



# Section 1

# Introduction

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## PREAMBLE

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*This section introduces the Albion Park Quarry Extraction Area Stage 7 Extension Project and provides:*

- *an outline and scope of the document;*
  - *an introduction to the Applicant;*
  - *relevant background and history of the Albion Park Quarry;*
  - *details of the existing approvals;*
  - *an overview of existing operations;*
  - *the need for the Project;*
  - *the alternatives considered;*
  - *the Applicant's approach to the management of the Quarry, environmental management and documentation for the Quarry; and*
  - *the personnel involved in the design of the Project, document preparation and Specialist Consultant investigations and assessments.*
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## 1.1 Scope

Cleary Bros (Bombo) Pty Ltd (Cleary Bros) proposes to extend the current hard rock extraction area within the Albion Park Quarry (the Quarry) located in the local suburb of Croom, approximately 20km south-southwest of Wollongong and approximately 4km west of Shellharbour. Three other operational quarries are present in this area, as shown in **Figure 1.1**.

The property on which the Quarry is located covers an area of approximately 140ha of which approximately 54ha is currently disturbed by quarry-related activities. The current extraction area covers Stages 1 to 6, all of which are located wholly within Lot 1 DP 858245. The proposed extraction area extension, i.e. Stage 7, is located immediately east of Stages 1 to 6 and extends onto the adjoining Lot 7 DP 3709. For the purpose of this document, “the Project” would involve the ongoing extraction of the remaining extractive materials within Stages 1 to 6 and extraction within Stage 7 together with the progressive rehabilitation of all stages.

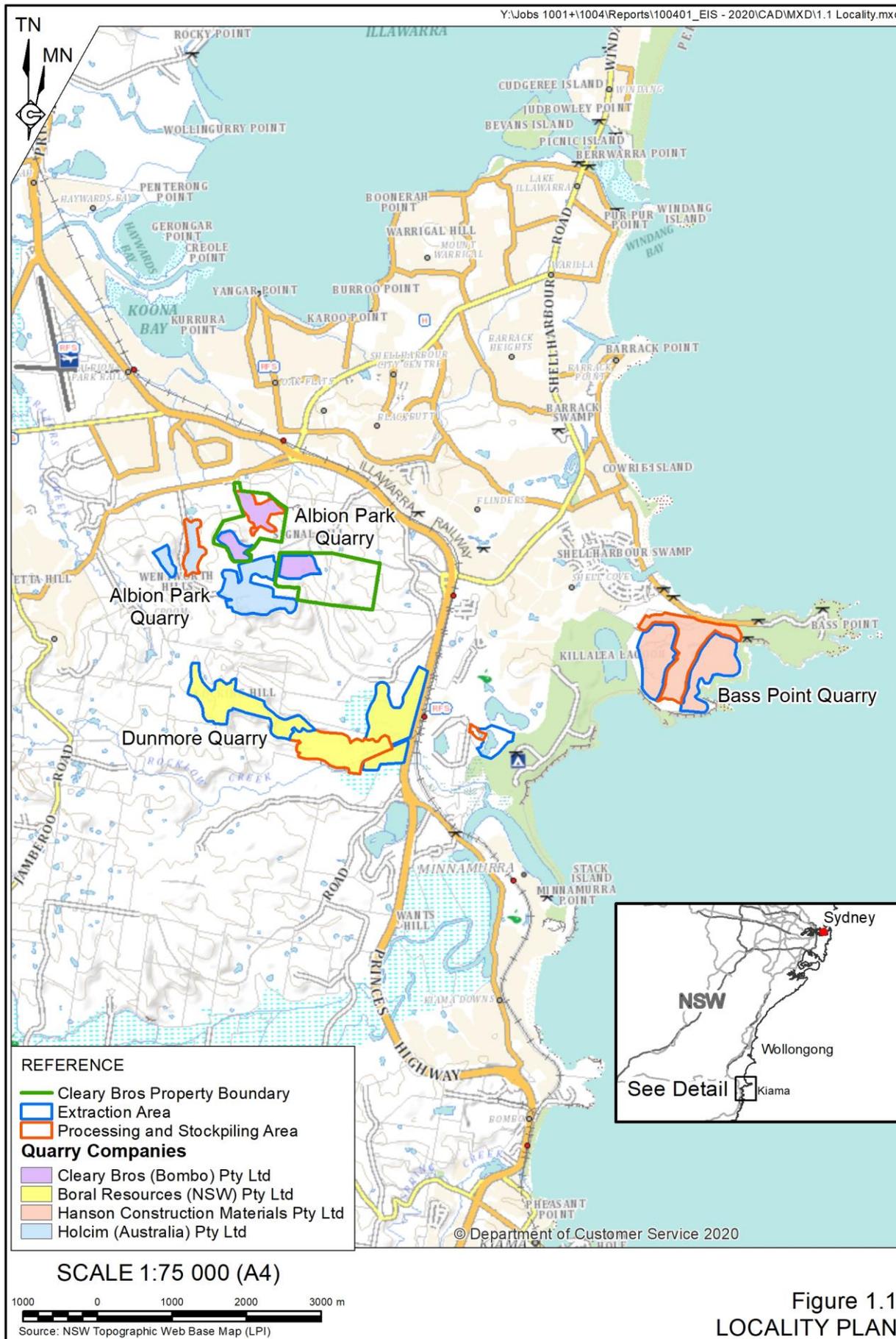
This document describes all components of the Project and provides information on the key environmental issues addressed in the design and assessment of the Project. This *Environmental Impact Statement* (EIS) has been prepared in accordance with the provisions of Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* given the Project is a State Significant Development.

This EIS describes the proposed vegetation clearing, soil removal, hard rock extraction, in-pit mobile processing and staged rehabilitation activities within the extraction area for the Project life. Mitigation measures and management controls Cleary Bros would adopt in order to avoid or reduce potential impacts within and surrounding the Quarry are also provided. The residual impact(s) are described together with the proposed monitoring programs that would be undertaken to assess the ongoing environmental performance of the Project.

The information presented in this document covers all aspects of the planning, development, operation, rehabilitation, environmental management and monitoring for the Project at a level of detail consistent with industry standards, the scale of the proposed operations and the potential for environmental impacts. These aspects are presented in a manner that addresses the specific Secretary’s Environmental Assessment Requirements (SEARs) issued by the then Department of Planning, Industry and Environment (DPIE) and the requirements of other State and Commonwealth government agencies and Shellharbour City Council, together with the issues raised during the community consultation process. The coverage of the SEARs and the relevant requirements of the consulted State and Commonwealth government agencies and Council within this EIS is presented in **Appendix A**.

## 1.2 Format of the Report

The EIS has been compiled and structured generally in accordance with a document issued by the then DPIE in December 2020 entitled “*Preparing an Environmental Impact Statement, State Significant Development Guide*”. The EIS has been compiled in a single volume which includes seven sections of text, a reference section, glossary, and a set of Appendices. The EIS is supported by a *Specialist Consultant Studies Compendium* incorporating the reports prepared by specialist environmental consultancies engaged to assist in the design of the Project and to assess specific environmental aspects of the Project.



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The EIS has been structured as follows.

- Executive Summary: provides an overview of the Project and its strategic context, a summary of the environmental safeguards and impacts and the evaluation of the Project.
- Section 1: introduces the Project, the Applicant and provides relevant background history and information about the Quarry. Details of the existing approvals and operations are outlined. The need for the Project and the alternatives considered throughout the design of the Project are addressed. Information is provided on the intended management of the Quarry together with information on the management of investigations for the EIS.
- Section 2: presents the strategic context for the Project with respect to State and local planning documentation, surrounding land ownership, land uses, surrounding infrastructure and other extraction operations.
- Section 3: describes the objectives, extraction area design, extraction activities and staging, in-pit crushing and screening, flexible elements, hours of operation, progressive rehabilitation activities and the biodiversity offset strategy for the Project.
- Section 4: presents the statutory context for the Project.
- Section 5: presents the results of the engagement that Cleary Bros has undertaken with its fence-line neighbours and the surrounding community.
- Section 6: presents the environmental setting of the Project Area, including information on topography and meteorology. This section also describes the existing environment, proposed management, assessment of potential impacts and maintenance/monitoring requirements for all relevant environmental issues.
- Section 7: evaluates the merits of the Project in terms of biophysical, economic and social considerations, the goals and guidelines of Ecologically Sustainable Development, and its strategic context. The evaluation also documents how the design of the Project would satisfy relevant statutory requirements and community views about the Project.
- Section 8: lists the various source documents referred to for information and data used during the preparation of the EIS.
- Section 9: presents the glossary of the technical terms, acronyms, symbols and units used throughout the EIS.
- Appendices: present the following additional information.
- A. The coverage of issues arising from the Secretary's Environmental Assessment Requirements and correspondence from the consulted government agencies.
  - B. Statutory Compliance Table
  - C. Community Engagement Tables
  - D. Mitigation Measures Table
  - E. Analysis of Environmental Risk

This EIS has been prepared with input from a team of specialist consultants that produced a total of ten specialist reports. Their reports have been compiled into the *Specialist Consultant Studies Compendium* placed on exhibition with the EIS. The contents of these reports are summarised into the appropriate section(s) of the EIS.



## 1.3 Project Background

### 1.3.1 The Applicant

Cleary Bros (Bombo) Pty Ltd is a company within the privately-owned Cleary Bros Group based in the Illawarra-Shoalhaven Region of NSW. Since its establishment in 1916, and initial involvement in the transport and timber industries, the Cleary Bros Group has expanded and diversified over a period of more than a century to represent a significant operator in the construction and materials supply industries.

The Cleary Bros Group operates a number of divisions that undertake activities including:

- extraction and processing of hard rock and sand from two extraction sites:
  - the Albion Park hard rock quarry; and
  - a sand extraction operation at Gerroa.
- earthmoving equipment and transport services;
- pre-mixed concrete manufacture at four plants located within the Illawarra-Shoalhaven Region; and
- small to medium civil construction projects.

Approximately 320 people are employed by the Cleary Bros Group, of which approximately 30 are directly involved in extraction and processing operations at the Albion Park Quarry. A larger number of employees within the broader Cleary Bros Group are reliant upon the transportation and ongoing production of a range of quarry products at the Albion Park Quarry.

The Cleary Bros Group has an established reputation for quality and reliability within the construction industry, with operations conducted in accordance with an Environmental Management System compliant with ISO14001. Furthermore, the Cleary Bros Group has demonstrated a strong commitment to the community through both financial contributions to local historic associations, sporting teams, and charities and through the active participation of employees in community organisations.

### 1.3.2 Quarry History

Initial Quarry operations on the Albion Park property commenced in November 1963 with a blue metal quarry and associated crushing plant on land currently identified as Lot 420 DP 1252087 (**Figure 1.2**). The existing fixed processing plant, office, workshop, product stockpiles and ancillary infrastructure remain on this Lot largely within the footprint of the initial extraction area (Pit 1).

In February 1977, extraction operations commenced within the adjacent Lot 421 DP 1252087, formerly referred to as the Beacon Hill Quarry (Pit 2), which remained the focus of extractive operations between 1977 and 2007. In 2006, a third extraction operation on nearby Lot 1 DP 858245 (Pit 3) was approved encompassing six stages of extraction (**Figure 1.2**). Extraction from Pit 3 commenced in 2008 from Stages 1 to 4 and Stages 5 and 6 were activated in 2017.

The fixed processing plant and sales area has continued to be used for the extractive materials extracted from Stages 1 to 6 within Pit 3.

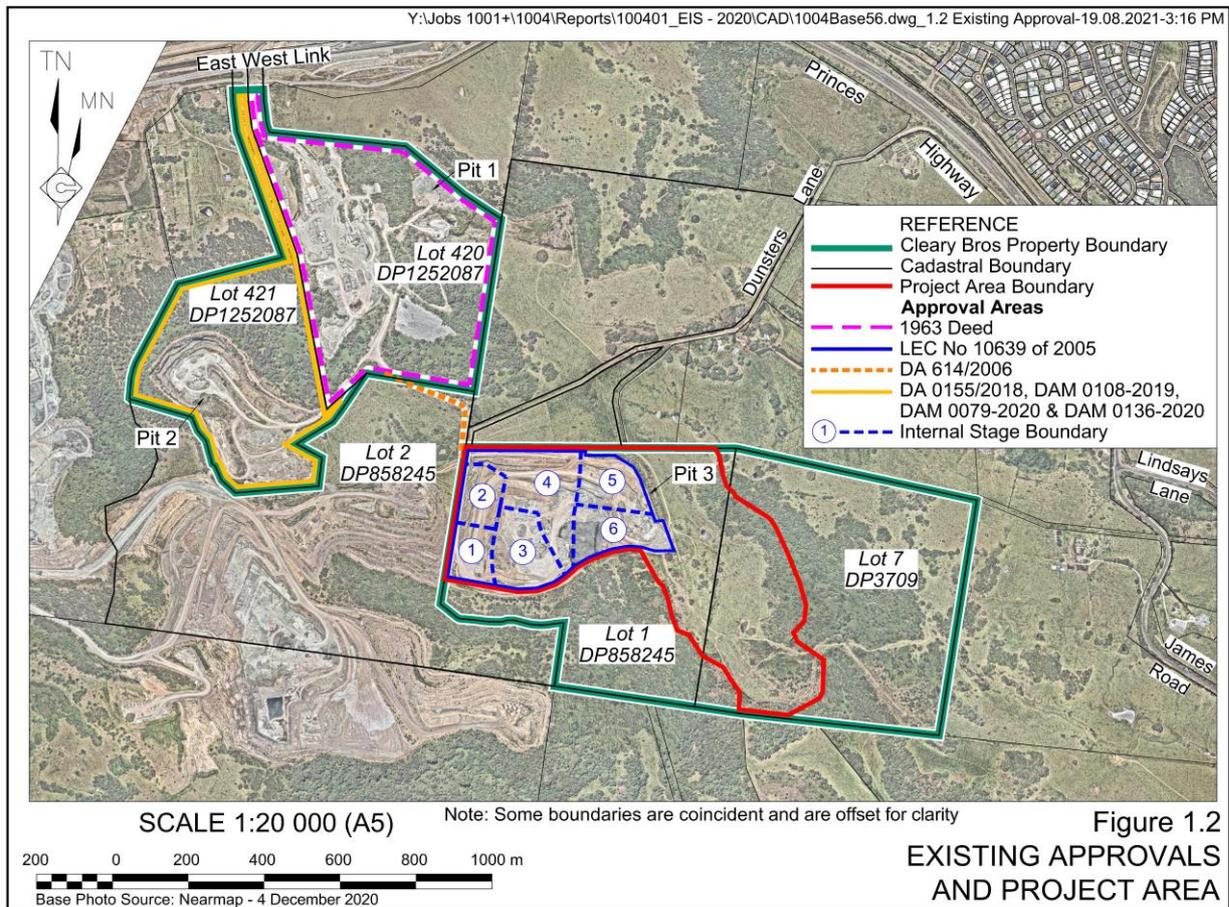


Figure 1.2  
 EXISTING APPROVALS  
 AND PROJECT AREA

### 1.3.3 Existing Approvals

**Figure 1.2** displays the boundary of the property owned by the Cleary Bros Group and the four approval areas for various components within the Quarry. A summary of the approvals granted for the Quarry is provided in **Table 1.1**.

The Quarry also operates with an Environment Protection Licence (EPL) - 299. This licence was issued on 18 November 1999 and was most recently varied on 2 June 2020.

Cleary Bros currently holds a surface Water Access Licence (WAL) No. 36711. This licence was issued on 24 June 2014 for the Illawarra Rivers Water Source within the Greater Metropolitan Region Unregulated Rivers Water Sharing Plan with a zero share component. Cleary Bros also holds groundwater WAL No. 41971. This licence was issued on 29 January 2019 for the Sydney Basin South Groundwater Source within the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources and includes a share component of 15 units.

#### Lot 420 DP 1252087

Initial Quarry operations on the Albion Park property were approved under a Deed dated 12 November 1963 and modified on 19 March 1964 between Cleary Bros and Shellharbour Council (‘the Council Approval’). The Council Approval was for the operation of a “blue metal quarry and associated crushing plant” on land now identified as Lot 420 DP 1252087. The area of the initial extraction activities on the property is referred to as ‘Pit 1’. The Council Approval



remains in force without an expiry date and provides the basis for the ongoing processing within the processing area and the range of associated activities and components (e.g. product stockpiling and despatch) that are currently related to the extraction operations in Stages 1 to 6 and would similarly be related to the Stage 7 extraction area.

**Table 1.1**  
**Current Quarry Approvals**

| Date Granted                | Approval Type                         | Land Parcel          | Key Activities Approved   |
|-----------------------------|---------------------------------------|----------------------|---|
| 12 Nov 1963 and 19 Mar 1964 | Deed                                  | Lot 420<br>DP1252087 | Operation of blue metal quarry and crushing plant which incorporates product stockpiling and despatch.  |
| 21 Feb 2006                 | LEC Consent No. 10639 of 2005         | Lot 1 DP858245       | Extraction from Stages 1 to 4, production limit of 400 000tpa; requirement that Stages 5 and 6 are the subject of a future development consent. |
| 10 May 2007                 | Consent DA614/2006                    | Lot 2 DP858245       | Construction of a haul road to link extraction Stages 1 to 4 to the fixed processing plant.   |
| 30 Jun 2009                 | LEC Consent No. 10639 of 2005 – MOD 1 |                      | Increased production limit to 600 000tpa.   |
| 25 Jun 2015                 | LEC Consent No. 10639 of 2005 – MOD 2 |                      | Increased production limit to 900 000tpa.   |
| 07 Jun 2017                 | LEC Consent No. 10639 of 2005 – MOD 3 | Lot 1 DP858245       | Extraction from Stage 5 and 6 areas.  |
| 26 Sep 2018                 | Consent DA0155/2018                   | Lot 421<br>DP1252087 | Consolidation of former consents DA77/6, DA88/67 and DA195/164 plus importation and reprocessing of VENM.                                       |
| 28 April 2020               | DAM0108/2019                          |                      | Approved Modification to Consent DA0155/2018 providing approval to modify front access and carpark.   |
| 29 October 2020             | DAM0079/2020                          |                      | Approved Modification to Consent DAM0108/2019 providing approval to construct replacement concrete batching plant.                              |
| 14 December 2020            | DAM0136/2020                          |                      | Approved Modification to Consent DA0079/2020 correcting various administrative errors.  |

Source: Cleary Bros (Bombo) Pty Ltd

### **Lot 421 DP 1252087**

In February 1977, approval was granted for the extension of extraction operations into the adjacent Lot 421 DP1252087. This extraction area was formerly referred to as the Beacon Hill Quarry ('Pit 2') and was the focus of extractive operations by Cleary Bros between 1977 and 2007 under Development Consents DA77/6, DA88/67 and DA95/164 ('the Beacon Hill Approvals').

In 2018, Shellharbour Council granted consent DA0155/2018 for the importation and re-processing of up to 100 000tpa of Virgin Excavated Natural Material (VENM) within the former Beacon Hill extraction area. In addition, this development consent consolidated the three Beacon Hill Approvals into a single consent, namely DA0155/2018. DA0155/2018 was subsequently modified in 2019 and 2020 to alter front access and carparking (DAM0108/2019) and to allow for the construction of a replacement concrete batching plant (DAM0079/2020) (**Table 1.1**).

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The consent DA0155/2018, as modified, acknowledges that “Those controls relating to the use of the present crushing plant and equipment, as enumerated in the Deed Agreement dated 12 November 1963 shall continue to apply”.

**Lot 1 DP 858245**

In 2003, an *Environmental Impact Statement* (EIS) was prepared to support an application to develop a third extraction operation, namely within Lot 1 DP 858245 (‘Pit 3’), encompassing six stages of extraction (**Figure 1.2**). The then Minister for Infrastructure and Planning granted consent for the extension under DA 466-11-2003, however it was subject to an objector appeal to the NSW Land and Environment Court (LEC) (Proceedings No. 10639 of 2005), following which the LEC dismissed the appeal and granted consent subject to a revised set of conditions (LEC Consent No. 10639 of 2005). In addition to providing for a maximum production limit of 400 000tpa, Condition 6 of Schedule 3 of the consent required that “prior to extraction in Stages 5 and 6, a report must be submitted to the Minister essentially assessing the environmental, social, agricultural and economic impacts of Stages 5 and 6 based on the environmental performance of the previous four stages”.

LEC Consent No. 10639 of 2005 has been modified on three occasions. The first two modifications related to an increase in the production limit from 400 000tpa to 600 000tpa (MOD 1 – approved 30 June 2009) and from 600 000tpa to 900 000tpa (MOD 2 – approved 25 June 2015).

For the third modification (MOD 3), an *Environmental Assessment* (EA) was submitted to the Department of Planning and Environment in August 2016 to satisfy Condition 6 of Schedule 3 of LEC Consent No. 10639 of 2005 in support of a modification application to seek approval for the continued extraction within Stages 5 and 6 with the approved annual production limit retained at 900 000tpa. Approval for MOD 3 was granted on 7 June 2017 until 21 February 2036.

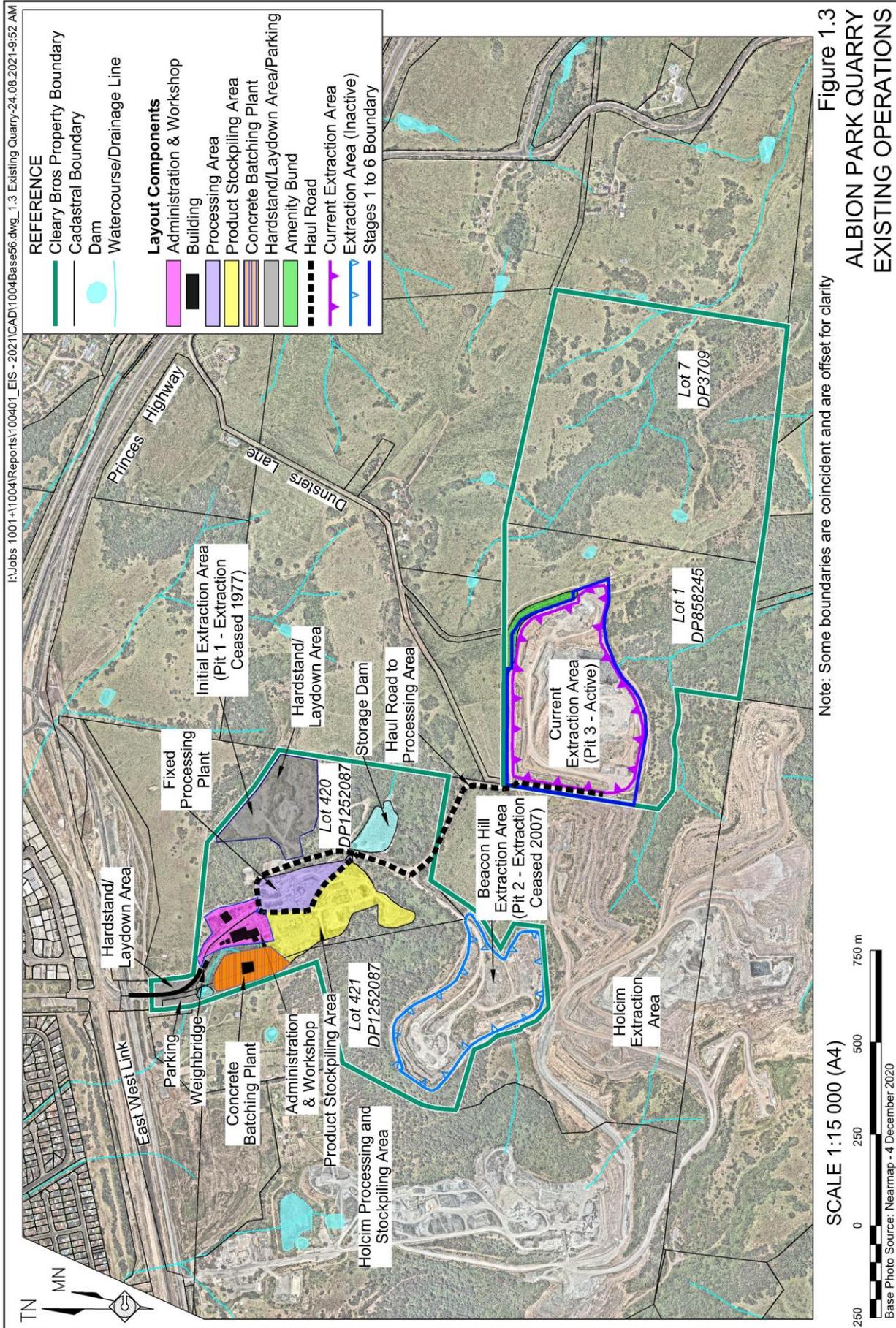
**Lot 2 DP 858245**

In May 2007, Development Consent DA614/2006 was granted by Shellharbour Council for the construction of a haul road to link the extraction in Pit 3 to the haul road within Lot 420 DP 1252087 to allow rock extracted from Pit 3 to be transported to the processing area on Lot 420 DP 1252087. It is noted that Lot 2 DP 858245 is owned by Holcim (Australia) Pty Ltd with whom Cleary Bros holds a lease for the subject haul road. This haul road would continue to be used for transportation of rock from Stages 1 to 7 to the processing area. This development consent is currently valid until 21 February 2036.

**1.3.4 Existing Operations**

The property on which the Albion Park Quarry is located covers an area of 142.74ha of which approximately 54ha is currently disturbed by Quarry-related activities. **Figure 1.3** displays the following components and activities within the property.

- An administration office, workshop and associated buildings.
- A fixed processing plant within the processing area (partly within the footprint of the initial extraction area – i.e. Pit 1).





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- A product stockpiling and loading area.
- A hardstand / laydown and parking area for light and heavy vehicles.
- A concrete batching plant.
- The former Beacon Hill extraction area (currently approved for processing quarry products and processing imported Virgin Excavated Natural Material) (Pit 2).
- The current extraction area (Stages 1 to 6) with an associated amenity barrier (Pit 3).
- Native vegetation management.
- Grazing cattle and general farm management.

Access to the current extraction area is through the processing area and product stockpiling area which in turn is accessed via the East-West Link in Croom (see **Figure 1.3**).

**Plates 1.1** and **1.2** display photographs of the existing extraction operations from the northwestern and southwestern corners of the current extraction area.



**Plate 1.1** A view to the southeast across the current extraction area from its northwestern corner (Ref: CB-1.3)



**Plate 1.2** A view to the northwest across the current extraction area from its southeastern corner (Ref: CB-1.2)



The western side of Stages 1 and 2 is currently part of the overall remnant extraction face adjacent to the current haul road to Stages 1 to 6. This face is located on the eastern side of a pillar of rock between Stages 1 and 2 and part of the adjoining extraction area managed by Holcim (Australia) Pty Ltd (see **Plate 1.2**).

### **1.3.5 Need for the Project**

The proposed extension to the current extraction area is required to re-establish the resource base of hard rock in order for Cleary Bros to continue to meet market demands for the supply of high-quality hard rock products and to underpin the long-term viability of the Cleary Bros Group.

For Stages 1 to 6, it was initially envisaged that each of the six stages would be completed in approximate 5 year periods based on an extraction rate of 400 000tpa. Subsequent increases in the annual production limit of the Quarry to 900 000tpa were granted in part based on evidence of increasing demand for Quarry products to support the construction industry in the Illawarra-Shoalhaven and Greater Sydney Regions. This increase in the annual production rate has resulted in the more rapid depletion of resources in Stages 1 to 6.

The hard rock resources remaining in Stages 1 to 6 would be depleted within approximately 3 to 5 years. Therefore, Cleary Bros is seeking approval to extract additional hard rock resources from an area referred to as “Stage 7” to secure the long-term supply of important raw materials for which there is a regular, and often, high demand. The development application is being submitted at this time, given the likely duration for the determination of the application and the need to integrate the existing and proposed extraction stages from a quality and practical perspective.

The continued competitiveness of the Cleary Bros Group is dependent upon maintaining a reliable supply of hard rock from a quarry controlled by Cleary Bros. Sourcing raw materials from a competitor would jeopardise the long-term viability of the Cleary Bros Group’s operations reliant upon quarry resources. The Project, if approved, would prevent disruptions to the supply chain and therefore impacts on the Cleary Bros Group. Further, the construction industry, particularly in the Illawarra-Shoalhaven Region, would continue to benefit from the presence of an independent supplier of high quality construction materials.

### **1.3.6 Key Strategies for the Project**

The key strategies that have been adopted when designing the Project have been to maximise the recovery of the high quality hard rock resources from within the Project Area and with the adoption of key design components to reduce the impacts upon threatened species, visibility from surrounding properties and to provide for the progressive rehabilitation of the completed sections of the extraction area.

## **1.4 Alternatives Considered**

The alternatives available to Cleary Bros to develop a further extraction area on its Albion Park property to provide a long-term source of high-quality rock are limited principally by zoning restrictions and the occurrence of threatened ecological communities and species. The proposed Stage 7 extension area has been extensively drilled and evaluated, and it contains the quality and

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quantity of rock sought by Cleary Bros to underpin the future of the Cleary Bros Group. It also has the advantage of being adjacent to the current approved extraction area that would assist in the development of Stage 7.

Given Cleary Bros' experience and long-term involvement with hard rock extraction in the former and current extraction areas, alternatives were not considered with respect to the design of the extraction benches and internal ramps, equipment selection, operating hours, extraction rates and on-site buildings. The alternatives that were considered in the design of the Project focussed upon the proposed extended area of extraction and staging of extraction.

**Extension Area Footprint**

The factors considered when identifying the proposed area for the extension of the current extraction area included the following.

1. The presence of a suitable resource – drilling undertaken on Cleary Bros' property confirmed the continuation of the two main latite rock units beneath the ridge that was zoned RU1 and recognised to occur within the Mineral Resource Area defined within the *Shellharbour Local Environmental Plan 2013* (Shellharbour LEP).
2. The occurrence of threatened species and ecological communities – mapping undertaken by Niche (2022) identified the presence of areas of greatest ecological value particularly areas of mature *Zieria granulata*.
3. The avoidance of surface water inflows into the extraction area – from the first order watercourse (Watercourse 6) near the northeastern corner of the Project Area.

Initially, the proposed extension area was confined to the area zoned RU1 with that area originally presented in the Scoping Report for the Project. However, given the results of the ecological survey and the initial hydrological assessment, Cleary Bros amended the boundary of the Project Area to exclude:

- 0.8ha of land adjacent to Watercourse 6; and
- 1.15ha of land within the RU1 zone due to the presence of mature *Zieria Granulata* and high condition vegetation communities.

The areas excluded are displayed on **Figure 1.4**.

The ecological survey also identified a 1.25ha area of land largely without native vegetation adjacent to the initial extension area but within land zoned C2. Cleary Bros decided to include this area within the Project Area to effectively offset the 0.8ha of land excluded for hydrological reasons and 1.15ha of land excluded for its ecological value. Extractive Industries are permissible on those parts of the Project Area within Zones RU1 and C2 (see Section 4.3.2).

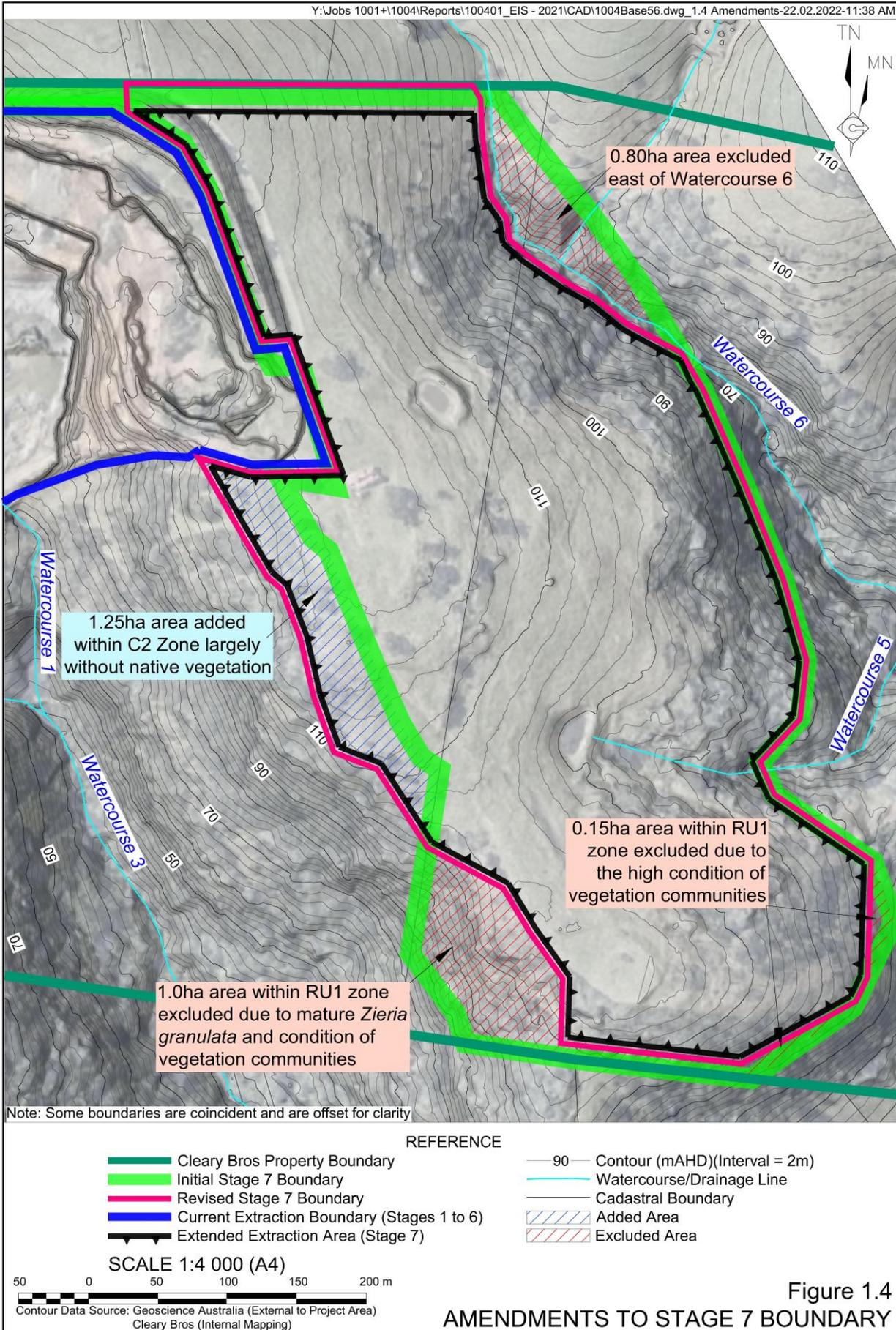


Figure 1.4  
AMENDMENTS TO STAGE 7 BOUNDARY

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Finally, it is recognised that the resource assessment identified a quantity of approximately 33 million tonnes of latite and agglomerate within the Project Area. This quantity of resource is greater than that which could be extracted (at an average rate of 750 000tpa) over the conventional 30-year Project life provided for most State Significant Development applications. Cleary Bros considers the Project Area, nor the extent of extraction, should not be adjusted to reduce the quantity of recoverable resource particularly given the importance of the resources in the long term to the ongoing development of the Illawarra-Shoalhaven Region. As discussed in Section 3.9, it is the preference of Cleary Bros to obtain development consent until 31 December 2066, i.e. 30 years beyond the expiry date of the current development consent. In the event a development consent is only granted for 30 years for the Project, Cleary Bros would apply for a further extension towards the end of the 30-year development consent to enable the recovery of the remaining resources within the Project Area. The incorporation of the entire resource area places a higher recognition of the resources than would otherwise occur if it was not included at this stage.

**Extraction Staging**

The Albion Park Quarry Manager considered a range of alternatives for the staging of extraction within the Project Area. From an operational perspective, an alternative was initially considered to extend the extraction operation eastward from Stages 5 and 6 and then progress in a southerly direction. While providing greater operational flexibility, this alternative was not pursued in favour of the proposed extraction staging as there would be less time available for the growth of vegetation on the upper benches to reduce visual impacts. Furthermore, the southerly advance of the extraction would result in higher noise levels and visual impacts at the residences within the “Figtree Hill” property.

Overall, Cleary Bros considers that the design of the Project reflects the most practical approach that reduces the ecological and visual impacts to an acceptable level whilst providing a long-term supply of high-quality construction materials for the Illawarra-Shoalhaven Region.

**1.5 Environmental Management and Documentation****1.5.1 Quarry Management**

Cleary Bros proposes that management of all operational components of the Quarry would continue to be undertaken by a fully qualified and experienced Quarry Manager employed by Cleary Bros. The Quarry Manager would continue to be supported by a team of supervisors, operators and subcontractors as required responsible for all earthmoving activities, blasting, processing and transportation within the Project Area.

**1.5.2 Environmental Management**

Ongoing environmental management within the Project Area and the implementation of the commitments made throughout this document and the conditions of the development consent or licence conditions, would be undertaken by Cleary Bros’ Environmental Officer in consultation with the Quarry Manager. Assistance would be provided by specialist consultants, as and when required.



### 1.5.3 Environmental Documentation

Cleary Bros currently operates the extraction area within the Albion Park Quarry in accordance with the Cleary Bros' Health, Safety, Environment and Quality Management System. At the core of the System is an overarching *Health, Safety, Environment and Quality Policy*, which is supported by a series of management plans comprising the following.

- *Quarry Environmental Management Plan*
- *Air Quality Management Plan*
- *Heritage Management Plan*
- *Noise and Blast Management Plan*
- *Rehabilitation Management Plan*
- *Vegetation Management Plan*
- *Water Management Plan*

Cleary Bros proposes to update all of the above documents in the event development consent is granted for the Project in a manner consistent with the conditional requirements of the development consent.

In addition to the Environmental Management Plan and Sub-plans, Cleary Bros would prepare an Annual Review recording an overview of the activities in each operational year with an assessment of compliance of the various conditional requirements in the development consent, environment protection licence and water licences. The document would also report upon any specific requirements nominated in the conditions and summarise and evaluate all monitoring data collected during the preceding year.

## 1.6 Management of Investigations

The preparation of this document has involved a study team managed by Mr Rob Corkery, MAppIsc, BSc (Hons), Principal Environmental Consultant with R.W. Corkery & Co. Pty Limited (RWC), assisted by Mr Gordon Barnes, BSc (Geology), MSc (Geology), Senior Environmental Consultant, and Mr Jack Flanagan, BSc, MEnvSc, Environmental Consultant, both with RWC. Mr Mitchell Bland, BSc(Hons), MEconGeol, LLB(Hons), Principal and Managing Director with RWC supervised finalisation of this document.

Strong emphasis has been placed upon a multi-disciplinary team approach to the design of the Project, the description of the existing environment, identification of key issues, development of appropriate mitigation measures and management controls and assessment of impacts.

Ms Helen Cleary (Executive General Manager, Development and Partnerships), Mr Mark Hammond (Quality and Environment Manager) and Mr Todd Kalajzich (General Manager, Quarries) of Cleary Bros, provided information in relation to the proposed activities and reviewed and approved this document for release.

Mr Graham Lee of Graham Lee & Associates Pty Ltd undertook the Resource Assessment for the Project. Mr Michael Yelf of RPM Global Pty Ltd undertook the design of the extraction area and resource calculations for the Project.

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A range of environmental investigations were initiated to identify the environmental constraints associated with the Project. These studies were undertaken by a team of specialist consultants managed by Cleary Bros including the following companies and key individuals.

- Northstar Air Quality Pty Ltd – Air Quality Assessment
  - Dr Martin Doyle (PhD, BSc(Hons))
- SLR Consulting Australia Pty Limited – Noise and Vibration Assessment
  - Mr Glenn Thomas (BSc (Geophysics and Atmospheric Science))
  - Mr Dick Godson (MSc(Eng))
  - Mr Aaron McKenzie (BE Hons (Env))
  - Mr Joshua Ridgway (MDesSc.(Audio & Acoustics))
- Niche Environment and Heritage Pty Ltd – Biodiversity Development Assessment Report and Biodiversity Offset Strategy
  - Mr Simon Tweed (BEnvSc(Hons))
  - Ms Sian Griffiths (BEnvSc(Hons))
  - Ms Sarah Hart (BSc, MSc, GradDipEnvMgt)
- Biosis Pty Ltd – Aboriginal Cultural and Historic Heritage Assessment
  - Ms Taryn Gooley (BASc(Hons))
  - Ms Samantha Keats (BA(Hons))
  - Ms Charlotte Allen (BA(Hons))
- Strategic Environmental and Engineering Consulting (SEEC) Pty Ltd – Soil and Surface Water Assessment
  - Mr Andrew Macleod (BSc Hons (Applied Physical Geography))
  - Mr Bill Johnson (BEng(Hons)(Civil), MEngSc(Civ/Env))
  - Mr Jason Armstrong (AssDipEng(Civil))
- Jacobs Group (Australia) Pty Ltd – Groundwater Assessment
  - Mr Ben Rose (BEnvMgt)
  - Mr Quan Bui (BEnvEng(Hons), BCom.)
- Gillespie Economics – Economic Impact Assessment
  - Dr Rob Gillespie (PhD (Economics), MEc, MPlan, BSc, BEc)
- Element Environment Pty Ltd – Social Impact Assessment
  - Dr Jamie Seaton (PhD, BSc(Hons)(Human Geography))
  - Ms Angela Peace (BComm)

RWC coordinated the assessments relating to visibility.

Reliance has been placed upon road noise and traffic and transportation assessments prepared for the Albion Park Rail Bypass for those aspects of the Project.



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