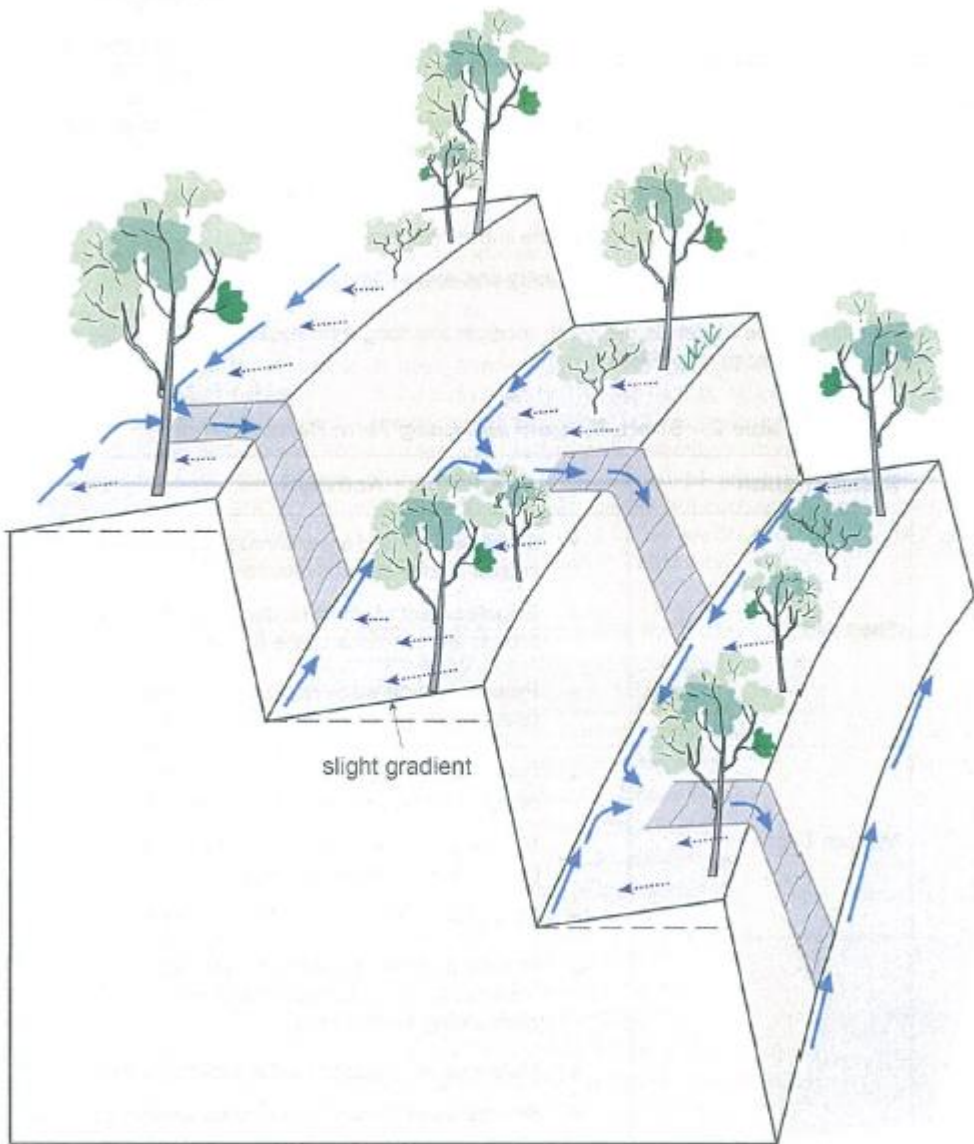
The areas to be rehabilitated can be prepared, topsoiled and revegetated using the unmined working bench for access. Extraction of the next bench will cease at the edge of the rehabilitated berm and then continue down into the next bench. The site topography will allow for continued access to all benches.

At quarry closure, the final bench will be shaped and the pit floor will be raised and re-profiled to create a free-draining wetland that will be revegetated with local plant species conducive to a wetland environment.

In developing the rehabilitation monitoring program, the following aspects will be taken into consideration:

- Replicated monitoring sites are needed in representative rehabilitation areas of different ages;
- One monitoring site per 20ha – 40ha is recommended for each major age class of the rehabilitation areas;
- Sites should be monitored 12 months after establishment and then every two years;

- A standard monitoring plot design for areas rehabilitated with tress will include:
  - 2m x 2m quadrates – these will provide some estimate of statistical variance, so that if required, statistical analyses can be undertaken to objectively compare different rehabilitation treatments and changes over time;
  - A 20m x 10m plot overlying the 2m quadrates and located 5m either side of the centreline, for ease of monitoring; and
  - A 50m erosion monitoring treatment on contour, running through the centre of the plot.



The above image provides an illustration of the proposed benching detail that will be a key component of the mine rehabilitation process.

## **8.2 Research and Rehabilitation Trials and Use of Analogue Sites**

Not applicable.

## **9.0 Intervention and Adaptive Management and Research**

### **9.1 Threats to Rehabilitation**

Not applicable.

### **9.2 Trigger Action Response Plan**

Not applicable.

## 10.0 Reporting

Not applicable.

## 11.0 Plans

### 11.1 Level 1 Mines (State Significant Development)

Newnes Kaolin is a State Significant Development.

### 11.2 Cross-Sections

Not applicable.

### 11.3 Colour Coding and Symbols for Plans

Not applicable.

## 12.0 Review and Implementation of MoP

### 12.1 Review of the MoP

This project is still in the construction phase.

The Environmental Management Plan has been approved and minor physical works have been completed on-site for 'physical commencement' purposes only.

It is intended to construct the mining infrastructure between now and 2023 which will include the following:

- Construction of overhead conveyor and associated works;
- Rail loading facilities;
- Water management infrastructure including main and lower retention ponds;
- Clear water diversion works;
- Stockpile storage areas; access road; and
- Site Office

Once this work has been completed a new MoP for the mining activities will be prepared.

### 12.2 Implementation

The personnel responsible for monitoring, reviewing and implementing activities outlined in this MoP are shown below:

Position	Name	Responsibilities
Newnes Kaolin General Manager	Ron Goldbery	Overall responsibility for the mine and quarry
Newnes Kaolin Environmental Officer	Tony Proust	<ul style="list-style-type: none"> <li>• Implementation of the EMP, monitoring, AEMR reporting</li> <li>• Community complaints</li> <li>• Community Consultative Committee</li> </ul>
Newnes Kaolin Site & Mine Supervisor	TBA	Day-to-day management of the mine/quarry operations

## 13.0 Explanatory Note 1 – Example Rehabilitation Table

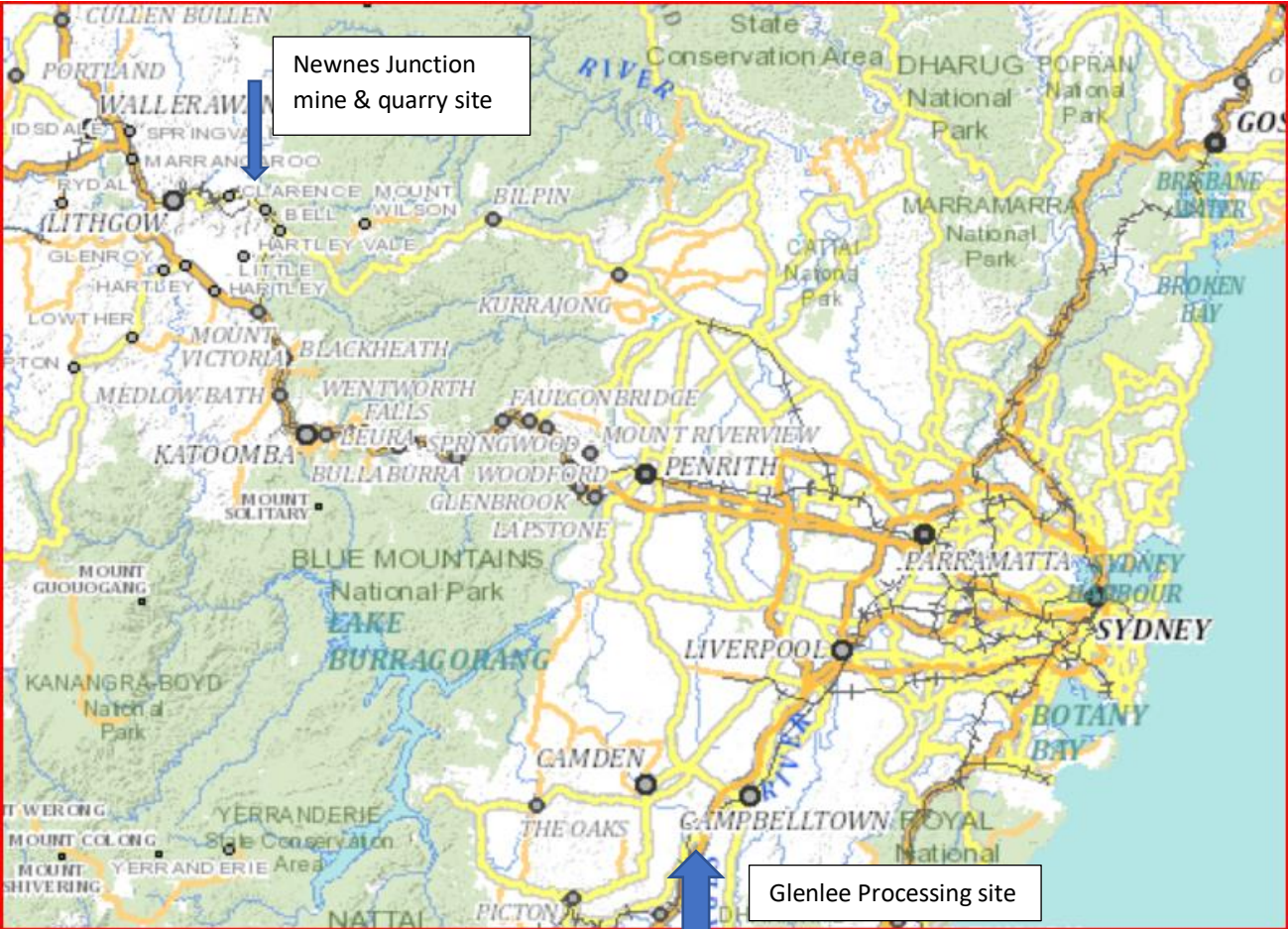
Not applicable.

## 14.0 Explanatory Table 2 – Rehabilitation and Mine Closure

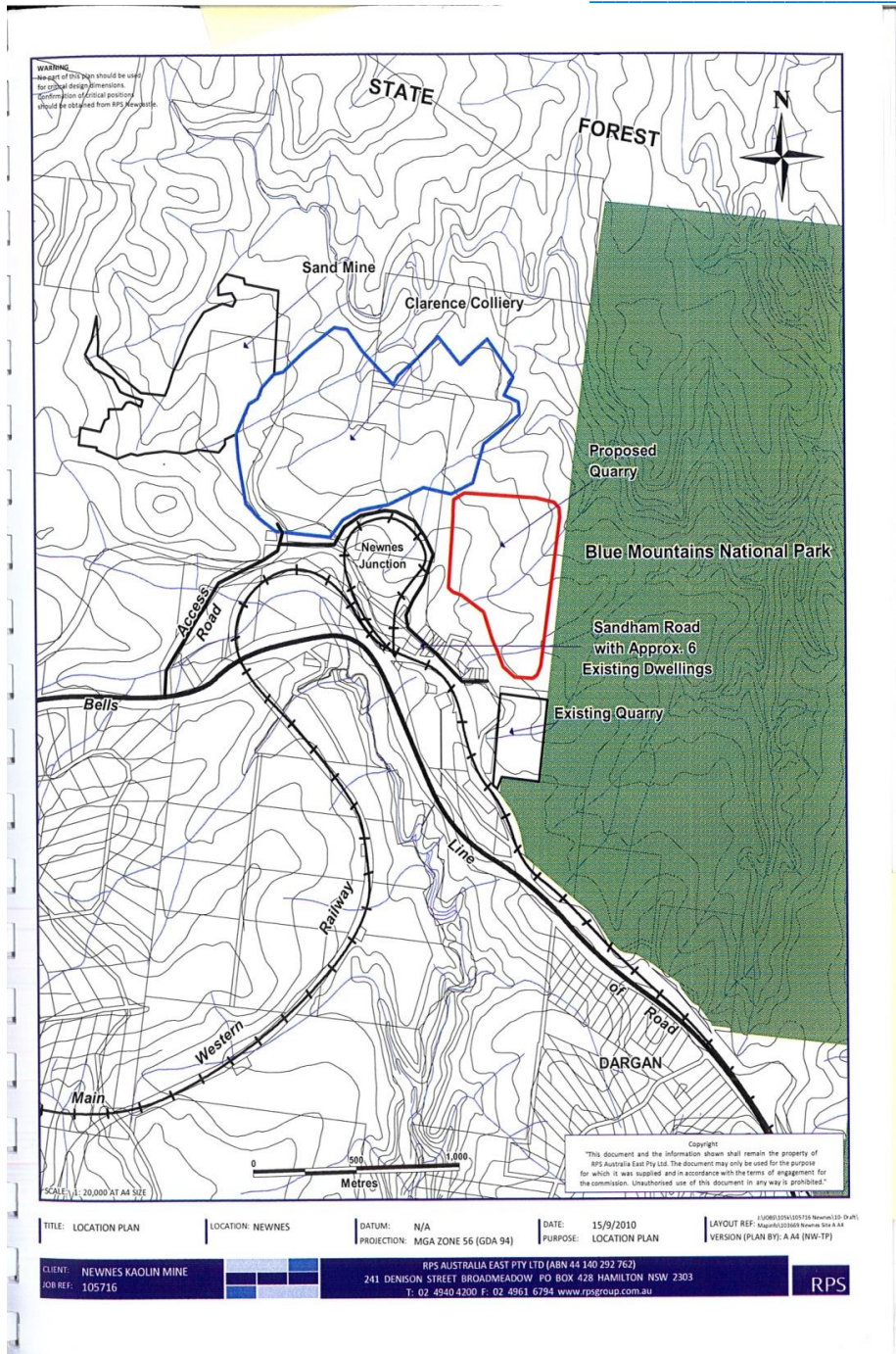
- (a) What is rehabilitation
- (b) Stakeholder Consultation
- (c) Post Mining Land-Use
- (d) Rehabilitation Objectives
- (e) Risk Assessment
- (f) Rehabilitation Planning
- (g) Domains
- (h) Rehabilitation Phases
- (i) Performance Indicators and Completion Criteria
- (j) Rehabilitation Tables
- (k) Rehabilitation Monitoring and Research

# Appendix 1

## Location Plans & Site Plans







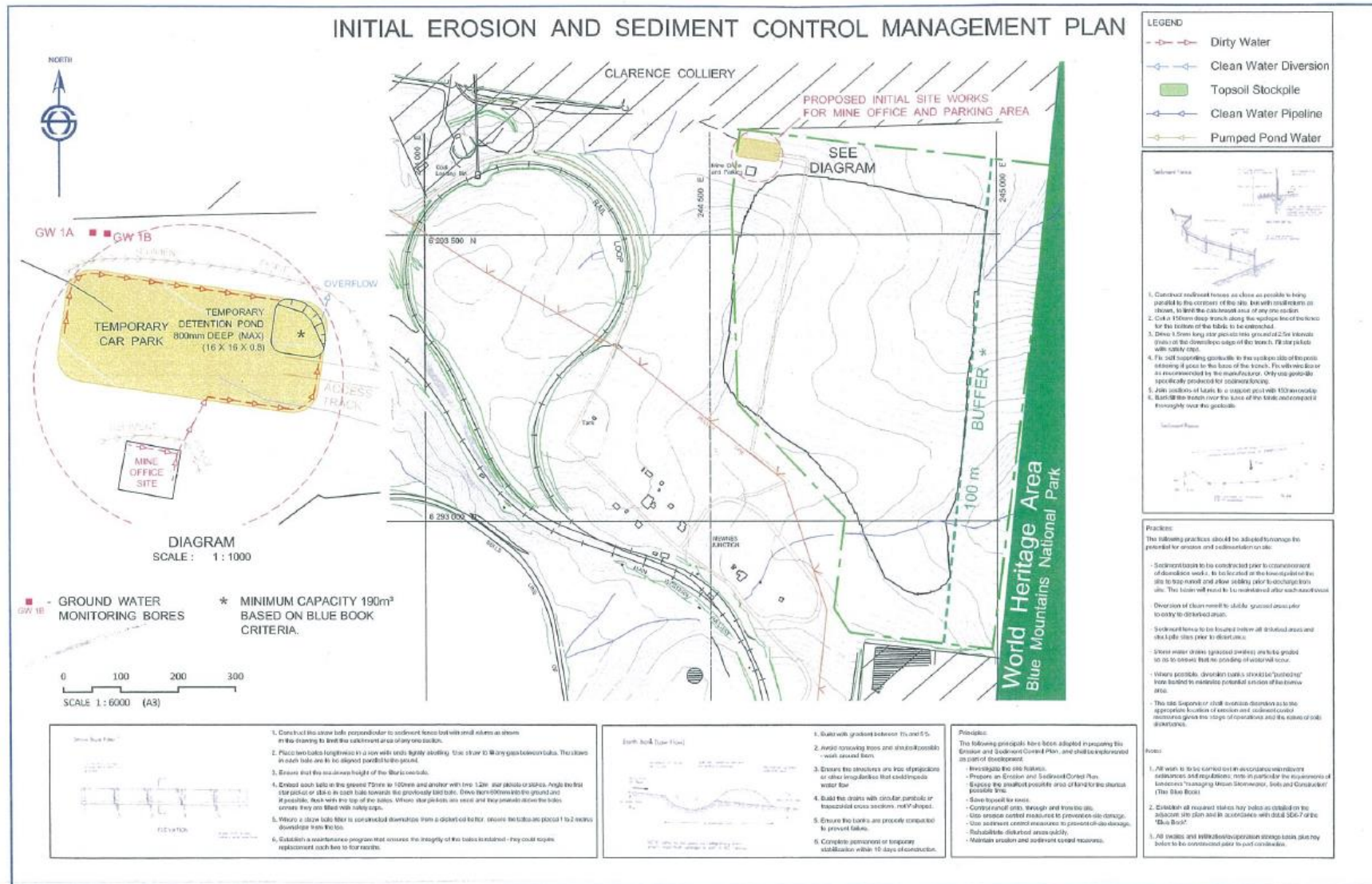
## Appendix 2

# Plan of Proposed Mine Infrastructure



## Appendix 3

# Erosion & Sediment Control Management Plan



TITLE INITIAL EROSION AND SEDIMENT CONTROL MANAGEMENT PLAN

LOCATION NEWNES

DATUM PROJECTION MGA

DATE JANUARY 2010  
PURPOSE PLANNING

AUTOCAD REF: 105716 - 14B  
VERSION (DRAWN BY): INITIAL EROSION & SEDIMENT

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CLIENT NEWNES SAND & KAOLIN  
JOB REF 105716

RPS AUSTRALIA EAST PTY LTD (ABN 44 140 292 762)  
241 DENISON STREET BROADMEADOW PO BOX 428 HAMILTON NSW 2303  
T: 02 4940 4200 F: 02 4961 6794 www.rpsgroup.com.au

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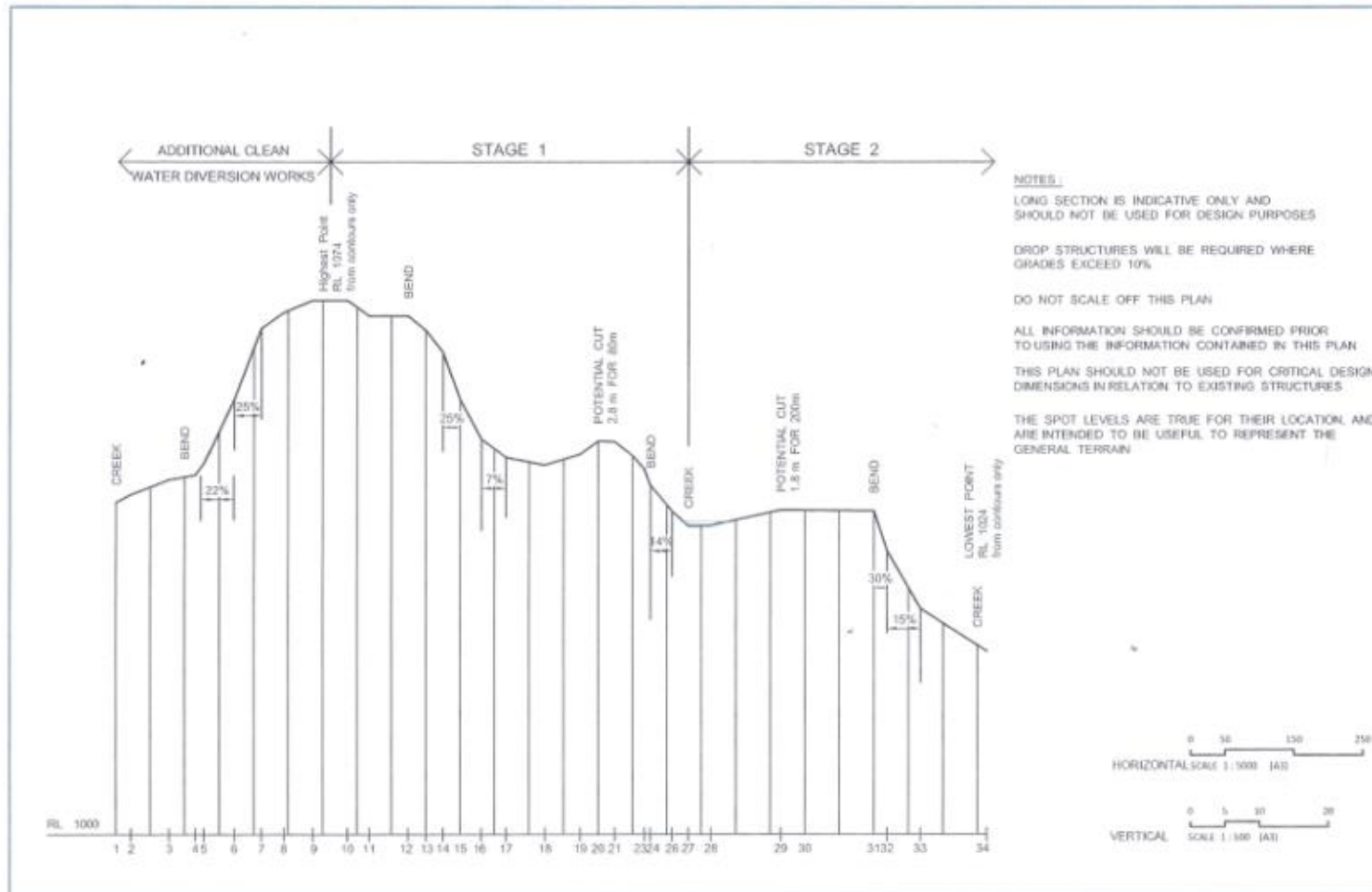
RPS

## Appendix 4

### Clean Water Diversion Works



Clean water diversion works designed to divert surface water runoff around the mine site into creeks which discharge to east and north of site

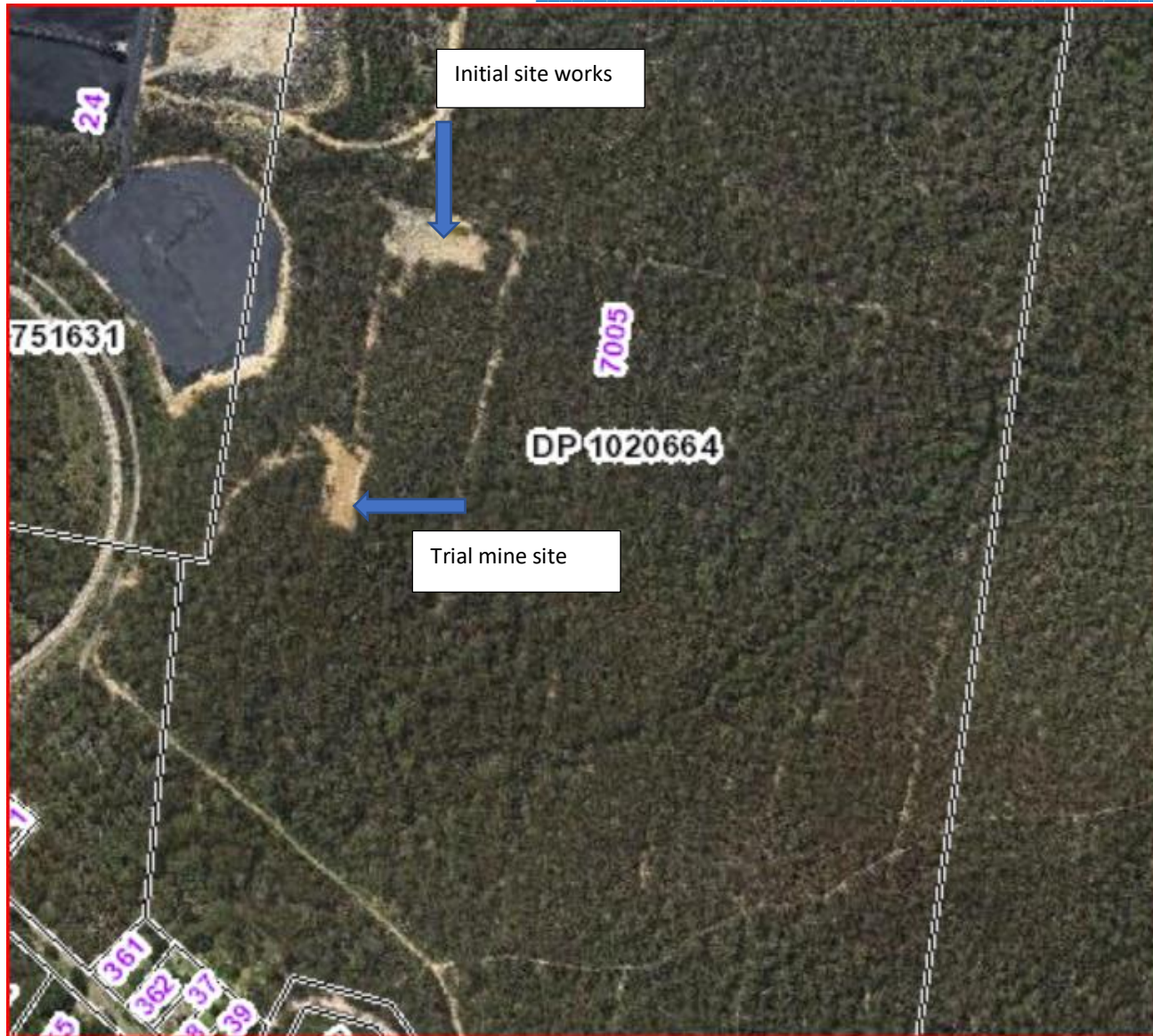


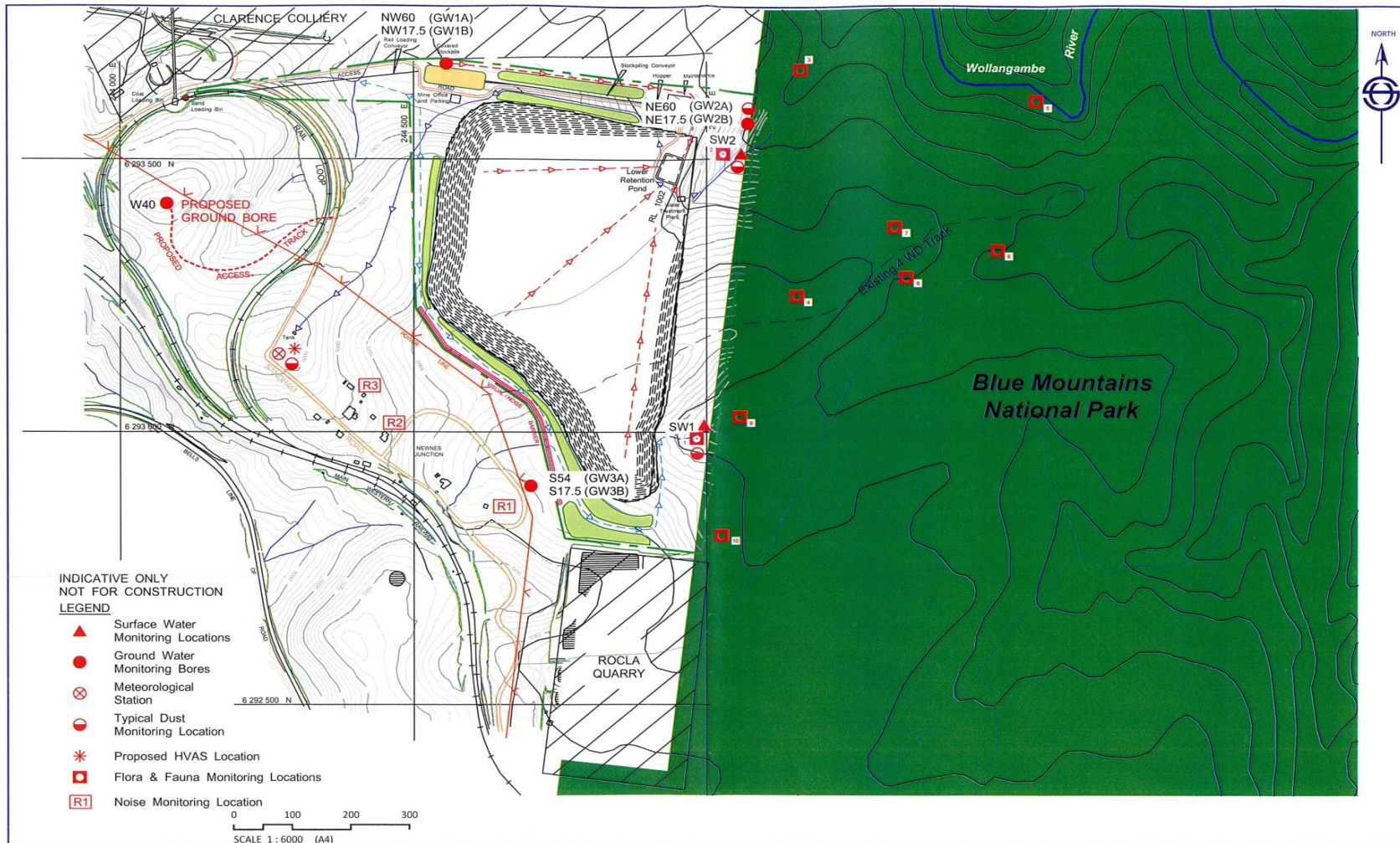
PROJECT: LONG SECTION CLEAN WATER DIVERSION WORKS	CUSTOMER: NEWNES	DRAWN BY: [REDACTED]	DATE: 20TH OCTOBER 2013	WORKSHEET: 005/716 - 148	PROJECT NAME: LONG SECTION
CLIENT: NEWNES SAND & KAOLIN	PROJECT NO: 105716	RPS AUSTRALIA EAST PTY LTD (ABN 44 540 292 762) 241 DENISON STREET BROCKMELBOURNS PD 600 428 HAMILTON NSW 2305 T: 02 4945 4200 F: 02 4951 6794 www.rpsgroup.com.au		creativepeople building a difference	RPS

## Appendix 5

### Site Analysis & Site Photos & Monitoring plan







TITLE: ALL MONITORING LOCATIONS

LOCATION: NEWNES JUNCTION

DATUM:  
 PROJECTION: MGA

DATE:  
 PURPOSE: 27TH MARCH 2013  
 PLANNING

AUTOCAD REF:  
 VERSION (PLAN BY): 105716 - 14B  
 MONITORING A3

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## Appendix 6

### Trial Mining Photo Record



Surface miner in operation - 2009



Trial mining in 2009



Trial benching



Trial mine site restoration

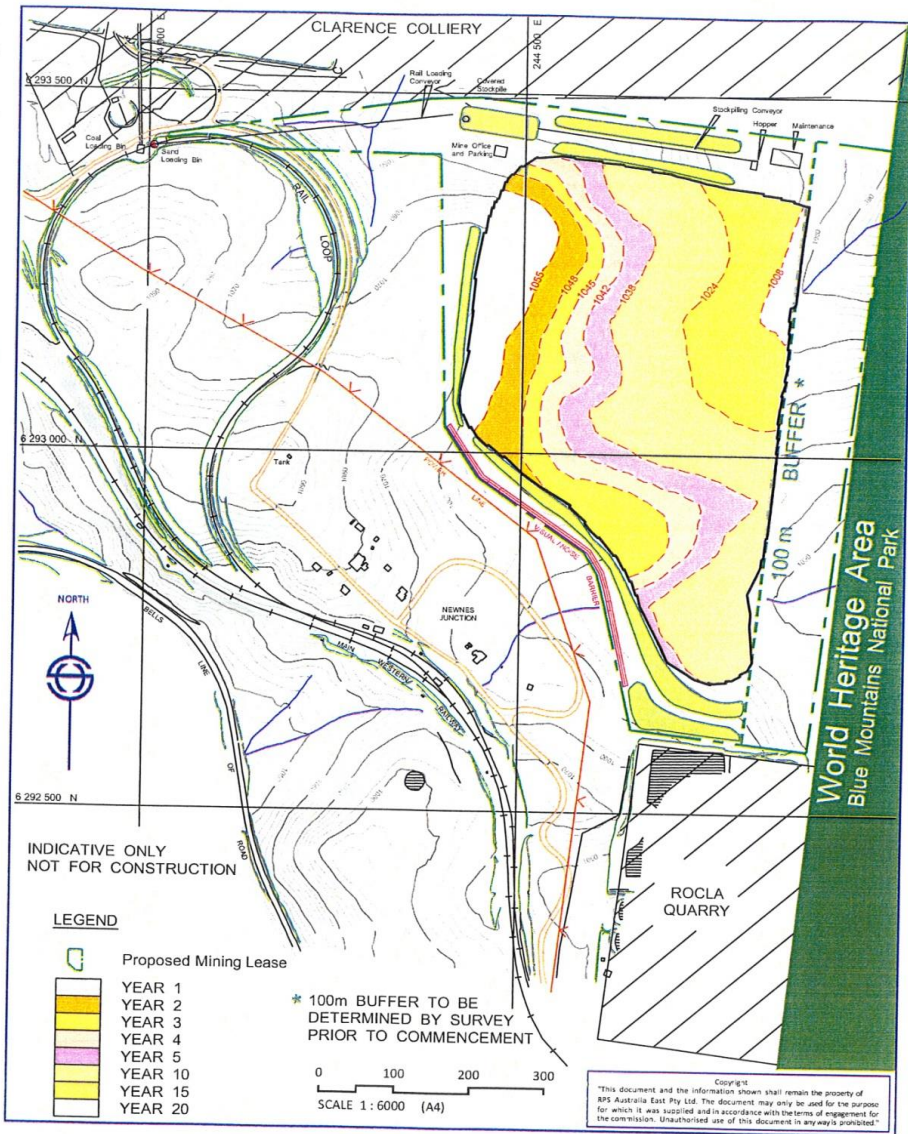


Trial mine site with vegetation regeneration 3 years on - 2012

Appendix 7  
AEMR Letter of Approval  
(under separate cover)

## Appendix 8

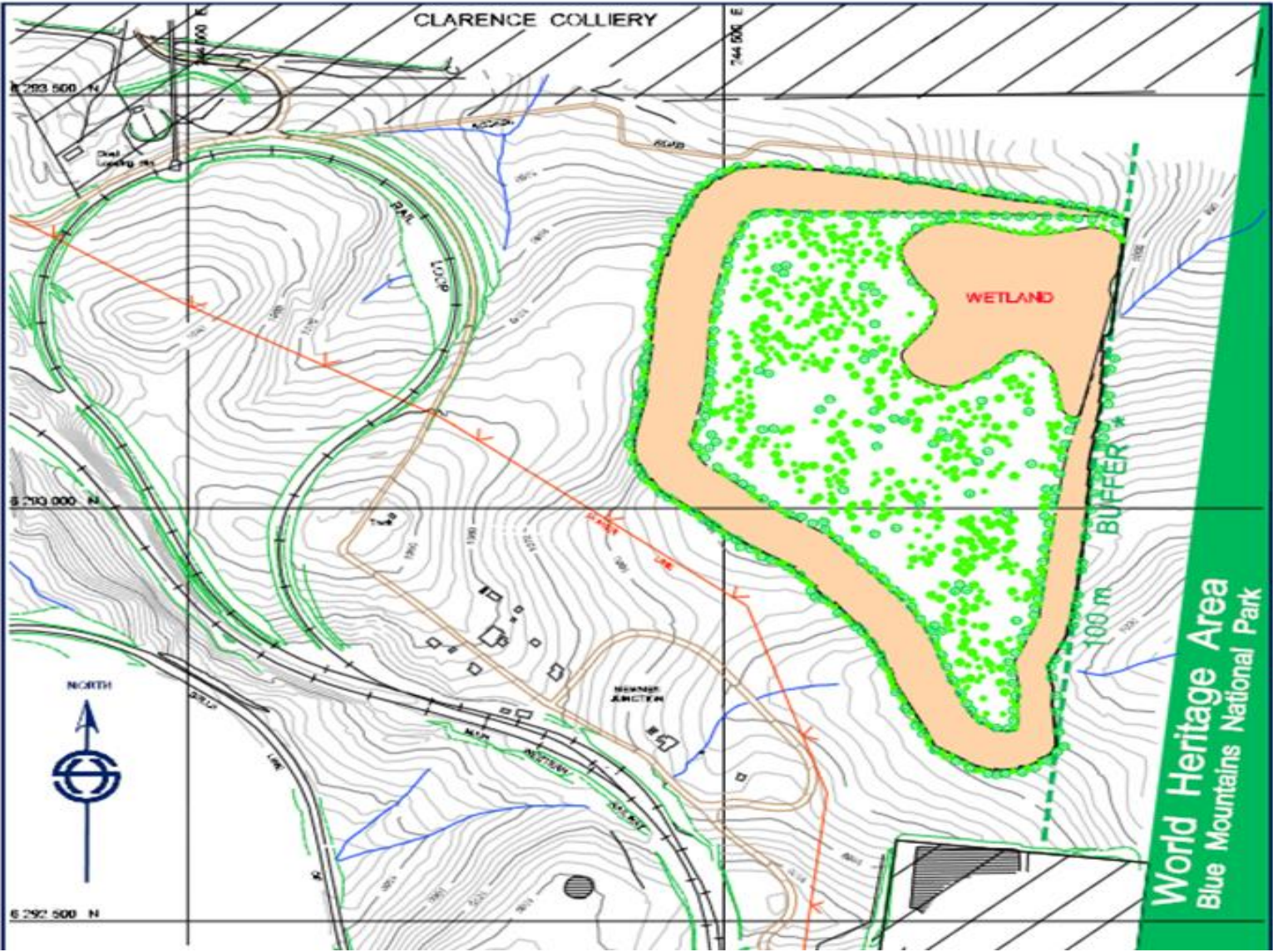
# Extraction Schedule Plan



TITLE: EXTRACTION SCHEDULING WITH 100m BUFFER TO WORLD HERITAGE AREA	LOCATION: NEWNES	DATUM: PROJECTION: MGA	DATE: 25TH NOV 2010	CAD REF: 105716 - 14A
CLIENT: NEWNES SAND & KAOLIN	RPS AUSTRALIA EAST PTY LTD (ABN 44 140 292 762)	PURPOSE: PLANNING	VERSION (PLAN BY EXTRACTION SCHEDULING)	
JOB REF: 105716	241 DENISON STREET BROADMEADOW PO BOX 428 HAMILTON NSW 2303	T: 02 4940 4200	F: 02 4961 6794	www.rpsgroup.com.au


## Appendix 9

# Final Rehabilitation Plan




## Appendix 10

### Mining Lease

	Office of State Revenue NSW Treasury
Client No:	1846988
Duty:	N/A
Trans No:	ML 1654
Asst details:	MINERALS

2372



MINING LEASE  
MINING ACT 1992

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NO **1654**

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DATED **24<sup>th</sup> January 2011**

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THE MINISTER FOR PRIMARY  
INDUSTRIES

OF THE STATE

OF NEW SOUTH WALES

TO

**Newnes Kaolin Pty Ltd**  
**(A.C.N. 065 564 794)**

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