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Bringelly Brickworks
Noise Management Plan

GLOSSARY AND ABBREVIATIONS

BCB	Boral CSR Bricks Pty Ltd, trading as PGH Bricks & Pavers
Boral	Boral Bricks Pty Limited
CoA	Conditions of Approval for SSD_5684, including Modification 1
CSR	CSR Limited
DP&E	Department of Planning & Environment
EIS	Bringelly Brickworks Quarry Extension Environmental Impact Statement (Hyder Consulting, 5 September 2013)
EMS	Environmental Management Strategy
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
INP	NSW Industrial Noise Policy (EPA 2000)
NMP	Noise Management Plan
OEH	NSW Office of Environment & Heritage
PIRMP	Pollution Incident Response Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
RBL	Rating Background Level
RTS	Bringelly Brickworks Quarry Extension Response to Submissions
SAP	Sensitive Area Plan
Secretary, the	The Secretary of the DP&E
SSD	State Significant Development
WMS	Work method statements

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1 INTRODUCTION

1.1 Context

This Noise Management Plan (NMP or Plan) forms part of the Environmental Management Strategy (EMS) for Bringelly Brickworks (the facility). The Plan has been prepared following the approval of the Bringelly Brickworks Extension Project (SSD_5684) on 3 March 2015 and a Section 96(1A) modification application (MOD1) which was determined on 31 October 2016.

This NMP has been prepared to address the requirements of the CoA as updated following the determination of MOD 1, the mitigation measures listed in the *Bringelly Brickworks Quarry Extension Environmental Impact Statement* (EIS) (Hyder Consulting, 5 September 2013) and applicable legislation identified in this Plan.

On 1 May 2015, CSR Limited (CSR) and Boral Limited (Boral) formally completed the establishment of a joint venture for brick manufacturing operations located in New South Wales, Victoria, Queensland, South Australia, Tasmania and the ACT. Ownership of Bringelly Brickworks (including quarrying activities) was transferred to the joint venture Boral CSR Bricks Pty Ltd (BCB), trading as PGH Bricks & Pavers. PGH Bricks & Pavers (PGH) is the controlling entity of the facility and responsible for implementing the Environmental Management Strategy of the site. On 31 October 2016 CSR agreed to acquire Boral's interest in BCB, therefore resulting in CSR owning 100% of PGH.

Bringelly Brick Works currently operates under DA 91/1194, however approval for State Significant Development (SSD 5684) was issued in March 2015 for the extension of the quarry and to upgrade ancillary infrastructure.

Schedule 2, Condition 9 of SSD 5684 requires PGH to surrender DA 91/1194 within 4 months of commencing development, as approved in SSD 5684.

In anticipation for the future surrender of DA 91/1194, draft management plans were prepared in accordance with SSD 5684 and submitted to the Department of Planning and Environment (DP&E) on 21 February 2017 for comment. DP&E provided comments on 15 March 2017, which subsequently necessitated minor updates to some of the draft management plans. These plans were resubmitted on the 3rd of July with further comments received on the 10th of September 2018.

Following an internal meeting with senior PGH management, PGH agreed upon an SSD take-up date of June 2019. PGH have appointed a project implementation team in order to meet all relevant requirements.

1.2 Background

Bringelly Brickworks (the facility) is a clay/shale quarry and brick making facility located at 60 Greendale Road, Bringelly, on Lot 100 in DP 1203966 and comprises an area of approximately 104 hectares in the Camden Local Government Area. The facility has been in operation since 1968, and in its original form it had the capacity to process approximately 51,500 tonnes of bricks per annum.

In 1991, Boral Bricks (NSW) Pty Limited undertook to upgrade the facility with new technology and increase production to ensure the continued economic viability of the site due to the age of the manufacturing plant and machinery. The Council of the Municipality of Camden, as the approving authority at the time, approved the Development Application on 13 September 1991 (Council ref. DA 91/1194). From 1991 until 2013, the Bringelly Brickworks facility operated under this approval, which permitted (among other things) quarry extraction up to 200,000 tonnes per annum, the receipt of up to 96,000 tonnes of supplementary materials and brick production up to 160,000 tonnes per annum.

In 2013, Boral prepared an Environmental Impact Statement (EIS) to assess the environmental impacts of an increase in production at the facility and continued extraction of the quarry to meet the anticipated demand for its brick products ('Bringelly Brickworks Extension Project', Application No. SSD_5684). The project was determined to be State Significant Development (SSD) under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Clause 8 *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP).

The EIS was publicly exhibited from 6 November 2013 to 9 December 2013. The Department of Planning & Environment (DP&E) received 12 submissions during this period, including 11 from public authorities and 1 submission from the general public who objected to the project due to its potential impacts. While none of the government authorities objected to the project, most raised concerns about its potential impacts and/or made recommendations for managing these impacts.

Boral prepared and submitted an initial Response to Submissions (RTS) to the DP&E in February 2014. However, following receipt of the RTS, DP&E received further correspondence from 7 public authorities which necessitated further consultation between Boral, DP&E and the relevant government authorities.

The additional consultation was resolved and in February 2015 DP&E finalised their Environmental Assessment Report and the Bringelly Brickworks Extension Project was approved with conditions on 3 March 2015.

Since Project Approval, the type of bricks demanded by the market have changed and the BCB joint venture was established. These two critical factors necessitated PGH to review its manufacturing requirements to ensure the most efficient use of all the resources available. To manufacture the bricks demanded by the market, the type, composition and quantity of the raw materials to be imported to Bringelly Brickworks was reconsidered because the type of raw materials required could not be solely extracted from the Bringelly quarry. PGH therefore applied to DP&E to modify SSD_5684 under Section 96(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), to provide for an increased raw material import limit to 321,000 tonnes per annum. MOD1 was approved by DP&E on 31 October 2016. It is anticipated that MOD 2 changes will be approved and taken up by June 2019.

1.3 Environmental Management Document System

The environmental management document system is described in Section 5.1 of the EMS and this NMP forms part of that system.

Management measures identified in this NMP will be addressed in relevant Work Method Statements, environmental procedures and environmental constraint maps.

Work Method Statements (WMS) are approved by the Plant Manager. Operational personnel are required to undertake works in accordance with the safeguards identified in WMS.

Sensitive Area Plans (SAP) provide detailed site-specific environmental constraints. Prior to works commencing, SAP will be consulted to ensure all environmentally sensitive areas are known and identified.

The review, auditing and document control processes for this NMP are described in Sections 8 and 9.

1.4 NMP Approval

The NMP has been prepared in consultation with NSW Environment Protection Authority (EPA) who acknowledged receipt of the Plan in correspondence received on 20 September 2016 (refer Section 5).

This NMP must be endorsed by the Plant Manager and National Workplace Health, Safety and Environmental Manager prior to submission to the Secretary of the Department of Planning & Environment (DP&E).

The NMP is required to be submitted to the Secretary of the DP&E for approval prior to commencing the development approved in SSD_6584, unless the Secretary agrees otherwise.

2 PURPOSE AND OBJECTIVES

2.1 Purpose

The purpose of this Plan is to describe how PGH proposes to manage noise impacts during construction and throughout the operational lifetime of the facility.

2.2 Objectives

The key objective of the NMP is to ensure that noise impacts to the local community are minimised.

To achieve this objective, PGH will undertake the following:

- Identify sensitive receivers and ensure appropriate environmental management measures and procedures are implemented during construction and operational activities to minimise noise impacts to these sensitive receivers;
- Ensure the EIS mitigation measures in **Table 4** and other appropriate noise controls outlined elsewhere in this Plan, are implemented to address the relevant CoA outlined in **Table 1** and other relevant legislation and requirements as described in Section 3 of this NMP; and
- Noise monitoring as detailed in Section 8.1 to confirm compliance with noise criteria specified in Section 8.2.

2.3 Targets

The following targets have been established for the management of noise impacts during the operational lifetime of the facility:

- Ensure full compliance with the relevant legislative requirements;
- Feasible and reasonable noise mitigation measures are implemented to ensure the facility complies with the noise criteria stipulated in the CoA; and
- Complaints from the community and stakeholders are minimised.

3 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

Legislation relevant to noise management includes:

- *Protection of the Environment Operations Act 1997* (POEO Act); and
- *Protection of the Environment Operations (Noise Control) Regulation 2008*.

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this NMP include:

- NSW Industrial Noise Policy (INP) (EPA 2000);
- NSW Road Noise Policy (RNP) (EPA 2011); and
- Interim Construction Noise Guideline (ICNG) (DECC 2009).

3.2 Minister's Conditions of Approval

The CoA relevant to this NMP are listed in **Table 1**. A cross reference is also included to indicate where the condition is addressed in this NMP or other environmental management documents.

Table 1 Conditions of Approval relevant to the NMP

<table>
<tr><th>CoA No.</th><th>Requirement</th><th>Reference</th></tr>
<tr><td>Schedule 3,
Clause 2</td><td>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)

<table>
<tr><th rowspan="2">Activity</th><th rowspan="2">Receiver</th><th>Day/Evening/Shoulder</th><th colspan="2">Night</th></tr>
<tr><th>$L_{Aeq\ (15min)}$</th><th>$L_{Aeq\ (15min)}$</th><th>$L_{A1\ (max)}$</th></tr>
<tr><td rowspan="4">Brick making and quarrying</td><td>R1, R2</td><td>47</td><td colspan="2" rowspan="4">Not Applicable</td></tr>
<tr><td>R3, R4, R14</td><td>46</td></tr>
<tr><td>R15, R17</td><td>45</td></tr>
<tr><td>All other receivers</td><td>44</td></tr>
<tr><td>Brick making</td><td>All receivers</td><td>44</td><td>43</td><td>53</td></tr>
</table>
Notes:
• To locate the receivers referred to in Table 2, refer to Appendix 3 of the CoA;
• After the first review of 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.</td><td>Section 8.2</td></tr>
</table>

CoA No.	Requirement	Reference
	Appendix 5 of the CoA 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.	
Schedule 3, Clause 3	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 of the CoA.*	Section 7
Schedule 3, Clause 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.	Section 7
Schedule 3, Clause 4A	The Applicant must ensure that the noise bund adjacent to Greendale Road is constructed prior to the commencement of brick making operations.	Section 7
Schedule 3, Clause 5	The Applicant must: a) Implement all reasonable and feasible mitigation measures to minimise construction, operational and road noise of the development;	Section 7
	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;	Section 8
	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 CoA); and	
	f) Carry out regular noise monitoring to determine where the development is complying with the relevant conditions of this consent. to the satisfaction of the Secretary.	
Schedule 3, Condition 6	The Applicant must prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with the EPA;	This Plan Section 5

CoA No.	Requirement	Reference
	b) be submitted to the Secretary for approval prior to commencement of development under this consent, unless the Secretary agrees otherwise;	Section 1.4
	c) Describe the reasonable and feasible mitigation measures that would be implemented to ensure: • construction noise is minimised; • 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.	Section 7
	d) describe the proposed noise management system on site; and	This Plan
	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.	Section 8

3.3 Licenses and permits

Environment Protection Licence (EPL) No. 1808 as issued under the *Protection of the Environment Operations Act 1997* (POEO Act) is currently held for the site. As there is no change to the operating times of the facility, a variation to the EPL for noise-related matters will not be sought; this however does not preclude a potential variation of the EPL due to changes in air quality criteria stipulated in the CoA.

4 EXISTING ENVIRONMENT

4.1 Site Overview

The local terrain generally consists of gently undulating low hills with vegetation comprising scattered bushland with trees up to 10m high, interspersed with fields cleared for pasture. The land usage is a mixture of agricultural and residential. The Bringelly Public School and village is located approximately 500m to the northeast of the facility. There are several rural residential properties in the area surrounding the facility. There are 38 sensitive receivers located primarily to the north and east of the facility and these are presented in Figure 1.

The project site is used for quarrying, brick production and associated activities. The brick-making facility along with various administration buildings, a finished bricks storage yard, staff car park and internal road network is generally contained within the northern part of the project site, and is set back approximately 200 metres from Greendale Road. The southern portion of the project site, adjacent to Thompsons Creek, is leased for the agistment of stock and grazing.

4.2 Hours of Operation

The hours of operation of the facility are as follows:

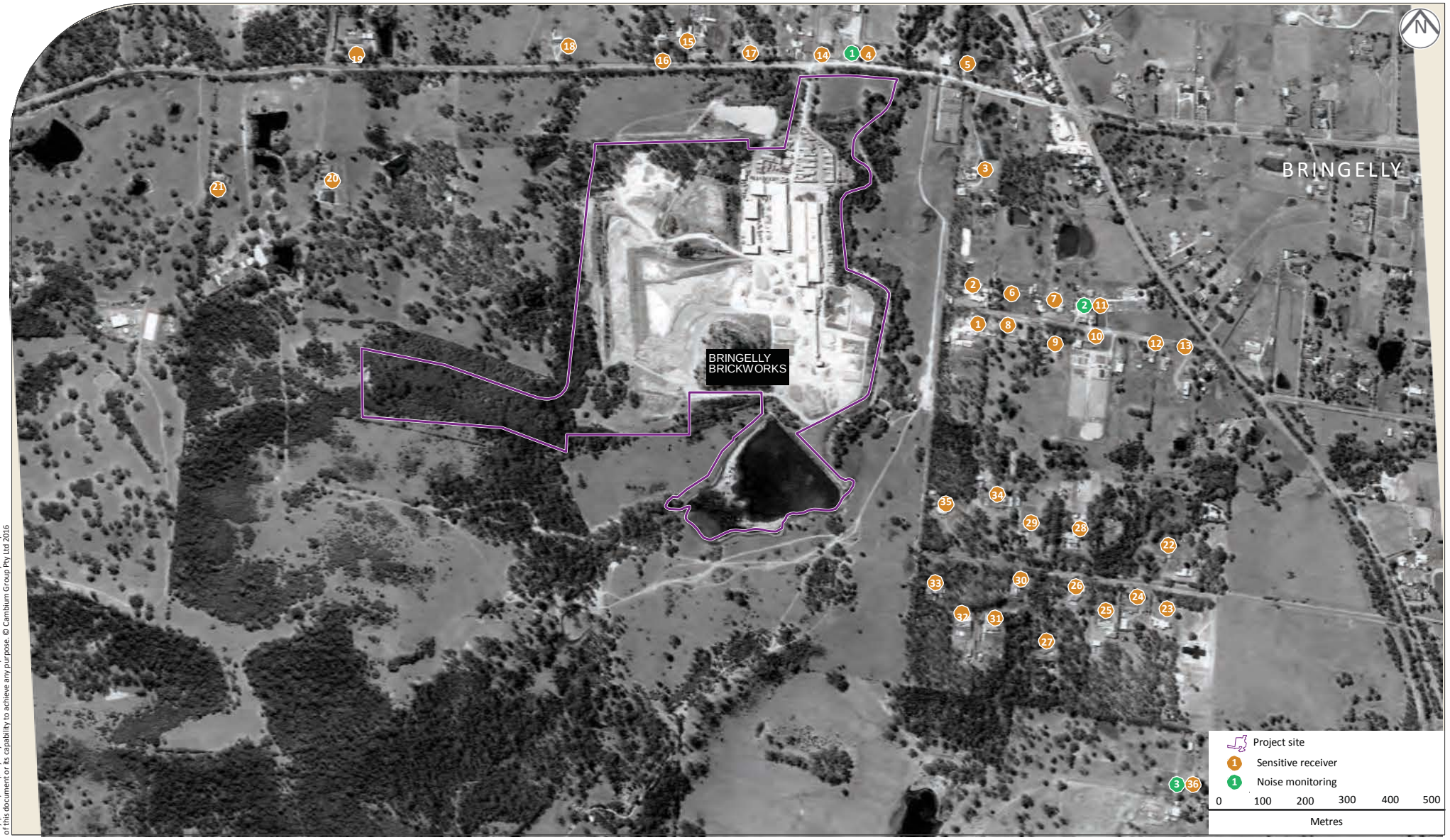
- Quarrying operations, deliveries and dispatch of finished bricks
  - Monday to Friday, 6AM to 6PM;
  - Saturdays, 6AM to 1PM; and
  - No activity on Sundays or Public Holidays.
- Brick manufacturing (except dispatch of finished bricks)
  - 24-hours per day, 7-days per week.
- Construction activities
  - Monday to Friday, 7AM to 6PM;
  - Saturdays, 8AM to 1PM; and
  - No construction to be undertaken on Sundays or Public Holidays.

4.3 Identified Sensitive Receivers

The CoA identify 38 sensitive receivers associated with the facility. The location of the 38 sensitive receivers are shown in **Figure 1** and their respective street addresses are detailed in **Table 2**.

FIGURE 1

Sensitive receiver locations surrounding the site and monitoring locations



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Source: Hyder Consulting Pty Ltd

Table 2 Sensitive Receivers

Receiver ID	Street Address
R1	55 Loftus Road, Bringelly, NSW 2556
R2	54 Loftus Road, Bringelly, NSW 2556
R3	20 Greendale Road, Bringelly, NSW 2556
R4	9 Greendale Road, Bringelly, NSW 2556
R5	5 Greendale Road, Bringelly, NSW 2556 (Bringelly Community Centre)
R6	46 Loftus Road, Bringelly, NSW 2556
R7	36 Loftus Road, Bringelly, NSW 2556
R8	47 Loftus Road, Bringelly, NSW 2556
R9	37 Loftus Road, Bringelly, NSW 2556
R10	27 Loftus Road, Bringelly, NSW 2556
R11	26 Loftus Road, Bringelly, NSW 2556
R12	15 Loftus Road, Bringelly, NSW 2556
R13	5 Loftus Road, Bringelly, NSW 2556
R14	23 Greendale Road, Bringelly, NSW 2556
R15	27 Greendale Road, Bringelly, NSW 2556
R16	29 Greendale Road, Bringelly, NSW 2556
R17	25 Greendale Road, Bringelly, NSW 2556
R18	31 Greendale Road, Bringelly, NSW 2556
R19	35 Greendale Road, Bringelly, NSW 2556
R20	170 Tyson Road, Bringelly, NSW 2556
R21	196 Greendale Road, Bringelly, NSW 2556
R22	46 Belmore Road, Bringelly, NSW 2556
R23	55 Belmore Road, Bringelly, NSW 2556
R24	63 Belmore Road, Bringelly, NSW 2556
R25	67 Belmore Road, Bringelly, NSW 2556
R26	73 Belmore Road, Bringelly, NSW 2556
R27	83-85 Belmore Road, Bringelly, NSW 2556
R28	76 Belmore Road, Bringelly, NSW 2556
R29	86 Belmore Road, Bringelly, NSW 2556
R30	87 Belmore Road, Bringelly, NSW 2556

Receiver ID	Street Address
R31	93 Belmore Road, Bringelly, NSW 2556
R32	95-97 Belmore Road, Bringelly, NSW 2556
R33	107 Belmore Road, Bringelly, NSW 2556
R34	96 Belmore Road, Bringelly, NSW 2556
R35	108 Belmore Road, Bringelly, NSW 2556
R36	1037 Northern Road, Bringelly, NSW 2556
R37	10 Greendale Road, Bringelly, NSW 2556
R38	1205 The Northern Road, Bringelly, NSW 2556 (Bringelly Public School)

4.4 Existing Noise Environment

Environmental noise monitoring was undertaken during the EIS to quantify the existing noise environment at the identified sensitive receivers. Unattended noise monitoring was carried out at three sensitive receiver locations listed below:

- R4 - 9 Greendale Road (Location 1);
- R11 - 26 Loftus Road (Location 2); and
- R36 - 1037 Northern Road (Location 3).

The EIS noted that the background RBL noise levels at the three locations were representative of the typical noise environment around the facility. **Table 3** summarises the result of noise monitoring for day, evening and night time periods, as defined in the INP. The summary values are:

- $L_{Aeq,Period}$ – the overall L_{Aeq} noise level measured over the assessment period. The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise, which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise; and
- RBL – Rating Background Level is a measure of typical background noise levels (i.e. existing noise environment) which are used in determining noise criteria.

In addition, a shoulder period RBL for the period between 6AM and 7AM was calculated to reflect the operational period of the last hour of the night period.

Table 3 Summary of unattended measured noise levels

Location	RBL (dBA)				$L_{Aeq,Period}$ (dBA)			
	Day 7AM-6PM	Evening 6-10 PM	Night 10PM - 7AM	Shoulder period 6-7AM	Day 7AM – 6PM	Evening 6-10 PM	Night 10PM - 7AM	Shoulder period 6-7AM
1 (R4)	41	40	37	42	57	49	46	53
2 (R11)	41	41	38	45	51	50	48	53
3 (R36)	39	43	38	42	49	48	45	45

4.5 Meteorology

Wind can increase noise at a receiver when it blows from the direction of the noise source. An increase in wind strength results in a corresponding increase in wind noise at the receiver, which masks noise from the source under investigation.

The affectation of noise due to wind will be considered when wind is a feature of the area under consideration. The INP defines this as where wind blows at speeds up to three metres per second for more than 30 percent of the time in any season.

The EIS analysed meteorological data to determine the frequency of occurrence of seasonal winds for day, evening and night time periods and it was determined that two metres per second south-south-west wind will be applicable to the facility for daytime periods.

Similarly, temperature inversions can increase noise levels at surrounding receivers by the reflection of sound waves from warmer upper layers of air. Temperature inversions occur predominantly at night. For a temperature inversion to be a significant characteristic of the area it needs to occur for approximately 30 percent of the total night time period during a season, typically winter.

The EIS determined that temperature inversions are common in the area and are predicted to occur approximately 33.9 percent of the total night time period during a season.

As outlined in Table 4 PGH will monitor meteorological conditions and modify or cease operations should adverse meteorological conditions persist and affect Noise above baseline levels.

5 CONSULTATION

As outlined in the CoA (refer **Table 1**), this Plan has been prepared in consultation with the EPA (refer **Appendix A**). A version of this Plan was provided to the EPA on 23 August 2016 for comment. The EPA responded on 20 September 2016 acknowledging receipt of this Plan and stated that they do not approve or endorse the Plan as the EPA's role is to set environmental objectives for environmental management, not to be directly involved in the development of strategies to achieve those objectives. The EPA did not provide any specific comments on noise management.

6 ENVIRONMENTAL ASPECTS AND IMPACTS

6.1 Development Activities

A range of activities are undertaken at the facility utilising various heavy machinery, plant and equipment. Key activities likely to generate noise are identified below.

- Vegetation clearing;
- Earthworks and drainage;
- Crushing and screening;
- Load and haul;
- Plant operation; and
- Product dispatch and transportation.

6.2 Influences

The potential for noise impacts on sensitive receivers will depend on several factors, notably:

- Meteorological conditions;
- Type of plant/equipment in use;
- Quantity of plant/equipment simultaneously in use;
- Ground conditions;
- Topography and other physical barriers;
- Proximity to sensitive receivers; and
- Hours of operation and duration of activities.

6.3 Impacts

The following potential and known noise impacts have been comprehensively assessed and documented in the EIS:

- Construction noise impacting sensitive receiver's north of the facility associated with the road realignment works, roadside noise bund and northern noise bund;
- Noise radiating from the crusher, grinder and main production building impacting sensitive receivers north and east of the facility;
- Night time activities, including reversing alarms and engine noise from forklifts and front end loaders, have the potential to result in sleep disturbance;
- Road traffic noise generated from a marginal increase in vehicle deliveries and dispatch; and
- Noise from quarrying activities impacting sensitive receivers to the north and east of the facility.

7 ENVIRONMENTAL MANAGEMENT MEASURES

Specific noise management measures identified in the EIS and CoA have been interpreted and generally reproduced in **Table 4**. The management measures identified in this table are to be implemented to mitigate or manage impacts identified in Section 6.3. Where additional resources will be required to implement a management measure, these have been identified in the last column.

Table 4 Environmental Management Measures

ID	Measure / Requirement	Source	When to implement	Responsibility	Additional Resources Needed
N1.	If compliance with the noise criteria stipulated in Section 8.2 cannot be achieved, acoustically insulate the crusher and box feeder buildings.	Section 7.3.9 of EIS Volume 1	Operation	Plant Manager	Noise Monitoring Procedure Noise Monitoring Record Sheet
N2.	Install a 200 m long 4.5 m high noise bund along Greendale Road prior to the commencement of brick making operations.	CoA 4A, Schedule 3	Construction	Plant Manager & Contractor	
N3.	Ensure the front-end loader does not exceed a maximum sound power level of 102 decibels by implementing the following: • Using front-end loaders that have manufactures specified sound power level no greater than 100 dB(A); • Ensure front-end loaders are regularly maintained; and • Completing noise monitoring in accordance with Section 8.1 of this Plan.	Section 7.3.9 of EIS Volume 1	Operation	Plant Manager	Noise Monitoring Procedure Noise Monitoring Record Sheet
N4.	A 4.5 m noise bund is to be constructed on the northern end of Cell D, prior to the commencement of quarrying operations in the extension area.	CoA 4, Schedule 3	Operation	Plant Manager	

N5.	Quarrying of the hill in Cell G will start from the western side so that the hill shields noise of the excavator and bulldozers from residences to the east.	Section 7.3.9 of EIS Volume 1	Operation	Plant Manager	Noise Monitoring Procedure Noise Monitoring Record Sheet
N6.	Standard beeper alarms will be replaced with broadband alarms on decommissioning of the old plant equipment.	Section 7.3.9 of EIS Volume 1	Operation	Plant Manager	
N7.	Noise generated during construction is to be assessed and managed in accordance with the noise management levels specified in Table 2 of the ICNG.	CoA	Construction	Plant Manager & Contractor	Noise Monitoring Procedure Noise Monitoring Record Sheet
N8.	The quietest available plant and equipment that can economically undertake the work required will be identified. Mobile plant will be fitted with residential class mufflers and other silencing equipment, as applicable.	Section 7.3.9 of EIS Volume 1	Construction	Plant Manager & Contractor	
N9.	All plant and equipment operators will be informed of the potential noise impacts of their activities so that they may implement techniques which may minimise noise emission.	Section 7.3.9 of EIS Volume 1	Construction	Plant Manager & Contractor	Site Induction
N10.	Where feasible and reasonable, the layout and positioning of noise producing plant and activities will be optimised to minimise noise emission levels.	Section 7.3.9 of EIS Volume 1	Construction	Plant Manager & Contractor	Sensitive Area Plans
N11.	An effective community relations program will be put in place to keep the local community informed of progress of construction, to forewarn potentially affected groups of any anticipated changes in noise emissions prior to critical stages of the construction works, and to explain compliant procedures and response mechanisms.	Section 7.3.9 of EIS Volume 1	Construction	Plant Manager & Contractor	Community Consultative Committee

8 COMPLIANCE MANAGEMENT

8.1 Noise Monitoring

Attended noise monitoring will be undertaken quarterly for the first two years following the approval of this Plan. Following a review of the first two years of monitoring data, quarterly monitoring may be reduced to yearly subject to approval by the Secretary.

Noise monitoring is to consider the approved noise criteria stipulated in Section 8.2 as well as meteorological conditions.

8.2 Noise Criteria

Attended noise monitoring is to be undertaken to measure the noise generated by the facility in accordance with the noise criteria stipulated in the CoA, as reproduced in **Table 5**. The applicable meteorological conditions stipulated in Section 8.2.1 will be taken into consideration when undertaking monitoring.

Table 5 Noise Monitoring Criteria

Activity	Receiver	Day/Evening/Shoulder	Night	
		LAeq (15min)	LAeq (15min)	LA1 (max)
Brick manufacturing and quarrying	R1, R2	47	Not Applicable	
	R3, R4, R14	46		
	R15, R17	45		
	All other receivers	44		
Brick manufacturing	All receivers	44	43	53

8.2.1 Applicable Meteorological Conditions

PGH will monitor onsite meteorological conditions, utilizing both onsite monitoring equipment and nearby Bureau of Meteorology weather stations. The Plant manager will modify or cease operations should adverse meteorological conditions arise or persist.

The noise criteria in **Table 5** will apply under all meteorological conditions, except for the following scenarios:

- Wind speeds greater than 3 m/s at 10 m above ground level; or
- Temperature inversion conditions between 1.5ºC and 3ºC/100 m and wind speeds greater than 2 m/s at 10 m above ground level; or
- Temperature inversion conditions greater than 3ºC/100 m.

In these exceptional circumstances, PGH will continue to implement the noise management measures identified in **Table 4**.

8.2.2 Determination of Meteorological Conditions

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

8.3 Training

All employees and contractors working on site will undergo site induction training, which will cover issues relating to noise management, including:

- Existence and requirements of this Plan;
- Relevant legislation;
- Bringelly Brickworks operational hours;
- Techniques for plant and equipment operators to implement to reduce noise emissions;
- All other noise management measures that need to be implement to reduce construction and operational noise emissions;
- Location of sensitive receivers; and
- Complaints reporting.

Further details regarding staff induction and training are outlined in the Bringelly Brickworks Environmental Management Strategy (EMS).

8.4 Complaints enquiries procedure

All complaints that are received relating to the facility's operations will be recorded and responded to per Section 7.3 of the EMS.

Information to be recorded will include location of complainant, time of occurrence of alleged noise impact, perceived source, prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint.

In response to a noise complaint, the following steps are advised:

1. Identify the source immediately and reduce the noise;
2. Contact the receiver to seek feedback whether the noise is less audible;
3. Undertake attended noise measurements to assess whether the facility is exceeding the noise criteria;
4. If the noise exceeds the criteria, investigate measures to reduce or attenuate the noise source;
5. Undertake attended noise measurements following any further attenuation or noise mitigation to assess whether the facility is exceeding the noise criteria;
6. Communicate corrective actions to receiver and staff and record;
7. If after all noise attenuation and mitigation measures have been exhausted and the facility continues to exceed noise criteria, actively seek a written agreement with the impacted landowner to generate higher noise levels and advise DP&E in writing of the terms of the agreement.

Complaints and the subsequent action(s) taken by PGH will be reported at each subsequent Community Consultative Committee meeting (refer Section 7.3.3 of EMS).

8.5 Incident Management

Any recorded exceedance will be reported in accordance with the incident reporting procedure in condition 7 of Schedule 5, regardless of whether it is "definitively attributable" to PGH. Subsequent investigation will then determine the cause of the exceedance and confirm whether a non-compliance has occurred

All incidents and emergencies will be managed in accordance with Section 8 of the EMS. PGH will immediately notify the Secretary and any relevant agencies when an incident (Noise exceedance) has been declared.

More specifically, where the following conditions are met, a noise incident shall be declared for investigation:

1. During scheduled noise monitoring or following a noise complaint investigation, any noise exceedance recorded above the noise criteria stipulated in **Table 5**; and
2. The source of the noise exceedance is definitively attributable to PGH.

Within seven days of the declaration of a noise incident, a report documenting the facts of the incident must be submitted to the Secretary. This report is to document the findings of the incident investigation, attempt to identify the cause and nature of the exceedance.

8.6 Audit and Reporting

Audits (both internal and external) and reporting will be undertaken to assess the effectiveness of noise management methodologies, compliance with this NMP, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 9.3 of the EMS.

Specific mechanisms for evaluating and reporting on the effectiveness of the noise management system and the best practice noise management measures will include;

- Weekly environmental inspections;
- Monthly noise exceedance reporting (Detailed in Environmental reporting);
- Quarterly noise monitoring (or adhoc should a noise complaint be received);
- Annual internal environmental audit; and
- Tri annual CSR external environmental audit.

Any recorded exceedances, corrective actions or non-conformances raised during the above mechanisms relating to noise, will be reported in accordance with the incident reporting procedure in condition 7 of Schedule 5 and internal reporting requirements.

9 REVIEW AND IMPROVEMENT

9.1 Continuous Improvement

Continuous improvement of this NMP will be achieved in accordance with Section 10 of the EMS, through the ongoing evaluation of environmental management performance against environmental policies, objectives and targets.

The continuous improvement process is designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

9.2 NMP Update and Amendment

The processes described in Sections 9 and 10 of the EMS may result in the need to update or revise this NMP. The approval of updates or revisions to the NMP will need to be considered in accordance with Section 11.2 of the EMS.

APPENDIX A CONSULTATION CORRESPONDENCE

23 August 2016

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Sydney
NSW 2000

Email: tenille.lawrence@epa.nsw.gov.au

Dear Tenille

BRINGELLY BRICKWORKS (SSD_5684) – ENVIRONMENTAL MANAGEMENT PLAN PREPARATION AND CONSULTATION

Following the commencement of a State Significant Development application (SSD_5684) in December 2012 for a proposed expansion to Bringelly Brickworks at 60 Greendale Road, Bringelly, Development Consent was issued on 3 March 2015 by the Department of Planning and Environment (DP&E).

In accordance with this Development Consent (refer Attachment 1), several conditions require Boral CSR Bricks, the owner of Bringelly Brickworks, to consult with the EPA in the preparation of the development's management plans. More specifically, Conditions 6 and 9 of Schedule 3 of the Development Consent require Boral CSR Bricks to prepare a Noise Management Plan and Air Quality Management Plan in consultation with the EPA.

On behalf of Boral CSR Bricks, please find attached a draft Noise Management Plan (Attachment 2) and draft Air Quality Management Plan (Attachment 3) for the EPA's review and comment.

For the EPA's comments to be considered, please provide your response to myself by no later than **7 September 2016**. My contact details are below.

Darren Green
Senior Environmental Consultant
Email: darren@elementenvironment.com.au
Phone: 0418 969 624
PO Box 1563, Warriewood, NSW, 2102

Please do not hesitate to contact me should you have any questions or queries in the interim.

Kind regards,

Darren Green
Senior Environmental Consultant
Element Environment Pty Ltd

Our reference: Contact:

EF15/7744:DOC16/426662-05:CK
Chris Kelly (02) 4224 4100

Mr Darren Green Element
Environment PO Box 1563
WARRIEWOOD NSW 2102

Dear Mr Green

BRINGELLY BRICKWORKS (SSD_5684)- ENVIRONMENT MANAGEMENT PLANS ENVIRONMENT PROTECTION LICENCE 1808

I refer to your correspondence of 23 August 2016, on behalf of Bora! CSR Bricks Pty Ltd (BCB), to the Environment Protection Authority (EPA) regarding the proposed expansion to the Bringelly Brickworks , Greendale Road Bringelly, Environment Protection Licence (EPL) 1808.

In accordance with Conditions 6 and 9 of Schedule 3 of Development Consent SSD_5684 issued by the Department of Planning and Environment, BCB has provided copies of its Noise Management Plan and Air Quality Management Plan (AQMP) to the EPA for review.

The EPA acknowledges receipt of these plans in accordance with SSD_5684, which will be retained for our records. The EPA encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. However, we do not approve or endorse these documents as our role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.

The EPA notes however that the AQMP makes reference to monitoring particulate matter at Location 5 using either a High-Volume Air Sampler (HVAS) or a Tapered Element Oscillating Microbalance (TEOM). The EPA considers the optimal ambient air monitoring would be based on continuous real time monitoring. This could be used as a management tool to help BCB control air emissions and inform *'Trigger Action Response Plans'* (TARP) when dust levels are above pre-determined levels. Any such ambient air monitor must be *'fit for purpose '.*

Additionally, the EPA proposes to vary EPL 1808, with regards to the increased brick production and land-based extraction including changes to noise and air conditions. The EPA will discuss these measures directly with BCB.

If you wish to discuss this matter further, please phone Mr Chris Kelly on (02) 4224 4100.

Yours sincerely

William Dove 20/08/2016

WILLIAM DOVE
Head Regional Operations
Metropolitan Illawarra
Environment Protection Authority