

# Noise Monitoring Assessment

PGH Bricks Bringelly  
Bringelly, NSW

# Document Information

## Noise Monitoring Assessment

PGH Bricks Bringelly

Bringelly, NSW

**Prepared for:** PGH Bricks Pty Ltd

Greendale Road

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# 1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by PGH Bricks Pty Ltd (PGH) to complete a Noise Monitoring Assessment (NMA) for the PGH Bringelly Brickworks (the 'site') at Greendale Road, Bringelly, NSW.

This assessment has been undertaken for the quarterly period ending December 2020, and forms part of the annual noise monitoring program to address conditions outlined in the Development Consent.

The NMA has quantified potential operational and sleep disturbance noise emissions from the operation and has been conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- Bringelly Brickworks Noise Management Plan (NMP ref BRK-BRI-NMP Version 4 dated 12.02.19), 2019;
- Bringelly Brickworks Development Consent, 2015 (SSD\_5684); and
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

The Development Consent is provided in **Appendix B**.

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## 2 Noise Criteria

The Bringelly Brickworks NMP outlines the applicable noise criteria for representative residential receivers surrounding the site and are presented in **Table 1**. The site includes the operation of a quarry and brickmaking plant, and as the quarry operates during the daytime, there are separate criteria relating to each period.

| Table 1 Noise Criteria <sup>1</sup> |                     |                                     |                    |                          |
|-------------------------------------|---------------------|-------------------------------------|--------------------|--------------------------|
| Activity                            | Receiver            | Day/Evening/Shoulder <sup>2,3</sup> | Night <sup>2</sup> |                          |
|                                     |                     | dB LAeq(15min)                      | dB LAeq(15min)     | dB LA1(max) <sup>3</sup> |
| Brickmaking and quarrying           | R1, R2              | 47                                  | N/A                |                          |
|                                     | R3, R4, R14         | 46                                  |                    |                          |
|                                     | R15, R17            | 45                                  |                    |                          |
|                                     | All other receivers | 44                                  |                    |                          |
| Brickmaking                         | All Receivers       | 44                                  | 43                 | 53                       |

Note 1: Noise criteria adopted from the Development Consent.

Note 2: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 3: Periods and parameters as expressed in the Development Consent

**Figure 1** presents the identified receiver locations and representative measurement locations.

Section 4 of the Bringelly Brickworks Development Consent, 2015 (SSD\_5684) outlines requirements for Noise Bunds adjacent to the northern boundary of the extraction area and adjacent to Greendale Road. It is noted that the proposed new access road and associated noise bund adjacent to Greendale Road are not in place at the time of the monitoring. Further details on review of noise mitigation measures for the site are contained in a historic report (MAC190946LR1, 29 September 2019).



FIGURE 1  
SITE LAYOUT  
MAC190946-02  
PGH Bringelly Brickworks

# KEY

- Monitoring Locations
- Receivers



### 3 Assessment Methodology

The attended noise measurements were conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise". Measurements were conducted using a Svantek Type 1, 971 noise analyser. The acoustic instrumentation used carries current NATA calibration and complies with AS IEC 61672.1-2019- Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed  $\pm 0.5\text{dBA}$ .

Noise measurements were of 15-minutes in duration and where possible, throughout each survey the operator quantified the contribution of each significant noise source. Measurements were conducted at five locations (N1, N3, N14, N20, N35) on Tuesday 8 December 2020, during the daytime, evening and night time periods to satisfy the requirements of the NMP.

Extraneous noise sources were excluded from the analysis to determine the  $L_{Aeq}(15\text{min})$  quarry noise contribution for comparison against the relevant criteria. In the event of site attributed noise being above criteria, prevailing meteorological conditions for the monitoring period are analysed in accordance with Fact Sheet D of the NPI to determine the stability category present at the time of each attended measurement.

Where the site is inaudible, the contribution is estimated to be at least 10dBA below the ambient noise level.

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## 4 Results

### 4.1 Assessment Results - Location N1

The monitored noise level contributions and observed meteorological conditions for each assessment period at Location N1 for the NMA are presented in **Table 2**.

**Table 2 Operator-Attended Noise Survey Results – Location N1**

| Date                              | Time (hrs)         | Descriptor (dBA re 20 µPa) |      |      | Meteorology                       | Description and SPL, dBA |
|-----------------------------------|--------------------|----------------------------|------|------|-----------------------------------|--------------------------|
|                                   |                    | LA1                        | LAeq | LA90 |                                   |                          |
| 08/12/2020                        | 14:14<br>(Day)     | 61                         | 49   | 46   |                                   | Car passby 52-59         |
|                                   |                    |                            |      |      | WD: SW                            | Truck passby to 67       |
|                                   |                    |                            |      |      | WS: 1.5m/s                        | Plane 45-56/50-54/53-59  |
|                                   |                    |                            |      |      | Rain: Nil                         | Residential Noise 47-50  |
|                                   |                    |                            |      |      |                                   | PGH not audible          |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |                                   | <35                      |
| 08/12/2020                        | 20:25<br>(Evening) | 45                         | 38   | 35   | WD: N/A                           | Insects 34-37            |
|                                   |                    |                            |      |      | WS: <0.5m/s                       | Birds 36-38/40-44        |
|                                   |                    |                            |      |      | Rain: Nil                         | PGH audible ~34-38       |
|                                   |                    |                            |      |      | PGH Site LAeq(15min) Contribution |                          |
| 08/12/2020                        | 23:10<br>(Night)   | 47                         | 41   | 39   | WD: N/A                           | Insects 38-40            |
|                                   |                    |                            |      |      | WS: <0.5m/s                       | PGH audible ~36-40       |
|                                   |                    |                            |      |      | Rain: Nil                         |                          |
|                                   |                    |                            |      |      | PGH Site LAeq(15min) Contribution |                          |

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

## 4.2 Assessment Results - Location N3

The monitored noise level contributions and observed meteorological conditions for each assessment period at Location N3 for the NMA are presented in **Table 3**.

**Table 3 Operator-Attended Noise Survey Results – Location N3**

| Date                              | Time (hrs)         | Descriptor (dBA re 20 μPa) |      |      | Meteorology                         | Description and SPL, dBA             |
|-----------------------------------|--------------------|----------------------------|------|------|-------------------------------------|--------------------------------------|
|                                   |                    | LA1                        | LAeq | LA90 |                                     |                                      |
| 08/12/2020                        | 13:47<br>(Day)     | 58                         | 48   | 41   | WD: SW<br>WS: 1.5m/s<br>Rain: Nil   | Truck passby 48-53                   |
|                                   |                    |                            |      |      |                                     | Distant traffic 40-41                |
|                                   |                    |                            |      |      |                                     | Birds 40-45                          |
|                                   |                    |                            |      |      |                                     | Plane 47-51/56-58                    |
|                                   |                    |                            |      |      |                                     | Truck entering PGH 40-42<br>(2-3sec) |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |                                     | <35                                  |
| 08/12/2020                        | 20:49<br>(Evening) | 55                         | 44   | 37   | WD: N/A<br>WS: <0.5m/s<br>Rain: Nil | Insects 35-37                        |
|                                   |                    |                            |      |      |                                     | Dog bark distant 40-42               |
|                                   |                    |                            |      |      |                                     | Car passby 40-49                     |
|                                   |                    |                            |      |      |                                     | Distant traffic 39-40                |
|                                   |                    |                            |      |      |                                     | PGH audible ~37-38                   |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |                                     | <34                                  |
| 08/12/2020                        | 22:47<br>(Night)   | 51                         | 44   | 39   | WD: N/A<br>WS: <0.5m/s<br>Rain: Nil | Insects 40-45                        |
|                                   |                    |                            |      |      |                                     | PGH audible ~38-40                   |
|                                   |                    |                            |      |      |                                     |                                      |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |                                     | 36                                   |

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

### 4.3 Assessment Results - Location N14

The monitored noise level contributions and observed meteorological conditions for each assessment period at Location N14 for the NMA are presented in **Table 4** *Error! Reference source not found.*

**Table 4 Operator-Attended Noise Survey Results – Location N14**

| Date                              | Time (hrs)         | Descriptor (dBA re 20 µPa) |      |      | Meteorology | Description and SPL, dBA                  |
|-----------------------------------|--------------------|----------------------------|------|------|-------------|-------------------------------------------|
|                                   |                    | LA1                        | LAeq | LA90 |             |                                           |
| 08/12/2020                        | 15:03<br>(Day)     | 72                         | 58   | 42   | WD: SW      | Car passbys 44-62                         |
|                                   |                    |                            |      |      | WS: 1.5m/s  | Truck passby 52-64                        |
|                                   |                    |                            |      |      | Rain: Nil   | Plane 44-47                               |
|                                   |                    |                            |      |      |             | Truck at PGH weighbridge<br>60-72 (20sec) |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |             | <40                                       |
| 08/12/2020                        | 21:14<br>(Evening) | 67                         | 54   | 36   | WD: N/A     | Insects 35-37                             |
|                                   |                    |                            |      |      | WS: <0.5m/s | Motorcycle 40-44                          |
|                                   |                    |                            |      |      | Rain: Nil   | Car passby 58-73                          |
|                                   |                    |                            |      |      |             | Truck passby 60-71<br>PGH audible ~34-36  |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |             | <35                                       |
| 08/12/2020                        | 22:27<br>(Night)   | 57                         | 45   | 33   | WD: N/A     | Insects 33-35                             |
|                                   |                    |                            |      |      | WS: <0.5m/s | Truck passby 60                           |
|                                   |                    |                            |      |      | Rain: Nil   | Car passby 62-63                          |
|                                   |                    |                            |      |      |             | PGH just audible ~33-35                   |
| PGH Site LAeq(15min) Contribution |                    |                            |      |      |             | <35                                       |

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

#### 4.4 Assessment Results - Location N20

The monitored noise level contributions and observed meteorological conditions for each assessment period at Location N20 for the NMA are presented in **Table 5**.

**Table 5 Operator-Attended Noise Survey Results – Location N20**

| Date       | Time (hrs)         | Descriptor (dBA re 20 µPa) |      |      | Meteorology                       | Description and SPL, dBA |
|------------|--------------------|----------------------------|------|------|-----------------------------------|--------------------------|
|            |                    | LA1                        | LAeq | LA90 |                                   |                          |
| 08/12/2020 | 14:42<br>(Day)     | 77                         | 64   | 39   | WD: SW                            | Car passbys 67-77        |
|            |                    |                            |      |      | WS: 1.5m/s                        | Truck passby 79          |
|            |                    |                            |      |      | Rain: Nil                         | PGH not audible          |
|            |                    |                            |      |      | PGH Site LAeq(15min) Contribution |                          |
|            |                    |                            |      |      |                                   | <35                      |
| 08/12/2020 | 21:34<br>(Evening) | 72                         | 58   | 33   | WD: N/A                           | Insects 31-35            |
|            |                    |                            |      |      | WS: <0.5m/s                       | Dog bark distant 36-37   |
|            |                    |                            |      |      | Rain: Nil                         | Plane 45                 |
|            |                    |                            |      |      |                                   | Car passby 45-70         |
|            |                    |                            |      |      |                                   | PGH not audible          |
|            |                    |                            |      |      | PGH Site LAeq(15min) Contribution |                          |
|            |                    |                            |      |      |                                   | <35                      |
| 08/12/2020 | 22:05<br>(Night)   | 75                         | 62   | 33   | WD: N/A                           | Insects 30-35            |
|            |                    |                            |      |      | WS: <0.5m/s                       | Plane 45                 |
|            |                    |                            |      |      | Rain: Nil                         | Car passby 45-77         |
|            |                    |                            |      |      |                                   | PGH not audible          |
|            |                    |                            |      |      | PGH Site LAeq(15min) Contribution |                          |
|            |                    |                            |      |      |                                   | <35                      |

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

#### 4.5 Assessment Results - Location N35

The monitored noise level contributions and observed meteorological conditions for each assessment period at Location N35 for the NMA are presented in **Table 6**.

**Table 6 Operator-Attended Noise Survey Results – Location N35**

| Date                              | Time (hrs) | Descriptor (dBA re 20 µPa) |      |      | Meteorology     | Description and SPL, dBA |
|-----------------------------------|------------|----------------------------|------|------|-----------------|--------------------------|
|                                   |            | LA1                        | LAeq | LA90 |                 |                          |
| 08/12/2020                        | 15:29      | 48                         | 41   | 36   | WD: SW          | Distant traffic <40      |
|                                   | (Day)      |                            |      |      | WS: 1.5m/s      | Birds 36-40              |
|                                   | Rain: Nil  |                            |      |      | PGH not audible |                          |
| PGH Site LAeq(15min) Contribution |            |                            |      |      |                 | <35                      |
| 08/12/2020                        | 20:07      | 44                         | 38   | 34   | WD: N/A         | Dog bark distant 39-42   |
|                                   | (Evening)  |                            |      |      | WS: <0.5m/s     | Distant traffic 38-39    |
|                                   | Rain: Nil  |                            |      |      | PGH not audible |                          |
| PGH Site LAeq(15min) Contribution |            |                            |      |      |                 | <35                      |
| 08/12/2020                        | 23:33      | 50                         | 38   | 30   | WD: N/A         | Dog bark distant 40-49   |
|                                   | (Night)    |                            |      |      | WS: <0.5m/s     | Insects 31-33            |
|                                   | Rain: Nil  |                            |      |      | Birds 38-43     |                          |
| PGH Site LAeq(15min) Contribution |            |                            |      |      |                 | PGH not audible          |
| PGH Site LAeq(15min) Contribution |            |                            |      |      |                 | <35                      |

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

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## 5 Discussion

Monitoring on Tuesday 8 December 2020 identified site noise was generally inaudible during the daytime at all monitoring locations, and just audible above ambient sources during the evening and night time periods at locations N1 and N3. Site attributable noise contributions were estimated to satisfy the relevant noise criteria at all locations during all assessment periods.

Audible site noise sources included the combustion fan, occasional rattle of forklift tines when travelling and trucks entering the site on the access road. Extraneous noise sources measured included insects, birds, traffic, aircraft and dogs barking.

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## 6 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment (NMA) for PGH Bricks Pty Ltd (PGH) at the Bringelly Brickworks (the 'site') at Greendale Road Bringelly, NSW. The assessment was completed to assess the site's compliance with the relevant noise criteria during Quarter 4, ending December 2020.

Attended noise monitoring was undertaken on Tuesday 8 December 2020 at five representative monitoring locations. The assessment has identified that noise emissions generated by Bringelly Brickworks were occasionally audible, however quarry noise emissions were below the relevant noise criteria throughout the survey period, satisfying the relevant consent conditions.

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# Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

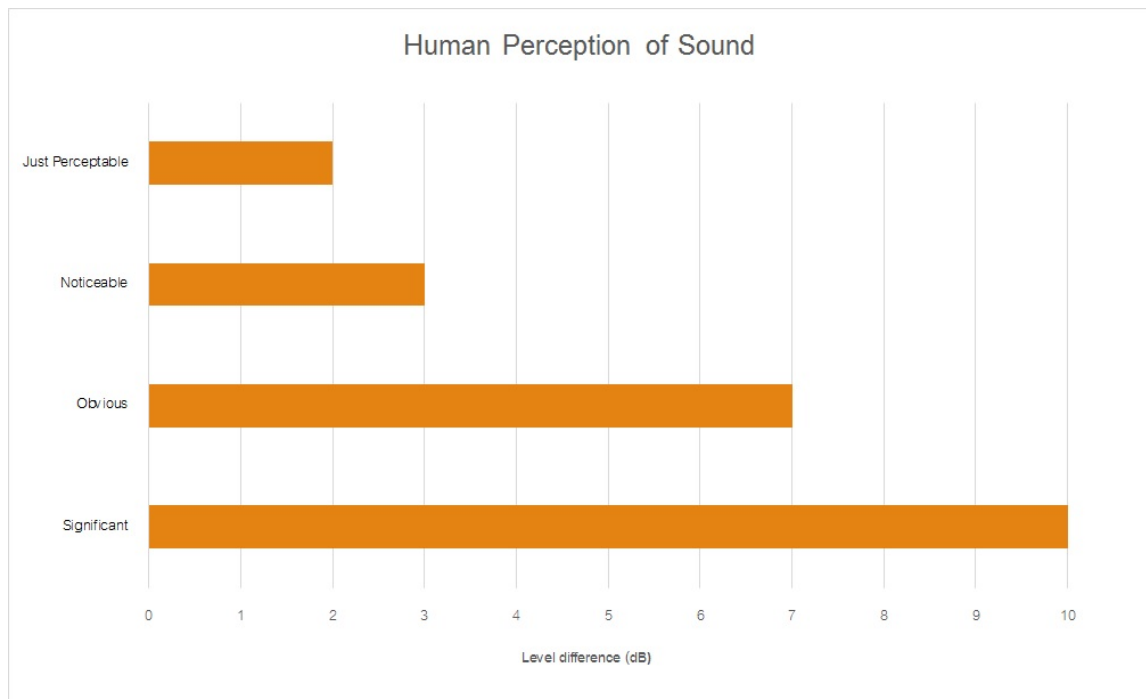
| Table A1 Glossary of Acoustical Terms |                                                                                                                                                                                                                                                                       |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Term                                  | Description                                                                                                                                                                                                                                                           |
| 1/3 Octave                            | Single octave bands divided into three parts                                                                                                                                                                                                                          |
| Octave                                | A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.                                                                                                                                           |
| ABL                                   | Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.                                             |
| Ambient Noise                         | The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.                                                                                               |
| A Weighting                           | A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.                                                                                                                                                           |
| Background Noise                      | The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor                                                                      |
| dBA                                   | Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.                                           |
| dB(Z), dB(L)                          | Decibels Z-weighted or decibels Linear (unweighted).                                                                                                                                                                                                                  |
| Extraneous Noise                      | Sound resulting from activities that are not typical of the area.                                                                                                                                                                                                     |
| Hertz (Hz)                            | The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.                                                                                                                                                             |
| LA10                                  | A sound level which is exceeded 10% of the time.                                                                                                                                                                                                                      |
| LA90                                  | Commonly referred to as the background noise, this is the level exceeded 90% of the time.                                                                                                                                                                             |
| LAeq                                  | Represents the average noise energy or equivalent sound pressure level over a given period.                                                                                                                                                                           |
| LAmx                                  | The maximum sound pressure level received at the microphone during a measuring interval.                                                                                                                                                                              |
| Masking                               | The phenomenon of one sound interfering with the perception of another sound.<br>For example, the interference of traffic noise with use of a public telephone on a busy street.                                                                                      |
| RBL                                   | The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period. |
| Sound power level<br>(Lw or SWL)      | This is a measure of the total power radiated by a source in the form of sound and is given by $10 \cdot \log_{10} (W/W_0)$ . Where W is the sound power in watts to the reference level of $10^{-12}$ watts.                                                         |
| Sound pressure level<br>(Lp or SPL)   | the level of sound pressure; as measured at a distance by a standard sound level meter.<br>This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.                                               |

Table A2 provides a list of common noise sources and their typical sound level.

**Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA**

| Source                              | Typical Sound Pressure Level |
|-------------------------------------|------------------------------|
| Threshold of pain                   | 140                          |
| Jet engine                          | 130                          |
| Hydraulic hammer                    | 120                          |
| Chainsaw                            | 110                          |
| Industrial workshop                 | 100                          |
| Lawn-mower (operator position)      | 90                           |
| Heavy traffic (footpath)            | 80                           |
| Elevated speech                     | 70                           |
| Typical conversation                | 60                           |
| Ambient suburban environment        | 40                           |
| Ambient rural environment           | 30                           |
| Bedroom (night with windows closed) | 20                           |
| Threshold of hearing                | 0                            |

**Figure A1 – Human Perception of Sound**



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## Appendix B – Development Consent

# Development Consent

## Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, I approve the development application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Kitto  
**Executive Director**  
**Resource Assessments and Business Systems**

Sydney

2015

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### SCHEDULE 1

**Application Number:**

SSD\_5684

**Applicant:**

Boral Bricks Pty Ltd

**Consent Authority:**

Minister for Planning

**Land:**

[Lot 100 in DP 1203966](#)

**Development:**

Bringelly Brickworks Extension Project

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Modification 1 (October 2016 shown in [blue](#) text)

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## DEFINITIONS

|                              |                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AHD                          | Australian Height Datum                                                                                                                                                                                                                                                                                                                                                   |
| Annual Review                | The review required by condition 4 of schedule 5                                                                                                                                                                                                                                                                                                                          |
| Applicant                    | Boral Bricks Pty Ltd, or any other person or persons who rely on this consent to carry out the development that is subject to this consent                                                                                                                                                                                                                                |
| BCA                          | Building Code of Australia                                                                                                                                                                                                                                                                                                                                                |
| Biodiversity offset strategy | The conservation and enhancement strategy described in the EIS, and shown conceptually in Appendix 4                                                                                                                                                                                                                                                                      |
| Brick making operations      | Includes the receipt, handling, processing, storage and transportation of raw materials on site, brick making on site and transportation of finished bricks on site                                                                                                                                                                                                       |
| CCC                          | Community Consultative Committee                                                                                                                                                                                                                                                                                                                                          |
| Conditions of consent        | Conditions contained in schedules 1 to 5 inclusive                                                                                                                                                                                                                                                                                                                        |
| Construction                 | The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent                                                                                                                                                                                                                                                             |
| CPI                          | Australian Bureau of Statistics Consumer Price Index                                                                                                                                                                                                                                                                                                                      |
| Date of commencement         | The date notified to the Department by the Applicant under condition 8 of Schedule 2                                                                                                                                                                                                                                                                                      |
| Day                          | The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays                                                                                                                                                                                                                                                                           |
| Department                   | Department of Planning and Environment                                                                                                                                                                                                                                                                                                                                    |
| Development                  | The development described in the documents of condition 2(a) of Schedule 2                                                                                                                                                                                                                                                                                                |
| Development area             | All land to which the development application applies, as listed under "Land" in schedule 1 and shown in Appendix 1                                                                                                                                                                                                                                                       |
| DPI Water                    | Department of Primary Industries - Water                                                                                                                                                                                                                                                                                                                                  |
| DRE                          | Division of Resources and Energy, within the NSW Department of Industry                                                                                                                                                                                                                                                                                                   |
| EEC                          | Endangered Ecological Community, as defined under the <i>Threatened Species Conservation Act 1995</i>                                                                                                                                                                                                                                                                     |
| EIS                          | Environmental Impact Statement titled <i>Bringelly Brickworks and Quarry Expansion</i> (2 volumes), dated September 2013, as modified by the Response to Submissions titled, <i>Bringelly Brickworks and Quarry Expansion, Response to Submissions</i> dated February 2014 and the letter entitled <i>Bringelly Brickworks – Biodiversity Offsets</i> , dated 2 June 2014 |
| EP&A Act                     | <i>Environmental Planning and Assessment Act 1979</i>                                                                                                                                                                                                                                                                                                                     |
| EP&A Regulation              | <i>Environmental Planning and Assessment Regulation 2000</i>                                                                                                                                                                                                                                                                                                              |
| EPA                          | NSW Environment Protection Authority                                                                                                                                                                                                                                                                                                                                      |
| EPL                          | Environment Protection Licence under the POEO Act                                                                                                                                                                                                                                                                                                                         |
| Evening                      | The period from 6pm to 10pm                                                                                                                                                                                                                                                                                                                                               |
| Extension area               | The area outside of the existing quarry footprint (i.e. cells D, E, F, G, H and I, as shown conceptually in Appendix 2)                                                                                                                                                                                                                                                   |
| Feasible                     | Feasible relates to engineering considerations and what is practical to build                                                                                                                                                                                                                                                                                             |
| GDE                          | Groundwater Dependent Ecosystem                                                                                                                                                                                                                                                                                                                                           |
| GPS                          | Global Positioning System                                                                                                                                                                                                                                                                                                                                                 |
| Growth Centres SEPP          | <i>State Environmental Planning Policy (Sydney Regional Growth Centres) 2006</i>                                                                                                                                                                                                                                                                                          |
| Ha                           | Hectare                                                                                                                                                                                                                                                                                                                                                                   |
| Incident                     | A set of circumstances that: <ul style="list-style-type: none"> <li>causes or threatens to cause material harm to the environment; and/or</li> <li>breaches or exceeds the limits or performance measures/criteria in this consent</li> </ul>                                                                                                                             |
| Land                         | As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in schedules 3 and 4 of this consent                                                                                                                                                                                                                                |

|                                  |                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | where it is defined to mean the whole of a lot, or contiguous lots, owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent                                                      |
| Material harm to the environment | Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial                                                                                                                                    |
| m                                | Metres                                                                                                                                                                                                                                   |
| Minister                         | Minister for Planning, or delegate                                                                                                                                                                                                       |
| Mitigation                       | Activities associated with reducing the impacts of the development                                                                                                                                                                       |
| Negligible                       | Small and unimportant, such as to be not worth considering                                                                                                                                                                               |
| Night                            | The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays                                                                                                                                        |
| NP&W Act                         | <i>National Parks and Wildlife Act 1974</i>                                                                                                                                                                                              |
| OEH                              | NSW Office of Environment and Heritage                                                                                                                                                                                                   |
| POEO Act                         | <i>Protection of the Environment Operations Act 1997</i>                                                                                                                                                                                 |
| Privately-owned land             | Land that is not owned by a public agency or the Applicant (or its subsidiary)                                                                                                                                                           |
| Quarrying operations             | Includes the removal of overburden and extraction, handling, storage and transportation of extractive materials on site                                                                                                                  |
| Raw materials                    | Raw materials imported for use in brick making including clay/shale and additives (such as manganese and iron oxides)                                                                                                                    |
| Reasonable                       | Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements |
| Rehabilitation                   | The restoration of land disturbed by the development to a good condition, ensuring that it is safe, stable and non-polluting and appropriately revegetated                                                                               |
| RMS                              | Roads and Maritime Services                                                                                                                                                                                                              |
| Secretary                        | Secretary of the Department, or nominee                                                                                                                                                                                                  |
| SEE (Mod 1)                      | Statement of Environmental Effects titled ' <i>Section 96(1A) Modification Supporting Information</i> ' dated August 2016 and prepared by Element Environment, including the Response to Submissions document dated September 2016       |
| Site                             | The land listed under "Land" in schedule 1                                                                                                                                                                                               |
| Shoulder                         | The period between 6am to 7am on Monday to Saturday                                                                                                                                                                                      |
| South West Growth Centre         | An area of land identified under the Growth Centres SEPP                                                                                                                                                                                 |

## SCHEDULE 2 ADMINISTRATIVE CONDITIONS

### OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant **must** implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

### TERMS OF CONSENT

2. The Applicant **must**:
  - (a) carry out the development generally in accordance with the EIS **and SEE (Mod 1)**; and
  - (b) the conditions of this consent.

*Note: The general layout of the development is shown in Appendix 2.*

3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
4. The Applicant **must** comply with any reasonable requirement/s of the Secretary arising the Department's assessment of:
  - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent;
  - (b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; or
  - (c) the implementation of any actions or measures contained in these documents.

### LIMITS ON CONSENT

#### Quarrying and Brick Making Operations

5. The Applicant may carry out quarrying **operations** and brick making operations from the date of commencement of development under this consent until 1 March 2045.

*Note: Under this consent, the Applicant is required to rehabilitate the site and carry out additional undertakings to the satisfaction of the Secretary. Consequently, this consent will continue to apply in all other respects other than the right to conduct quarrying operations until the rehabilitation of the site and those undertakings have been carried out to a satisfactory standard.*

#### Production Limits

6. The Applicant **must** not:
  - (a) extract more than 200,000 tonnes of clay/shale from the site in any calendar year;
  - (b) produce more than 263,500 tonnes of bricks at the site in any calendar year;
  - (c) carry out quarrying operations beyond 46 m AHD; and
  - (d) receive more than **321,000** tonnes of raw materials required for brick making to the site in any calendar year.

#### Transportation Limits

7. The Applicant **must** not:
  - (a) transport more than 263,500 tonnes of bricks from the site in a calendar year;
  - (b) receive more than 90 trucks to the site per day or more than 18 trucks per hour; and
  - (c) dispatch more than 90 trucks from the site per day or more than 18 trucks per hour.

### NOTIFICATION OF COMMENCEMENT

8. **Prior to commencing development under this consent, the Applicant must notify the Department in writing of the date on which it will commence development permitted under this consent.**

## **SURRENDER OF EXISTING DEVELOPMENT CONSENT**

9. Within 4 months of commencing development under this consent, the Applicant must surrender the development consent (DA 91/1194) for existing operations on the site in accordance with Section 104A of the EP&A Act.

Following the commencement of development under this consent, the conditions of this consent (including any notes) shall prevail to the extent of any inconsistency with the conditions of the existing development consent (DA 91/1194).

## **STRUCTURAL ADEQUACY**

10. The Applicant must ensure that any new buildings and structures, and any alterations, or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

*Notes:*

- Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.

## **DEMOLITION**

11. The Applicant must ensure that all demolition work on site is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

## **PROTECTION OF PUBLIC INFRASTRUCTURE**

12. The Applicant must:
- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
  - (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

*Note: This condition does not apply to any damage to roads caused as a result of general road usage.*

## **OPERATION OF PLANT AND EQUIPMENT**

13. The Applicant must ensure that all plant and equipment used on site or any monitoring equipment used off site for monitoring the performance of the development is:
- (a) maintained in a proper and efficient condition; and
  - (b) operated in a proper and efficient manner.

## **UPDATING AND STAGING STRATEGIES, PLANS OR PROGRAMS**

14. With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.

To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval.

With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.

*Notes:*

- While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times.
- If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.

15. Until they are replaced by an equivalent strategy, plan or program approved under this consent, the Applicant **must** implement the existing strategies, plans or programs for the site that have been approved under DA 91/1194.

#### **IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION**

16. Prior to undertaking quarrying operations in the extension area, the Applicant **must**:
- (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the development area; and
  - (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.
17. While quarrying operations are being carried out, the Applicant **must** ensure that these boundaries are clearly marked at all times to allow operating staff and inspecting officers to clearly identify the approved limits of extraction.

#### **PRODUCTION DATA**

18. The Applicant **must**:
- (a) provide annual quarry production data to DRE using the standard form for that purpose; and
  - (b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).

#### **DEVELOPER CONTRIBUTIONS**

19. The Applicant **must** pay Camden Council road maintenance contributions of \$0.0811 for every tonne of material transported to and from the site, indexed to CPI. Each payment must be:
- (a) paid to Council at the end of each calendar year; and
  - (b) based on weighbridge records of all supplementary brick making materials transported to the site and bricks and spoil transported from the site.

*Note: If the parties are not able to agree on any aspect of the maintenance contributions, either party may refer the matter to the Secretary for resolution.*

### SCHEDULE 3 ENVIRONMENTAL PERFORMANCE CONDITIONS

#### HOURS OF OPERATION

- The Applicant **must** comply with the operating hours set out in Table 1.

Table 1: Operating Hours

| Activity                                                                                                                        | Operating Hours                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Quarrying operations</li> <li>Deliveries</li> <li>Dispatch of finished bricks</li> </ul> | 6am to 6pm, Monday to Friday<br>6am to 1pm, Saturday<br>No activities on Sundays or Public Holidays                    |
| Brick making operations (except dispatch of finished bricks)                                                                    | 24 hours a day, 7 days a week                                                                                          |
| Construction activities                                                                                                         | 7am to 6pm, Monday to Friday<br>8am to 1pm, Saturday<br>No construction to be undertaken on Sundays or Public Holidays |

#### NOISE

##### Noise Criteria

- The Applicant **must** ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise criteria dB(A)

| Activity                   | Receiver            | Day/Evening/Shoulder           | Night                          |                            |
|----------------------------|---------------------|--------------------------------|--------------------------------|----------------------------|
|                            |                     | <i>L<sub>Aeq</sub>(15 min)</i> | <i>L<sub>Aeq</sub>(15 min)</i> | <i>L<sub>A1</sub>(max)</i> |
| Brick making and quarrying | R1, R2              | 47                             | Not Applicable                 |                            |
|                            | R3, R4, R14         | 46                             |                                |                            |
|                            | R15, R17            | 45                             |                                |                            |
|                            | All other receivers | 44                             |                                |                            |
| Brick making               | All receivers       | 44                             | 43                             | 53                         |

Notes:

- To locate the receivers referred to in Table 2 refer to Appendix 3.
- After the first review on any EPL granted for this development under Section 78 of the POEO Act, nothing in this consent prevents the EPA from imposing stricter noise limits on the quarrying operations on site under the EPL.

Appendix 5 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner/s to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

##### Construction Noise

- The Applicant **must** manage noise generated during the construction of the new site access road and associated road alignment works, and the noise bund adjacent to Greendale Road, in accordance with the guidelines specified in Table 2 of the *Interim Construction Noise Guideline*.

Note: Management guidelines are applicable to receivers 3 and 4, shown in Appendix 3.

## Noise Bunds

4. The Applicant must ensure that the noise bund adjacent to the northern boundary of the extraction area is constructed prior to the commencement of quarrying operations in the extension area.
- 4A. The Applicant must ensure that the noise bund adjacent to Greendale Road is constructed prior to the commencement of brick making operations.

## Operating Conditions

5. The Applicant **must**:
  - (a) implement all reasonable and feasible mitigation measures to minimise construction, operational and road noise of the development;
  - (b) implement periods of respite during the construction of the new site access road and associated road alignment works, and the noise bund adjacent to Greendale Road;
  - (c) regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this consent;
  - (d) maintain the effectiveness of noise suppression equipment on plant and equipment on site;
  - (e) minimise the noise impacts of the development during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 5); and
  - (f) carry out regular noise monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Secretary.

## Noise Management Plan

6. The Applicant **must** prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
  - (a) be prepared in consultation with the EPA;
  - (b) be submitted to the Secretary for approval prior to the commencement of **development** under this consent, unless the Secretary agrees otherwise;
  - (c) describe the reasonable and feasible mitigation measures that would be implemented to ensure:
    - construction noise is minimise;
    - compliance with the relevant noise criteria and operating conditions in this consent;
    - best management practice is being employed; and
    - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply;
  - (d) describe the proposed noise management system on site; and
  - (e) include a quarterly (or as otherwise agreed with the Secretary) noise monitoring program that:
    - uses attended monitoring to evaluate the compliance of the development against the noise criteria in this consent;
    - evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
    - defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

## AIR QUALITY

### Air Quality Criteria

7. The Applicant **must** implement all reasonable and feasible avoidance and mitigation measures so that particulate matter emissions generated by the development do not exceed the criteria in Tables 3 to 6 at any residence on privately-owned land.

Table 3: Long-Term Criteria for Particulate Matter

| Pollutant                                      | Averaging period | <sup>a</sup> Criterion            |
|------------------------------------------------|------------------|-----------------------------------|
| Total suspended particulates (TSP)             | Annual           | <sup>a</sup> 90 µg/m <sup>3</sup> |
| Particulate matter < 10 µm (PM <sub>10</sub> ) | Annual           | <sup>a</sup> 30 µg/m <sup>3</sup> |

Table 4: Short-Term Criteria for Particulate Matter

| Pollutant                                      | Averaging period | <sup>d</sup> Criterion            |
|------------------------------------------------|------------------|-----------------------------------|
| Particulate matter < 10 µm (PM <sub>10</sub> ) | 24 hour          | <sup>a</sup> 50 µg/m <sup>3</sup> |

Table 5: Long-Term Criteria for Deposited Dust

| Pollutant                   | Averaging Period | Maximum increase in deposited dust level | Maximum total deposited dust level     |
|-----------------------------|------------------|------------------------------------------|----------------------------------------|
| <sup>c</sup> Deposited dust | Annual           | <sup>b</sup> 2 g/m <sup>2</sup> /month   | <sup>a</sup> 4 g/m <sup>2</sup> /month |

Table 6: Long and Short-Term Stack Emissions

| Pollutant         | Averaging period | <sup>d</sup> Criterion |
|-------------------|------------------|------------------------|
| Sulphur Dioxide   | 10-minute        | 712 µg/m <sup>3</sup>  |
|                   | 1-Hour           | 570 µg/m <sup>3</sup>  |
|                   | 24-Hour          | 228 µg/m <sup>3</sup>  |
|                   | Annual           | 60 µg/m <sup>3</sup>   |
| Nitrogen Dioxide  | 1-Hour           | 246 µg/m <sup>3</sup>  |
|                   | Annual           | 62 µg/m <sup>3</sup>   |
| Hydrogen Chloride | 1 hour           | 0.14 mg/m <sup>3</sup> |

Notes to Tables 3-6:

- <sup>a</sup> Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
- <sup>b</sup> Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
- <sup>c</sup> Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.
- <sup>d</sup> Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.

## Operating Conditions

8. The Applicant **must**:
  - (a) implement all reasonable and feasible measures to minimise the stack and dust emissions of the development;
  - (b) minimise surface disturbance and maximise progressive rehabilitation;
  - (c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note (d) to Tables 3-6 above); and
  - (d) monitor and report on compliance with the relevant air quality conditions in this consent; to the satisfaction of the Secretary.

## Air Quality Management Plan

9. The Applicant **must** prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
  - (a) be prepared in consultation with the EPA;
  - (b) be submitted to the Secretary for approval prior to the commencement of **development** under this consent, unless the Secretary agrees otherwise;
  - (c) describe the measures that would be implemented to ensure:
    - compliance with the air quality criteria and operating conditions under this consent;
    - best practice management is being employed; and
    - the air quality impacts of the development are minimised during adverse meteorological conditions;
  - (d) describe the air quality management system; and
  - (e) include an air quality monitoring program that:
    - evaluates and reports on:
      - the effectiveness of the air quality management system; and
      - compliance with the air quality criteria and operating conditions; and
    - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

## METEOROLOGICAL MONITORING

10. For the life of the development, the Applicant **must** ensure that there is a suitable meteorological station operating in the vicinity of the site that:
- (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline; and
  - (b) is capable of continuous measurement of stability class, in accordance with the *NSW Industrial Noise Policy*, or as otherwise approved by EPA.

## TRANSPORT

### Monitoring of Product Transport

11. The Applicant **must** keep accurate records of the:
- (a) **tonnage** of bricks transported from the site (monthly and annually);
  - (b) amount of raw material imported to the site (monthly and annually); and
  - (c) **tonnage of each type of raw materials imported to the site (monthly and annually);** and provide the Secretary with a summary of this information upon request.

### Parking

12. The Applicant **must** provide sufficient parking on-site for all development-related traffic, in accordance with Camden Council's parking codes, to the satisfaction of the Secretary.

### Operating Conditions

13. The Applicant **must** ensure that:
- (a) all development-related heavy vehicles enter and exit the site in a forward direction;
  - (b) all laden vehicles entering or exiting the site have their loads covered (with the exception of vehicles carrying bricks);
  - (c) all laden vehicles that have accessed the extraction and/or stockpile areas are cleaned of sand and other material that may fall on the road, before leaving the site;
  - (d) all heavy vehicles exiting the site travel east of the site along Greendale Road to The Northern Road and/or Bringelly Road;
  - (e) the dispatch of laden trucks is avoided during the peak drop-off and pick-up times at the Bringelly Public School to the greatest extent practicable, particularly prior to the upgrade of the Greendale Road/Bringelly Road intersection by RMS; and
  - (f) no trucks queue at the entrance to the site before 6am.

### Access Road Intersection Construction

14. Within 12 months of commencing development under this consent, unless otherwise agreed with the Secretary, the Applicant must design and construct the new site access road intersection with Greendale Road in accordance with applicable AUSTROADS standards, to the satisfaction of Camden Council. The Applicant must notify the Secretary in writing within 30 days of obtaining Council approval.

Within 7 days of completing construction and the new site access road being operational, the existing site access road must be permanently closed.

### Transport Management Plan

15. The Applicant **must** prepare a Transport Management Plan for the development to the satisfaction of the Secretary. This plan must:
- (a) be prepared in consultation with RMS, Camden Council, Liverpool City Council and Bringelly Public School, and be submitted to the Secretary for approval prior to the commencement of **development** under this consent, unless the Secretary agrees otherwise;
  - (b) describe the measures that would be implemented to ensure compliance with the transport operating conditions under this consent, including specific measures to avoid **the arrival and**

- dispatch of laden trucks from the site during the peak drop-off and pick-up times at the Bringelly Public School;
- (c) include a Code of Conduct for heavy vehicle drivers that addresses:
- travelling speeds;
  - procedures to minimise noise including a regular Truck Noise Auditing Program;
  - procedures to minimise diesel exhaust emissions;
  - instructions to avoid grouping or convoying of trucks;
  - procedures to ensure that drivers adhere to the designated haulage routes and the haulage hours permitted under this consent;
  - instructions to drivers not to overtake each other on the haulage route, as far as practicable, and to maintain appropriate distances between vehicles; and
  - instruction to drivers to be properly safety conscious and to strictly obey all traffic regulations, particularly in relation to school zones along Greendale Road; and
- (d) describe the measures that would be put in place to ensure compliance with the drivers' Code of Conduct and include a program to monitor the effectiveness of the implementation of these measures.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

## SOIL AND WATER

*Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development, including in respect of the extraction and/or interception of groundwater.*

### Water Supply

16. The Applicant **must** ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply to the satisfaction of the Secretary.

### Water Discharges

17. The Applicant **must** comply with the discharge limits in any EPL or with Section 120 of the POEO Act.

### Water Management Plan

18. The Applicant **must** prepare a Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
- (a) be prepared by suitably qualified person/s approved by the Secretary;
  - (b) be prepared in consultation with the EPA and **DPI Water**;
  - (c) be submitted to the Secretary for approval **prior to the commencement of development under this consent**, unless the Secretary agrees otherwise;
  - (d) include a Site Water Balance that:
    - includes details of:
      - quantity of water required to support operations;
      - sources and security of water supply;
      - water use and management on site;
      - reporting procedures; and
      - measures to be implemented to minimise potable water use on site;
  - (e) include a Surface Water Management Plan, that includes:
    - baseline data on surface water flows and quality in the watercourses that could be affected by the development;
    - a description of the surface water management system on site, including:
      - clean water diversions;
      - erosion and sediment controls;
      - the dirty water management system; and
      - water storages (addressing maximum harvestable rights if applicable);
    - performance criteria, including trigger levels for investigating any potentially adverse surface water quality impacts;
    - a program to monitor and report on:
      - any surface water discharges;

- the effectiveness of the water management system; and
  - surface water flows and quality in local watercourses;
  - a plan to respond to any exceedances of the performance criteria.
- (f) a Groundwater Management Plan, which includes:
- baseline data on groundwater levels, yield and quality in surrounding aquifers;
  - groundwater assessment and performance criteria, including trigger levels for investigating potentially adverse groundwater impacts;
  - a program to monitor:
    - groundwater inflows to the quarry pit; and
    - impacts of the development on surrounding aquifers;
  - an analysis of the monitoring results to determine long-term water levels within the quarry void; and
  - a plan to respond to any exceedances of the performance criteria.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

## BIODIVERSITY

### Biodiversity Offset Strategy

19. The Applicant **must** implement the Biodiversity Offset Strategy described in the EIS, as summarised in Table 7 and shown conceptually in Appendix 4, to the satisfaction of the Secretary.

Table 7: Summary of the Biodiversity Offsets

| Area           | Offset Criteria                                                                                                                          | Size (Ha) |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| On-site offset | Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland. | 1.93      |

### Security of Offsets

20. Within 2 years of **notifying the Department of commencement of development (see condition 8 of Schedule 2)**, unless otherwise agreed with the Secretary, the Applicant **must** make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.

*Note: Mechanisms to provide appropriate long term security to the land within the Biodiversity Offset Strategy include a Biobanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.*

### Biodiversity Management Plan

21. The Applicant **must** prepare a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must:
- (a) be prepared in consultation with the OEH and Camden Council;
  - (b) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;
  - (c) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
  - (d) describe the short, medium, and long term measures that would be implemented to:
    - manage the remnant vegetation and habitat on the site and in the offset area and;
    - implement the biodiversity offset strategy, including detailed performance and completion criteria;
  - (e) include performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);
  - (f) include a description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:
    - maximising the salvage of resources within the approved disturbance area - including vegetative, soil and cultural heritage resources – for beneficial reuse in the enhancement of the biodiversity areas or rehabilitation area;

- minimising the impacts on fauna on site, including pre-clearance surveys and minimising the potential exposure to tailings;
  - controlling weeds and feral pests;
  - controlling erosion;
  - controlling access; and
  - bushfire management;
- (g) identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and
- (h) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

The Applicant must implement the approved management plan as approved from time to time by the Secretary.

## Conservation Bond

22. Within 6 months of the approval of the Biodiversity Management Plan, the Applicant **must** lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan.

The sum of the bond **must** be determined by:

- a. calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and
- b. employing a suitably qualified quantity surveyor to verify the calculated costs,
- c. to the satisfaction of the Secretary.

The calculation of the conservation bond must be submitted to the Department for approval at least 1 month prior to lodgement of the final bond.

If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond.

If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary will call in all, or part of, the conservation bond, and arrange for the satisfactory completion of the relevant works.

Notes:

- Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate (or any other mechanism agreed with OEH) can be used to reduce the liability of the conservation bond.
- The sum of the bond may be reviewed in conjunction with any revision to the biodiversity offset strategy or the completion of major milestones within the approved plan.

## REHABILITATION

### Rehabilitation Objectives

23. The Applicant **must** rehabilitate the site to the satisfaction of the Secretary. Rehabilitation must:
- a. comply with the objectives in Table 8; and
  - b. be generally consistent with the proposed rehabilitation strategy in the EIS, and the final land form shown conceptually in Appendix 4 (unless modified by the Final Land Use Options Plan, prepared in accordance with condition 25 of this consent).

Table 8: Rehabilitation Objectives

| Feature           | Objective                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site (as a whole) | <ul style="list-style-type: none"> <li>• Safe, stable and non-polluting</li> <li>• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat</li> </ul> |

|                        |                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surface infrastructure | <ul style="list-style-type: none"> <li>To be decommissioned and removed (unless the Secretary agrees otherwise)</li> </ul>                                                       |
| Final void             | <ul style="list-style-type: none"> <li>Minimise the size, depth and slope of the batters of the final void</li> <li>Minimise the drainage catchment of the final void</li> </ul> |
| Quarry pit floor       | <ul style="list-style-type: none"> <li>Landscaped and revegetated using native flora species, above the anticipated final void water level</li> </ul>                            |
| Community              | <ul style="list-style-type: none"> <li>Ensure public safety</li> </ul>                                                                                                           |

### Progressive Rehabilitation

24. The Applicant **must** rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

### Final Land Use Options Plan

25. The Applicant **must** prepare a Final Land Use Options Plan for the site to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with DRE and Camden Council;
  - be submitted to the Secretary for approval within 2 years of the date of [notifying the Department of commencement of development \(see condition 8 of Schedule 2\)](#), unless the Secretary agrees otherwise;
  - provide details of the conceptual final landform and associated final land uses for the site;
  - ensure that the conceptual final land form is compatible with surrounding land uses, and is consistent with the rehabilitation objectives in Table 8 and the objectives of the Growth Centres SEPP for the South West Growth Centre;
  - inform the Rehabilitation Management Plan (prepared in accordance with condition 26 of this consent); and
  - be reviewed every 7 years to account for applicable land use priorities, and if necessary updated.

### Rehabilitation Management Plan

26. The Applicant **must** prepare a Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with OEH, DRE, [DPI Water](#) and Camden Council;
  - be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;
  - provide details of the conceptual final landform and associated land uses for the site (which must be consistent with the Final Land Use Options Plan under condition 25 of this consent);
  - describe the short, medium and long term measures that would be implemented to:
    - manage remnant vegetation and habitat on site; and
    - ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;
  - include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, including triggers for any necessary remedial action;
  - include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and
  - include details of who would be responsible for monitoring, reviewing, and implementing the plan.

[The Applicant must implement the approved management plan as approved from time to time by the Secretary.](#)

*Note: The Rehabilitation Management Plan must be reviewed, and if necessary updated, following any update of the Final Land Use Options Plan.*

## HERITAGE

### Heritage Management Plan

27. The Applicant **must** prepare a Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with OEH;
  - (a) be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise;
  - b. describe the measures that would be implemented to:
    - manage identified heritage objects, previously unidentified heritage objects or the discovery of any human remains on site;
    - ensure ongoing consultation with Aboriginal stakeholders in the conservation and management of any Aboriginal cultural heritage values on site; and
    - protect sites identified adjacent to the development.

The Applicant **must** implement the approved management plan as approved from time to time by the Secretary.

## VISUAL

28. The Applicant **must** establish a vegetation screen on both noise bunds, as soon as practicable after construction of the bunds, to minimise visibility of site infrastructure from outside the development area. Following establishment, the Applicant **must** maintain the vegetation screen, to the satisfaction of the Secretary.
29. The Applicant **must**:
- implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development; and
  - b) ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*, or its latest version.

## BUSHFIRE MANAGEMENT

30. The Applicant **must**:
- ensure that the development is suitably equipped to respond to any fires on site; and
  - b) assist the Rural Fire Service, emergency services and National Parks and Wildlife Service as much as practicable if there is a fire in the surrounding area.

## WASTE

31. Prior to importing onto the site any material that may be classified as a waste under the EPA *Waste Classification Guidelines 2009* (or its latest version), the Applicant must obtain a 'resource recovery exemption' under the POEO Act and provide evidence of this exemption to the Department.

*Note: This condition does not apply to routine deliveries to the site.*

32. The Applicant **must**:
- manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Camden Council; and
  - b) pump all sewage generated and stored on-site to a sewage treatment facility, unless otherwise agreed with the Secretary.
33. The Applicant **must**:
- minimise the waste generated by the development;
  - b) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
  - c) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.

## **SCHEDULE 4 ADDITIONAL PROCEDURES**

### **NOTIFICATION OF LANDOWNERS**

1. As soon as practicable after obtaining monitoring results showing an exceedance of any relevant criteria in schedule 3, the Applicant **must** notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria.

### **INDEPENDENT REVIEW**

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant **must**:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
  - consult with the landowner to determine his/her concerns;
  - conduct monitoring to determine whether the development is complying with the relevant criteria in schedule 3;
  - if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and
- (b) give the Secretary and landowner a copy of the independent review.

**SCHEDULE 5**  
**ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING**

**ENVIRONMENTAL MANAGEMENT**

**Environmental Management Strategy**

1. If the Secretary requires, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
  - (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Applicant;
  - (b) provide the strategic framework for environmental management of the development;
  - (c) identify the statutory approvals that apply to the development;
  - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
  - (e) 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;
    - receive, handle, respond to, and record complaints;
    - resolve any disputes that may arise during the course of the development;
    - respond to any non-compliance;
    - respond to emergencies; and
  - (f) include:
    - copies of any strategies, plans and programs approved under the conditions of this consent; and
    - a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

The Applicant must implement any Environmental Management Strategy as approved from time to time by the Secretary.

**Adaptive Management**

2. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.

**Management Plan Requirements**

3. The Applicant must ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include:
  - (a) detailed baseline data;
  - (b) a description of:
    - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
    - any relevant limits or performance measures/criteria; and
    - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
  - (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
  - (d) a program to monitor and report on the:

- impacts and environmental performance of the development; and
- effectiveness of any management measures (see (c) above);
- (e) a contingency plan to manage any unpredicted impacts and their consequences;
- (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
- (g) a protocol for managing and reporting any:
  - incidents;
  - complaints;
  - non-compliances with statutory requirements; and
  - exceedances of the impact assessment criteria and/or performance criteria; and
- (h) a protocol for periodic review of the plan.

*Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

#### **Annual Review**

4. By the end of September each year, the Applicant [must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary](#). This review must:
  - (a) describe the development (including rehabilitation) that was carried out in the previous [financial](#) year, and the development that is proposed to be carried out over the current [financial](#) year;
  - (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous [financial](#) year, which includes a comparison of these results against:
    - the relevant statutory requirements, limits or performance measures/criteria;
    - the monitoring results of previous years; and
    - the relevant predictions in the [documents in condition 2\(a\) of Schedule 2](#);
  - (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
  - (d) identify any trends in the monitoring data over the life of the development;
  - (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
  - (f) describe what measures will be implemented over the current [financial](#) year to improve the environmental performance of the development.

#### **Revision of Strategies, Plans and Programs**

5. [Within 3 months of the submission of an:](#)
  - (a) [Annual Review under condition 4 above;](#)
  - (b) [incident report under condition 7 below;](#)
  - (c) [audit report under condition 9 below; and](#)
  - (d) [any modifications to this consent,](#)
 the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.

*Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.*

#### **Community Consultative Committee**

6. The Applicant [must](#) establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the [Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments](#) (Department of Planning, 2007, or its latest version), and be operating [prior to the commencement of development under this consent](#).

*Notes:*

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*

- In accordance with the guideline, the Committee should comprise an independent chair and appropriate representation from the Applicant, Camden Council and the local community.

## REPORTING

### Incident Reporting

7. The Applicant **must** immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant **must** provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

### Regular Reporting

8. The Applicant **must** provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

## INDEPENDENT ENVIRONMENTAL AUDIT

9. Within a year of **commencing development under this consent**, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant **must** commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
  - (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
  - (b) include consultation with the relevant agencies;
  - (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);
  - (d) review the adequacy of any approved strategy, plan or program required under these approvals;
  - (e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals; **and be conducted and reported to the satisfaction of the Secretary.**

*Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.*

10. Within **12 weeks of commencing** this audit, unless the Secretary agrees otherwise, the Applicant **must** submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.

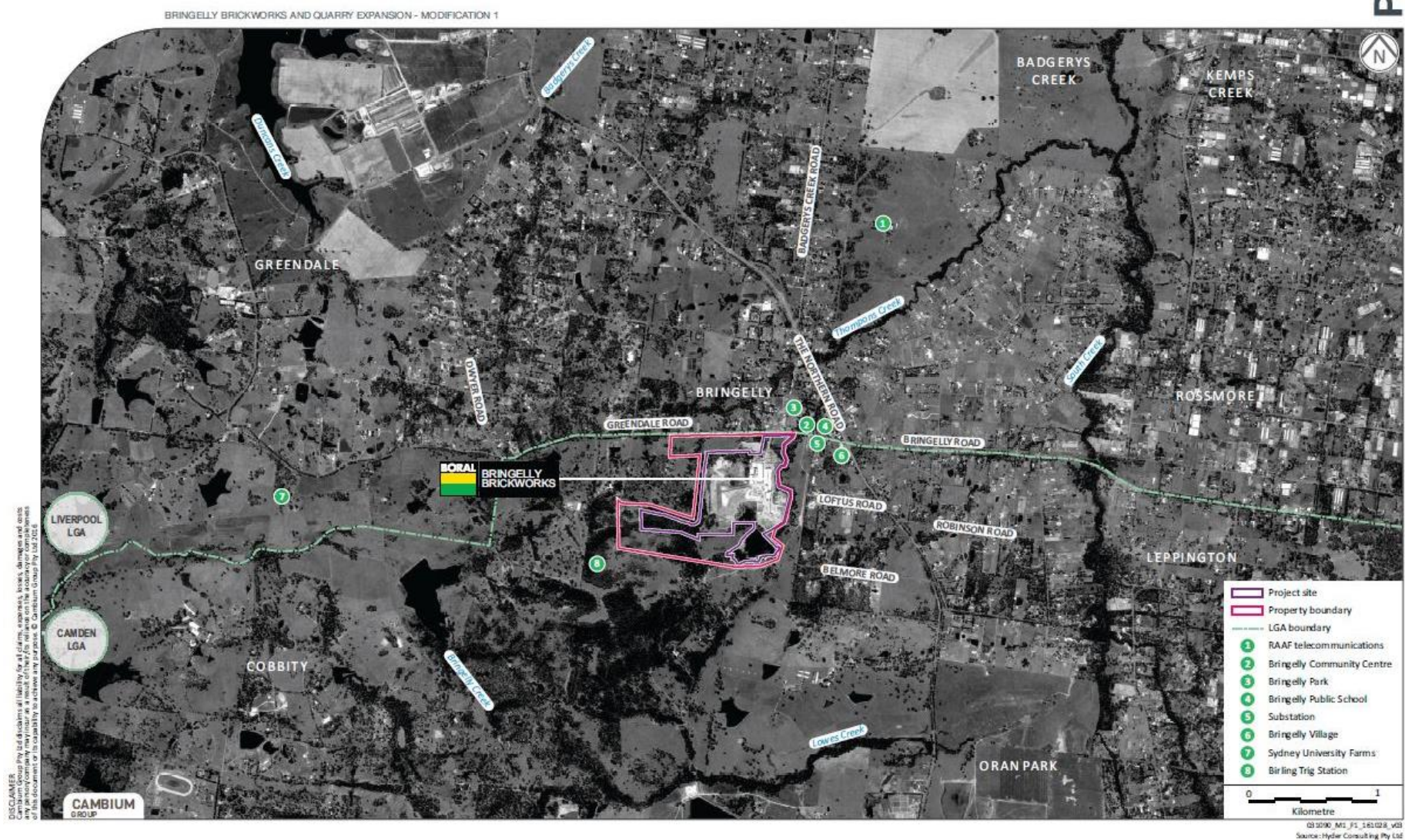
**Within 7 days of commencing the audit, the Applicant must notify the Department in writing of the commencement of the audit.**

## ACCESS TO INFORMATION

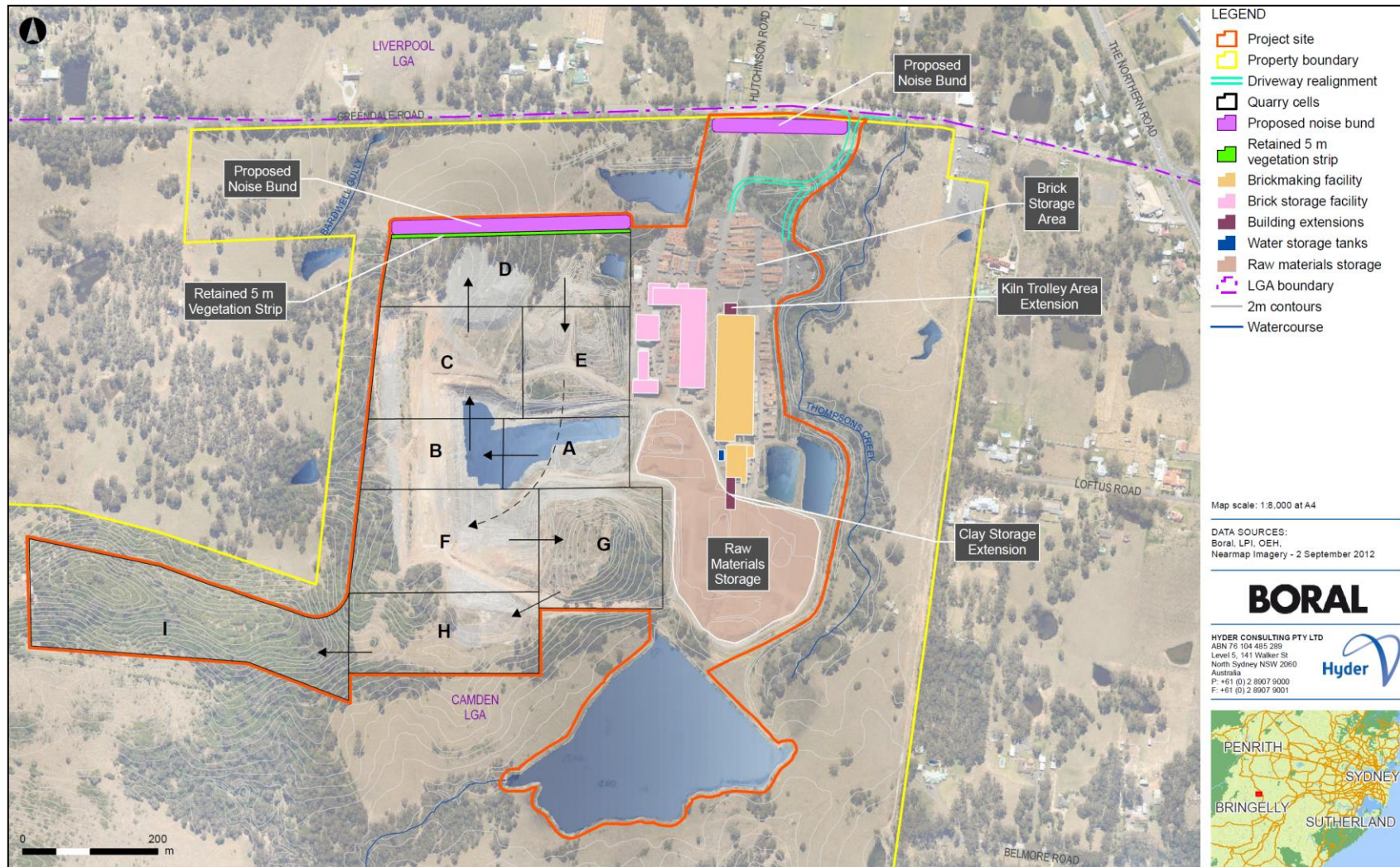
11. Within 6 months of **commencing development under this consent**, the Applicant **must**:
  - (a) make copies of the following publicly available on its website:
    - the documents in **condition 2(a) of Schedule 2**;
    - current statutory approvals for the development;
    - approved strategies, plans and programs required under the conditions of this consent;
    - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
    - a complaints register, which is to be updated monthly;
    - minutes of CCC meetings;
    - the annual reviews of the development (for the last 5 years);
    - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
    - any other matter required by the Secretary; and

(b) keep this information up-to-date,  
to the satisfaction of the Secretary.

## APPENDIX 1 DEVELOPMENT AREA



## APPENDIX 2 DEVELOPMENT LAYOUT



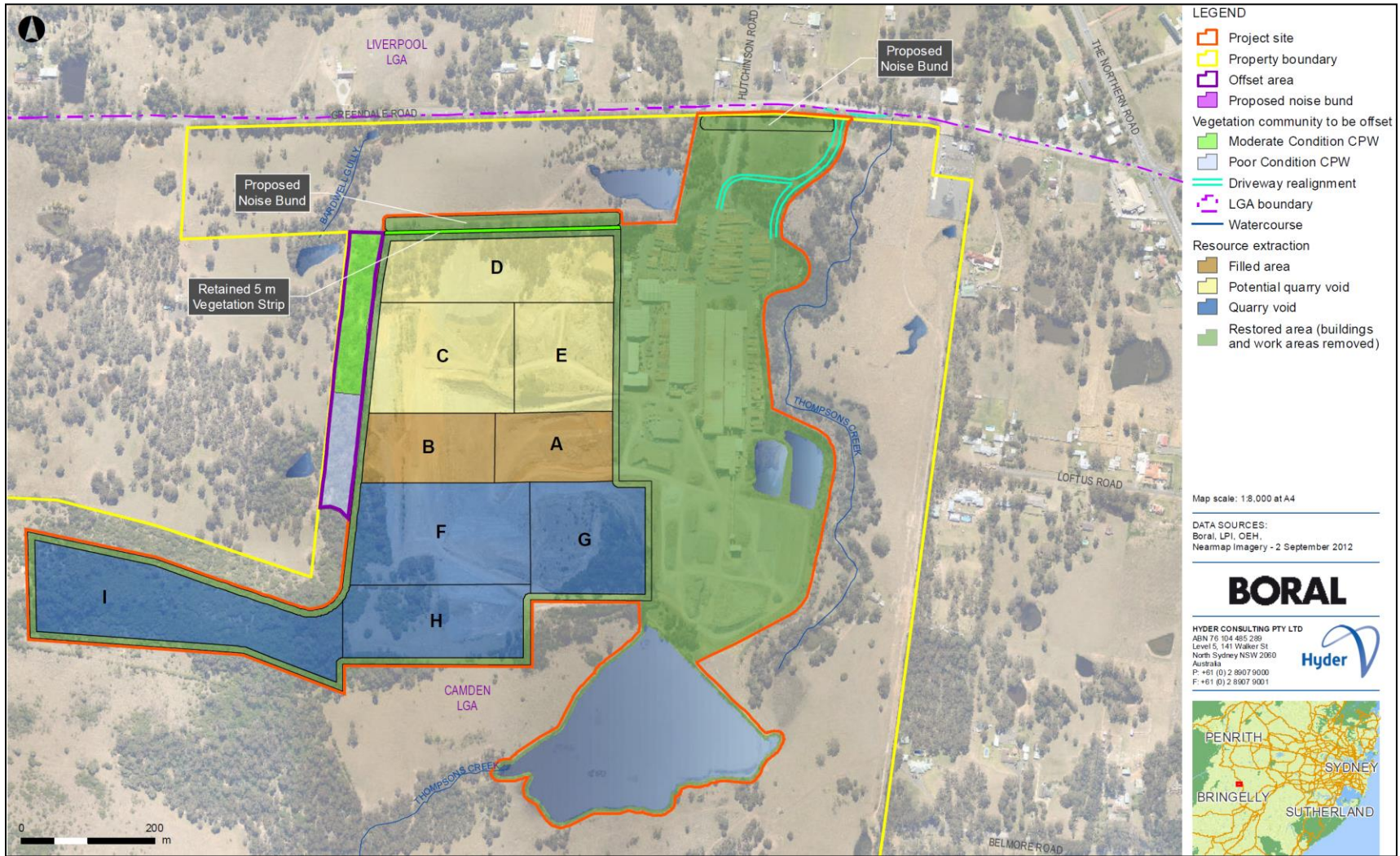
### APPENDIX 3 RECEIVER LOCATIONS



| Receiver number | Receiver address                              |
|-----------------|-----------------------------------------------|
| 1               | 55 Loftus Road                                |
| 2               | 54 Loftus Road                                |
| 3               | 20 Greendale Road                             |
| 4               | 9 Greendale Road                              |
| 5               | 5 Greendale Road (Bringelly Community Centre) |
| 6               | 46 Loftus Road                                |
| 7               | 36 Loftus Road                                |
| 8               | 47 Loftus Road                                |
| 9               | 37 Loftus Road                                |
| 10              | 27 Loftus Road                                |
| 11              | 26 Loftus Road                                |
| 12              | 15 Loftus Road                                |
| 13              | 5 Loftus Road                                 |
| 14              | 23 Greendale Road                             |
| 15              | 27 Greendale Road                             |
| 16              | 29 Greendale Road                             |
| 17              | 25 Greendale Road                             |
| 18              | 31 Greendale Road                             |
| 19              | 35 Greendale Road                             |
| 20              | 170 Tyson Road                                |
| 21              | 196 Greendale Road                            |
| 22              | 46 Belmore Road                               |
| 23              | 55 Belmore Road                               |
| 24              | 63 Belmore Road                               |
| 25              | 67 Belmore Road                               |
| 26              | 73 Belmore Road                               |
| 27              | 83-85 Belmore Road                            |
| 28              | 76 Belmore Road                               |
| 29              | 86 Belmore Road                               |
| 30              | 87 Belmore Road                               |
| 31              | 93 Belmore Road                               |
| 32              | 95-97 Belmore Road                            |
| 33              | 107 Belmore Road                              |
| 34              | 96 Belmore Road                               |
| 35              | 108 Belmore Road                              |
| 36              | 1037 Northern Road                            |
| 37              | 10 Greendale Road                             |
| 38              | Bringelly Public School                       |

## APPENDIX 4

### CONCEPTUAL FINAL LANDFORM AND BIODIVERSITY OFFSET STRATEGY



## **APPENDIX 5 NOISE COMPLIANCE ASSESSMENT**

### **Applicable Meteorological Conditions**

1. The noise criteria in Table 2 of the conditions are to apply under all meteorological conditions except the following:
  - (a) wind speeds greater than 3 m/s at 10 m above ground level; or
  - (b) temperature inversion conditions between 1.5 °C and 3°C/100 m and wind speeds greater than 2 m/s at 10 m above ground level; or
  - (c) temperature inversion conditions greater than 3°C/100 m.

### **Determination of Meteorological Conditions**

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions **must** be that recorded by the meteorological station on or in the vicinity of the site.

### **Compliance Monitoring**

3. Unless directed otherwise by the Secretary, quarterly attended monitoring is to be used to evaluate compliance with the relevant conditions of consent.

*Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the development.*

4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
  - (a) monitoring locations for the collection of representative noise data;
  - (b) meteorological conditions during which collection of noise data is not appropriate;
  - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
  - (d) modifications to noise data collected including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

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