Construction Noise Management Plan

Timber Processing Facility – Particle Board

124 Lowes Mount Road, Oberon NSW

Borg Construction Pty Ltd

26 November 2021

Revision History

Rev No.	Revision Date	Author / Position	Details	Reviewed / Authorised	
				Name / Position	Signature
0	04/04/17	Carly McCormack Planning and Environmental Officer	Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics Victor Bendevski Environmental and Regulatory Compliance	
1	20/04/17	Carly McCormack Planning and Environmental Officer	Final Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics Victor Bendevski Environmental and Regulatory Compliance	
2	01/06/17	Carly McCormack Planning and Environmental Officer	Final	Victor Bendevski Environmental and Regulatory Compliance	
3	19/05/21	J Blomberg Environmental Manager	Review and update as per SSD 7016 condition C10, for submission to DPIE	V Bendevski Environmental & Regulatory Compliance	
4	26/11/21	A Brady Environmental Manager	Review and update as per SSD 7016 condition C10(d),for submission to DPIE	J Blomberg Environmental Manager	

Table of Contents

Definitions and Abbreviations

Abbreviation	Description
ABL	Assessment background level (ABL), the 10th percentile background noise level for a single period (day, evening or night) of a 24 hour monitoring period.
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Background Noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed.
CEMP	Construction Environmental Management Plan
Day	The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
DP&E	NSW Department of Planning and Environment
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence issued by the EPA under the POEO Act
Evening	The period from 6:00pm to 10:00pm
Incident	A set of circumstances causing or threatening material harm to the environment, and/or exceedance of the limits of performance criteria in Development Consent SSD 7016
$L_{Aeq\ (15\ min)}$	The average noise energy during a 15 minute period.
Night	The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays
RBL	Rating background level (RBL), the background noise level for a period (day, evening or night) determined from ABL data.
Sound Level Meter (SLM)	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.

1 Introduction

1.1 Background

Borg Panels operates an existing Medium Density Fibre (MDF) and particleboard production facility in Oberon, NSW, manufacturing a range of Customwood MDF products and particleboard products including:

- Standard MDF;
- Moisture Resistant MDF;
- E0 (Low Formaldehyde Emitting) MDF;
- Ultraprime MDF Mouldings;
- Standard particleboard;
- Moisture resistance particleboard;
- Particleboard flooring products for structural applications;
- Decorative Laminated MDF and particleboard; and
- Treated paper for the lamination of MDF and particleboard.

On 29 May 2017 Development Consent (SSD 7016) was granted by the Minister for Planning to construct a particleboard manufacturing facility, modify the existing MDF Board manufacturing facility and undertake general site works (the Project) at the existing Borg Panels facility located on 124 Lowes Mount Road, Oberon.

The main components of the Project are:

- Construction of a dedicated particleboard manufacturing line;
- Provide additional infrastructure within existing buildings;
- Modernise the existing facility;
- Construct a new automated storage warehouse; and
- Construction of hardstand, water quality ponds and emergency catchment.

Since that date, the Minister for Planning has approved three modifications (MOD) to SSD 7016:

- MOD 1 – extension of mouldings warehouse, reorientation of materials handling building, layout changes to particleboard chipper/debarker building, extension of northern noise bund, reconfiguration of elements of the surface water management system, reclamation of the Spring Dam (approved 20th November 2018);
- MOD 2 – installation of an electricity generation gas turbine and ancillary equipment (approved 29th November 2019); and
- MOD 3 – additional materials handling equipment, extension to northern warehouse, changes to the site surface water system and construction of further hardstand (approved 22nd May 2020).

No additional conditions were imposed by the Minister during the assessment and approval of these modifications with regards to this Construction Noise Management Plan.

This Construction Noise Management Plan (CNMP) is a sub plan to the Construction Environment Management Plan (CEMP).

1.2 Construction Staging

Construction works commenced in June 2017 under approved SSD 7016 dated 29th May 2017, and essentially followed the Stages as outlined below:

- Stage 1 – Demolition of office building and site works, construction of detention basin and hardstand areas. Within this stage the construction of the detention basin and drainage swales will be undertaken first in order to ensure that the appropriate erosion and sediment control measures can be implemented as support for following stages. Stage 1 is to commence upon approval and is estimated to take approximately 6 months.
- Stage 2 – construction of particleboard manufacturing facility and installation of related plant and equipment, including modernisation of the existing plant. Stage 2 is to commence upon approval or slightly thereafter and is estimated to take up to 18-24 months, dependent on equipment and labour availability.
- Stage 3 – alterations and additions to existing MDF site and construction of new automated storage warehouse. Stage 3 is to commence post completion of Stage 2 and is estimated that this will take up to 9 months.
- Stage 4 – debarker chipper building and chip preparation area. Stage 4 may commence approximately 6 months after approval and is estimated to take up to 12 months to complete.

The activities included in the above four stages are complete. The works associated with the modifications described in section 1.1 Background have since followed. Works under MOD 1 are complete. Works under MOD 2 have been completed with final commissioning of the new turbine undertaken on the 28th of May 2021. Activities under MOD 3 are progressing.

1.3 Purpose of this Plan

This CNMP has been developed to address potential noise impacts on sensitive receivers and to satisfy the requirements set out in Condition B15 of Development Consent SSD 7016 for the Project, and includes information on the following:

- Relevant legislation and guidelines for noise generated during construction of the Project;
- Potential sensitive receivers who may be affected by noise generated by the Project;
- Noise impacts potentially arising from the Project;
- Safeguards, mitigation measures and monitoring to manage noise impacts during construction;
- Roles and responsibilities of those involved in the design and implementation of noise management controls; and
- An effective monitoring, auditing and reporting framework to assess the effectiveness of the controls implemented.

2 Legislative and Regulatory Compliance

2.1 Relevant Legislation

Key environmental legislation relating to noise management for the Project includes:

- *Protection of the Environment Operations Act 1997*; and
- *Environment Planning and Assessment Act 1979.*

2.2 Conditions of Consent

The Development Consent (SSD 7016) conditions relevant to noise that have been considered in this Plan are detailed in **Table 1**.

Table 1 – Development Consent Conditions

<table>
<tr><th>No.</th><th>Requirement</th><th>Document Reference</th></tr>
<tr><td></td><td>NOISE</td><td></td></tr>
<tr><td></td><td>Hours of Work</td><td></td></tr>
<tr><td>B13</td><td>The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work<table><tr><th>Activity</th><th>Day</th><th>Time</th></tr><tr><td>Earthworks and Construction</td><td>Monday – Friday
Saturday</td><td>7 am to 7 pm
8 am to 1 pm</td></tr><tr><td>Operation</td><td>Monday – Sunday</td><td>24 hours</td></tr></table></td><td>Section 2.6</td></tr>
<tr><td>B14</td><td>Works outside of the hours identified in Condition B13 may be undertaken in the following circumstances:

(a) works that are inaudible at the nearest sensitive receivers;

(b) works agreed to in writing by the Secretary;

(c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or

(d) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.</td><td>Section 2.6</td></tr>
<tr><td></td><td>Construction Noise Management Plan</td><td></td></tr>
<tr><td>B15</td><td>The Applicant must prepare a Construction Noise Management Plan (CNMP) for the Project to manage construction noise. The plan must form part of the CEMP required by Condition C1 and must:</td><td>This Plan</td></tr>
<tr><td></td><td>(a) be prepared by a suitably qualified and experienced noise expert;</td><td>Reviewed by Global Acoustics</td></tr>
<tr><td></td><td>(b) be approved by the Secretary prior to the commencement of construction of the Project;</td><td></td></tr>
<tr><td></td><td>(c) describe procedures for achieving the noise limits in Table 2;</td><td>Section 6</td></tr>
<tr><td></td><td>(d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;</td><td>Section 6</td></tr>
</table>

<table>
<tr><td></td><td>(e) include strategies that have been developed with the community for managing noisy works;</td><td>Table 7 & Section 9.1.2</td></tr>
<tr><td></td><td>(f) describe the community consultation undertaken to develop the strategies in e) above; and</td><td>Section 9.1.2</td></tr>
<tr><td></td><td>(g) include a complaints management system that would be implemented for the duration of the Project.</td><td>Section 9.2</td></tr>
<tr><td></td><td>Operational Noise Limits</td><td></td></tr>
<tr><td>B16</td><td>The Applicant must ensure that noise generated by the Development does not exceed the noise limits in Table 2.

Table 2: Noise Limits dB(A)
<table><tr><th>Location</th><th>Day
$L_{Aeq(15\ minute)}$</th><th>Evening
$L_{Aeq(15\ minute)}$</th><th>Night
$L_{Aeq(15\ minute)}$</th></tr><tr><td>All sensitive receivers</td><td>55</td><td>50</td><td>45</td></tr></table>
Note: Noise generated by the Development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.</td><td>Section 5</td></tr>
<tr><td></td><td>Mobile Wood Chippers</td><td></td></tr>
<tr><td>B22</td><td>During construction, the Applicant must ensure that mobile wood chippers are not operating simultaneously with rock/concrete breaking activities.</td><td>Section 6
Table 7</td></tr>
</table>

2.3 Mitigation Measures

This Plan also considers the requirements of the Mitigation Measures from the Environmental Impact Statement (EIS) and Response to Submissions (RTS) for the Project.

There are no noise mitigation measures specific to construction, however Borg commits to achieving noise limits prescribed for the Project, and managing noisy works including concrete breaking in close proximity to sensitive receivers. Table 7 General Construction Noise Impact Mitigation Measures of this Plan outlines the commitments made to manage noise impacts from construction activities.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL 3035) specifies noise limits for operation of the existing facility. Condition L4 of the EPL provides noise conditions, which are reproduced below:

L4 Noise limits

L4.1 Noise from the premises must not exceed:
a) 55 dB(A) $L_{Aeq(15\ minute)}$ during the day (7am to 6pm); and
b) 50 dB(A) $L_{Aeq(15\ minute)}$ during the evening (6pm to 10pm); and
c) at all other times 45 dB(A) $L_{Aeq\ (15\ minute)}$, except as expressly provided by this licence.

Where L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L4.2 To determine compliance with condition L4.1, noise must be measured at or computed for Oberon High School or any other noise sensitive locations (such as a residence/school). A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "NSW Industrial Noise Policy (EPA, January 2000)".

L4.3 The noise limits set out in condition L4.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

L4.4 For the purpose of condition L4.3:

a) Data recorded by the meteorological station identified as EPA Licence Point 26 must be used to determine meteorological conditions; and
b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

Borg will operate the Project with continuation of these existing noise limits.

2.5 Guidelines and Standards

The guidelines and standards relevant to noise management for the Project include:

- DECC 2009, *Interim Construction Noise Guideline (ICNG)*, NSW Department of Environment and Climate Change: Sydney NSW; and
- EPA 2017, *Noise Policy for Industry (NPfI)*, Environment Protection Authority. Sydney NSW.

2.6 Construction Noise Management Levels

Construction noise can represent a significant risk of impact on the amenity of sensitive receivers. The Interim Construction Noise Guideline (DECC, 2009) was developed to focus on applying work practices most suited to minimising construction noise impacts, rather than focusing only on achieving numeric noise levels. While some noise from construction sites is inevitable, the aim of the guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

Table 2 sets out management levels for construction noise at residences and how they are to be applied. The rating background level (RBL), i.e. the overall background noise level measured in each relevant assessment period, is used when determining the management level.

Table 2 – Noise Management Levels from the ICNG (DECC, 2009)

Time of Day	Management Level LAeq (15 min) *	Notes
Residential Premises		
Recommended Standard Hours Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or Public Holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise.
		Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.
		The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise.
		Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:
		1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or midmorning or mid-afternoon for works near residences 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside Recommended Standard Hours	Noise affected RBL + 5 dB	A strong justification would typically be required for works outside the recommended standard hours.
		The proponent should apply all feasible and reasonable work practices to meet the noise affected level.
		Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.
Commercial Premises	70 dB(A)	External noise level at most affected point of the premises.

* Noise levels apply at the property boundary that is most exposed to construction noise at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence.

Other types of sensitive land uses such as schools or recreation areas may consider noise from construction to be disruptive when the property is in use. Management levels for noise at other sensitive land uses are summarised in **Table 3**.

Table 3 – Noise Management Levels for Sensitive Land Uses other than Residences

Land Use	**Management Level LAeq (15min)** **(Applies when property is in use)**
Classrooms at schools and other educational institutions	Internal noise level: 45 dB(A)
Hospital wards and operating theatres	Internal noise level: 45 dB(A)
Places of worship	Internal noise level: 45 dB(A)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level: 65 dB(A)
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level: 60 dB(A)
Community centres	Depends on the intended use of the centre. Refer to the recommended 'maximum' internal levels in AS2107 for specific uses.

Construction of the infrastructure will occur concurrently with operation of the existing facility. All construction will generally be undertaken during standard construction hours, with the exception of 6pm – 7pm Monday to Friday. The operational noise criterion for the evening period would apply during these hours, as conditioned in Development Consent SSD7016 and EPL 3035. Only unforeseen circumstances would require work to continue outside of these hours. When construction work outside of these hours is required, the operational noise criterion for the relevant period would apply, as conditioned in Development Consent SSD7016 and EPL 3035.

Borg propose to generally restrict site noise emission from both construction and operational tasks combined to comply with the day period operational noise criterion of $L_{Aeq(15\ min)}$ 55 dB and the evening period operational noise criterion of $L_{Aeq\ (15\ min)}$ 50 dB, conditioned in Development Consent SSD7016 and EPL 3035. The exception will be for short duration high noise emitting tasks as such as rock/concrete breaking, for which the "highly noise affected" construction noise criterion of $L_{Aeq\ (15\ min)}$ 75 dB is deemed appropriate. Such construction tasks should be restricted to the least noise sensitive times of day. It is recommended all potentially affected receivers are notified in advance of any construction tasks where the operational day period criterion is likely to be exceeded.

3 Sensitive Receivers

The subject land is located on the northern outskirts of Oberon, to the east of Lowes Mount Road. As per the Oberon Council Local Environmental Plan (LEP) 2013, the land zoning classification of the subject site is IN1 General Industrial. The Borg operations are part of a larger industrial precinct operated by a number of separate companies, which generally involve timber product manufacture.

Land use north, east and west of the subject site is generally agricultural. Land use to the immediate south is industrial / recreational, and further south residential and the township of Oberon.

For the purpose of identifying and managing noise impacts, representative noise sensitive receivers (NSR) have been selected including the nearest and potentially most affected residences to the site, and Oberon High School. The following NSRs are considered representative of all potentially affected receivers and are referred to in this Plan. Refer to **Figure 1** for details.

Table 4 – Noise Sensitive Receivers

Receiver ID	Receiver Location
R01	32 O'Connell Road
R02	6 Herborn Street
R03	Oberon High School
R04	10 Tasman Street
R05	127 Hazelgrove Road
R06	26 Cunynghame Street
R07	131 Hazelgrove Road
R08	2 Herborn Street
R09	15-19 Albion Street
R10	Oberon Caravan Park

Figure 1 – Noise Sensitive Receivers (Source: Global Acoustics, May 2016)

4 Noise and Vibration Impact Assessment

Global Acoustics (May 2016) was engaged by Borg to carry out a noise and vibration impact assessment for the proposed expansion of the panel manufacturing facility. This assessment considered impacts associated with noise emission from the existing site, and the expansion. Potential impacts from operational noise, low frequency noise, sleep disturbance, cumulative noise, construction noise and road traffic noise were assessed. A model validation assessment was undertaken to provide an estimate of model prediction accuracy.

Acoustic advice was also provided for construction and operation of those items included in modifications 1 through 3. At each modification, the acoustic consultant concluded that there would be no change to site noise emission levels with continued compliance predicted for all receptors, and that construction activities should continue to be managed in accordance with the CNMP (this Plan).

4.1 Operation

Model predictions indicate the proposed expansion could generally comply with existing EPL operational noise criteria, when recommended management strategies are implemented, and if limiting sound powers for proposed infrastructure and recommended noise controls for existing plant are achieved. The exception is 15-19 Albion Street, for which a minor 1 dB exceedance is predicted for the day period during enhancing meteorological conditions if a mobile chipper is operational. Compliance was predicted for all receivers for 'normal' operations when no mobile chipping plant is operated.

4.2 Construction

4.2.1 Noise

Construction activities will be undertaken in conjunction with regular operation of the existing site. Borg propose to generally restrict site noise emission from both construction and operational tasks combined to comply with operational noise criteria conditioned in Development Consent SSD7016 and EPL 3035.

Rock or concrete breaking, earthworks, and infrastructure installation were assessed. Model predictions for the earthworks and installation scenarios indicate general compliance with the day period operational noise criterion at all receivers, with the exception of 15-19 Albion Street. At this location, exceedances were predicted during prevailing wind conditions if a mobile chipper is operated concurrently with construction plant. Exceedance of the evening period operational noise criterion is predicted at R02, R03, R06, R08, R09 and R10. These exceedances are predicted during calm and prevailing wind conditions when a mobile chipper is operated concurrently with construction plant. Construction noise can be managed through monitoring weather conditions, restricting use of the mobile chipper during enhancing conditions if a large amount of construction plant is operating, and restricting construction activities where possible to the hours detailed in the ICNG.

Rock breaking was assessed against the “highly affected” construction noise criterion of $L_{Aeq(15min)}$ 75 dB, as the duration would be relatively short compared with other construction tasks, and few options are available to mitigate noise from this activity. Predictions were well below this criterion.

4.2.2 Vibration

Due to the distance to sensitive receivers from operational and construction areas, no vibration impact is expected.

4.2.3 Road Traffic Noise

Construction and operational road traffic noise impacts were assessed for North Street and Albion Street, the roads indicated in the Traffic Impact Assessment report to receive the greatest traffic flows. The majority of both construction and operational project traffic generated by the project will occur outside of general peak hour traffic flows. Increases to road traffic noise relative to the existing situation were found to be insignificant, and less than 1 dB. Such an increase is unlikely to be either measurable, or perceptible to the human ear.

4.2.4 Construction Plant

Table 5 lists plant included in the construction noise assessment.

Table 5 – Potential Noise Sources

Equipment Type	Earthworks	Installation	Rock Breaking
Excavator	4	0	0
Loader	1	0	0
Dozer	1	0	0
Dump truck	2	0	0
Grader	1	0	0
Roller	1	0	0
Articulated truck	2	0	0
Mobile crane	0	2	0
Concrete truck	0	1	0
Delivery Truck	0	2	0
Bobcat	0	1	0
Rock breaker	0	0	1

Predictions for the rock breaking scenarios include a plus 5 dB modifying factor penalty to account for the intermittent nature of rock breaking works. It is recommended mobile chipping plant is not operated during rock breaking works. It is considered reasonable to assess rock breaking against the “highly affected” construction noise criterion of $L_{Aeq\ (15\ min)}$ 75 dB, as the duration would be relatively short compared with other construction tasks, and few options are available to mitigate noise from this activity. Predictions (without mobile chipping plant operating) are well below this criterion.

5 Construction Noise Management Levels

Construction activities will be undertaken simultaneously with regular operation of the existing site. Borg propose to generally restrict site noise emission from both construction and operational tasks combined to comply with operational noise criteria conditioned in Development Consent SSD 7016 and EPL 3035.

Following consideration of the ICNG (**Section 2.6**), Development Consent (SSD 7016) conditions (**Section 2.2**), EPL 3035 (**Section 2.4**) and the measured background noise levels (refer Global Acoustics, May 2016), **Table 6** summarises the Noise Management Levels (NMLs) for all residential receivers.

Table 6 – Operation and Construction Noise Management Levels

Location	**Activity**	**Day (7am-6pm) LAeq (15 min)**	**Evening (6pm-10pm) LAeq (15 min)**	**Night (10pm-7am) LAeq (15 min)**
All residential receivers	General Construction	55	50	45
	Rock/ Concrete Breaking	75		

Work outside approved construction hours are not expected, however unforeseen constraints relating to delivery of materials or equipment, or other technical requirements, may see some activities undertaken outside approved hours. Where required, out of hours works will be undertaken to meet the noise management levels in **Table 6**.

Development Consent SSD 7016 Condition B14 requires non-standard construction hour work to be inaudible at the nearest sensitive receivers. The Development Consent takes precedence over the ICNG and will be adopted in this plan.

In this instance, “inaudible” means the activity is not discernible from general operation activities.

6 Impact Management Measures

In order to ensure project goals are met and to maintain impacts at a practical minimum, the measures and safeguards summarised in **Table 7** will be implemented by Borg throughout the construction phase of the Project.

Table 7 – General Construction Noise Impact Mitigation Measures

Mitigation Measures	Timing	Responsibility
Administrative Controls		
Construction activities that are audible at any residential receptor, shall only be undertaken during the following hours: a) 7:00 am to 7:00 pm Monday to Friday b) 8:00 am to 1:00 pm Saturdays c) at no time on Sundays or public holidays.	Daily	Project Manager/ Environmental Manager
The DECC construction noise management levels, and site operational levels, will be achieved as far as practicable. Where works are predicted to exceed the NMLs (refer Section 5), residents should be informed of the time, type, duration and noise level of noisy activities prior to the anticipated exceedance.	Daily	Project Manager/ Environmental Manager
Provide an induction to site personnel (which includes Environmental Awareness Training) addressing the requirements of this CNMP and their responsibilities with regard to noise management.	Prior to startingwork on site	Project Manager/ Environmental Manager
Ensure truck drivers are informed of designated vehicle routes, parking locations, delivery hours, and minimising engine braking and idling.	Daily	Project Manager/ Environmental Manager
Provide education of supervisors, operators and sub-contractors on the need to minimise noise through Toolbox meetings and on-site coaching.	As needed	Project Manager/ Environmental Manager
Inform potentially noise affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as relevant contact details.	As needed	Project Manager/ Environmental Manager
Restrict use of mobile chippers during enhancing conditions if a large amount of construction plant is operating.	Daily	Project Manager/ Environmental Manager
Where works are expected to be undertaken outside approved work hours, ensure operational noise management levels can be met for the relevant period (evening or night).	As needed	Project Manager/ Environmental Manager
Procedures for handling noise complaints (Section 9) will be implemented including recording, reporting and acting on complaints.	As needed	Project Manager/ Environmental Manager
Construction Controls – General		
Select appropriately sized equipment for the task, such as excavation equipment.	Daily	Project Manager/ Environmental Manager

Select low noise emission plant where possible.	Daily	Project Manager/ Environmental Manager
Avoid, where possible, noisy plant working simultaneously close together.	Daily	Project Manager/ Environmental Manager
Ensure all equipment is equipped with reasonable and feasible noise control (e.g. mufflers, acoustic enclosures, flashing lights or non-tonal reversing alarms (squawkers) as an alternative to traditional reversing beepers) and is turned off when not in use.	Daily	Project Manager/ Environmental Manager
Ensure equipment is operated in the correct manner and adequately maintained - including replacement of engine covers, repair of defective silencing equipment, tightening of rattling components, repair of leakages in air lines and shutting down equipment not in use.	Daily	Project Manager/ Environmental Manager
Where practicable, maintenance work on all construction plant will be carried out away from noise sensitive receivers and confined to standard construction hours.	Daily	Project Manager/ Environmental Manager
The site entry and egress points will be set as far from receivers as practical.	Once-off	Project Manager/ Environmental Manager
Ensure traffic movement is kept to a minimum, e.g. ensure trucks are fully loaded so that the volume of each delivery is maximised.	Daily	Project Manager/ Environmental Manager
Avoid dropping material from a height into unlined metal trays or bins.	Daily	Project Manager/ Environmental Manager
Where it is necessary to modify or remove noise control/management measures (even temporary), ensure impacts are appropriately addreddes	As necessary	Project Manager/ Environmental Manager
Construction Controls – Rock/Concrete Breaking		
Mobile wood chipper and rock/ concrete breaking activities are not to be undertaken concurrently. A permit to work is required for rock/ concrete breaking activities that requires the construction team to consult with mobile wood chipper operators to ensure operations do not occur simultaneously.	Daily	Project Manager/ Environmental Manager
Consult with Oberon High School prior to rock/concrete breaking activities. Where feasible and reasonable, plan works to limit rock/concrete breaking activities during important events, e.g. examination periods.	Daily	Project Manager/ Environmental Manager
Undertake rock/concrete breaking activities only between 8am and 6pm Monday to Friday, and 8am and 1pm Saturdays.	Daily	Project Manager/ Environmental Manager

Undertake rock/concrete breaking in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.	Daily	Project Manager/ Environmental Manager
Monitoring and Auditing		
Monitor construction noise levels to verify compliance with the CNMP. Prepare quarterly monitoring summaries for submission to the Project team.	As needed	Environmental Manager
Monitor meteorological conditions (i.e. wind speed and direction) during construction activities and adjust activities when prevailing (enhancing) meteorological conditions occur.	As needed	Environmental Manager
Report any exceedance of limits to DPIE and EPA in accordance with Development Consent SSD 7016 and EPL 3035.	As needed	Environmental Manager

7 Noise Monitoring

7.1 Overview

The Noise Impact Assessment (Global Acoustics, May 2016) and subsequent advice provided as required for each modification indicates general compliance with the day period operational noise criterion at all receivers, when management measures are implemented. Therefore, construction noise monitoring will be undertaken to:

- Verify compliance with the noise objectives presented in **Section 5**;
- In response to any exceedance of limits; and
- In response to complaints where this is considered appropriate.

7.2 Monitoring Frequency

7.2.1 Compliance Monitoring

The following compliance monitoring, to be undertaken during construction by a suitably qualified noise expert, is recommended for the project:

- Periodic attended noise monitoring at the potentially most affected residences during the day period, with a frequency of once per quarter, during the construction phase of the Project; and
- If exceedance of limits is demonstrated, additional mitigation controls are to be implemented, and follow-up monitoring undertaken by a suitably experienced person within one week of the exceedance.

Construction noise performance is reported as detailed in **Section 10**.

7.2.2 Management Monitoring

In addition to quarterly compliance monitoring, off-site management noise monitoring by suitably trained site personnel should be undertaken regularly, particularly during periods of meteorological enhancement and on commencement of new construction activities or areas,

to ensure relevant noise criteria are adhered to.

Operations should be modified accordingly as required when exceedance or potential exceedances are measured. Modifications may include, but are not limited to, erection of temporary barriers or screens, temporary shutdown of equipment until adverse weather conditions change, or relocating equipment to less sensitive areas when feasible to do so.

7.3 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 8**. Refer to **Figure 2** for these locations.

Table 8 – Noise Monitoring Locations

Location ID	Monitoring Location
NM1	Oberon Caravan Park
NM2	Intersection Pine Street and Herborn Street
NM3	127 Hazelgrove Road
NM4	Intersection Tasman Street and Earl Street

Noise management levels for each monitoring location are provided in **Table 6**. Where these are exceeded by construction-related noise sources, the exceedance should be investigated (as discussed in **Section 10**) to determine the cause and any necessary mitigation.

7.3.1 Instrumentation

The following requirements should be observed whilst monitoring:

- Before commencing monitoring, ensure the Sound Level Meter's (SLM) laboratory calibration is current (refer to the sticker on the unit).
- If unsure about the functions of the SLM, refer to the instruction sheet in the case. The Environmental Manager should be trained in the use of the SLM and training documents kept on file.
- Ensure the windscreen is attached and that the SLM settings include a windscreen factor, the SLM is set to A-weighted and fast response.
- Prior to and completing the measurement, the SLM should be field calibrated using the supplied calibrator. Ensure that the pre and post measurements do not differ by more than 0.5 dB(A).

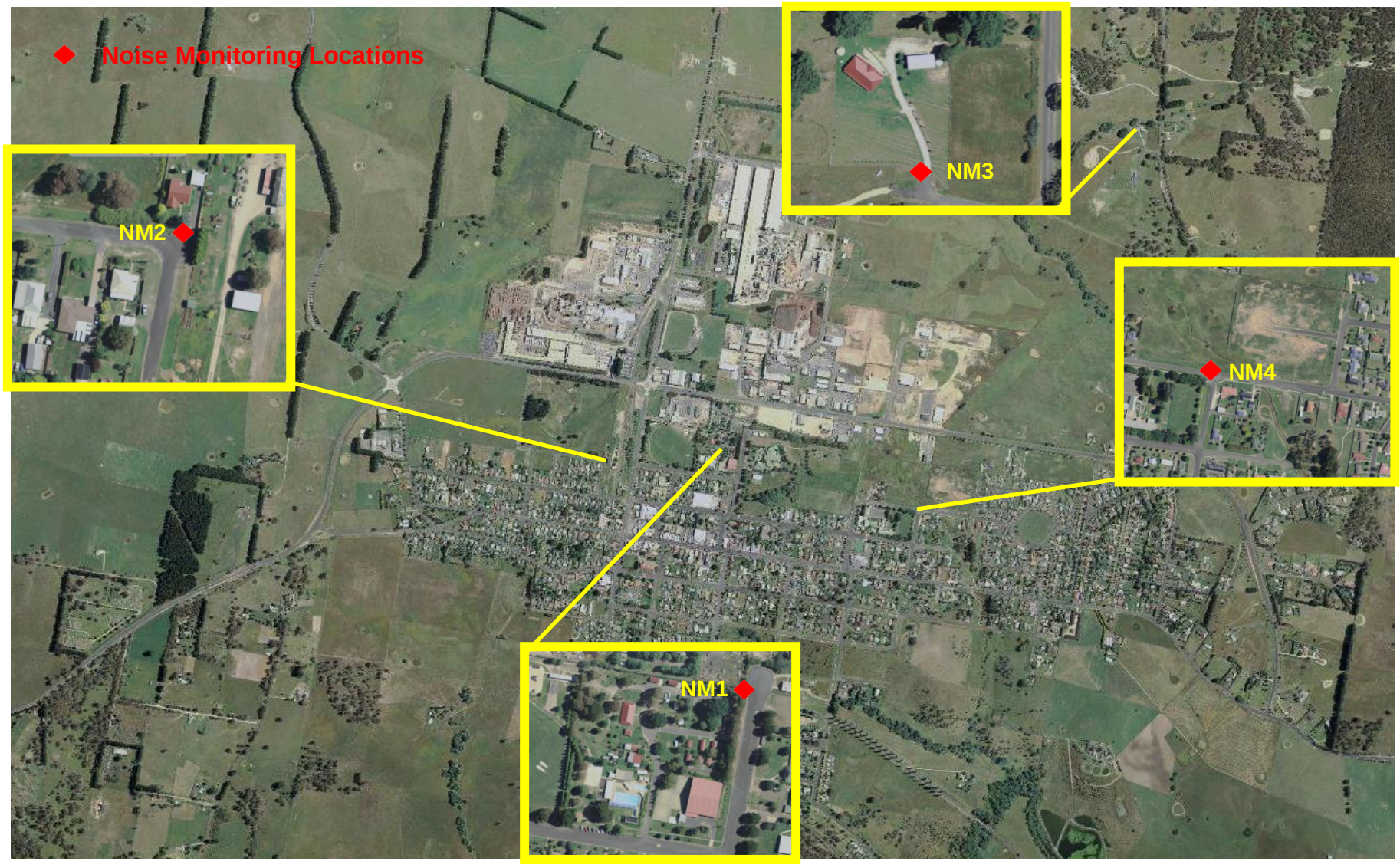

Figure 2 – Noise Monitoring Locations

7.3.2 Weather Conditions

Monitoring should be undertaken on days of light winds (<5 m/s) and no rain. Wind speed is to be monitored using a hand held wind speed monitor. Rain and too much wind will elevate the noise level. If there is no choice but to monitor in inclement weather, note the conditions on the field sheet.

NMLs listed in Table 6 apply under all meteorological conditions except for the following:

- Wind speeds greater than 3 metres/second at 10 metres above ground level; or
- Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
- Stability category G temperature inversion conditions.

Weather conditions measured at the site weather station should be used to determine applicability of meteorological exclusion rules.

7.3.3 Construction Noise Monitoring Procedure

Monitoring should be undertaken for a duration of 15 minutes at each location. More than one 15-minute measurement can be undertaken at each location.

The following information should be recorded in accordance with *AS 1055.2—1997 Acoustics—Description and measurement of environmental noise*. The field sheet for noise monitoring should capture the following details:

- Date and time of measurement;
- Details of the measurement positions, instrumentation used and types of analyses made;
- Weather conditions at each monitoring location, recorded at 1.8 metres above ground level, during the measurements (wind direction, wind velocity, relative humidity, temperature, recent precipitation, cloud cover (oktas));
- Description of the noise being investigated as well as operating conditions of the sound source(s) under investigation;
- Noise due to other sources including normal and possibly unusual noises;
- Statistical noise metric results including L_{A1}, L_{A10}, L_{Aeq} and L_{A90} due to all noise sources during the measurement period;
- Estimated or calculated $L_{Aeq\ (15min)}$ attributable to Borg noise sources (in the absence of extraneous noise sources) during the measurement period;
- Associated observations (vibrations, amplitude or frequency modulation or similar).

Noise monitoring results will be recorded on a Noise Monitoring Record Form. An example Noise Monitoring Record form is provided as **Appendix B**.

Correction for Background Noise

Operational noise management levels are used to assess construction noise (refer **Section 5**). Borg propose to generally restrict site noise emission from both construction and specific operational tasks combined to comply with operational noise criteria.

Background noise such as traffic and other non-operational influences are not included in this total. Therefore, it is important to distinguish between operational noise and other noises. This can be done in several ways:

i. Use the SLM display while monitoring to estimate the noise level from specific sources dominant at the time, e.g. when no traffic is present and construction/operational equipment is strongly dominant or where construction/operation is inaudible over the traffic.
ii. Also, note the proportion of time that construction/operational noise is dominant, e.g. 10%, 50% etc, and under what conditions this occurs.
iii. If practical, use the 'pause' and 'back erase' functions of the SLM to eliminate any extraneous noise such as dogs barking or lawn mowers.
iv. Where possible, or in cooperation with operators, measure background noise with no construction activity, then again with construction underway. The construction noise can then be compared with the background noise. This could be for durations of just a few minutes or, with cooperation, two separate 15 minute recordings.

Correction for Impulsive Noise
Impulsive noise is noise having a high peak of short duration or a sequence of such peaks (EPA, 2000).

To assess whether noise is substantially impulsive, noisy activities should be measured with the SLM set on A-weighted ***fast*** response and ***impulse*** response. According to the INP, noise is considered impulsive if the difference between the two values is more than 2 dB(A). Apply difference in measured levels as the correction, up to a maximum of 5 dB.

Correction for Intermittent Noise
Intermittent noise is when the level of noise suddenly drops to that of the background noise several times during the assessment period, with a noticeable change in noise level of at least 5 dB (EPA, 2000).

In accordance with the INP, a correction of 5 dB(A) for intermittent noise should be made to the measured L_{Aeq} noise levels to account for the greater annoyance. Adjustment to be applied for night-time period only.

8 Training

Borg shall implement appropriate training and induction in the requirements of this CNMP. All employees and contractors working on site will undergo site induction training, which includes Environmental Awareness Training. The induction will address:

- This CNMP;
- The existence of noise legislation and what this means for the Project, i.e. Noise Management Levels;
- Delivery hours and locations;
- Reporting and recording environmental non-compliance related to noise;
- Noise minimisation measures; and
- The importance of regular plant maintenance.

Records will be kept of all personnel undertaking the site induction and training, including the contents of the training, date and name of trainer/s.

Key staff will undertake more comprehensive training relevant to their position and/or responsibility. This training may be provided as “toolbox” training or at a more advanced level by the Environmental Manager.

Further details regarding the content of staff induction and training are outlined in the CEMP.

9 Community Consultation and Complaints Management

9.1 Community Consultation

Close community liaison will be maintained to ensure that local residents are aware of the times and durations when they may be affected by construction noise that exceeds the NML’s in **Table 6** (such as rock/concrete breaking activities) and to provide an avenue for communication between the community and the Project team.

The CEMP details the methods and timing for community consultation on the Project throughout the construction period.

9.1.1 Community Consultative Committee

Borg has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the Borg Panels site. This existing CCC will be utilised to discuss and address general construction impacts, including noise management and mitigation measures. The CCC meeting will also provide a forum to provide feedback to Borg in relation to the environmental management of the Project.

9.1.2 Community Consultation for Managing Noisy Works

Strategies developed with the community for managing noisy works are documented in **Table 7**; refer section on Construction Controls – Rock/Concrete Breaking.

Community consultation undertaken to develop these strategies for managing noisy works included:

- Presentation and Project update to the Oberon Business and Tourism Association at their meeting held on 12 April 2017. An outline of activities to occur during construction, including rock/concrete breaking activities was presented, and included contact details for the construction period of the Project.
- Written email correspondence on 12 April 2017 with the Oberon High School Principal to inform that noise generating activities will occur during construction of the Project. The email was an invitation to assist in development of strategies for managing the noisy works and sought feedback and suggestions.

  Additionally, the Principal was advised further consultation will be undertaken prior to the activity occurring and where feasible and reasonable, Borg will plan works to limit rock/concrete breaking activities during important events, e.g. examination periods.

  Furthermore, an invite was extended to the School Principal to attend the CCC meeting workshop for developing strategies for managing noisy works.

- A meeting was held on the 18 May 2017 to update Oberon Council on the progress of the development application. This meeting was also used to discuss the management of noisy works during Project construction. Council agreed that the communication channels proposed in the CEMP were suitable, and also suggested the use of the Council community newsletter as a conduit to the public. This newsletter is sent to all households on the 15th of each month.

A project update letter dated 22nd February 2019 was distributed to the community via Oberon Council. This letter advised that the project had progressed well since approval in May 2017 and that commissioning of the new particleboard line was underway.

A workshop focusing on managing noisy works was held at CCC meeting dated 12th April 2017, prior to the noisy works being undertaken. Proposed strategies for managing the noisy works were presented, discussed and further developed with the CCC members. Strategies previously developed have been included in **Table 7**.

9.2 Inquiry and Complaints Management

9.2.1 Opportunities for Information Exchange

Borg has in place the following avenues to register inquiries and complaints related to construction and operational activities:

- A 24-hour freecall community liaison line (1800 802 795);
- Postal address for written complaints (Borg Panels, Private Mail Bag 1, Oberon NSW 2787); and
- Email address for electronic complaints (oberon_site@borgs.com.au).

The telephone number, postal and email address will be clearly displayed on a sign near the entrance to the construction site, in a position that is clearly visible to the public. This information will also be widely disseminated in the community and included on public information, which may include the website, local area advertisements, letterbox notifications and Project specific fact sheets.

9.2.2 Inquiry and Complaints Handling Process

Borg's community and stakeholder management system includes procedures for recording, investigating, tracking and handling of all inquiries and complaints, as detailed in the CEMP.

Once Borg has received verbal or written inquiries and/or complaints via telephone, email or post, the Environmental Manager or their nominated delegate will:

- Undertake an immediate investigation into the nature/cause of the inquiry and/or complaint;
- Make initial contact with the community or stakeholder representative within 48 hours to clarify the reason for the inquiry and/or complaint and to notify of the investigation process including an appropriate re-notification time;
- Record the inquiry and/or complaint on the Community Complaints register. This register includes the following details:

- Complaint date and time;
- Site;
- Title;
- Category;
- Description;
- Caller details;
- Action;
- Status;
- Follow-up;
- Complaint validity; and
- Attachments.

- Further investigate the inquiry and/or complaint and provide the community or stakeholder representative with an explanation of the cause and details of any actions taken to mitigate its effect.

It should be noted that if the inquiry and/or complaint is classified as an incident of significance under the site Emergency Response Plan (ERP), the Environmental Manager must follow the incident reporting process in that document and ensure appropriate resolution andsign-off.

Records of complaints will be maintained in the complaints register database for at least four years after the complaint was made.

10 Reporting

10.1 Scheduled Reporting

Construction noise performance is reported externally as follows:

- Quarterly attended noise compliance monitoring reports. Attended noise monitoring reports will include a comparison of measured noise levels with operational noise criteria conditioned in Development Consent SSD 7016 and EPL 3035. All attended measurement result analysis should consider criteria applicability (for project specific criteria) with regard to wind speed and atmospheric stability class;
- Quarterly updates of monitoring results on the Borg website; and
- Annual Review. A copy of the Annual Review is sent to relevant stakeholders, including DPIE, EPA and Oberon Council and is available on the Borg website.

10.2 Exceedance Reporting

In the event it is determined that an exceedance of a noise criterion has occurred, at the earliest opportunity (as soon as practicable) Borg will notify DPIE in accordance with Development Consent SSD 7016 and EPA in accordance with EPL 3035.

In accordance with Condition C12 of Development Consent SSD 7016, Borg will within 7 days of the exceedance date, provide a detailed report on the exceedance to the DPIE and EPA.

11 CNMP Review

In accordance with Development Consent SSD 7016 Condition C10, this CNMP will be reviewed and if necessary revised within 3 months of an:

- Approval of a modification;
- Submission of an incident report under Condition C13;
- Approval of an Annual Review under Condition C11; or
- Completion of an audit under Condition C15.

Revisions to the CNMP will be submitted to the Secretary DPIE for approval.

12 References

Environment Protection Authority (January 2000). *NSW Industrial Noise Policy*. ISBN 0 7313 2715 2, EPA 00/1.

Environment Protection Authority (September 2015). *Draft Industrial Noise Guideline*. ISBN 978 1 74359 940 2, EPA 2015/0185.

Global Acoustics (May 2016). *Borg Panels Timber Panel Processing Facility Oberon NSW – Noise and Vibration Impact Assessment*. Prepared for Borg Manufacturing.

Appendices

Appendix A – Noise Monitoring Record Form

Noise Monitoring Record Form	
Monitoring Location	
Description of Location	
Test Conducted By	
Date of Monitoring	
Measurement Start Time (hh:mm)	
Measurement Time – Length (min)	
Noise Meter Model/ Calibration Date	
Calibrator Model/ Calibration Date	
Weather Conditions	
General Description	
Wind Speed (m/s)	
Wind Direction	
Temperature (deg C)	
Relative Humidity	
Recent Rainfall	
Cloud Cover (oktas)	
Measurement Results	
$L_{Aeq\ (15min)}$ (dB(A))	
L_{A1} (dB(A))	
L_{A10} (dB(A))	
L_{Aeq} (dB(A))	
L_{A90} (dB(A))	
Major Construction Noise Source(s) During Monitoring	
Other Noise Source(s) During Monitoring	
Comments	