

Annual Review 2024/25

Porta Products Pty Ltd (Formally Borg Manufacturing, Borg Panels, Australian Panels)

124 Lowes Mount Road, Oberon NSW

Porta Products

1 August 2025

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name/ Position	Signature
1	1/08/2025	Andrew Brady Environmental Manager	For submission to DPE	Richard Kaine Facility Manager	

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Annual Review Title Block

Name of operation	Porta Products Pty Ltd
Name of operator	Porta Products Pty Ltd
Development consent / project approval #	SSD 7016
Name of holder of development consent / project approval	Borg Construction
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	80WA715797
Name of holder of water licence	Porta Products Pty Ltd.
MOP/RMP start date	N/A
MOP/RMP end date	N/A
<i>I, Richard Kaine, certify that this audit report is a true and accurate record of the compliance status of Porta Products Oberon for the period 1st May 2024 to 30th April 2025 and that I am authorised to make this statement on behalf of Porta Products Pty Ltd</i> Note. a) <i>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i> b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, \$22,000, or both.)</i>	
Name of authorised reporting officer	Richard Kaine
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	1/08/2025

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Porta Products Pty Ltd (Formally Borg Manufacturing, Borg Panels, Australian Panels) Oberon site (referred to herein as the 'Development') and covers the twelve-month reporting period from 1 May 2024 to 30 April 2025. This Annual Review has been prepared to satisfy condition C11 of Development Consent SSD 7016 issued by the Minister for Planning on 29 May 2017.

The Development is located at 124 Lowes Mount Road, Oberon and consists of three medium density fibreboard (MDF) plants, a particleboard manufacturing plant and a mouldings manufacturing plant.

This Annual Review is submitted to NSW Department of Planning and Environment (DPE), NSW Environment Protection Authority (EPA) and Oberon Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the Porta Products Oberon website:

[BORG - Oberon NSW \(borgs.com.au\)](http://borgs.com.au)

Porta Products Pty Ltd ('Porta') generally maintained compliance with necessary approvals and licences with the exception of EPL 3035 condition L2.5 and O2.1 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water and Section 7.2 Non-Conformances respectively.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 7016	C11	Annual review	Compliant		1.4 Annual Review Requirements
WAL28951	N/A	Aquifer extraction	Compliant		1.6 Water Licenses
EPL 3035	Section 3 L2.4	Air Quality	Compliant	Exceedances of EPL 3035 discharge to air limits	4.3 Air Monitoring
EPL 3035	Section 3 L2.5	Water Quality	Compliant		4.4 Surface Water
EPL 3035	Section 3 L4.1	Noise	Compliant	Exceedance by 1 decibel during night period monitoring. Retest within one week below license limit.	4.6 Noise
SSD 7016	C15	Independent Environmental Audit	Non-compliant	Communication made with Department of Planning however still awaiting endorsement. Auditor Booked and will conduct audit during the 2025/26 reporting period	6 Independent Audit
EPL 3035	R3	Exceedance of emissions limit at Pt.31 in previous reporting period	Non-compliant	Self-report made to EPA Pollution Hotline as per PIRMP	7.2 Non-Conformances
EPL 3035	R3	Fire at Materials handling building (PB)	N/A	Self-report made to EPA Pollution Hotline as per PIRMP	7.2 Non-Conformances

1.2 Introduction

The Development forms part of the wider Oberon Timber Complex, manufacturing a range of MDF products (Custom wood) and particleboard including:

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

Figure 1 Regional context



1.3 Consent

Development Consent SSD 7016 was issued by the Minister for Planning on 29 May 2017 to construct and operate a particleboard facility, and continuation of and alterations and additions to, the existing medium density fibreboard facilities.

Condition A26 of SSD 7016 required the Development to modify DA27/95. Porta submitted a Section 96 Modification Application requesting removal of condition A26 as compliance with it was not possible. This application also included a minor change to the orientation of the material handling building at particleboard, an increase to the warehouse footprint and amendments to the stormwater management system at the northern section of the site. A determination was received from the Department approving this application on 20 November 2018 (SSD 7016 MOD 1 – Site layout changes).

Under Modification of Development Consent SSD 7016 MOD 2 Porta proposed to install a high-pressure natural gas pipeline connection and turbine, and ancillary equipment to produce electricity and utilise waste exhaust heat in the particleboard manufacturing process. The Minister for Planning provided approval for MOD 2 on 29 November 2019.

Activities proposed under Modification 3 included the installation of additional equipment to the materials handling area for better separation and removal of undesirable materials found in the recycled wood that is used in the production of particleboard, and the addition of an enclosed awning to the northern end of the Northern Warehouse for more optimized truck loading/unloading. Works to the site stormwater management system were also proposed under MOD 3. These included reclamation of the overflow effluent pond and reinstatement at another location to allow for further hardstand, and changes to the stormwater conveying swales and ponds to allow construction of the hardstand and also to separate surface water flows between the Development and the Highland Pine Panels ('HPP') site, including the construction of a new HPP discharge point.

Approval was provided by the Minister of Planning for MOD 3 on 22 May 2020.

An application to modify SSD 7016 (Modification 4) was submitted to the Department of Planning and Environment on 26 October 2021. Activities proposed under MOD 4 included the following:

- reclamation of the remaining portion of the man-made spring fed dam to allow for increase in the size of the hardstand at the north eastern corner of the site to facilitate the relocation of the existing site mechanic's workshop;
- modernisation of the old multidaylight press used for producing medium density fibreboard and changes to its exhaust air emissions;
- addition of an enclosure to the site water treatment biological tanks;
- installation of additional reverse osmosis filtered water production;
- construction of a new bunded chemical storage shed for the water treatment plant;
- construction of an additional lined effluent storage dam for the water treatment plant; and
- construction of a new road within the site to better facilitate traffic flow.

Approval was provided by the Minister of Planning for MOD 4 on 20 May 2022.

An application to modify SSD 7016 (Modification 5) was submitted to the Department of Planning and Environment on 21 December 2023. Activities proposed under MOD 5 included the following:

- Minor alterations and additions to the approved mechanical workshop including three additional workshop bays,
- additional first floor storage within the workshop and,
- minor updates to the office.

Development justification for the proposed modification:

- Improve the infrastructure required to support the existing activities
- Enable larger mechanical repair workshop for the growing fleet of vehicles increase the number of workshop bays from seven to ten (three additional bays)
- Include a dedicated automated truck washing machine and parking area for large vehicles
- Support a safer working environment for the employees and reduce the potential of outdoor work activities

Approval was provided by the Minister of Planning for MOD 5 on 23 April 2024.

A summary of development consents including modifications applicable to Porta is presented in Table 2.

Table 2 Facility Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016	29 May 2017	NSW Minister for Planning	Construction and operation of a particle board facility and continuation of, and alterations and additions to, the existing medium density fibreboard facility.
Development Consent SSD 7016 MOD 1	20 November 2018	NSW Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	NSW Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment
Development Consent SSD 7016 MOD 3	22 May 2020	NSW Minister for Planning	Additional material handling equipment, extension to the Northern Warehouse, changes to the site surface water system and construction of further hardstand.

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016 MOD 4	20 May 2022	NSW Minister for Planning	Reclamation of the spring fed dam, increase in hardstand at the north eastern corner of the site, relocation of existing mechanic's workshop, modernisation of multidaylight press and changes to its exhaust air emissions, addition of an enclosure to water treatment biological tanks, installation of reverse osmosis filtered water production, construction of chemical storage shed, construction of a lined effluent storage dam and construction of a new road.
Development Consent SSD 7016 MOD 5	23 April 2024	NSW Minister for Planning	Minor update to the approved mechanical workshop including additional workshop bays, additional first floor storage and minor updates to the office Removal of the refuelling station

1.4 Annual Review Requirements

The Annual Review requirements provided for by condition C11 of Development Consent SSD 7016 have been summarised in Table 3, alongside the relevant sections of this document where those requirements are addressed.

Table 3 Annual Review Requirements

Development Consent SSD 7016 – Condition C11	Section of Annual Review
By 31 July 2017, and each year thereafter, unless otherwise agreed by the Secretary, the Applicant must review and submit a report to the Secretary detailing the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This Report
(a) describe the development that was carried out during the reporting period, and the development that is proposed to be carried out over the next reporting period;	Section 2 Section 8
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 7
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4

Development Consent SSD 7016 – Condition C11	Section of Annual Review
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 8

1.5 Environment Protection Licence

The Development operates in accordance with Environment Protection Licence 3035 (EPL 3035), issued on 14 February 2001 by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 5 May 2025.

The EPL was varied and updated during this reporting period to include a Name change from Australian Panels to Porta Products Pty Ltd and updates to the previously implemented Pollution Studies and Reduction Program. The PRP incorporated the following elements:

U1 Air Emissions Audit Report

U1.1 By 14 March 2025, the licensee must provide the EPA with an Air Emissions Audit Report (AEAR). The AEAR must consider all plant and equipment operated at the Premises that has the potential to discharge any air pollutants into the environment (including the points identified within this licence). The Report must at a minimum include, but not be limited to the following:

- A. An identification of all plant and equipment with the potential to discharge air pollutants, including:
 - i. the air pollutants emitted,
 - ii. discharge parameters (eg. stack height, diameter),
 - iii. date plant installed/commissioned,
 - iv. date of any control technology installed/commissioned, and
 - v. a map with GPS points showing the location of each discharge point.
- B. For all the discharge points identified in A., a summary of all emissions testing data for the last 2 years and a comparison against the licence and Protection of the Environment Operations (Clean Air) Regulation 2022 limits. All original stack test reports should be provided. Where no testing has been undertaken, the Licensee must provide an emissions estimate (with supporting justification).
- C. For all the discharge points identified in A., a description of all control and mitigation measures currently implemented to reduce potential air pollution.
- D. For all emission controls installed, provide records of maintenance, management and monitoring of control equipment, including any future scheduled maintenance and upgrades.

1.6 Water Licences

Porta holds a Water Access Licence for use of groundwater in operations. Current licence details issued under the *Water Management Act 2000* are summarised in Table 4. Borg harvested 2,035,000 Litres of spring water during the reporting period at an average of 32,000 litres per harvest.

Table 4 Water Licences

Approval Details	Approval Number	Validity of Licence	Approval Kind	Extraction Limit
WAL28951	80WA715797	16 January 2012 – 01 March 2026	Water Extraction	28 Units

1.7 Trade Waste Licence

Porta's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable this reporting period as there was no renewal of the licence. Liquid trade waste is now treated on site.

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7016, construction activities continue to be undertaken in accordance with the Construction Environmental Management Plan (CEMP) and the existing development in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C10 Revision of Strategies, Plans and Programs, environmental management plans were reviewed, and minor amendments made where necessary. In this review period the following Plans were updated:

- Traffic Management
- Waste Management
- Noise Management
- Mobile Wood Chipper Management
- Erosion and Sediment Management
- Spring Fed Dam Reclamation Management Plan
- Operational Noise Management
- Surface Water Management
- Waste Management
- Operational Air Management
- Urban Wood Residue Management Plan

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for managing environmental operations at the Development.

Table 5 Site Personnel

Name	Title	Contact Details
Richard Kaine	Facility Manager	0409 151 094
Victor Bendeviski	Environmental and Regulatory Compliance	(02) 4340 9800
Andrew Brady	Environmental Manager	0447 765 913

1.10 Actions Required from Previous Annual Review

The actions listed in Table 6 were identified in the 2023/24 Annual Review for implementation during this 2024/25 reporting period.

Table 6 Proposed Activities in 2023/24 Reporting Period

Activities Proposed in 2023/24 Reporting Period	Results achieved in 2024/25 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.	Ongoing implementation of the OEMP, CEMP and sub plans including environmental inspections undertaken at least monthly. Inspections recorded and actions assigned accordingly, and use of DataStation to track progress and close out. CEMP, OEMP and sub plans reviewed, and updates performed where: a) changes to site operations (existing and project); and b) in accordance with SSD 7016 C10.
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1, MOD 2, MOD 3 and MOD 4	As reported in this Annual Review. All additional conditions imposed by modifications have been incorporated into Porta's tracking document OBERON Approvals and Licensing Compliance Register.
Complete works as approved under MOD 4	Works commenced once approval was granted. Works will continue into the next reporting period. the remainder of the Spring dam was filled during the reporting period. Subsurface water flows have continued as per the plan with no disruptions to ground water. No other projects associated with MOD 4 were commenced.
Undertake rehabilitation works to areas disturbed by construction activities	Stormwater swales impacted by construction activities established good groundcover to assist with managing erosion control and sediment mobilisation which can affect stormwater quality discharge. Ongoing rehabilitation and modification works will continue on-site to ensure good water management practices.
Discuss with EPA licensed water discharge points, referencing EPL 3035, to ensure this is fit for purpose	Continuation of monitoring from the two separated water sources (EPA Pt.28 and HPP Swale). Full compliance throughout the reporting period from Porta.
Continue erosion and sediment control inspections and rectification works as necessary to manage storm water quality discharge as well as reinstate the original HPP swale design once high voltage electrical works have been completed (movement of powerlines from above ground to below).	Continuation of monitoring from the two separated water sources (EPA Pt.28 and HPP Swale). Full compliance throughout the reporting period from Porta. Earthworks are however still underway with upgrades to the system and closed concrete transfer pipes under roadways.

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7016 allows for production of up to 380,000 m³ of MDF and 500,000 m³ of particleboard per calendar year. During this reporting period the following quantities were manufactured at the Development: 313,158m³ of MDF and 333,211m³ of particleboard, along with a total intake of approximately 193,185 tonnes of UWR.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Increases to efficiency of particleboard UWR system to produce better quality board with a higher percentage of recycled content
- Modifications to traffic flow and roadways with concrete replacing dirt/gravel roads to decrease dust impacts
- Increase in efficiency of water treatment plant to better utilise stormwater and decrease use of town water
- Modifications to the C4 reject and dryer cyclones to increase efficiency
- Installation of a second paper treater for higher output and increased product range
- Installation of a reject conveyor for C1 line to eliminate manual processing/handling of rejected boards
- Installation of new higher efficiency screw press at the water treatment plant
- Upgrades to the heat plant

See Figure 2 for location of site infrastructure.

2.3 Site Activities

The following activities associated with the modifications to existing operations occurred during the reporting period:

- Extensive erosion and sediment control works to the northern and eastern swale system to improve discharge water quality including rectification to eroded sections, installation of rock check dams and closed concrete transfer pipes in areas of high flow and improvements to the inflow path to the first flush basin.
- Earthworks commenced to improve traffic flow and access to the proposed Mechanics workshop. Concrete roads installed to replace dirt tracks.
- Continued to receive quality recycled wood material under *The Borg Panels Urban Wood Residue order and exemption March 2021* for inclusion in the production of particleboard.
- Completed filling works to reclaim the spring dam in the northeastern corner of the site to make way for the proposed mechanic's workshop whilst maintaining spring water flow into the tributary that leads to Kings Stockyard Creek. Additional earthworks continuing.

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- construction works undertaken in accordance with the Construction Environmental Management Plan and sub-plans;
- attended noise verification monitoring;
- air emission verification monitoring;
- water quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via EHSR Alerts and Toolbox Talks.

2.4 Wood Recycling Program

During this reporting period the development continued to accept recycled wood materials in accordance with *The Borg Panels Urban Wood Residue order and exemption March 2021*. Approximately 193,185 tonnes of UWR was received on site for inclusion in the production of particleboard. The recycled material is aggregated at one of two Porta sites located in Sydney where it is inspected prior to delivery to Oberon. When this material arrives at Oberon via truck transport it is again inspected as it enters the site, this is conducted by spreading the materials out on a hardstand before being incorporated into the manufacture of particleboard.

Quarterly monitoring was conducted at EPA Pt 32 (WESP) during the reporting period and was compliant with all site operating conditions.

Figure 2 SSD 7016 Approved Development Area



3 Waste Management

Waste generated at the Development is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste removed from The Development during the reporting period is provided in Table 7.

Table 7 Waste Management 2024/25

Month	Description				Destination
	Litres	m3	Tonnes	Waste	
Apr 2025			105.58	mixed commercial	Bathurst Regional Council
	17040			waste oil	Sams Liquid Waste & Hire
Mar 2025		180		ash	Oberon Council Waste Depot
		820		general	Oberon Council Waste Depot
			81.58	mixed commercial	Bathurst Regional Council
	14500			waste oil	Cleanaway/Nationwide Oil
Feb 2025		130		ash	Oberon Council Waste Depot
		1170		general	Oberon Council Waste Depot
			73.8	mixed commercial	Bathurst Regional Council
Jan 2025		130		ash	Oberon Council Waste Depot
		880		general	Oberon Council Waste Depot
			50.08	Bulky Large Waste	Bathurst Regional Council
Dec 2024		170		ash	Oberon Council Waste Depot
		1005		general	Oberon Council Waste Depot
			32.06	mixed commercial	Bathurst Regional Council
Nov 2024		170		ash	Oberon Council Waste Depot
		1275		general	Oberon Council Waste Depot
			46.92	mixed commercial	Bathurst Regional Council
Oct 2024		268		ash	Oberon Council Waste Depot
		1275		general	Oberon Council Waste Depot
		5		tyres	Oberon Council Waste Depot
Sep 2024		235		ash	Oberon Council Waste Depot
		715		general	Oberon Council Waste Depot
			35.92	mixed commercial	Bathurst Regional Council
Aug 2024		367		ash	Oberon Council Waste Depot
		750		general	Oberon Council Waste Depot
			68.34	mixed commercial	Bathurst Regional Council
		2		Truck Tyres	Oberon Council Waste Depot
Jul 2024		320		ash	Oberon Council Waste Depot
		745		general	Oberon Council Waste Depot

			42.46	mixed commercial	Bathurst Regional Council
	8000			waste oil	Cleanaway/Nationwide Oil
Jun 2024		205		ash	Oberon Council Waste Depot
		785		general	Oberon Council Waste Depot
			47.28	mixed commercial	Bathurst Regional Council
May 2024		290		ash	Oberon Council Waste Depot
		859		general	Oberon Council Waste Depot
			56.96	mixed commercial	Bathurst Regional Council
			9.5	waste requiring burial	Bathurst Regional Council
	39,540	12,751	650.48		
Total		8545.9	191.98		

Waste types in Table 7 are further described as:

- General waste including a mix of both putrescible and non-putrescible waste;
- Waste requiring burial made up of urea formaldehyde, spade-able resin, paraffin wax bladders and ash materials;
- Non-Recyclable plastic waste is a new classification created by Oberon council and includes all soft plastics (wrapping, strapping and any general plastic waste).
- Building and demolition waste including concrete, metal and timber are recycled when appropriate; and
- Used oils from the plant process oil systems and mechanical workshop are recycled off site via third parties. All waste oil is considered trackable. All waste oil collected during the reporting period was collected by a suitably licensed waste transporter and taken to a suitably licensed waste facility. This reporting period it was decided to use multiple transporters as there had been reliability issues with one particular company.

3.2 Trade Waste

Porta's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable during this reporting period as there was no renewal of the licence. Liquid trade waste is treated on site.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

The development operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental monitoring is conducted in accordance with the requirements of SSD 7016, its subsequent modifications (MOD1, MOD2, MOD3, MOD4 & MOD5), and EPL 3035. Environmental monitoring is an integral part of the development's environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Meteorological Data

The development operates and maintains a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The meteorological station was inspected and serviced on 29 May 2025 by a trained third-party consultant from Envirodata Weather Stations Pty Ltd.

The following section summarises the meteorological data for the 2024/25 reporting period.

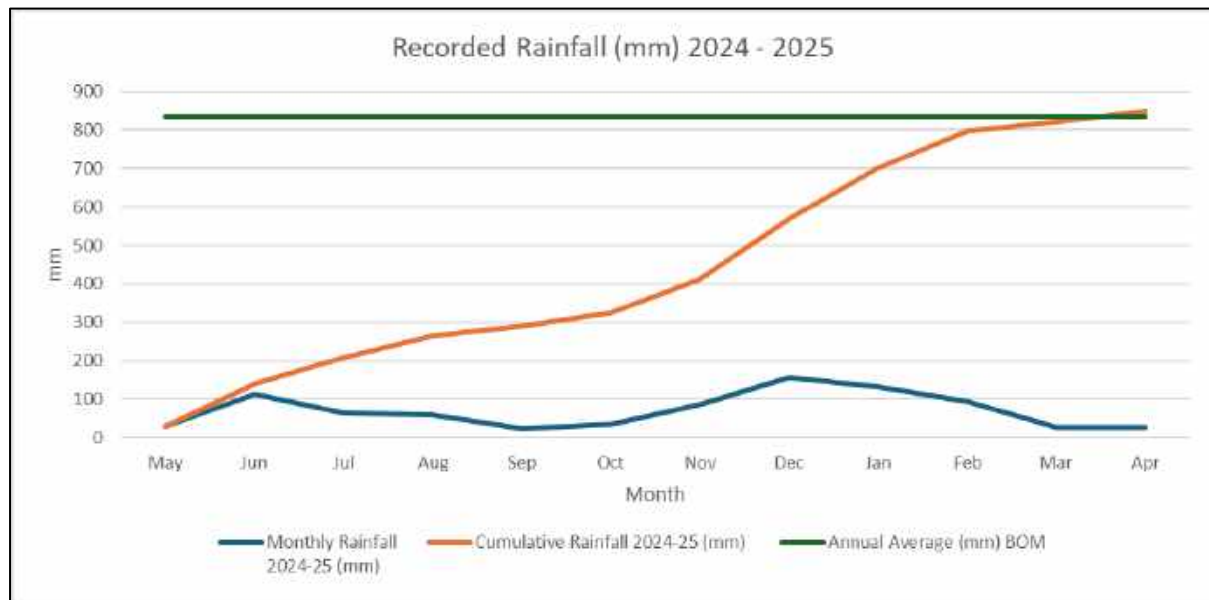
4.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during this reporting period recorded at EPA Point 26 is shown in Table 8 and displayed in Figure 3 below. Total recorded rainfall for the period was 848.6mm. This is 12.9mm above the annual mean rainfall of 835.7mm for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2024/25

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
29.2	112.2	65.6	58.6	24.4	34	87.6	158	132.2	94.4	26	26.4	848.6
Number of Rain Days (≥0.2mm)												
22	17	18	21	26	27	22	24	20	20	26	25	268

Figure 3 Recorded Rainfall (mm) at Porta Meteorological Station 2024/25



4.2.2 Temperature

Monthly maximum and minimum temperatures recorded from the site weather station during the reporting period are shown in Table 9.

Table 9 Monthly Minimum and Maximum Temperatures 2024/25

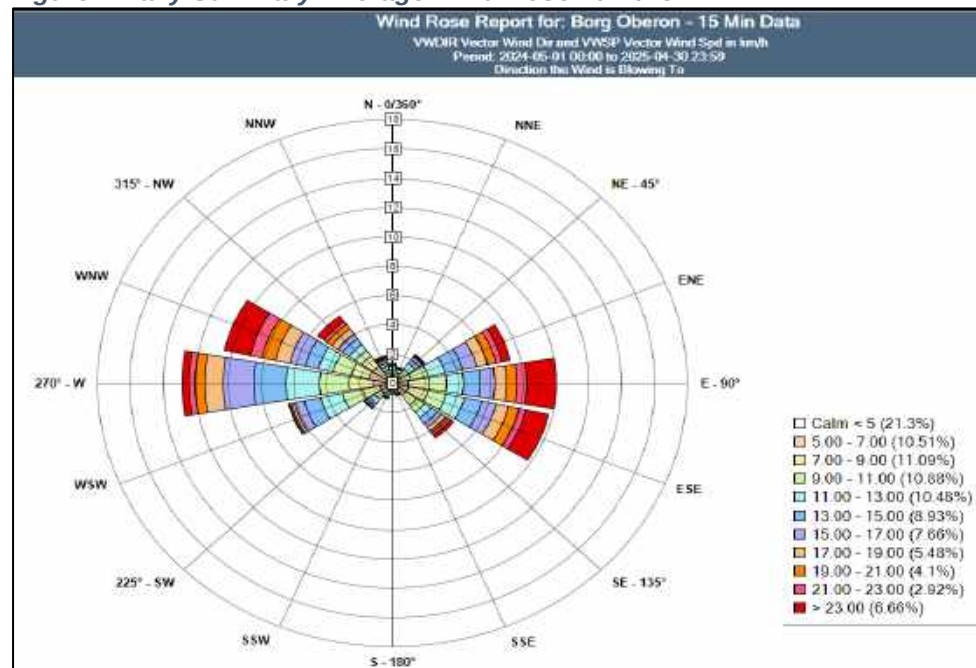
Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-2.9	-4.1	-2.6	-2.9	-4.6	1.6	3.7	4.1	6	4.4	4.4	1.5
17.6	12.3	12.7	16.9	20	22.3	29.5	31.2	31.8	29.8	30.9	22.7

4.2.3 Wind Speed and Direction

The site weather station recorded wind speed and direction data is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4. As can be seen in Table 10 and Figure 4, the dominant wind direction during this reporting period was from an easterly direction.

Table 10 Monthly Daily Wind Data 2024/25

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2024	46.4	10.2	124.2° (SE)
June 2024	45.9	10.2	280.2° (W)
July 2024	49.6	14.6	264.8° (W)
August 2024	44.5	11.2	285.3° (WNW)
September 2024	55.4	14.7	256.4 ° (WSW)
October 2024	45.4	11.2	286 ° (WNW)
November 2024	50.2	10.5	287.3 ° (WNW)
December 2024	47.2	10.4	255.1° (WSW)
January 2025	58.5	12.7	131.5° (SE)
February 2025	42.6	9.6	286 ° (WNW)
March 2025	45.5	12.5	102.2° (ESE)
April 2025	36.1	9.7	122.7° (ESE)

Figure 4 Daily Summary Average Wind Rose 2024/25

4.3 Air Quality

4.3.1 Dust Depositional Gauges

Dust deposition monitoring is undertaken in accordance with the development's Operational Air Quality Management Plan (OAQMP). Condition O3 of EPL 3035 states that:

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

EPL 3035 does not specify dust deposition monitoring be undertaken, the development conducts this to assist with site management. The air quality criteria adopted for deposited dust is provided in Table 11.

Table 11 Air Quality Criteria Deposited Dust

Averaging Period	Impact	Criteria
Annual	Incremental	2 g/m ² /month
	Total	4 g/m ² /month

There are six dust depositional gauges (DMG) located in and around the site. The six gauges were sampled monthly throughout the year from May to April. The locations of dust depositional gauges are listed in Table 12 and shown in Figure 5.

Table 12 Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description
DMG 1	The Development eastern boundary with Woodchem
DMG 2	Materials handling building
DMG 3	Water treatment plant
DMG 4	Northern boundary
DMG 5	Highlands Motor Inn, South of the Development
DMG 6	Albion Street, East of the Development

Figure 5 Depositional Dust Gauge Locations



DMGs 1 to 4 are located at the periphery of the site. DMG 1 is located within the operational boundary of the site immediately adjacent to an unsealed laydown area and in general proximity of an unsealed road. DMG 2 is located adjacent to the materials handling building. DMG 4 is located towards the northern boundary in an area of unsealed compacted surfaces used for storage of large pieces of machinery and reusable material such as steel.

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method*. During the reporting period all dust samples were collected by trained specialists and analysed by NATA certified laboratories.

Table 13 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids (g/m ² /month) 2022/23	Annual Average Insoluble Solids (g/m ² /month) 2023/24	Annual Average Insoluble Solids (g/m ² /month) 2024/25
DMG 1	The Development eastern boundary with Woodchem	5.9	5.3	4.8
DMG 2	Materials handling building	5.1	3.6	2.7
DMG 3	Site Meteorological station	1.3	2.2	0.9
DMG 4	Northern boundary	1.0	0.8	0.9
DMG 5	Highlands Motor Inn	0.9	0.8	0.6
DMG 6	Albion Street east of the Development	1.0	0.7	0.7

*DMG1 was removed during upgrades to the roadway adjacent Woodchem and is proposed to be reinstated in a more suitable location once works are completed. DMG1 annual average result is based off a time period of four months.

Table 13 shows DMG 1, returned exceedance of the annual average criteria of 4g/m^2 for insoluble solids however, it had further decreased in the annual average when compared to the last three year's reporting periods. DMG 1 is exposed to regular traffic and day-to-day activities adjacent internal dirt roads.

DMG 4 was the only gauge to have increased in annual average insoluble solids. However, it was still significantly below the annual average criteria.

There were no exceedances of the dust deposition criteria (4g/m^2) at locations DMG 2, DMG 3, DMG 4, DMG 5 and DMG 6 for the 2024/25 reporting period.

All gauges showed a decrease in the average annual for insoluble solids when compared to the previous three years data. This is expected to be as a result of both higher than average rainfall and increased management efforts of suppression using stormwater catchment dams and a watercart.

4.3.2 Air Emissions Monitoring Points

The locations of air emission monitoring points are listed in Table 14 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 11 April 2025.

Table 14 Location of Air Emissions Monitoring

EPA Identification No.	Description
4	DC1 Baghouse
5	DC2 Baghouse
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)
9	Conti 1 Dryer Cyclone #1 (south)
10	Conti 1 Dryer Cyclone #2 (north)
11	Conti 2 Heat Plant
12	Press Vents Conti 1
17	Conti 1 Heat Plant
18	Press exhaust vents
19	Dryer stack
20	Reject cyclone DC 11
21	Reject cyclone DC 12
22	Reject cyclone DC 13
27	Combined Conti 2 Press Vent
29	Forming Line Baghouse

EPA Identification No.	Description
30	Form Station Baghouse
31	Particleboard Press Extraction
32	Wet Electrostatic Precipitator (WESP)
33	Cogeneration Unit 1
34	Cogeneration Unit 2

EPA Identification Points 18, 19, 20, 21 and 22 are recognised as discharge points in EPL 3035 however there is no requirement to monitor the concentration of pollutants discharged at these points. Plant associated with these points has previously been dormant however it was the subject of MOD4 and will be added back to the license once Conti 4 has been commissioned and in operation.

Points 11 and 17 do not produce flow. The exhaust from Conti 2 heat plant (Point 11) is ducted back into Conti 2 dryer cyclones (Points 7&8), and exhaust from Conti 1 heat plant (Point 17) is ducted back into the Conti 1 production system (Points 9&10).

4.3.3 Air Monitoring

Environment Protection Licence 3035 sets pollution concentration limits for emission Points 7, 8, 9 and 10 as shown in Table 15. All plant and equipment must comply with the relevant concentration standards listed in Schedule 2, 3 and 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* where pollution limits are not specified in the EPL. Monitoring results are assessed against these criteria to determine compliance with air emission limits.

Table 15 EPL 3035 Air Concentration Limits

Pollutant	ID Point	Units of Measure	100 Percentile Concentration Limit	Reference Condition	Oxygen Correction	Averaging Period
Total Solid Particulates	7,8,9,10	mg/m ³	200	n/a	n/a	n/a
Formaldehyde	7,8,9,10	mg/m ³	5	n/a	n/a	n/a
Total Solid Particulates	29,30	mg/m ³	10	Dry, 273 K, 101.3 kPa	n/a	n/a
Total Solid Particulates	31,32	mg/m ³	50	Dry, 273K,101.3k Pa	n/a	n/a
Type 1 and Type 2 substances in aggregate	32	mg/m ³	0.5	n/a	n/a	1 hour
Nitrogen Oxides	33,34	mg/m ³	450	Dry, 273K,101.3k Pa	5%	1 hour
Volatile organic compounds	33,34	mg/m ³	20	Dry, 273K,101.3k Pa	5%	1 hour

Source: EPL 3035 (5 May 2025)

Air emission monitoring was undertaken by trained specialists and samples analysed by NATA accredited laboratories. Monitoring equipment is maintained by the consultant and calibrated in accordance with the manufacturer's specifications by qualified specialists. This monitoring

is performed in accordance with the methodologies as specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* and the requirements of EPL 3035. USEPA Method GD-008 is the approved method for determining flow rate and sampling for particulate matter in cyclonic flow from licenced discharge Points 7, 8, 9 & 10.

For each discharge point identified in Table 14 above, the development monitored the concentration of each pollutant as specified in EPL 3035. The results for this period are compared against results from the previous two years as displayed in Tables 16 to 33.

Table 16 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	<12	-	<2
Formaldehyde	mg/m ³	Yearly	4.2	-	0.11

Table 17 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	<3	-	<3
Formaldehyde	mg/m ³	Yearly	4.1	-	0.65

Points 4 and 5 saw a notable decrease in formaldehyde across both locations and similar TSP across the previous years data.

Table 18 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	38	35	28
Formaldehyde	mg/m ³	Yearly	21	3.3	1.60
Nitrogen Oxides	mg/m ³	Yearly	220	180	300
PM10	mg/m ³	Yearly	12	19	11
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Point 7 saw a decrease in formaldehyde, TSP and PM10 when compared to previous years however an increase in Nitrogen Oxides was noted.

Table 19 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	47	-	25
Formaldehyde	mg/m ³	Yearly	1.3	1.9	2.8

Nitrogen Oxides	mg/m ³	Yearly	230	-	340
PM10	mg/m ³	Yearly	16	-	11
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Point 8 saw a decrease in TSP and PM10 when compared to previous years however an increase in Nitrogen Oxides and a slight increase in formaldehyde was noted.

Table 20 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	32	18	20
Formaldehyde	mg/m ³	Yearly	3.7	4.8	0.47
Nitrogen Oxides	mg/m ³	Yearly	160	190	14
PM10	mg/m ³	Yearly	21	-	160
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Point 9 generally saw a reduction in all analytes when compared to previous years data with a notable decrease in Nitrogen Oxides especially.

Table 21 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2022/23	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	190	19	20
Formaldehyde	mg/m ³	Yearly	3.2	1	1.9
Nitrogen Oxides	mg/m ³	Yearly	140	110	13
PM10	mg/m ³	Yearly	47	47	130
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 18 generally shows a further reduction in Formaldehyde when compared to last years data across the discharge points. There was also a general reduction in nitrogen oxides in most locations.

All results shown in Tables 16 to 21 are within EPL 3035 limits as well as the *Protection of the Environment Operations (Clean Air) Regulation 2022*.

Table 22 Air Emissions Monitoring Results EPA Identification Point 12 Vent 1

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Every 3 years	-	-	<3

Formaldehyde	mg/m ³	Every 3 years	-	-	0.87
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	-

Table 23 Air Emissions Monitoring Results EPA Identification Point 12 Vent 2

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Every 3 years	-	-	10
Formaldehyde	mg/m ³	Every 3 years	-	-	1.4
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	4.4

Table 24 Air Emissions Monitoring Results EPA Identification Point 12 Vent 3

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Every 3 years	-	-	2.1
Formaldehyde	mg/m ³	Every 3 years	-	-	2.1
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	4

Table 25 Air Emissions Monitoring Results EPA Identification Point 12 Vent 4

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Every 3 years	-	-	6.7
Formaldehyde	mg/m ³	Every 3 years	-	-	6.7
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	5.7

Table 26 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	4.5	-	97
Formaldehyde	mg/m ³	Yearly	1.6	-	1.3
Nitrogen Oxides	mg/m ³	Yearly	<4	-	3
PM10	mg/m ³	Yearly	<4	-	41

Table 27 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	<2	-	<2
Formaldehyde	mg/m ³	Yearly	1.5	-	0.65
Nitrogen Oxides	mg/m ³	Yearly	<4	-	<4
PM10	mg/m ³	Yearly	<3	-	<2
Smoke Emissions	Obscuration	Yearly	0	-	0

Table 28 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	2.3	-	<2
Formaldehyde	mg/m ³	Yearly	1.0	-	0.03
Nitrogen Oxides	mg/m ³	Yearly	<4	-	<4
PM10	mg/m ³	Yearly	<3	-	<3
Smoke Emissions	Obscuration	Yearly	0	-	0

Points 12, 27, 29 and 30 all returned results that remained within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2022 limits.

Table 29 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25
Total Solid Particles	mg/m ³	Yearly	49	72	5.7
Formaldehyde	mg/m ³	Yearly	0.86	5.4	7.9
Nitrogen Oxides	mg/m ³	Yearly	<4	3	<4
PM10	mg/m ³	Yearly	19	29	5
Smoke Emissions	Obscuration	Yearly	0	0	0

Point 31 saw a slight increase in Formaldehyde however notable decreases in TSP, PM10 and Nitrogen Oxides during the reporting period when compared to the previous year's data.

Table 30 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2022/2023	2023/24	2024/25

Total Solid Particles	mg/m ³	Yearly	34	4	9.5
Formaldehyde	mg/m ³	Yearly	0.032	2.4	0.39
Nitrogen Oxides	mg/m ³	Yearly	190	150	4
PM10	mg/m ³	Yearly	*	2.1	4.8
Smoke Emissions	Obscuration	Yearly	0	0	0

*Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

Table 30.1 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	Test 1	Test 2	Test 3	Test 4
Type 1 and Type 2 substances in aggregate	mg/m ³	Quarterly	<0.19	<0.085	<0.1	<0.085

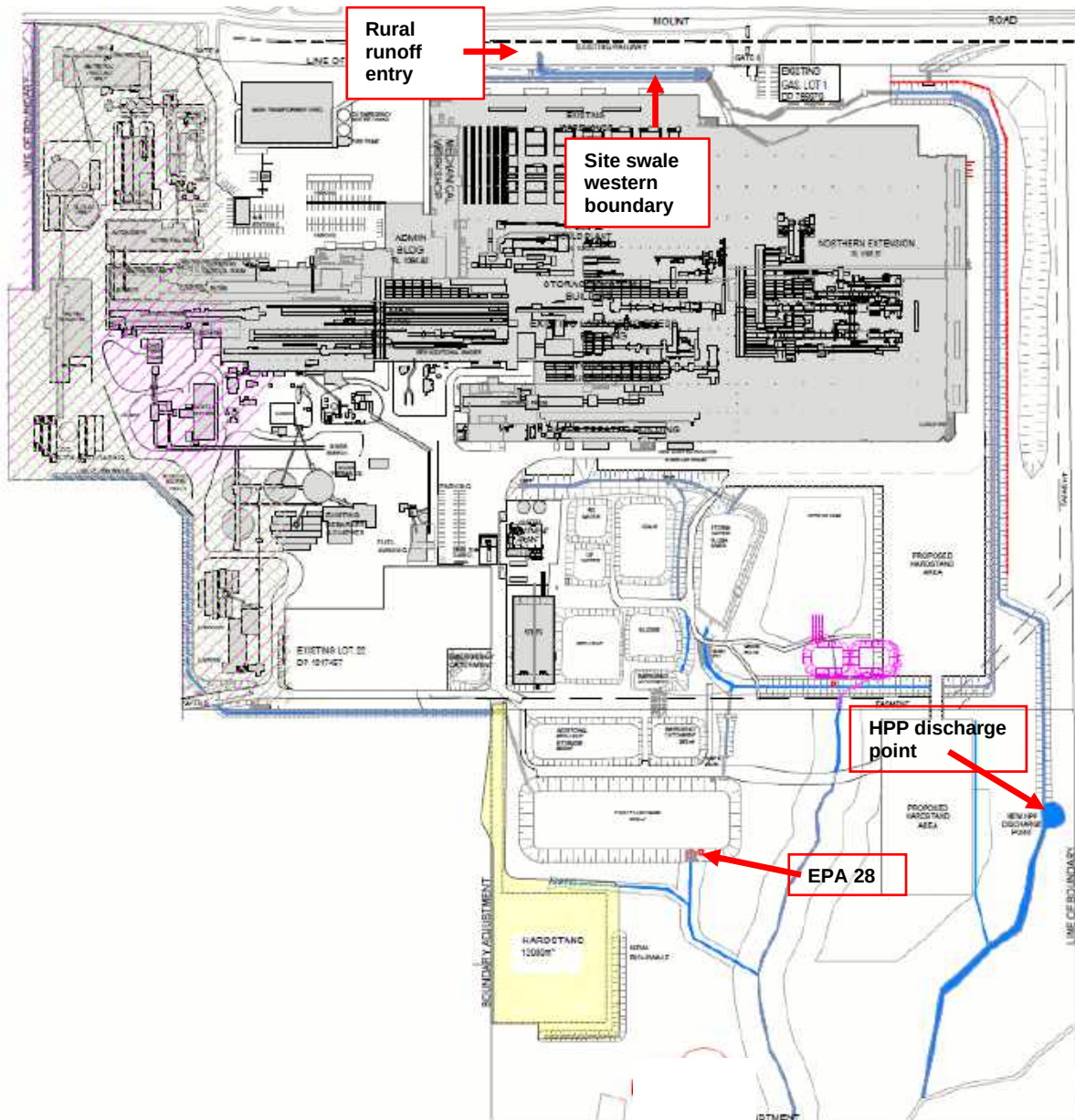
Point 32 Saw a slight increase in TSP and PM10 however notable decreases in Formaldehyde and Nitrogen Oxides during the reporting period. Despite the increase in TSP the results remain within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2022 limits.

4.4 Surface Water

The existing surface water management system (see Figure 6) includes runoff from the Development and adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from StructaFlor and Highland Pine Products Sawmill 2 flows across Lowes Mount Road and directed onto the site via the swale on the western boundary
- Runoff from rural parcels of land on Lowes Mount Road is also directed into the site from the western boundary, conveyed via a 'clean' water swale, which runs alongside the site swale following the northern boundary before discharging at an independent HPP discharge point to a tributary of Kings Stockyard Creek
- The Development roof and surface runoff from the western side of the facility is directed into the boundary swale and transferred into the first flush basin
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap (GPT) and then into the stormwater flush basin
- Any overflow from the existing stormwater flush basin is directed into the first flush basin
- Water captured in the basins is harvested by the site water treatment plant for reuse in the production system.
- Stormwater harvesting averaged 9.7m³/day over the reporting period the largest recorded volume of water harvested in one day was 148m³
- Runoff from construction areas is managed in accordance with Erosion Sediment Control Plans as part of the CEMP for SSD7016. Surface water from these zones is directed into the site swale then on to the stormwater basin
- Water discharges from EPL discharge Point 28, and HPP discharge point to a tributary of Kings Stockyard Creek (shown on Figure 6)

Figure 6 Surface water management system - SSD 7016



In accordance with EPL 3035, water quality monitoring is undertaken weekly during discharge to manage discharge compliance requirements.

Samples were taken at the HPP discharge point based on the EPA License 887 requirements for Highland Pine Products Pty Ltd. Samples were taken on a monthly basis.

The concentration limits of a pollutant discharged from EPA 28 (and HPP discharge point) in EPL 3035 is shown below in Table 31 and 32.

Table 31 EPA Identification Point 28 Water pollution limits (also adopted for HPP Swale sampling location)

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3
Biochemical Oxygen Demand (BOD)	mg/L		20
Colour	Hazen	80	160
Dieldrin	µg/L		0.3
Methylene Blue Active Substances (MBAS)	mg/L		0.5
Nitrogen (Total)	mg/L		10
Oil and Grease	mg/L		10
pH	pH		6.5-8.5
Phosphorus (Total)	mg/L		0.3
Total Suspended Solids	mg/L		50

Table 32 EPA 887 Identification Point 1 (HPP Swale) Water pollution limits

Pollutant	Units of Measure	Frequency	100 percentile concentration limit
Biochemical Oxygen Demand (BOD)	mg/L	Monthly during discharge	20
Filterable Iron	mg/L	Monthly during discharge	
Methylene Blue Active Substances (MBAS)	mg/L	Monthly during discharge	
Nitrate + nitrite (oxidised nitrogen)		Monthly during discharge	
Oil and Grease	mg/L	Monthly during discharge	10
pH	pH	Monthly during discharge	6.5-8.5
Total Iron		Monthly during discharge	
Total Suspended Solids	mg/L	Monthly during discharge	50
Turbidity	nephelometric turbidity	Monthly during discharge	

Stormwater samples are collected by trained Porta personnel and are analysed by NATA certified laboratories. Full results for the 2024/25 reporting period are provided in Appendix B Surface Water Monitoring Data.

Table 33 provides a summary of the development's historic annual average water monitoring results for discharge from EPA Point 28. This shows that for the 2024/25 reporting period, the annual average for all pollutants were generally below the concentration limit set in EPL 3035.

Table 33 Annual Average Water Quality Monitoring Results EPA Point 28

Pollutant	Units of Measure	2022/23	2023/24	2024/25
Aldrin	µg/L	<0.01	<0.01	<0.01
Biochemical Oxygen Demand	mg/L	5.8	<2	4
Colour	Hazen	36.0	35	30
Dieldrin	µg/L	<0.01	<0.01	<0.01
Methylene Blue Active Substances	mg/L	0.2	<0.1	<0.1
Nitrogen (Total)	mg/L	7.8	1	5.7
Oil and Grease	mg/L	6.0	<5	5.5
pH	pH	7.6	8.08	7.6
Phosphorus (Total)	mg/L	0.1	0.02	0.1
Total Suspended Solids	mg/L	19.3	<5	21.5

Two samples were collected and analysed at Point 28 during discharge in the 2024/25 reporting period all other sampling events occurred during times of no discharge and as a precaution.

Four additional samples were analysed from Point 28 during the reporting period that were not included in the table of averages provided. The Four additional samples were taken at times of nil discharge and were taken as a precautionary measure due to heavy rains being forecast or extended periods between sampling events. No exceedances were recorded from Point 28 during the reporting period. On average all analysis results were consistent with the previous years data.

Table 34 Annual Average Water Quality Monitoring Results HPP Swale Discharge Point

Pollutant	Units of Measure	2022/23	2023/24	2024/25
Aldrin	µg/L	<0.010	<0.010	<0.010
Biochemical Oxygen Demand	mg/L	4.2	1.8	4.1
Colour	Hazen	39.1	23.1	59.4
Dieldrin	µg/L	<0.010	<0.010	<0.010
Methylene Blue Active Substances	mg/L	<0.1	<0.1	<0.1
Nitrogen (Total)	mg/L	1	0.8	5.5
Oil and Grease	mg/L	0.8	6.1	<5
pH	pH	7.6	7.6	7.3

Phosphorus (Total)	mg/L	0.1	0.1	0.1
Total Suspended Solids	mg/L	16.8	8.0	12.9

The HPP Discharge Point was not a formally recognised EPA licence discharge location during the reporting period however it was treated the same. Both site discharge points converge approximately 200m downstream of the respective locations. Monthly water samples were undertaken by the Environmental Manager during discharge and analysed off site by a NATA laboratory for the same parameters as indicated in the site EPL. Twelve samples (sample event) were collected and analysed at the HPP Discharge Point during discharge in the 2024/25 reporting period. The water that passes through the discharge location consists of stormwater that passes through the HPP site. The water travels approximately 1.7km through open swales, pipelines, natural water conveying channels containing artificially constructed ERSED controls to filter it. This combination of both natural and artificial filtration has resulted in the low level contaminants at the discharge point over the reporting period, as can be seen in Table 34. All sampling results were sent to a site representative for reporting and notification. All sampling results remained generally consistent with previous years, and any slight increases would be expected due to the higher than average rainfall for the year.

4.4.1 EPL 3035 Identification Point 28

At EPL discharge Point 28 there were no occurrences where water quality discharge limits for were exceeded.

4.5 Groundwater

In accordance with EPL 3035, the development monitors four groundwater bores on site. The locations of groundwater monitoring bores are listed in Table 35 and shown on Figure 7.

Table 35 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site
15	East of stormwater treatment pond
16	East of Woodchem
24	Adjacent northern swale

Samples were collected by an appropriately qualified third-party specialist and analysed by NATA accredited laboratories in accordance with “Standard Methods for the Examination of Water & Wastewater,” APHA, AWWA, WEF and Water & Wastewater and Examination Manual (V. Dean Adams). Monitoring equipment is maintained in accordance with the manufacturer’s specifications by qualified specialists.

Figure 7 Groundwater Monitoring Locations

Tables 36 - 39 present results for EPA Identification Points 14, 15, 16 and 24 during the reporting period and compares them with the previous three years data. There are no concentration limits for groundwater set in EPL 3035.

Table 36 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2022/23	2023/24	2024/25
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.06	0.02	0.02
Chemical Oxygen Demand	mg/L	Yearly	16	<10	<10
Electrical Conductivity	µS/cm	Yearly	266	332	328
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.40	<0.1	<0.1
pH	pH Units	Yearly	7.3	7.0	7.4
Total Dissolved Solids	mg/L	Yearly	201	176	203
Total Organic Carbon	mg/L	Yearly	3	<1	2
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	21	16	11
Water Height	m	Yearly	0.92	1.62	1.12

Table 37 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2022/23	2023/24	2024/25
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	4.14	2.62	0.72
Chemical Oxygen Demand	mg/L	Yearly	296	<10	77
Electrical Conductivity	µS/cm	Yearly	1527	1919	1115.7
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.60	<0.1	<0.1
pH	pH Units	Yearly	6.6	6.6	6.6
Total Dissolved Solids	mg/L	Yearly	985	1350	734
Total Organic Carbon	mg/L	Yearly	101	79	20.3
Total Petroleum Hydrocarbons	µg/L	Yearly	2290.00	1780	740
Total Suspended Solids	mg/L	Yearly	55	30	18.7
Water Height	m	Yearly	4.80	3.45	3.37

EPA Point 14 (Table 36) generally showed consistent analysis results when compared to the previous two years. It was reported in the last two reporting periods that the monitoring point 15 (Table 37) well had only recently been reinstated, and that excess sediment may have been deposited. As expected, there were further decreases in TSS over the course of the reporting period. Generally, all analytes showed significant decreases in comparison to the previous two years data.

Table 38 Groundwater Monitoring Results EPA Identification Point 16 (GW01)

Pollutant	Unit of Measure	Frequency	2022/23	2023/24	2024/25
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.06	0.08	0.0
Chemical Oxygen Demand	mg/L	Yearly	26	37	<10
Electrical Conductivity	µS/cm	Yearly	250	283	394.5
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	4.60	<0.1	0.02
pH	pH Units	Yearly	6.8	6.4	6.1
Total Dissolved Solids	mg/L	Yearly	176	132	233
Total Organic Carbon	mg/L	Yearly	4	6	5
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	54	152	66.5
Water Height	m	Yearly	2.34	2.20	2.69

Generally, all analytes displayed in Table 38 at Point 16 were consistent with the previous reporting periods results except for a notable decrease in Total Suspended Solids and Chemical Oxygen Demand.

Table 39 Groundwater Monitoring Results EPA Identification Point 24 (GW03)

Pollutant	Unit of Measure	Frequency	2022/23	2023/24	2024/25
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.09	0.02	0.2
Chemical Oxygen Demand	mg/L	Yearly	28	<10	25
Electrical Conductivity	µS/cm	Yearly	374	45	386.7
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	<0.1	<0.1
pH	pH Units	Yearly	6.7	6.8	6.7
Total Dissolved Solids	mg/L	Yearly	340	280	509.3
Total Organic Carbon	mg/L	Yearly	4	4	6.7
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	190
Total Suspended Solids	mg/L	Yearly	19	11	12
Water Height	m	Yearly	3.0	2.30	5.55

Generally, the analytes displayed in Table 39 at Point 24 were consistent with the previous reporting periods results when averaged over the last three years. During the reporting period, three samples were taken from Point 24 for analysis. Two out of the three samples for Total Petroleum Hydrocarbons return a reading below the level of reporting (<50 µg/L) and one result in March 2025 of 190µg/L. It is not understood what had lead to the sudden increase of TPH as there had been no reported fuel/oil spills in the area and no other sudden changes in site activities.

4.6 Noise

In accordance with EPL 3035 and site management plans, the development monitors noise emissions from the facility. Noise from the premises must not exceed the limits noted in Table 44. In accordance with Development Consent SSD 7016 all construction activities related to the development must also comply with the limits in Table 40.

Table 40 Noise Limits dB(A)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45
Note: <u>Day</u> – The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays <u>Evening</u> – The period from 6:00pm to 10:00pm <u>Night</u> – The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays L _{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.			

These noise limits apply under all meteorological conditions except for the following:

- Wind speeds greater than 3 meters/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.

Data recorded by the site meteorological station identified as EPA Identification Point 26 is used to determine meteorological conditions. Temperature inversion conditions (stability category) are to be determined by the sigma-thetas method referred to in Fact Sheet D in the *Noise policy for Industry* EPA 2017.

4.6.1 Operational Noise

EPL 3035 stipulates that noise monitoring to determine compliance must be carried out at least once annually during the day, evening and night-time hours specified in Table 40. Noise monitoring must be undertaken in accordance with *Australian Standard AS 2659.1 (1998): Guide to use of sound measuring equipment – portable sound level meters*, and the compliance monitoring guidance provided in the *NSW Noise Policy for Industry* (EPA 2017).

During the 2024/25 reporting period, EMM Consulting (formally Global Acoustics) were engaged to conduct attended noise monitoring and provide an *Annual Noise Monitoring Report* for operational noise generated by the Development. The noise monitoring event was conducted at four sensitive receiver locations as shown in Figure 8 on 16th and 23rd May 2024. Table 41 presents results of the attended annual noise monitoring event.

Figure 8 Porta's noise monitoring locations



NA = Not Applicable means atmospheric conditions outside conditions specified in Development.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible means there was no noise from the source of interest audible at the monitoring location.

1. Atmospheric data is sourced from Borg's weather station in Oberon;

2. In accordance with EPL and PA, the noise criteria are to apply under all meteorological conditions except the following:

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

3. Criterion may or may not apply due to rounding of meteorological data values;

4. Estimated or measured LAeq, 15 minute attributed to Borg;

5. Bold results in red indicate exceedance of criteria (if applicable); and

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable

4.6.2 Construction Noise

Porta's Construction Noise Management Plan (CNMP) includes an attended monitoring regime of one event per quarter. Quarterly noise monitoring is not a compliance requirement under EPL 3035 however it is included as a commitment in Porta's Construction Noise Management Plan and therefore, a requirement of SSD 7016 condition C3.

Attended monitoring locations are shown in Figure 8. If any exceedances are identified, additional mitigation measures are implemented, and follow-up monitoring undertaken within one week of the exceedance to determine the effectiveness of the additional controls. EMM conducted the construction noise monitoring for this review period. Tables 41 to 44 show monitoring results for quarterly noise monitoring events. All reference notes are included below Table 44.

Table 41 Annual Environmental/operational noise monitoring Quarter 2

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg LAeq 15 min dB ⁴	Exceedance 5,6
NM1	16/5/2024 10:03	3.7	C	55	No	51	N/A
NM2	16/5/2024 10:26	2.4	B	55	Yes	47	Nil
NM3	16/5/2024 09:15	3.4	C	55	No	32	N/A
NM4	16/5/2024 09:39	2.6	A	55	Yes	35	Nil
NM1	16/5/2024 18:44	0.9	D	50	Yes	50	Nil
NM2	16/5/2024 19:07	0.9	E	50	Yes	49	Nil
NM3	16/5/2024 18:00	0.3	E	50	Yes	33	Nil
NM4	16/5/2024 18:23	0.6	E	50	Yes	41	Nil
NM1	16/5/2024 22:43	0.4	F	45	Yes	47	2
NM1 ²	23/5/2024 22:05	0.8	E	45	Yes	45	Nil
NM2	16/5/2024 23:04	0.3	F	45	Yes	46	1
NM2 ²	23/5/2024 22:28	0.4	E	45	Yes	44	Nil
NM3	16/5/2024 22:00	0.4	F	45	Yes	41	Nil
NM4	16/5/2024 22:22	0.7	E	45	Yes	39	Nil

². Indicates follow up monitoring within one week of exceedance.

1. Noise emissions limits are applicable if weather conditions were within parameters specified in section 3.3.

2. Red indicates exceedance of relevant limit.

N/A indicates limits were not applicable due to weather conditions.

The attended noise monitoring conducted by EMM recorded an exceedance of the limits identified in Table 41 for the night time period of 1 decibel. Follow up monitoring was undertaken within one week and all results were compliant with the relevant limits. All measurements were undertaken as per the *Noise policy for Industry EPA 2017*.

Table 42 Construction Noise Quarter 3

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg LAeq 15 min dB ⁴	Exceedance 5,6
NM1	8/08/2024 12:23	5.8	D	55	No	NM	N/A
NM2	8/08/2023 12:04	5.2	C	55	No	IA	N/A
NM3	8/08/2023 13:04	4.6	D	55	No	41	N/A
NM4	8/08/2023 12:43	5.0	C	55	No	47	N/A

Table 43 Construction Noise Quarter 4

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance _e 3,4
NM1	10/10/2024 08:12	2.3	B	55	Yes	50	Nil
NM2	10/10/2024 08:33	2.6	B	55	Yes	46	Nil
NM3	10/10/2024 07:28	1.4	A	55	Yes	35	Nil
NM4	10/10/2024 07:50	2.1	A	55	Yes	45	Nil

Table 44 Construction Noise Quarter 1

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance e ^{3,4}
NM1	18/02/2025 11:49	3.0	A	55	Yes	47	Nil
NM2	18/02/2025 12:10	2.7	A	55	Yes	37	Nil
NM3	18/02/2025 10:59	2.9	A	55	Yes	42	Nil
NM4	18/02/2025 11:24	2.6	B	55	Yes	44	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development Consent and so criterion is not applicable.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible, there was no noise from the source of interest audible at the monitoring location.

1. Noise criteria are to apply under all meteorological conditions except the following:

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

2. Site-only LAeq, 15minute attributed to the Development, including modifying factors if applicable;

3. Bold results in red indicate exceedance of criteria (if applicable); and

4. NA in exceedance column means atmospheric conditions outside conditions specified and criterion is not applicable.

No exceedances of EPL 3035 noise limits were recorded during these monitoring events.

5 Community Relations

5.1 Environmental Complaints

Three community complaints were received during the 2024/25 reporting period. Site investigations were conducted by the Environmental Manager and team leaders which included a review of plant operational data, noise monitoring and visual inspections. Discussions were conducted with Area Managers/Supervisors regarding site activities to determine if the facility was operating within approved conditions as specified in SSD 7016 and EPL 3035 at the time of the complaints.

1 AIR, 1 ODOUR, 1 NOISE, TOTAL OF 3

Air: 21.08.2024 Photos were sent by a resident of minimal dust and debris on the windscreen of a car. On and off site investigations were conducted by employees and management. No visible wood fibre on any other cars in the area around complaint residence. No issues with plant operating conditions.

Noise: 27.11.2024 A call was made directly to the EPA complaints line. Caller wanted to remain anonymous and said that it was a hot night so they wanted to have the doors and windows open however they couldn't because there was very loud log deck noises coming from Borg. Call was made at midnight. Reviewed CCTV footage from the 27th and confirmed that the MDF chipper was not running after 9:45pm which means the Sennebogen (log crane) and the log deck were not running. These were not running until the following morning on the 28th of November. The Particleboard Chipper had mechanical issues on the 27th and was down from lunchtime, meaning the Sennebogen (log crane) and the log deck were also not running from lunchtime right through until the following day (28th).

Odour: 13.02.2025 Resident reported that the smell of Formaldehyde at his place was unbearable, to the point they couldn't go outside. Multiple field surveys were conducted by multiple staff members and communication with resident was transparent. Field surveys consisted of Formaldemeter readings and odour assessments by staff. Weather data was also tracked during

the assessments to ensure wind was blowing towards the resident as well as away from the resident during the assessments. Multiple follow up assessments were made around the resident location as well as at the resident's house itself. No elevated levels of Formaldehyde or odour were identified during the assessments.

For each complaint received, Porta provided a response to the complainant in a timely manner. With respect to noise complaints, regardless of our demonstration of compliance with noise limits via compliance noise monitoring events, Porta will continue to undertake ad hoc attended and unattended noise monitoring to ensure nil noise nuisance to local residents from site activities.

5.2 Community Liaison

5.2.1 Community Consultative Committee (CCC)

Porta has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the facility, and the greater Oberon Timber Complex (OTC). The CCC meetings provide a forum to discuss and address general construction and operational impacts, and mitigation measures for Porta. The CCC meetings also allow for feedback from the local community to Porta and the OTC in relation to environmental performance.

Porta hosted two CCC meetings during the reporting period on the 26th June , 2nd October 2024 and 12th March 2025. All meetings were held in the boardroom of the administration building at the Development where members of the community, local council, the Mayor and neighbouring businesses (Highland Pine Products and Woodchem) attended and contributed. Some community members also joined online via video call on Teams.

The major discussion points relating to the Development in 2023/24 were as follows:

- Introduction of the new sustainability Manager within the Porta company
- Upgrades to one of the heat plants
- New screw press installed at the water treatment plant for efficiency
- No further issues around the community complaints line
- Incident at the particle board recycled timber conveyor discussed
- Waste management issues within Oberon discussed with Council and members of the committee

5.2.3 Opportunities for Information Exchange

Porta established the following avenues to record enquiries and complaints related to construction and operational activities:

- A 24-hour free call community liaison line (1800 802 795)
- Postal address for written complaints (Porta Products, Private Mail Bag 1, Oberon NSW 2787)
- Email address for electronic complaints (oberon_site@borgs.com.au)

The telephone number, postal and email address are displayed on a sign at the entrance to the Development in a position that is clearly visible to the public. This information is also distributed to the local community and is included in public information communications which may include Porta website, local area advertisements, letterbox notifications and project fact sheets.

6 Independent Audit

Development Consent SSD 7016 condition C15 sets out requirements for independent environmental audits of the Development. Porta commissioned environmental consultants Water Technology to conduct an Independent Environmental Audit (IEA) of the site for operations and construction for audit period 1 July 2021 to 29 May 2024. In accordance with SSD 7016 condition C15 the audit is scheduled to take place in August and the findings will be submitted during the next reporting period.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through Porta Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, Porta's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

- (a) Harm to the environment is material if:
 - i. It involves actual or potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
 - ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations),and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there was one reportable environmental pollution incident at the Development.

It was also reported that an exceedance occurred during last year's reporting period at Point 31; however, due to lack of availability from third party consultants, the retest fell within this reporting period and all results were within the EPL guidelines. The original result was 72mg/m³ with a license limit of 50mg/m³.

7.2 Non-conformances

Particleboard Fire: On 20.5.24 a self-report was made by the development to the EPA Pollution Hotline

It was determined that the incident did not occur as a result of an electrical failure or a mechanical failure. Evidence of large wood-based matter (which is not standard for this point in the process) was identified to be obstructing the cleaning system on the underside of the transport conveyor. It is believed that due to these obstructions it is possible that friction on the wood matter may have caused a smolder to start.

The Environmental and Safety Manager contacted the 24-hour community complaints line at Gate 3 and neighboring businesses to notify them of the current situation in case of any concerned residents etc. The incident was reported to the EPA via the EPA Pollution Hotline and SafeWork NSW. Facility Manager contacted the Oberon Council General Manager. As the Fire Brigade, Police, Ambulance and Essential Energy were all in attendance on site (Fire and Rescue NSW protocol) these parties were not notified by the site.

No neighboring businesses, residents or watercourses were impacted by the incident. The fire was contained to a small area within the equipment adjacent to the western side of the materials handling building. Some plant was damaged as a result of the incident however no staff were evacuated from the site and no injuries occurred as a result of the incident. The fire was extinguished using town water within approximately 40 minutes and the area was handed back over to the site by Fire and Rescue NSW. No community complaints about smoke or fire associated issues were recorded as a result of the incident.

Noise Monitoring: The attended noise monitoring conducted by EMM recorded an exceedance of the limits identified in Table 41 for the night time period of 1 decibel. Follow up monitoring was undertaken within one week and all results were compliant with the relevant limits. All measurements were undertaken as per the *Noise policy for Industry* EPA 2017.

Independent audit: The three yearly independent audit is now overdue however a consultant has been booked and is to conduct site visit and audit during the next reporting period and results will be discussed next year.

8 Activities Proposed for the next Annual Review Period

Porta will endeavour to carry out the activities listed in Table 46 during the 2025/26 reporting period to assist with improving the environmental performance of the existing development and the project.

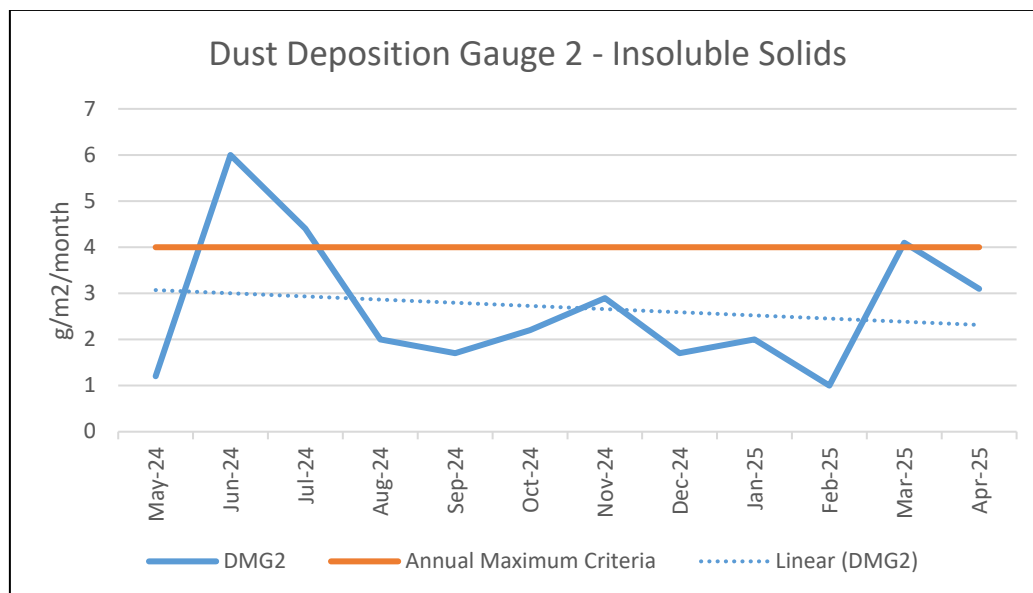
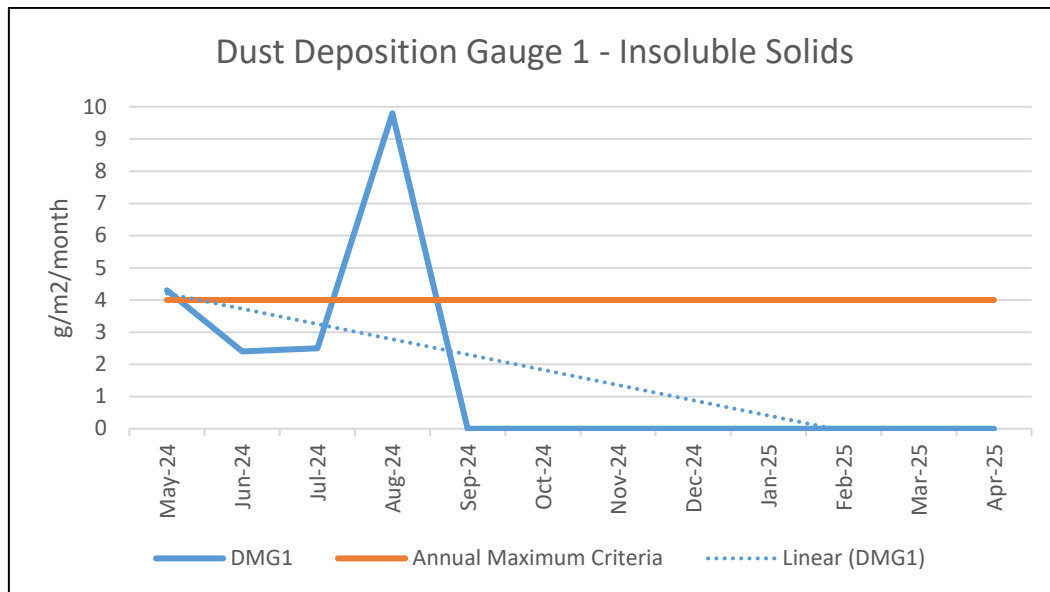
Table 46 Proposed Activities for 2025/26 Reporting Period

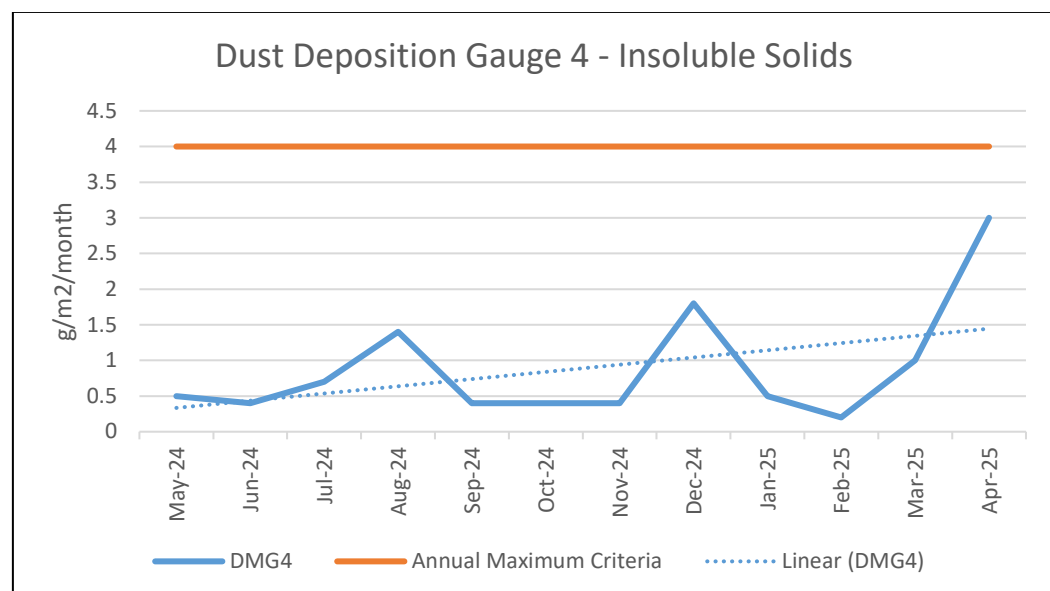
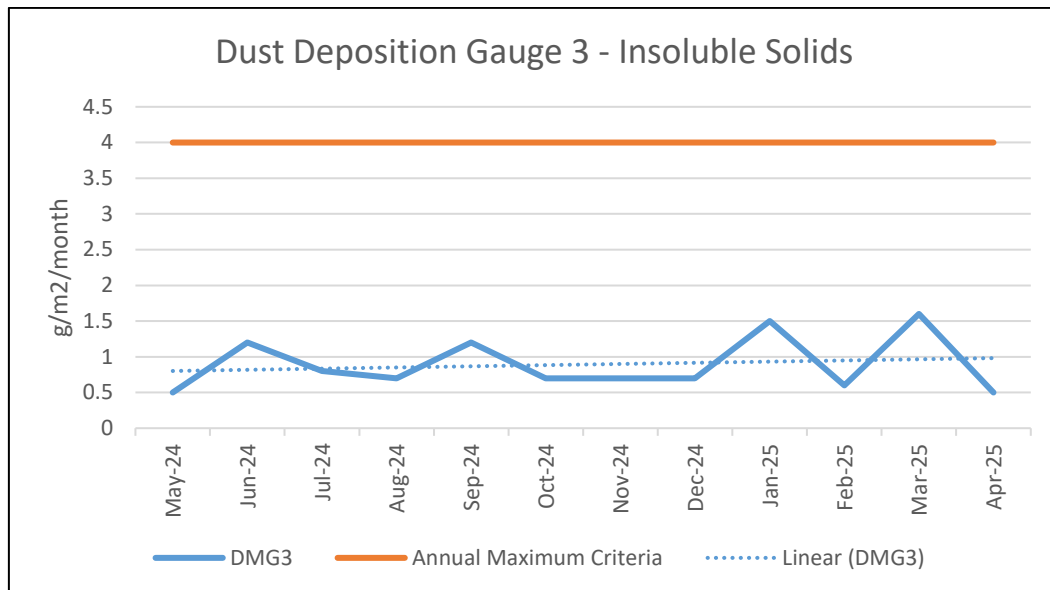
Ongoing implementation of Environmental Management Plans for the existing development and the project.
Complete verification studies required for SSD 7016 including modifications

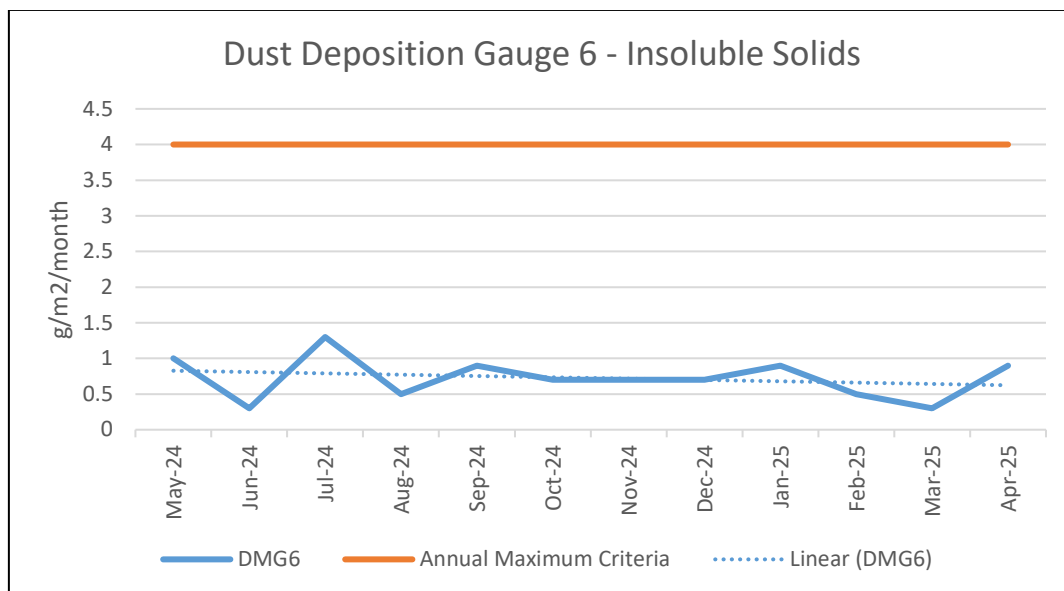
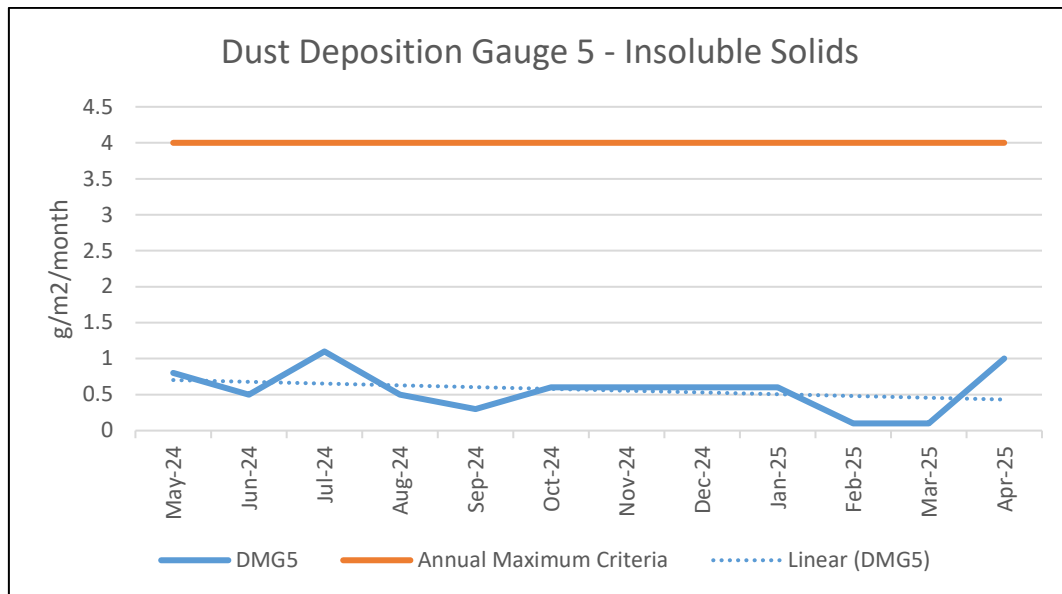
Commence hazard audit under DPIE Hazardous Industry Planning Advisory Paper No. 5 -Hazard Audit Guidelines (HIPAP 5 – Ref. 2) (four yearly)
Complete Conti 4 commissioning and associated commissioning and verification reports and license variation
Complete works as approved under Modification 4 & commence works under Mod 5
Continue erosion and sediment control inspections and rectification works as necessary to manage storm water quality discharge
Carry out independent environmental audit (IEA) as per condition C15
Upgrades to Particleboard WESP screw press for increased efficiency
Increase recycling initiatives on site and reduce waste to landfill

APPENDICIES

Appendix A – Depositional Dust Monitoring Data







Appendix B – Surface Water Monitoring Data

SURFACE WATER MONITORING Pt. 28											
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	EPA/DPI E Notified
EPL Upper Limit	8.5	50	160	10	0.3	10	20	0.5	0.3	0.3	
UNITS	pH Units	mg/L	Hazen	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	
1/08/2024	7.7	16	25	6	0.08	7	2	<0.1	<0.010	<0.010	
19/02/2025	7.4	27	35	5.4	0.1	<5	6	<0.1	<0.010	<0.010	
Min	7.4	16	25	5.4	0.08	7	2	0	0	0	
Average	7.6	21.5	30.0	5.7	0.1	7.0	4.0	#DIV/0!	<0.010	<0.010	
Max	7.7	27.0	35.0	6.0	0.1	7.0	6.0	0.0	0.0	0.0	
Exceedance											
Total samples required	2										
Total no. samples collected	6										

SURFACE WATER MONITORING HPP SWALE											
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	EPA/DPIE Notified
EPL Upper Limit	8.5	50	160	10	0.3	10	20	0.5	0.3	0.3	
UNITS	pH Units	mg/L	Hazen	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	
29/05/2024	7.5	<5	35	0.6	0.08	<5	4	<0.1	<0.010	<0.010	
28/06/2024	7.1	9	55	0.9	0.1	<5	<2	<0.1	<0.010	<0.010	
1/08/2024	7.4	<5	40	0.8	0.06	<5	2	<0.1	<0.010	<0.010	
29/08/2024	7.3	<5	55	0.9	0.06	<5	6	<0.1	<0.010	<0.010	
30/09/2024	7.2	20	30	1.3	0.08	<5	2	<0.1	<0.010	<0.010	
22/10/2024	7.4	11	80	1.1	0.15	<5	2	<0.1	<0.010	<0.010	
29/11/2024	6.9	10	90	1.5	0.05	<5	3	<0.1	<0.010	<0.010	
18/12/2024	7.7	7	80	1.4	0.11	<5	2	<0.1	<0.010	<0.010	
14/01/2025	7.3	6	70	1.2	0.07	<5	3	0.5	<0.010	<0.010	
19/02/2025	7.4	10		53.9		<5	6	<0.1	<0.010	<0.010	
26/03/2025	7.2			1		8	7	<0.1	<0.010	<0.010	
30/04/2025	7	30		1.6		<5	8	<0.1	<0.010	<0.010	
Min	6.9	6	30	0.6	0.05	8	2	0.5	0	0	
Average	7.3	12.9	59.4	5.5	0.1	8.0	4.1	0.5	<0.010	<0.010	
Max	7.7	30.0	90.0	53.9	0.2	8.0	8.0	0.5	0.0	0.0	
Exceedance											



Appendix C – Community Complaints



Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
146	Noise	27/11/2024	Anonymous	Call made directly to EPA complaints line. Caller wanted to remain anonymous and said that it was a hot night so they wanted to have the doors and windows open however they couldn't because there was very loud log deck noises coming from Borg. Call was made at midnight.	Reviewed CCTV footage from the 27th and confirmed that the MDF chipper was not running after 9:45pm which means the Sennebogen (log crane) and the log deck were not running. These were not running until the following morning on the 28th of November. The Particleboard Chipper had mechanical issues on the 27th and was down from lunchtime, meaning the Sennebogen (log crane) and the log deck were also not running from lunchtime right through until the following day (28th).
147	Noise	13/2/2025	Bracken Estate, Oberon	'The smell of Formaldehyde at my place is unbearable, can't even go outside.'	Multiple field surveys by multiple staff members and communication with resident. Field surveys consisted of Formaldemetre readings and odour assessments by staff. Weather data was also tracked during the assessments to ensure wind was blowing towards the resident as well as away from the resident during the assessments. Multiple follow up assessments were made around the resident location as well as at the resident's house itself. No elevated levels of Formaldehyde or odour were identified during the assessments.
143	Dust/fibre	21/8/2024	Tasman Street, Oberon	Photos of dust and debris on window of car sent	Photos provided of minimal dust on the windscreen of car. On and off site investigations. no visible fibre on any other cars in the area around the residence.

Annual Review 2023/24

Borg Manufacturing Oberon

124 Lowes Mount Road, Oberon NSW

Borg Manufacturing

15 August 2024

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
1	15/08/2024	Andrew Brady Environmental Manager	For submission to DPE	Victor Bendevski	

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Annual Review Title Block

Name of operation	Borg Manufacturing
Name of operator	Borg Manufacturing
Development consent / project approval #	SSD 7016
Name of holder of development consent / project approval	Borg Construction
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	80WA715797
Name of holder of water licence	Borg Panels Pty Ltd.
MOP/RMP start date	N/A
MOP/RMP end date	N/A
<i>I, Victor Bendevski, certify that this audit report is a true and accurate record of the compliance status of Borg Manufacturing Oberon for the period 1st May 2022 to 30th April 2023 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd</i> Note. a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000. b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, \$22,000, or both.)	
Name of authorised reporting officer	Victor Bendevski
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	9/08/2024

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Borg Manufacturing Oberon site (referred to herein as the '**Development**') and covers the twelve-month reporting period from 1 May 2023 to 30 April 2024. This Annual Review has been prepared to satisfy condition C11 of Development Consent SSD 7016 issued by the Minister for Planning on 29 May 2017.

The Development is located at 124 Lowes Mount Road, Oberon and consists of three medium density fibreboard (MDF) plants, a particleboard manufacturing plant and a mouldings manufacturing plant.

This Annual Review is submitted to NSW Department of Planning and Environment (DPE), NSW Environment Protection Authority (EPA) and Oberon Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the Borg Oberon website:

[BORG - Oberon NSW \(borgs.com.au\)](https://borgs.com.au)

Borg Panels Pty Ltd ('**Borg**') generally maintained compliance with necessary approvals and licences with the exception of EPL 3035 condition L2.5 and O2.1 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water and Section 7.2 Non-Conformances respectively.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 7016	C11	Annual review	Compliant		1.4 Annual Review Requirements
WAL28951	N/A	Aquifer extraction	Compliant		1.6 Water Licenses
EPL 3035	Section 3 L2.4	Air Quality	Non-compliant	Exceedances of EPL 3035 discharge to air limits	4.3 Air Monitoring
EPL 3035	Section 3 L2.5	Water Quality	Compliant		4.4 Surface Water
EPL 3035	Section 3 L4.1	Noise	Compliant		4.6 Noise
SSD 7016	C15	Independent Environmental Audit	Non-compliant	Communication made with Department of Planning however still awaiting endorsement	6 Independent Audit
EPL 3035	R3	Off-site fugitive fibre discharge	Non-compliant		7.2 Non-Conformances

1.2 Introduction

The Development forms part of the wider Oberon Timber Complex, manufacturing a range of MDF products (Custom wood) and particleboard including:

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

Figure 1 Regional context



1.3 Consent

Development Consent SSD 7016 was issued by the Minister for Planning on 29 May 2017 to construct and operate a particleboard facility, and continuation of and alterations and additions to, the existing medium density fibreboard facilities.

Condition A26 of SSD 7016 required Borg to modify DA27/95. Borg submitted a Section 96 Modification Application requesting removal of condition A26 as compliance with it was not possible. This application also included a minor change to the orientation of the material handling building at particleboard, an increase to the warehouse footprint and amendments to the stormwater management system at the northern section of the site. A determination was received from the Department approving this application on 20 November 2018 (SSD 7016 MOD 1 – Site layout changes).

Under Modification of Development Consent SSD 7016 MOD 2 Borg proposed to install a high-pressure natural gas pipeline connection and turbine, and ancillary equipment to produce electricity and utilise waste exhaust heat in the particleboard manufacturing process. The Minister for Planning provided approval for MOD 2 on 29 November 2019.

Activities proposed under Modification 3 included the installation of additional equipment to the materials handling area for better separation and removal of undesirable materials found in the recycled wood that is used in the production of particleboard, and the addition of an enclosed awning to the northern end of the Northern Warehouse for more optimized truck loading/unloading. Works to the site stormwater management system were also proposed under MOD 3. These included reclamation of the overflow effluent pond and reinstatement at another location to allow for further hardstand, and changes to the stormwater conveying swales and ponds to allow construction of the hardstand and also to separate surface water flows between the Development and the Highland Pine Panels ('HPP') site, including the construction of a new HPP discharge point.

Approval was provided by the Minister of Planning for MOD 3 on 22 May 2020.

An application to modify SSD 7016 (Modification 4) was submitted to the Department of Planning and Environment on 26 October 2021. Activities proposed under MOD 4 included the following:

- reclamation of the remaining portion of the man-made spring fed dam to allow for increase in the size of the hardstand at the north eastern corner of the site to facilitate the relocation of the existing site mechanic's workshop;
- modernisation of the old multidaylight press used for producing medium density fibreboard and changes to its exhaust air emissions;
- addition of an enclosure to the site water treatment biological tanks;
- installation of additional reverse osmosis filtered water production;
- construction of a new bunded chemical storage shed for the water treatment plant;
- construction of an additional lined effluent storage dam for the water treatment plant; and
- construction of a new road within the site to better facilitate traffic flow.

Approval was provided by the Minister of Planning for MOD 4 on 20 May 2022.

An application to modify SSD 7016 (Modification 5) was submitted to the Department of Planning and Environment on 21 December 2023. Activities proposed under MOD 5 included the following:

- Minor alterations and additions to the approved mechanical workshop including three additional workshop bays,
- additional first floor storage within the workshop and,
- minor updates to the office.

Development justification for the proposed modification:

- Improve the infrastructure required to support the existing activities
- Enable larger mechanical repair workshop for the growing fleet of vehicles increase the number of workshop bays from seven to ten (three additional bays)
- Include a dedicated automated truck washing machine and parking area for large vehicles
- Support a safer working environment for the employees and reduce the potential of outdoor work activities

Approval was provided by the Minister of Planning for MOD 5 on 23 April 2024.

A summary of development consents including modifications applicable to Borg is presented in Table 2.

Table 2 Facility Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016	29 May 2017	NSW Minister for Planning	Construction and operation of a particle board facility and continuation of, and alterations and additions to, the existing medium density fibreboard facility.
Development Consent SSD 7016 MOD 1	20 November 2018	NSW Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	NSW Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment
Development Consent SSD 7016 MOD 3	22 May 2020	NSW Minister for Planning	Additional material handling equipment, extension to the Northern Warehouse, changes to the site surface water system and construction of further hardstand.

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016 MOD 4	20 May 2022	NSW Minister for Planning	Reclamation of the spring fed dam, increase in hardstand at the north eastern corner of the site, relocation of existing mechanic's workshop, modernisation of multidaylight press and changes to its exhaust air emissions, addition of an enclosure to water treatment biological tanks, installation of reverse osmosis filtered water production, construction of chemical storage shed, construction of a lined effluent storage dam and construction of a new road.
Development Consent SSD 7016 MOD 5	23 April 2024	NSW Minister for Planning	Minor update to the approved mechanical workshop including additional workshop bays, additional first floor storage and minor updates to the office Removal of the refuelling station

1.4 Annual Review Requirements

The Annual Review requirements provided for by condition C11 of Development Consent SSD 7016 have been summarised in Table 3, alongside the relevant sections of this document where those requirements are addressed.

Table 3 Annual Review Requirements

Development Consent SSD 7016 – Condition C11	Section of Annual Review
By 31 July 2017, and each year thereafter, unless otherwise agreed by the Secretary, the Applicant must review and submit a report to the Secretary detailing the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This Report
(a) describe the development that was carried out during the reporting period, and the development that is proposed to be carried out over the next reporting period;	Section 2 Section 8
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 7
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4

Development Consent SSD 7016 – Condition C11	Section of Annual Review
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 8

1.5 Environment Protection Licence

Borg operates in accordance with Environment Protection Licence 3035 (EPL 3035), issued on 14 February 2001 by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 23 September 2023.

The EPL was varied and updated during this reporting period to include a Pollution Studies and Reduction Program. The PRP incorporated the following elements:

- U1 Cyclone Upgrades 'Conti 1' U1.1 By 28 July 2023, the Licensee must submit in writing to the EPA a proposed construction schedule, including completion timeframes for the upgrade works to be undertaken on 'Conti 1' (as labelled in "Borg response Environment Protection Authority - NSW Page 23 of 29 Licence version date: 14-Sep-2023 Section 55 Protection of the Environment Operations Act 1997 Environment Protection Licence - 3035 to Draft Notice of Variation no.1629923 - Annexure (A)" (DOC23/652780).
- U1.2 By 04 August 2023, the Licensee must submit to the EPA, a qualitative assessment or manufacturer's guarantee that the proposed works to be undertaken as per U1.1 will be able to satisfy the requirements of the "Protection of the Environment Operations (Clean Air) Regulation 2022".
- U1.3 Commencing on 11 August 2023, the Licensee must submit a quarterly 'Progress Report' in writing to the EPA until works are completed. The report/s must contain at a minimum but not be limited to the following: a. A progress report of works identified in 'U1.1', b. Any documentation or photographic evidence to support the report, c. Any known or perceived delays that may affect the project's final completion date. The Licensee must notify the EPA in writing within 7 days of the completion of works identified in U1.1.

1.6 Water Licences

Borg holds a Water Access Licence for use of groundwater in operations. Current licence details issued under the *Water Management Act 2000* are summarised in Table 4. Borg harvested 2,035,000 Litres of spring water during the reporting period at an average of 32,000 litres per harvest.

Table 4 Water Licences

Approval Details	Approval Number	Validity of Licence	Approval Kind	Extraction Limit
WAL28951	80WA715797	16 January 2012 – 01 March 2026	Water Extraction	28 Units

1.7 Trade Waste Licence

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable this reporting period as there was no renewal of the licence. Liquid trade waste is now treated on site.

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7016, construction activities continue to be undertaken in accordance with the Construction Environmental Management Plan (CEMP) and the existing development in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C10 Revision of Strategies, Plans and Programs, environmental management plans were reviewed, and minor amendments made where necessary. In this review period the following Plans were updated:

- Traffic Management
- Waste Management
- Noise Management
- Mobile Wood Chipper Management
- Erosion and Sediment Management
- Spring Fed Dam Reclamation Management Plan
- Operational Noise Management
- Surface Water Management
- Waste Management
- Operational Air Management
- Urban Wood Residue Management Plan

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for managing environmental operations at the Development.

Table 5 Site Personnel

Name	Title	Contact Details
Richard Kaine	Facility Manager	0409 151 094
Victor Bendeviski	Environmental and Regulatory Compliance	(02) 4340 9800
Andrew Brady	Environmental Manager	0447 765 913

1.10 Actions Required from Previous Annual Review

The actions listed in Table 6 were identified in the 2022/23 Annual Review for implementation during this 2023/24 reporting period.

Table 6 Proposed Activities in 2022/23 Reporting Period

Activities Proposed in 2022/23 Reporting Period	Results achieved in 2023/24 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.	Ongoing implementation of the OEMP, CEMP and sub plans including environmental inspections undertaken at least monthly. Inspections recorded and actions assigned accordingly, and use of DataStation to track progress and close out. CEMP, OEMP and sub plans reviewed, and updates performed where: a) changes to site operations (existing and project); and b) in accordance with SSD 7016 C10.
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1, MOD 2, MOD 3 and MOD 4	As reported in this Annual Review. All additional conditions imposed by modifications have been incorporated into Borg's tracking document OBERON Approvals and Licensing Compliance Register.
Complete works as approved under MOD 4	Works commenced once approval was granted. Works will continue into the next reporting period. Progress made on the filling of the Spring Dam during the reporting period. No other projects associated with MOD 4 were commenced.
Undertake rehabilitation works to areas disturbed by construction activities	Stormwater swales impacted by construction activities established good groundcover to assist with managing erosion control and sediment mobilisation which can affect stormwater quality discharge. Ongoing rehabilitation and modification works will continue on-site to ensure good water management practices.
Discuss with EPA licensed water discharge points, referencing EPL 3035, to ensure this is fit for purpose	Discussions with EPA were had within this reporting period. EPA were generally satisfied with the current sampling locations and plan as a short-term solution. Short term solutions were carried out successfully and the stormwater swales were reinstated, joining back into the Flush 1 Basin (using EPA Pt 28 Discharge location).
Continue erosion and sediment control inspections and rectification works as necessary to manage storm water quality discharge as well as reinstate the original HPP swale design once high voltage electrical works have been completed (movement of powerlines from above ground to below).	Extensive earthworks and erosion and sediment controls implemented along with the swales separated back to their original state so that the water can be differentiated between HPP surface water and StructaFlor surface water.

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7016 allows for production of up to 380,000 m³ of MDF and 500,000 m³ of particleboard per calendar year. During this reporting period the following quantities were manufactured at the Development: 312,123m³ of MDF and 348,955m³ of particleboard, along with a total intake of approximately 125,000 tonnes of UWR.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Installation of a dust collector at the Particle Board line wood recycling area, eliminating fugitive fibre escape when removing collected materials allowing reuse and reducing gas usage in the dust burner.
- Installation and commissioning of ECS (Eddy current separator/Non-Ferrous material) at the recycled wood area of Particle board were completed.
- Installation of conveyor and blow line for removal of oversize material from Particle Board Air graders for recycled wood. This removed the need for open bin storage that needs manual removal operations to be completed.
- Conti 4- upgrade screw conveyor at air the Air grader oversize material removal. This eliminated blockages and operator intervention and reduced downtime by 90%.
- Conti 4-Installation of heating duct to main fibre bin to eliminate condensation build up causing reject and down time.
- MDF Reclaimer 1 repair/upgrade- Installation of new outfeed conveyor and steel structure for chip supply to Conti 1 & 4.
- Installation of new fuel feed conveyors and magnet at the Energy Plants.
- Replacement of both C1 Cyclone upper sections, restoring performance.

See Figure 2 for location of site infrastructure.

2.3 Site Activities

The following activities associated with the modifications to existing operations occurred during the reporting period:

- Ongoing updates and alterations to the site surface water channels at the southern area of the site to better manage high flows and to divert the flows away from the neighbouring Woodchem facility to improve flood mitigation.
- Extensive erosion and sediment control works to the northern and eastern swale system to improve discharge water quality including rectification to eroded sections, installation of rock check dams in areas of high flow and improvements to the inflow path to the first flush basin.
- Earthworks completed as part of Mod 4 facilitating the reconnection of stormwater swales back to their original state so that the water flow are not comingled between Highland Pine Panels (HPP) and Borg/StructaFlor surface water.
- Continued to receive recycled wood material under *The Borg Panels Urban Wood Residue order and exemption March 2021* for inclusion in the production of particleboard.
- Continued works to reclaim the spring dam in the northeastern corner of the site to make way for the proposed mechanic's workshop whilst maintaining spring water flow into the tributary that leads to Kings Stockyard Creek.

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- construction works undertaken in accordance with the Construction Environmental Management Plan and sub-plans;
- attended noise verification monitoring;

- air emission verification monitoring;
- water quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via EHSR Alerts and Toolbox Talks.

2.4 Wood Recycling Program

During this reporting period Borg continued to accept recycled wood materials in accordance with *The Borg Panels Urban Wood Residue order and exemption March 2021*. Approximately 125,000 tonnes of UWR was received on site for inclusion in the production of particleboard. The recycled material is aggregated at one of two Borg sites located in Sydney where it is inspected prior to delivery to Oberon. When this material arrives at Oberon via truck transport it is again inspected as it enters the site, this is conducted by spreading the materials out on a hardstand before being incorporated into the manufacture of particleboard.

As part of the RRO & RRE requirements additional air emission sampling was conducted on the 8th, 9th, 10th, 11th of August 2023 12th, 13th and 27th of October 2023, 12th and 13th of December 2023 and 26th and 27th of March 2024 in accordance with EPL 3035 condition M2.2 and included license discharge points 29, 30, 31 and 32 (points associated with air emissions from the recycled wood program) for the following pollutants:

- Total solid particles
- Fine particulate matter (PM10)
- Formaldehyde
- Nitrogen oxides
- Type 1 & 2 Substances
- Smoke

Results from the stack testing were generally all within EPL 3035 specified air concentration discharge limits. See section 4.3.3 Air Monitoring of this report for emission monitoring results.

Figure 2 SSD 7016 Approved Development Area



3 Waste Management

Waste generated at The Development is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste removed from The Development during the reporting period is provided in Table 7.

Table 7 Waste Management 2023/24

Month	Description				Destination
	Litres	m3	Tonnes	Waste	
Apr 2024		155		ash	Oberon Council Waste Depot
		906		general	Oberon Council Waste Depot
			2.02	mixed commercial	Bathurst Regional Council
Mar 2024		926		general	Oberon Council Waste Depot
			20	mixed commercial	Bathurst Regional Council
Feb 2024		950		general	Oberon Council Waste Depot
			49.3	mixed commercial	Bathurst Regional Council
Jan 2024		605		general	Oberon Council Waste Depot
				mixed commercial	Bathurst Regional Council
				(blank)	Bathurst Regional Council
Dec 2023		610		general	Oberon Council Waste Depot
			15.12	mixed commercial	Bathurst Regional Council
			8.72	waste requiring burial	Bathurst Regional Council
Nov 2023		760		general	Oberon Council Waste Depot
			8.92	mixed commercial	Bathurst Regional Council
			1.06	waste requiring burial	Bathurst Regional Council
Oct 2023		700		general	Oberon Council Waste Depot
			8.78	mixed commercial	Bathurst Regional Council
			1.16	waste requiring burial	Bathurst Regional Council
Sep 2023		775		general	Oberon Council Waste Depot
			9.84	waste requiring burial	Bathurst Regional Council
Aug 2023		720		general	Oberon Council Waste Depot
		28.9		waste requiring burial	Bathurst Regional Council
Jul 2023		660		general	Oberon Council Waste Depot
			19.84	waste requiring burial	Bathurst Regional Council
Jun 2023		110		general	Bathurst Regional Council
May 2023		640		general	Bathurst Regional Council
			47.22	waste requiring burial	Bathurst Regional Council
				general	
				waste requiring burial	
Total		8545.9	191.98		

Waste types in Table 7 are further described as:

- General waste including a mix of both putrescible and non-putrescible waste;
- Waste requiring burial made up of urea formaldehyde, spade-able resin, paraffin wax bladders and ash materials;
- Building and demolition waste including concrete, metal and timber are recycled when appropriate; and
- Used oils from the plant process oil systems and mechanical workshop are recycled off site via third parties. All waste oil is considered trackable. All waste oil collected during the reporting period was collected by waste transporter EPL 7100 and taken to waste facility EPL 854.

3.2 Trade Waste

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable during this reporting period as there was no renewal of the licence. Liquid trade waste is treated on site.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

Borg operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental monitoring is conducted in accordance with the requirements of SSD 7016, its subsequent modifications (MOD1, MOD2, MOD3, MOD4 & MOD5), and EPL 3035. Environmental monitoring is an integral part of Borg's environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Meteorological Data

Borg operates and maintain a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The meteorological station was inspected and serviced on 17 April 2024 by a trained third-party consultant from Envirodata Weather Stations Pty Ltd

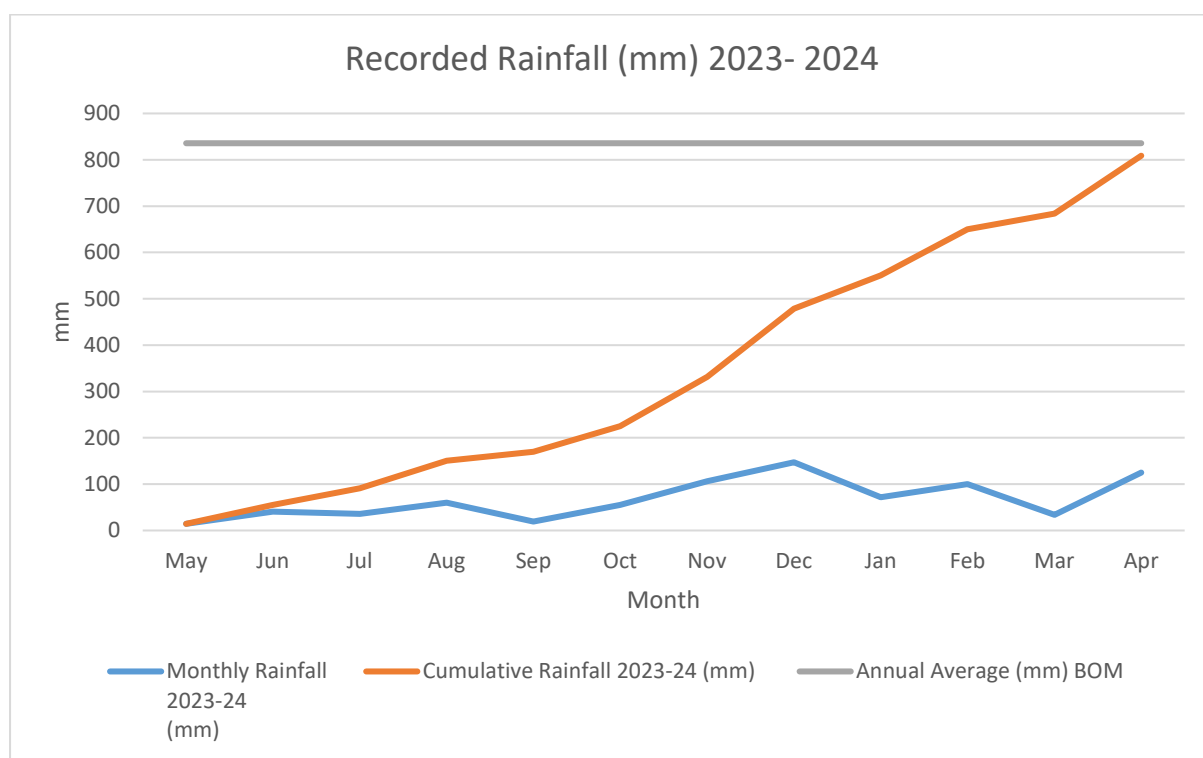
The following section summarises the meteorological data for the 2023/24 reporting period.

4.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during this reporting period recorded at EPA Point 26 is shown in Table 8 and displayed in Figure 3 below. Total recorded rainfall for the period was 808.8mm. This is 26.9mm below the annual mean rainfall of 835.7mm for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2023/24

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
14.4	40.8	35.6	59.8	19.4	55	106.4	147.2	71.6	100	33.8	124.8	808.8
Number of Rain Days (≥0.2mm)												
23	21	21	21	27	28	21	19	20	19	23	22	265

Figure 3 Recorded Rainfall (mm) at Borg Meteorological Station 2023/24

4.2.2 Temperature

Monthly maximum and minimum temperatures recorded from the site weather station during the reporting period are shown in Table 9.

Table 9 Monthly Minimum and Maximum Temperatures 2023/24

Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-4.7	-6.5	-6.1	-2.6	-2.2	0.6	2.3	5.2	6.4	8.3	3.6	-0.9
16.8	15.8	15.1	16.8	24.7	27.1	28	33.4	30.4	33.1	30.1	24.4

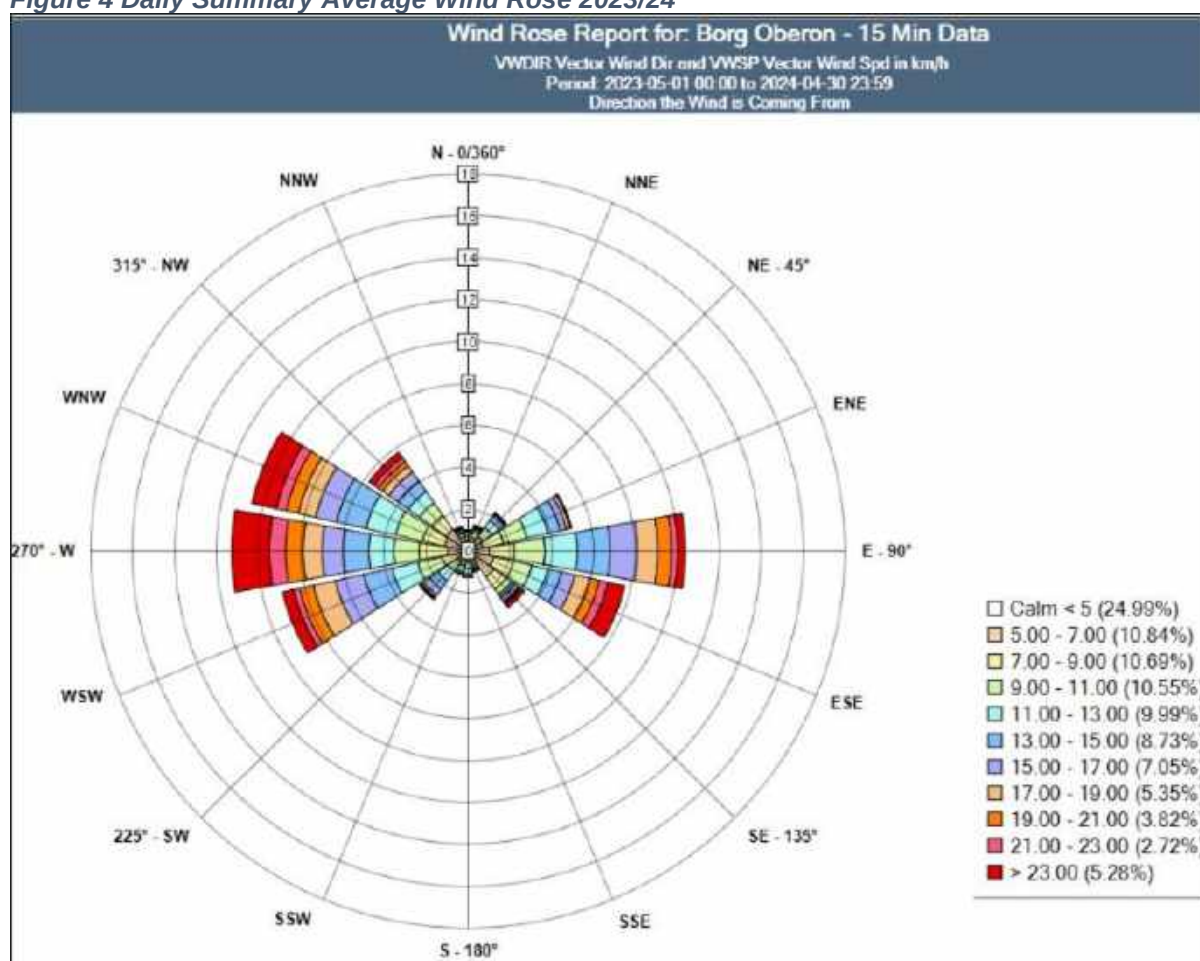
4.2.3 Wind Speed and Direction

The site weather station recorded wind speed and direction data is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4. As can be seen in Table 10 and Figure 4, the dominant wind direction during this reporting period was from an easterly direction.

Table 10 Monthly Daily Wind Data 2023/24

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2023	52.9	11.1	207.4° (SSW)
June 2023	43.1	12.3	223.3° (SW)
July 2023	44.5	11.3	212.8° (SSW)
August 2023	47.1	9.1	194.6° (SSW)
September 2023	44.4	9.7	194.9° (SSW)
October 2023	60.1	13.2	203.8° (SSW)
November 2023	38.3	10.4	157.6° (SSE)
December 2023	48	11.5	191.1° (S)
January 2024	47.7	12.3	150.7° (SSE)
February 2024	42.5	11.5	149.2° (SSE)
March 2024	37.6	9.3	135.3° (SE)
April 2024	40.1	8.7	173.4° (S)

Figure 4 Daily Summary Average Wind Rose 2023/24



4.3 Air Quality

4.3.1 Dust Depositional Gauges

Dust deposition monitoring is undertaken in accordance with Borg's Operational Air Quality Management Plan (OAQMP). Condition O3 of EPL 3035 states that:

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

EPL 3035 does not specify dust deposition monitoring be undertaken, Borg conducts this to assist with site management. The air quality criteria adopted for deposited dust is provided in Table 11.

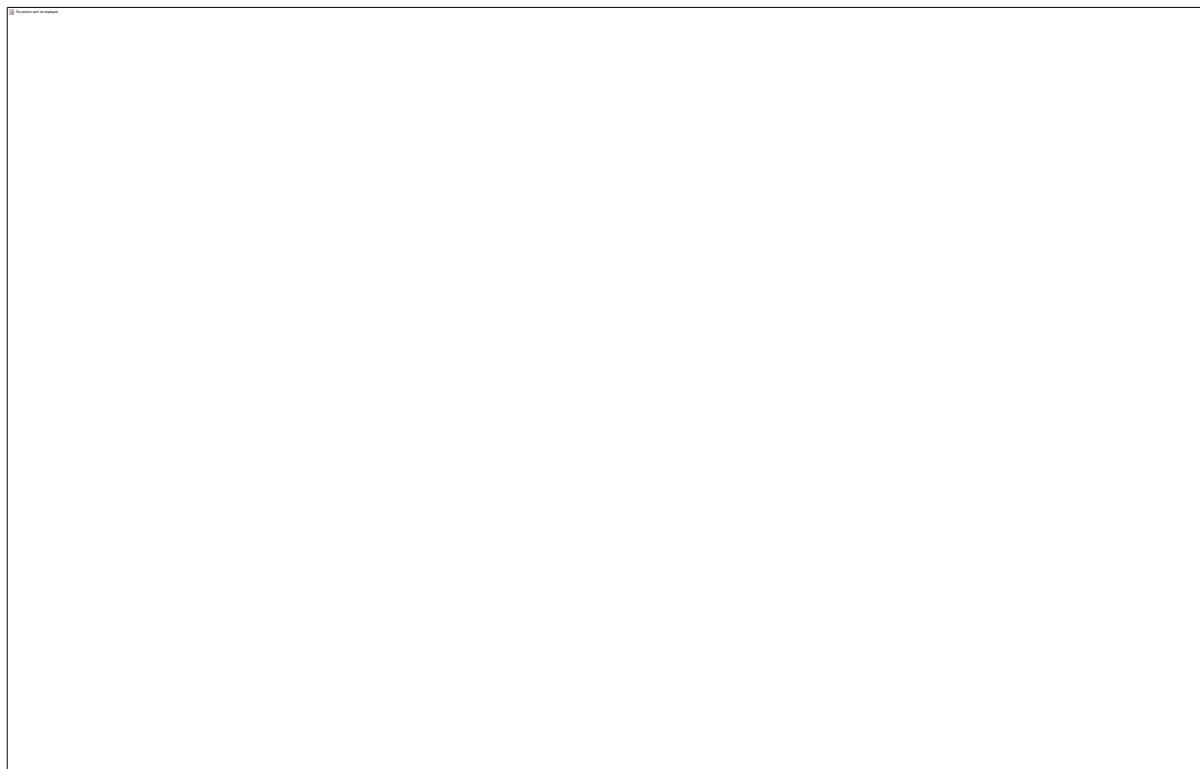
Table 11 Air Quality Criteria Deposited Dust

Averaging Period	Impact	Criteria
Annual	Incremental	2 g/m ² /month
	Total	4 g/m ² /month

There are six dust depositional gauges (DMG) located in and around the site. The six gauges were sampled monthly throughout the year from May to April. The locations of dust depositional gauges are listed in Table 12 and shown in Figure 5.

Table 12 Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description
DMG 1	The Development eastern boundary with Woodchem
DMG 2	Materials handling building
DMG 3	Water treatment plant
DMG 4	Northern boundary
DMG 5	Highlands Motor Inn, South of the Development
DMG 6	Albion Street, East of the Development

Figure 5 Depositional Dust Gauge Locations

DMGs 1 to 4 are located at the periphery of the site. DMG 1 is located within the operational boundary of the site immediately adjacent to an unsealed laydown area and in general proximity of an unsealed road. DMG 2 is located adjacent to the materials handling building. DMG 4 is located towards the northern boundary in an area of unsealed compacted surfaces used for storage of large pieces of machinery and reusable material such as steel.

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method*. During the reporting period all dust samples were collected by trained specialists and analysed by NATA certified laboratories.

Table 13 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids (g/m ² /month) 2021/22	Annual Average Insoluble Solids (g/m ² /month) 2022/23	Annual Average Insoluble Solids (g/m ² /month) 2023/24
DMG 1	The Development eastern boundary with Woodchem	7.9	5.9	5.3
DMG 2	Materials handling building	5.8	5.1	3.6
DMG 3	Site Meteorological station	1.2	1.3	2.2
DMG 4	Northern boundary	1.3	1.0	0.8
DMG 5	Highlands Motor Inn	0.9	0.9	0.8
DMG 6	Albion Street east of the Development	0.8	1.0	0.7

Table 13 shows DMG 1, returned an exceedance of the annual average criteria of 4g/m^2 for insoluble solids however, it had decreased in the annual average when compared to the last two year's reporting periods. DMG 1 is exposed to regular traffic and day-to-day activities adjacent internal dirt roads.

DMG 3 was the only gauge to have increased in annual average insoluble solids. This may be due to its location which is in close proximity to the earth works which had been taking place surrounding Mod 4 filling of the spring dam. Although the site water cart had been in use for dust suppression throughout the reporting period this year had a lower than average rainfall, so conditions were relatively dry.

There were no exceedance of the dust deposition criteria (4g/m^2) at locations DMG 2, DMG 3, DMG 4, DMG 5 and DMG 6 for the 2023/24 reporting period.

All gauges showed a decrease in the average annual for insoluble solids when compared to the previous two years except for DMG 3 which showed a slight increase compared to last year's data. DMG 3 however was still below the criteria of 4g/m^2 .

4.3.2 Air Emissions Monitoring Points

The locations of air emission monitoring points are listed in Table 14 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 14 September 2023.

Table 14 Location of Air Emissions Monitoring

EPA Identification No.	Description
4	DC1 Baghouse
5	DC2 Baghouse
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)
9	Conti 1 Dryer Cyclone #1 (south)
10	Conti 1 Dryer Cyclone #2 (north)
11	Conti 2 Heat Plant
12	Press Vents Conti 1
17	Conti 1 Heat Plant
18	Press exhaust vents
19	Dryer stack
20	Reject cyclone DC 11
21	Reject cyclone DC 12
22	Reject cyclone DC 13
27	Combined Conti 2 Press Vent
29	Forming Line Baghouse
30	Form Station Baghouse
31	Particleboard Press Extraction

EPA Identification No.	Description
32	Wet Electrostatic Precipitator (WESP)
33	Cogeneration Unit 1
34	Cogeneration Unit 2

EPA Identification Points 18, 19, 20, 21 and 22 are recognised as discharge points in EPL 3035 however there is no requirement to monitor the concentration of pollutants discharged at these points. Plant associated with these points has previously been dormant however it was the subject of MOD4 and will be added back to the license once Conti 4 has been commissioned and in operation.

Points 11 and 17 do not produce flow. The exhaust from Conti 2 heat plant (Point 11) is ducted back into Conti 2 dryer cyclones (Points 7&8), and exhaust from Conti 1 heat plant (Point 17) is ducted back into the Conti 1 production system (Points 9&10).

4.3.3 Air Monitoring

Environment Protection Licence 3035 sets pollution concentration limits for emission Points 7, 8, 9 and 10 as shown in Table 15. All plant and equipment must comply with the relevant concentration standards listed in Schedule 2, 3 and 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* where pollution limits are not specified in the EPL. Monitoring results are assessed against these criteria to determine compliance with air emission limits.

Table 15 EPL 3035 Air Concentration Limits

Pollutant	ID Point	Units of Measure	100 Percentile Concentration Limit	Reference Condition	Oxygen Correction	Averaging Period
Total Solid Particulates	7,8,9,10	mg/m ³	200	n/a	n/a	n/a
Formaldehyde	7,8,9,10	mg/m ³	5	n/a	n/a	n/a
Total Solid Particulates	29,30	mg/m ³	10	Dry, 273 K, 101.3 kPa	n/a	n/a
Total Solid Particulates	31,32	mg/m ³	50	Dry, 273K,101.3k Pa	n/a	n/a
Type 1 and Type 2 substances in aggregate	32	mg/m ³	0.5	n/a	n/a	1 hour
Nitrogen Oxides	33,34	mg/m ³	450	Dry, 273K,101.3k Pa	5%	1 hour
Volatile organic compounds	33,34	mg/m ³	20	Dry, 273K,101.3k Pa	5%	1 hour

Source: EPL 3035 (14 September 2023)

Air emission monitoring was undertaken by trained specialists and samples analysed by NATA accredited laboratories. Monitoring equipment is maintained by the consultant and calibrated in accordance with the manufacturer's specifications by qualified specialists. This monitoring is performed in accordance with the methodologies as specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* and the requirements of EPL

3035. USEPA Method GD-008 is the approved method for determining flow rate and sampling for particulate matter in cyclonic flow from licenced discharge Points 7, 8, 9 & 10.

For each discharge point identified in Table 14 above, Borg monitored the concentration of each pollutant as specified in EPL 3035. The results for this period are compared against results from the previous two years as displayed in Tables 16 to 33.

Table 16 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	<2	<12	-
Formaldehyde	mg/m ³	Yearly	11	4.2	-

Table 17 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	<2	<3	-
Formaldehyde	mg/m ³	Yearly	5.6	4.1	-

Table 18 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	28	38	35
Formaldehyde	mg/m ³	Yearly	4.2	21	3.3
Nitrogen Oxides	mg/m ³	Yearly	250	220	180
PM10	mg/m ³	Yearly	11	12	19
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 19 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	25	47	-
Formaldehyde	mg/m ³	Yearly	4.6	1.3	1.9
Nitrogen Oxides	mg/m ³	Yearly	220	230	-
PM10	mg/m ³	Yearly	10	16	-
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 20 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	12	32	18
Formaldehyde	mg/m ³	Yearly	3.6	3.7	4.8
Nitrogen Oxides	mg/m ³	Yearly	84	160	190
PM10	mg/m ³	Yearly	6.8	21	-
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 21 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2021/22	2022/23	2023/24
Total Solid Particles	mg/m ³	Yearly	17	190	19
Formaldehyde	mg/m ³	Yearly	3.3	3.2	1
Nitrogen Oxides	mg/m ³	Yearly	48	140	110
PM10	mg/m ³	Yearly	8.3	47	47
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Due to external third-party consultant availability and plant downtime, some emissions monitoring points were not analysed during the 2023/24 reporting period (EPA Point 4, 5, 12, 27, 29 and 30, however these points were covered in the following months. All results that have been received during the writing of this report which fell outside the reporting period have been compliant and will be reported in the next Annual Review (2024/25).

Table 18 shows a significant reduction in Formaldehyde when compared to last years data. The levels recorded in this years reporting period were 17.7 mg/m³ less than the previous year. There was also a reduction in nitrogen oxides and total solid particles.

All results shown in Tables 16 to 21 are within EPL 3035 limits as well as the *Protection of the Environment Operations (Clean Air) Regulation 2022*.

Table 22 Air Emissions Monitoring Results EPA Identification Point 12 Vent 1

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Every 3 years	-	-	-
Formaldehyde	mg/m ³	Every 3 years	-	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	-
PM10	mg/m ³	Every 3 years	-	-	-

Table 23 Air Emissions Monitoring Results EPA Identification Point 12 Vent 2

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Every 3 years	-	-	-
Formaldehyde	mg/m ³	Every 3 years	-	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	-
PM10	mg/m ³	Every 3 years	-	-	-

Table 24 Air Emissions Monitoring Results EPA Identification Point 12 Vent 3

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Every 3 years	-	-	-
Formaldehyde	mg/m ³	Every 3 years	-	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	-
PM10	mg/m ³	Every 3 years	-	-	-

Table 25 Air Emissions Monitoring Results EPA Identification Point 12 Vent 4

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Every 3 years	-	-	-
Formaldehyde	mg/m ³	Every 3 years	-	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	-
PM10	mg/m ³	Every 3 years	-	-	-

Table 26 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Yearly	12	4.5	-
Formaldehyde	mg/m ³	Yearly	7.2	1.6	-
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	-
PM10	mg/m ³	Yearly	3.4	<4	-

Table 27 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Yearly	<2	<2	-
Formaldehyde	mg/m ³	Yearly	4.9	1.5	-
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	-
PM10	mg/m ³	Yearly	<2	<3	-
Smoke Emissions	Obscuration	Yearly	0	0	-

Table 28 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Yearly	<2	2.3	-
Formaldehyde	mg/m ³	Yearly	1.3	1.0	-
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	-
PM10	mg/m ³	Yearly	<3	<3	-
Smoke Emissions	Obscuration	Yearly	0	0	-

Table 29 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Yearly	30	49	72
Formaldehyde	mg/m ³	Yearly	1.5	0.86	5.4
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	3
PM10	mg/m ³	Yearly	20	19	29
Smoke Emissions	Obscuration	Yearly	0	0	0

Table 30 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2021/2022	2022/2023	2023/24
Total Solid Particles	mg/m ³	Yearly	39	34	4
Formaldehyde	mg/m ³	Yearly	2.3	0.032	2.4
Nitrogen Oxides	mg/m ³	Yearly	210	190	150
PM10	mg/m ³	Yearly	*	*	2.1
Smoke Emissions	Obscuration	Yearly	0	0	0

*Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

Table 30.1 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	Test 1	Test 2	Test 3
Type 1 and Type 2 substances in aggregate	mg/m ³	Quarterly	<0.12	<0.11	<0.11

Point 31 saw a slight increase in all analytes during the reporting period which may potentially be attributed to a shift in production priorities and recipes. Despite the increase the results remain within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2022 limits.

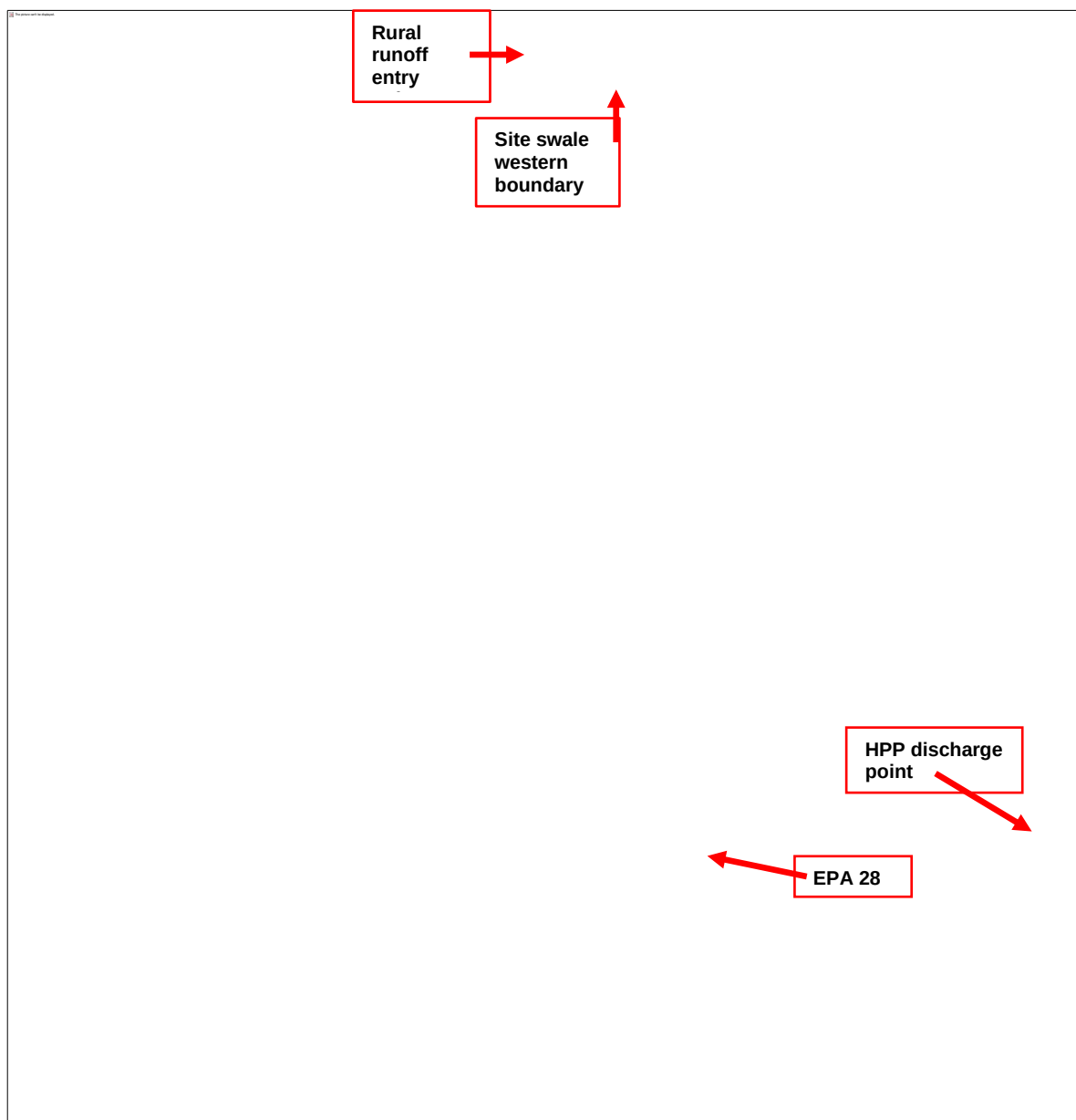
Point 32 generally saw an overall decrease in comparison to the previous year's results. There was however an increase of formaldehyde at the sampling location. Formaldehyde emissions can vary depending on plant operating conditions due to which product is being processed at the time of sampling. The results still remained within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2022 limits.

4.4 Surface Water

The existing surface water management system (see Figure 6) includes runoff from the Development and adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from StructaFlor and Highland Pine Products Sawmill 2 flows across Lowes Mount Road and directed onto the site via the swale on the western boundary
- Runoff from rural parcels of land on Lowes Mount Road is also directed into the site from the western boundary, conveyed via a 'clean' water swale, which runs alongside the site swale following the northern boundary before discharging at an independent HPP discharge point to a tributary of Kings Stockyard Creek
- The Development roof and surface runoff from the western side of the facility is directed into the boundary swale and transferred into the first flush basin
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap (GPT) and then into the stormwater flush basin
- Any overflow from the existing stormwater flush basin is directed into the first flush basin
- Water captured in the basins is harvested by the site water treatment plant for reuse in the production system.
- Stormwater harvesting averaged 15.2m³/day over the reporting period the largest recorded volume of water harvested in one day was 81m³
- Runoff from construction areas is managed in accordance with Erosion Sediment Control Plans as part of the CEMP for SSD7016. Surface water from these zones is directed into the site swale then on to the stormwater basin
- Water discharges from EPL discharge Point 28, and HPP discharge point to a tributary of Kings Stockyard Creek (shown on Figure 6)

Figure 6 Surface water management system - SSD 7016



In accordance with EPL 3035, water quality monitoring is undertaken weekly during discharge to manage discharge compliance requirements. During this reporting period water discharge was from EPA Point 28, additionally samples were taken at the HPP discharge point.

The HPP discharge point was utilised temporarily for Borg/SF flows due to earthworks and powerline realignment. The powerlines have been removed and power now runs underground, and the connection back into the grid has occurred which allowed for the reconnection of the swale southern side swale back into Flush 1 (Point 28).

EPA Point 1 sampling location has been removed during construction and diversion works for as part of the Mod 4 spring dam reclamation. The removal of Point 1 from the EPL 3035 has been discussed but a formal License variation has not yet been completed to remove the conditions from the licence.

The concentration limits of a pollutant discharged from EPA 1, EPA 28 (and HPP discharge point) in EPL 3035 is shown below in Table 31.

Table 31 EPA Identification Point 1 and Point 28 Water pollution limits (also adopted for HPP Swale sampling location)

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3
Biochemical Oxygen Demand (BOD)	mg/L		20
Colour	Hazen	80	160
Dieldrin	µg/L		0.3
Methylene Blue Active Substances (MBAS)	mg/L		0.5
Nitrogen (Total)	mg/L		10
Oil and Grease	mg/L		10
pH	pH		6.5-8.5
Phosphorus (Total)	mg/L		0.3
Total Suspended Solids	mg/L		50

Stormwater samples are collected by trained Borg personnel and are analysed by NATA certified laboratories. Full results for the 2023/24 reporting period are provided in Appendix B Surface Water Monitoring Data.

Table 32 provides a summary of Borg's historic annual average water monitoring results for discharge from EPA Point 1. No samples were taken from the discharge point as diversion works had commenced in the previous year reporting period.

Table 32 Annual Average Water Quality Monitoring Results EPA Point 1

Pollutant	Units of Measure	2019/20	2020/21
Aldrin	µg/L	0	0
Biochemical Oxygen Demand (BOD)	mg/L	8.2	6
Colour	Hazen	39.2	18
Dieldrin	µg/L	0	0
Methylene Blue Active Substances (MBAS)	mg/L	0.1	0.2
Nitrogen (Total)	mg/L	6.3	3.7
Oil and Grease	mg/L	7.5	5.1
pH	pH	7.6	7.6
Phosphorus (Total)	mg/L	0.1	0.1
Total Suspended Solids	mg/L	31.3	28.9

No samples were collected at Point 1 during the reporting period

Table 33 provides a summary of Borg's historic annual average water monitoring results for discharge from EPA Point 28. This shows that for the 2023/24 reporting period, the annual average for all pollutants were generally below the concentration limit set in EPL 3035.

Table 33 Annual Average Water Quality Monitoring Results EPA Point 28

Pollutant	Units of Measure	2020/21	2021/22	2022/23	2023/24
Aldrin	µg/L	0	0	<0.01	<0.01
Biochemical Oxygen Demand	mg/L	7.7	5.3	5.8	<2
Colour	Hazen	68.5	31.1	36.0	35
Dieldrin	µg/L	0	0	<0.01	<0.01
Methylene Blue Active Substances	mg/L	0.11	0.2	0.2	<0.1
Nitrogen (Total)	mg/L	8.42	5.7	7.8	1
Oil and Grease	mg/L	5.8	<5	6.0	<5
pH	pH	7.72	7.4	7.6	8.08
Phosphorus (Total)	mg/L	0.09	0.1	0.1	0.02
Total Suspended Solids	mg/L	23.5	63	19.3	<5

One sample was collected and analysed at Point 28 during discharge in the 2023/24 reporting period all other sampling events occurred during times of no discharge and as a precaution.

Four additional samples were analysed from Point 28 during the reporting period that were not included in the table of averages provided. The Four additional samples were taken at times of nil discharge and were taken as a precautionary measure due to heavy rains being forecast. No exceedances were recorded from Point 28 during the reporting period. On average all analysis results were lower than the previous years except for pH which slightly increased.

Table 34 Annual Average Water Quality Monitoring Results HPP Swale Discharge Point

Pollutant	Units of Measure	2021/2022	2022/23	2023/24
Aldrin	µg/L	0	<0.010	<0.010
Biochemical Oxygen Demand	mg/L	3.7	4.2	1.8
Colour	Hazen	57.2	39.1	23.1
Dieldrin	µg/L	0	<0.010	<0.010
Methylene Blue Active Substances	mg/L	0.1	<0.1	<0.1
Nitrogen (Total)	mg/L	1.2	1	0.8
Oil and Grease	mg/L	0	0.8	6.1
pH	pH	7.7	7.6	7.6
Phosphorus (Total)	mg/L	0.06	0.1	0.1
Total Suspended Solids	mg/L	14.6	16.8	8.0

The HPP Discharge Point was not a formally recognised EPA licence discharge location during the reporting period however it was treated the same. Both site discharge points converge approximately 200m downstream of the respective locations. Weekly water samples were undertaken by the Environmental Manager during discharge and analysed off site by a NATA laboratory for the same parameters as indicated in the site EPL. Twenty-one samples (sample event) were collected and analysed at the HPP Discharge Point during discharge in the 2023/24 reporting period. The water that passes through the discharge location consists of stormwater that passes through the HPP site and non-operational StructaFlor site which is adjacent to the Borg facility. The water travels approximately 1.7km through open swales, pipelines, natural water conveying channels containing artificially constructed ERSED controls to filter it. This combination of both natural and artificial filtration has resulted in the low level contaminants at the discharge point over the reporting period, as can be seen in Table 34. The swales were separated back to their original state so that the water can be differentiated between HPP surface water and StructaFlor surface water. The StructaFlor water was rediverted back into Fush 1 stormwater dam and the first separated sampling event was completed on 4 October 2023.

One sample taken from the comingled HPP Swale on 25 July 2023 returned an Oil and Grease result of 38mg/L which exceeds the EPA licence limit at Point 28 of 10mg/L. It was noted on the stormwater recording sheet that the water had moderate discharge and colour appeared light which is similar to previous week. No suspended sediment, water was back to earlier Oil and Grease levels (6mg/L), no Hydrocarbon sheen was visible at sampling location or upstream. Oil and Grease had not previously been an issue in the drainage system. Less than one week after the exceedance event the same discharge point was sampled again and returned a result for Oil and Grease of 6 mg/L. It was also noted that in the week the exceedance occurred, the sample analysis results for Total Recoverable Hydrocarbons with silica gel cleanup were below the detectable reporting level.

The exceedances experienced during this period were investigated in an attempt to determine potential pollutant sources that may have contributed to the exceedances. This included upstream inspections (Council, StructaFlor and HPP stormwater infrastructure), assessment of site activities and ERSED controls, and review of rainfall data from the site weather station. No Hydrocarbon sheen was visible at the sampling location, or upstream and no unusual site activities had been noted during the time.

4.4.1 EPL 3035 Identification Point 28

At EPL discharge Point 28 there were no occurrences where water quality discharge limits for were exceeded.

4.5 Groundwater

In accordance with EPL 3035, Borg monitors four groundwater bores on site. The locations of groundwater monitoring bores are listed in Table 35 and shown on Figure 7.

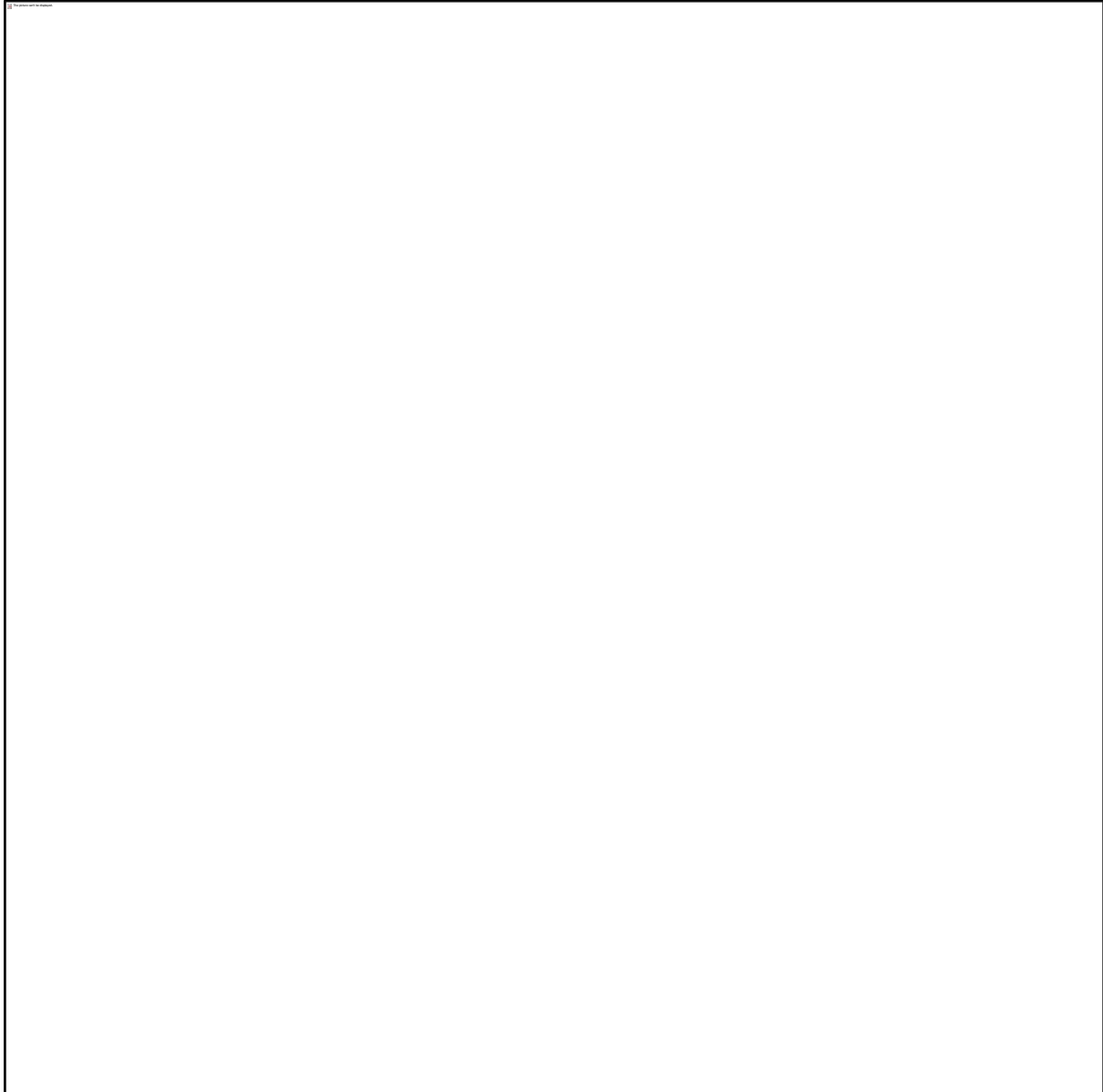
Table 35 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site
15	East of stormwater treatment pond
16	East of Woodchem

24	Adjacent northern swale

Samples were collected by an appropriately qualified third-party specialist and analysed by NATA accredited laboratories in accordance with “Standard Methods for the Examination of Water & Wastewater,” APHA, AWWA, WEF and Water & Wastewater and Examination Manual (V. Dean Adams). Monitoring equipment is maintained in accordance with the manufacturer’s specifications by qualified specialists.

Figure 7 Groundwater Monitoring Locations



Tables 36 - 39 present results for EPA Identification Points 14, 15, 16 and 24 during the reporting period and compares them with the previous three years data. There are no concentration limits for groundwater set in EPL 3035.

Table 36 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23	2023/24
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.02	0.04	0.06	0.02
Chemical Oxygen Demand	mg/L	Yearly	25	<10	16	<10
Electrical Conductivity	µS/cm	Yearly	220	323	266	332
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.2	<0.1	0.40	<0.1
pH	pH Units	Yearly	6.8	7.7	7.3	7.0
Total Dissolved Solids	mg/L	Yearly	210	244	201	176
Total Organic Carbon	mg/L	Yearly	3	<1	3	<1
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	606	26	21	16
Water Height	m	Yearly	1.09	2.21	0.92	1.62

Table 37 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23	2023/24
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	5.95	4.14	2.62
Chemical Oxygen Demand	mg/L	Yearly	26	23	296	<10
Electrical Conductivity	µS/cm	Yearly	1040	1336	1527	1919
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	1.10	0.60	<0.1
pH	pH Units	Yearly	7.1	6.7	6.6	6.6
Total Dissolved Solids	mg/L	Yearly	690	982	985	1350
Total Organic Carbon	mg/L	Yearly	3	55	101	79
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	2230	2290.00	1780
Total Suspended Solids	mg/L	Yearly	45	43	55	30
Water Height	m	Yearly	0.98	4.28	4.80	3.45

At EPA Points 14 and 15 (Table 36 and 37), it was reported in the last reporting period that the monitoring well had only recently been reinstated, and that excess sediment may have been deposited. As expected, there were further decreases in TSS over the course of the reporting period. Generally, all analytes were consistent with the previous reporting periods results except electrical conductivity which had a slight increase and a notable decrease of Total Petroleum Hydrocarbons at Point 15.

Table 38 Groundwater Monitoring Results EPA Identification Point 16 (GW01)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23	2023/24
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0	0.03	0.06	0.08
Chemical Oxygen Demand	mg/L	Yearly	26	28	26	37
Electrical Conductivity	µS/cm	Yearly	257	282	250	283
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.3	<0.2	4.60	<0.1
pH	pH Units	Yearly	6.3	6.9	6.8	6.4
Total Dissolved Solids	mg/L	Yearly	200	168	176	132
Total Organic Carbon	mg/L	Yearly	6	8	4	6
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	173	197	54	152
Water Height	m	Yearly	0.86	2.02	2.34	2.20

Generally, all analytes displayed in Table 38 at Point 16 were consistent with the previous reporting periods results except for a notable decrease in formaldehyde.

Table 39 Groundwater Monitoring Results EPA Identification Point 24 (GW03)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23	2023/24
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	1.12	0.09	0.02
Chemical Oxygen Demand	mg/L	Yearly	182	37	28	<10
Electrical Conductivity	µS/cm	Yearly	421	428	374	45
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	0.1	<0.1	<0.1
pH	pH Units	Yearly	7.3	7.2	6.7	6.8
Total Dissolved Solids	mg/L	Yearly	264	397	340	280
Total Organic Carbon	mg/L	Yearly	148	3	4	4
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	142	23	19	11
Water Height	m	Yearly	5.89	6.5	3.0	2.30

Generally, the analytes displayed in Table 39 at Point 24 have decreased in comparison to the previous year's reporting period. A notable decrease in Chemical Oxygen Demand and Electrical Conductivity is evident when compared with the last reporting period.

4.6 Noise

In accordance with EPL 3035 and site management plans, Borg monitors noise emissions from the facility. Noise from the premises must not exceed the limits noted in Table 44. In accordance with Development Consent SSD 7016 all construction activities related to Borg must also comply with the limits in Table 40.

Table 40 Noise Limits dB(A)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45
Note: <u>Day</u> – The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays <u>Evening</u> – The period from 6:00pm to 10:00pm <u>Night</u> – The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays L _{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.			

These noise limits apply under all meteorological conditions except for the following:

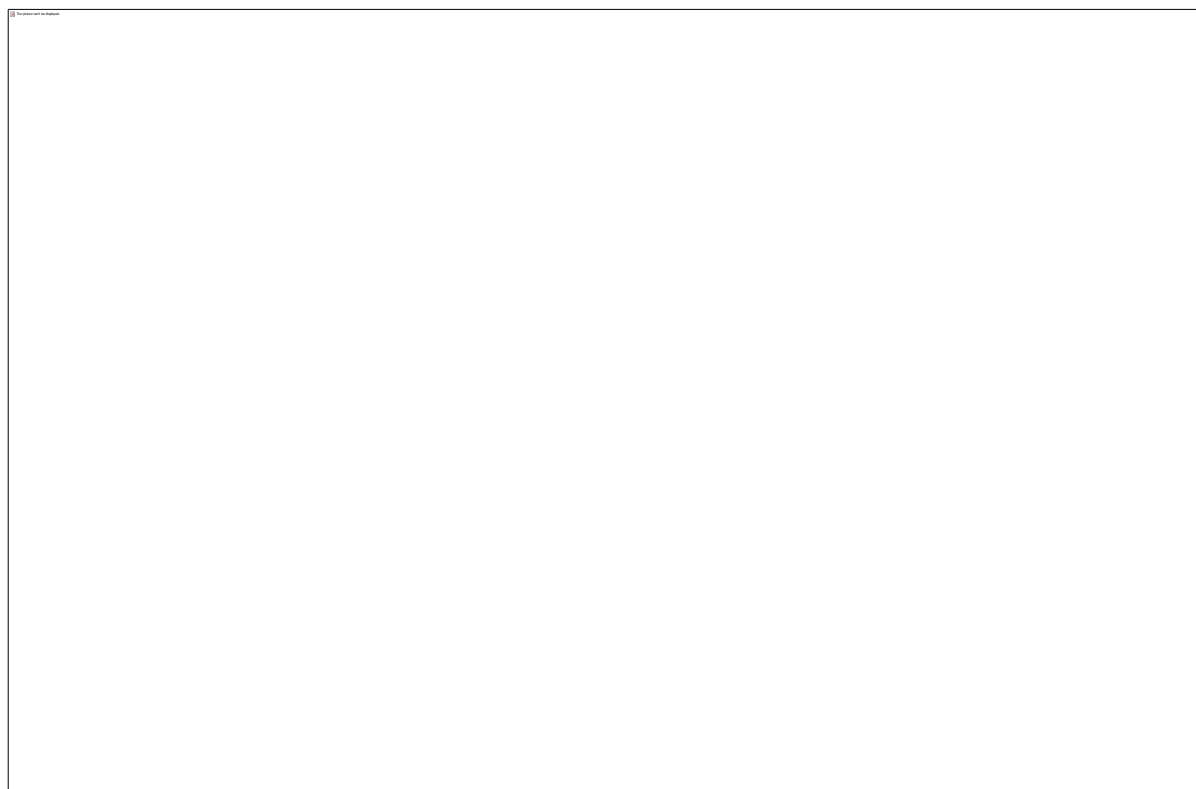
- Wind speeds greater than 3 meters/second at 10 metres above ground level; or
- Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
- Stability category G temperature inversion conditions.

Data recorded by the site meteorological station identified as EPA Identification Point 26 is used to determine meteorological conditions. Temperature inversion conditions (stability category) are to be determined by the sigma-thetas method referred to in Fact Sheet D in the *Noise policy for Industry* EPA 2017.

4.6.1 Operational Noise

EPL 3035 stipulates that noise monitoring to determine compliance must be carried out at least once annually during the day, evening and night-time hours specified in Table 40. Noise monitoring must be undertaken in accordance with *Australian Standard AS 2659.1 (1998): Guide to use of sound measuring equipment – portable sound level meters*, and the compliance monitoring guidance provided in the *NSW Noise Policy for Industry* (EPA 2017).

During the 2023/24 reporting period, Global Acoustics were engaged to conduct attended noise monitoring and provide an *Annual Noise Monitoring Report* for operational noise generated by the Development. The noise monitoring event was conducted at four sensitive receiver locations as shown in Figure 8 on 20th June 2023. Table 41 presents results of the attended annual noise monitoring event.

Figure 8 Borg's noise monitoring locations**Table 41 Attended Noise Monitoring L_{Aeq} (15 minute)**

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ² , 3	Borg L_{Aeq} 15 min dB ⁴	Exceedance 5,6
NM1	20/6/2023 13:20	3.4	C	55	No	42	NA
NM2	20/6/2023 13:40	3.3	C	55	No	NM	NA
NM3	20/6/2023 14:04	3.2	B	55	No	NM	NA
NM4	20/6/2023 14:25	3.3	A	55	No	NM	NA
NM1	20/6/2023 20:03	0.8	F	50	Yes	36	Nil
NM2	20/6/2023 20:24	0.6	F	50	Yes	37	Nil
NM3	20/6/2023 20:48	1	E	50	Yes	44	Nil
NM4	20/6/2023 21:12	1.8	E	50	Yes	IA	Nil
NM1	20/6/2023 22:06	1.3	E	45	Yes	42	Nil
NM2	20/6/2023 22:26	0.7	F	45	Yes	37	Nil
NM3	20/6/2023 22:49	0.5	F	45	Yes	41	Nil
NM4	20/6/2023 23:12	0.4	F	45	Yes	41	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible means there was no noise from the source of interest audible at the monitoring location.

1. Atmospheric data is sourced from Borg's weather station in Oberon;

2. In accordance with EPL and PA, the noise criteria are to apply under all meteorological conditions except the following:

- Wind speeds greater than 3 m/s at 10 metres above ground level; or

- Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or

- Stability class G temperature inversion conditions.

3. Criterion may or may not apply due to rounding of meteorological data values;

4. Estimated or measured LAeq, 15 minute attributed to Borg;

5. Bold results in red indicate exceedance of criteria (if applicable); and

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable

The attended noise monitoring conducted by EMM (Formally Global Acoustics) recorded no exceedance of the limits identified in Table 40. All measurements were undertaken as per the *Noise policy for Industry EPA 2017*.

4.6.2 Construction Noise

Borg's Construction Noise Management Plan (CNMP) includes an attended monitoring regime of one event per quarter. Quarterly noise monitoring is not a compliance requirement under EPL 3035 however it is included as a commitment in Borg's Construction Noise Management Plan and therefore, a requirement of SSD 7016 condition C3.

Attended monitoring locations are shown in Figure 8. If any exceedances are identified, additional mitigation measures are implemented, and follow-up monitoring undertaken within one week of the exceedance to determine the effectiveness of the additional controls. Global Acoustics conducted the construction noise monitoring for this review period. Tables 42 to 45 show monitoring results for quarterly noise monitoring events. All reference notes are included below Table 45.

Table 42 Construction Noise Quarter 2

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg LAeq 15 min dB ⁴	Exceedance ^{5,6}
NM1	20/6/2023 13:20	3.4	C	55	No	42	NA
NM2	20/6/2023 13:40	3.3	C	55	No	NM	NA
NM3	20/6/2023 14:04	3.2	B	55	No	NM	NA
NM4	20/6/2023 14:25	3.3	A	55	No	NM	NA
NM1	20/6/2023 20:03	0.8	F	50	Yes	36	Nil
NM2	20/6/2023 20:24	0.6	F	50	Yes	37	Nil
NM3	20/6/2023 20:48	1	E	50	Yes	44	Nil
NM4	20/6/2023 21:12	1.8	E	50	Yes	IA	Nil
NM1	20/6/2023 22:06	1.3	E	45	Yes	42	Nil
NM2	20/6/2023 22:26	0.7	F	45	Yes	37	Nil
NM3	20/6/2023 22:49	0.5	F	45	Yes	41	Nil

NM4	20/6/2023 23:12	0.4	F	45	Yes	41	Nil

Table 43 Construction Noise Quarter 3

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg LAeq 15 min dB ⁴	Exceedance 5,6
NM1	3/08/2023 10:11	4.5	D	55	No	49	NA
NM2	3/08/2023 10:35	4.5	A	55	No	NM	NA
NM3	3/08/2023 9:18	3.1	C	55	No	46	NA
NM4	3/08/2023 9:47	4.2	D	55	No	47	NA

Table 44 Construction Noise Quarter 4

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance e ^{3,4}
NM1	2/11/2023 11:38	2.5	A	55	Yes	46	Nil
NM2	2/11/2023 12:00	1.8	A	55	Yes	36	Nil
NM3	2/11/2023 10:50	2.3	A	55	Yes	36	Nil
NM4	2/11/2023 11:15	1.7	A	55	Yes	37	Nil

Table 45 Construction Noise Quarter 1

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance e ^{3,4}
NM1	19/03/2024 13:32	2.9	A	55	Yes	47	Nil
NM2	19/03/2024 13:54	2.5	A	55	Yes	NM	Nil
NM3	19/03/2024 12:45	3.7	A	55	No	38	NA
NM4	19/03/2024 13:10	2.5	A	55	Yes	40	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development Consent and so criterion is not applicable.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible, there was no noise from the source of interest audible at the monitoring location.

1. Noise criteria are to apply under all meteorological conditions except the following:

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

2. Site-only LAeq, 15minute attributed to the Development, including modifying factors if applicable;

3. Bold results in red indicate exceedance of criteria (if applicable); and

4. NA in exceedance column means atmospheric conditions outside conditions specified and criterion is not applicable.

No exceedances of EPL 3035 noise limits were recorded during these monitoring events.

5 Community Relations

5.1 Environmental Complaints

Eleven community complaints were received during the 2023/24 reporting period. Site investigations were conducted by the Environmental Manager and team leaders which included a review of plant operational data, noise monitoring and visual inspections. Discussions were conducted with Area Managers/Supervisors regarding site activities to determine if the facility was operating within approved conditions as specified in SSD 7016 and EPL 3035 at the time of the complaints.

2 AIR, 1 ODOUR, 8 NOISE, TOTAL OF 11

Two fibre complaints were made by one resident in Oberon and discussions have been ongoing. The resident has been communicating with Borg about debris being found on his car on occasion. During a phone call the Borg Environmental Manager informed the resident that we were commencing significant works on C1 cyclones very shortly. We had conducted significant investigations into potential sources and were reviewing the details regularly, however our geographically placed wind rose data did not align with the thought that it could have been from the C1 cyclones. Conversations around the sites EPA licence and emissions data have also been conducted.

One complaint was received by a contract worker who was working outside and there seemed to be a lot of steam and odour coming from the site. Caller believed there was a strong formaldehyde smell. Environmental Manager confirmed that the plant was operating under normal conditions. Investigated multiple areas surrounding the site and conducted Formaldehyde monitoring with all results being below the detectable limit of the Faradmeter which is 0.02ppm.

Eight complaints received during this reporting period were related to noise from one resident. The complainant also made multiple complaints in the previous reporting periods, all of which were investigated, and no breaches were identified. This reporting period the complainant had become quite persistent with complaints calling, sometimes twice a week. The complainant had given very little to no detail leaving messages for the complaints line such as "Loud noise coming from Albion Street. Woke me up this morning" and "Has been going for hours and has been getting worse, could not tell you what it sounds like, but it is from Borg." The complainant became very difficult to work with in the last reporting period, this did not improve during this reporting period. They did not answer or return phone calls and so following up these complaints became quite difficult. A specific project was commissioned which included spot noise checks in various locations throughout the town surrounding the site, noise monitoring and mapping of the surrounding area helped to provide insight into any unsubstantiated illegitimate complaints.

External noise monitoring was completed by EMM (Formally Global Acoustics) quarterly within the reporting period with no evidence of breaches identified. It was reported by neighbouring business Woodchem that they had undertaken investigations into noise sources on site around June/ July 2023 and some work was completed on air valves and controls in the following months. The work was successful and minimised noise emissions further below the already compliant limits. Following the work that Woodchem had completed in August, Borg has not received any further noise complaints.

For each complaint received, Borg provided a response to the complainant in a timely manner. With respect to noise complaints, regardless of our demonstration of compliance with noise limits via compliance noise monitoring events, Borg will continue to undertake ad hoc attended and unattended noise monitoring to ensure nil noise nuisance to local residents from site activities.

5.2 Community Liaison

5.2.1 Community Consultative Committee (CCC)

Borg has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the facility, and the greater Oberon Timber Complex (OTC). The CCC meetings provide a forum to discuss and address general construction and operational impacts, and mitigation measures for Borg. The CCC meetings also allow for feedback from the local community to Borg and the OTC in relation to environmental performance.

Borg hosted two CCC meetings during the reporting period on the 17th of August 2023, and 27th March 2024. All meetings were held in the boardroom of the administration building at the Development where members of the community, local council, the Mayor and neighbouring businesses (Highland Pine Products and Woodchem) attended and contributed. Some community members also joined online via video call on Teams.

The major discussion points relating to the Development in 2023/24 were as follows:

- Hot line complaints – line not working effectively. Gatehouse 3 answers the hot line as “gate 3” and people hang up as they do not think it is the Hot line. Need to look at ways to register or receipt of hot line messages at the gate.
- Conti 1 cyclones repair/construction is underway and will be operational around December 23.
- Wastewood – Water curtains installed around UWR to capture dust and particles with the increase in recycled wood.
- Community Hot line issues improving and are now being directed to Andrew Brady.
- Mid last year was the last noise complaint.
- Third Party monitoring, all good around sites outside.
- Dust – Cyclone upgrades have helped, one resident dust complaint on going.
- Dryer upgrade is now completed on C1 with new cyclone tops replacing the existing ones.
- Harvesting a lot more storm water this year meaning less discharge
- On average 73% UWR recycled wood was used in the Particle Board product. We're heading towards 18,000-19,000 tonnes per month with the Particle Board output having increased by 15%.

5.2.3 Opportunities for Information Exchange

Borg established the following avenues to record enquiries and complaints related to construction and operational activities:

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

The telephone number, postal and email address are displayed on a sign at the entrance to the Development in a position that is clearly visible to the public. This information is also distributed to the local community and is included in public information communications which may include Borg website, local area advertisements, letterbox notifications and project fact sheets.

6 Independent Audit

Development Consent SSD 7016 condition C15 sets out requirements for independent environmental audits of the Development. Borg commissioned environmental consultants Molino Stewart to conduct an Independent Environmental Audit (IEA) of the site for operations and construction for audit period 1 July 2018 to 29 May 2021. In accordance with SSD 7016 condition C15 the next IEA is scheduled for 2024 and will be submitted after this reporting period.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through Borg Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, Borg's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

- (a) Harm to the environment is material if:
 - i. It involves actual or potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
 - ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations),
and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there were three reportable environmental pollution incidents at Borg.

7.2 Non-conformances

On 7 November 2023 Borg reported an incident to the EPA's Environment Line. The incident comprised the release of wood fibre from the Conti 4 cyclone. The Environmental and Safety Manager and Facility Manager identified no widely dispersed debris on or adjacent the roads surrounding the plant (Lowes Mount Road, Albion St, North St, Dart St, Ross St, Horace St, Oberon St). Minor quantities of debris was observed in a very specific area of Scotia Avenue approximately 1km from C4, Carrington Avenue approximately 1.2km from C4 and Balfour Street approximately 1.3km from C4. No fibre was identified on any other surfaces or the road surrounding the site. No formal complaints were made about the fibre event either directly to Facility staff or the 24-hour complaints line and no further sightings were recorded by residents or business owners to the business.

The decision was made to take Conti 4 offline until the above works and a full investigation was completed, and suitable modifications were enacted. The line was not put back into operation until approximately 9:00pm the following day (8/11/2023). On 29 November 2023 Borg provided the EPA with an incident report in accordance with EPL 3035 condition R3.

On 19 March 2024 Borg reported a second incident to the EPA's Environment Line. The incident comprised the release of wood fibre from the Conti 4 cyclone to the nearby receiving community at approximately 17:45pm. Management believed that the clean-up was adequate at approximately 10:00pm and decided that further off-site investigations would be best undertaken with daylight the following morning. The following morning Wednesday 20 March 2024 the Environmental and Safety Manager conducted another off-site assessment on the roads previously identified and determined that there were no further impacts that needed rectification. Communication continued with the public-school principal after the event to ensure any questions or complaints could be resolved. The principal was satisfied with the cleanup works and said that no complaints had been received by students, teachers, or parents regarding the incident.

Following the incident, Borg Facility Manager and the Environmental and Safety Manager met with the General Manager of Oberon Council Gary Wallace and Planning and Development Director Damian O'Shannassy to debrief and have an open discussion. The Environmental and Safety Manager informed the council members that Borg was going to hold a Community Consultative Committee Meeting the following week on 27 March 2024 to inform and debrief with members of the community as well as neighboring businesses. It was suggested by Council to request an extraordinary Local Emergency Management Committee (LEMC). This was requested by The Environmental and Safety Manager and the meeting was held on Thursday 4 April 2024.

An R3 report was submitted to the EPA in relation to the incident.

On 26 March 2024, air emissions specialists EKTIMO Pty Ltd conducted Borg's annual compliance monitoring. Air monitoring was conducted at the Particleboard Press Extraction System EPA Point 31 for Total Solid Particles (TSP), Nitrogen Oxides (NOx) and Metals: Type 1 substances (Sb, As, Cd, Pb, Hg) & type 2 substances (Be, Cr, Co, Mn, Ni, Se, Sn, V). A report was provided by EKTIMO on 26 April 2024.

All emission results were below the adopted thresholds governed by EPL 3035 with the exception of Total Particulate Matter (TPM). The license stipulates a 100 Percentile concentration limit of 50 milligrams per cubic metre for EPA Point 31. The detected value at the time of monitoring was 72 milligrams per cubic metre. Upon receipt of the result the following actions were undertaken:

1. Notification made to the EPA.
2. Completed a precautionary drain and clean of the Press Extraction System
3. Scheduling of an additional test for Point 31.
 - a. EKTIMO were unable to attend for a retest until the 4 June 2024. Booked in the retest and then enquired with additional companies.
 - b. Assured Environmental were approached and attended site on 22 May 2024 for TPM testing.

Assured Environmental attended site on 22 May 2024 to conduct TPM testing of EPA Point 31. Two tests were performed during the day for at the discharge point and returned results of **5.7mg/m³** and **6.6mg/m³** respectively.

EKTIMO attended site on 4 June 2024 to conduct further TPM testing of EPA Point 31. Whilst the report has not been finalised for the testing a verbal result of **<9 mg/m³** has been provided by EKTIMO on 14 June 2024.

8 Activities Proposed for the next Annual Review Period

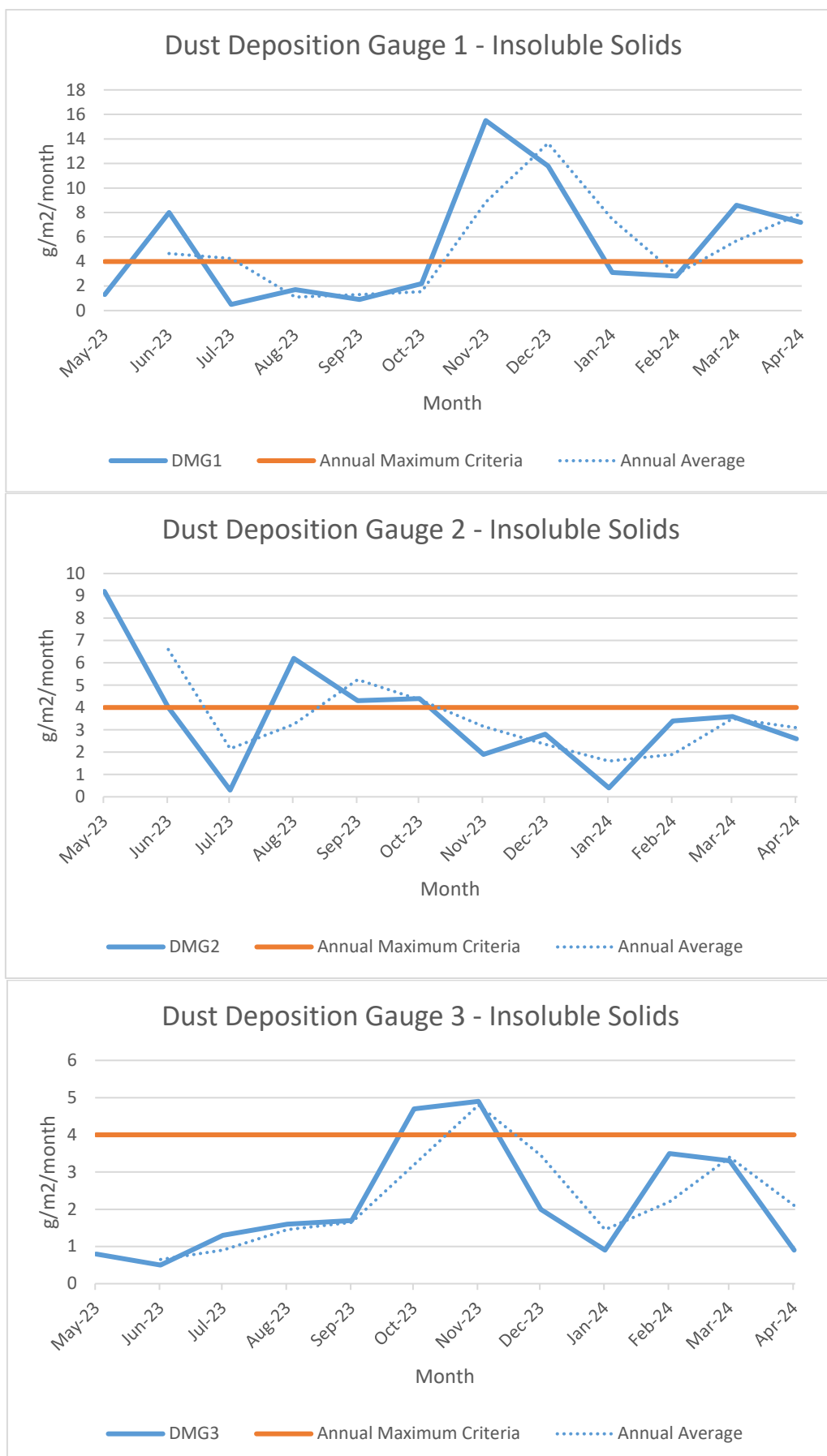
Borg will endeavour to carry out the activities listed in Table 46 during the 2024/25 reporting period to assist with improving the environmental performance of the existing development and the project.

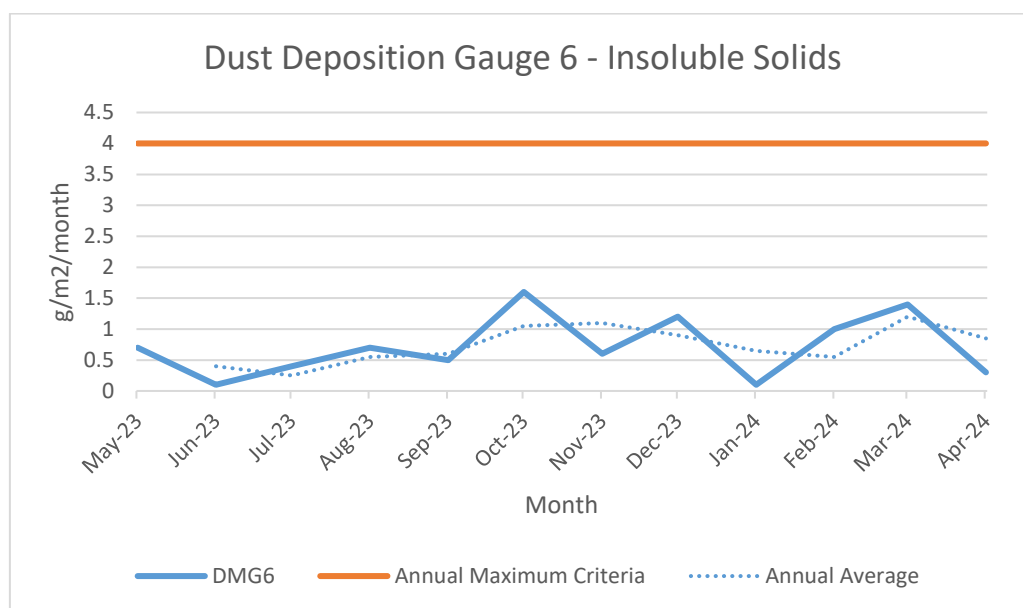
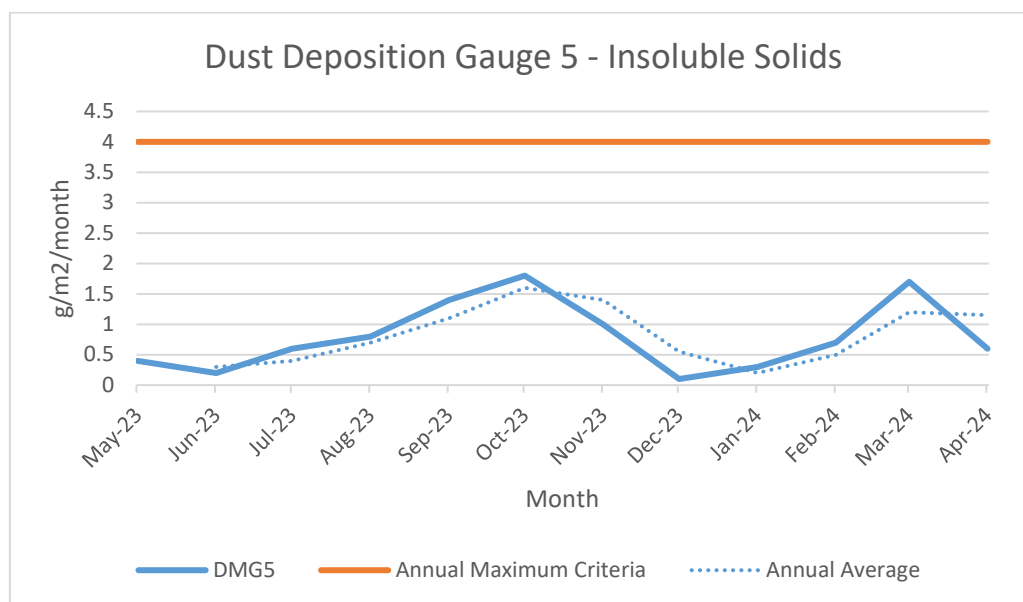
Table 46 Proposed Activities for 2024/25 Reporting Period

Ongoing implementation of Environmental Management Plans for the existing development and the project.
Complete verification studies required for SSD 7016 including modifications
Commence hazard audit under DPIE Hazardous Industry Planning Advisory Paper No. 5 -Hazard Audit Guidelines (HIPAP 5 – Ref. 2) (four yearly)
Complete Conti 4 commissioning and associated commissioning and verification reports and license variation
Complete works as approved under Modification 4 & commence works under Mod 5
Continue erosion and sediment control inspections and rectification works as necessary to manage storm water quality discharge
Carry out independent environmental audit (IEA) as per condition C15

APPENDICIES

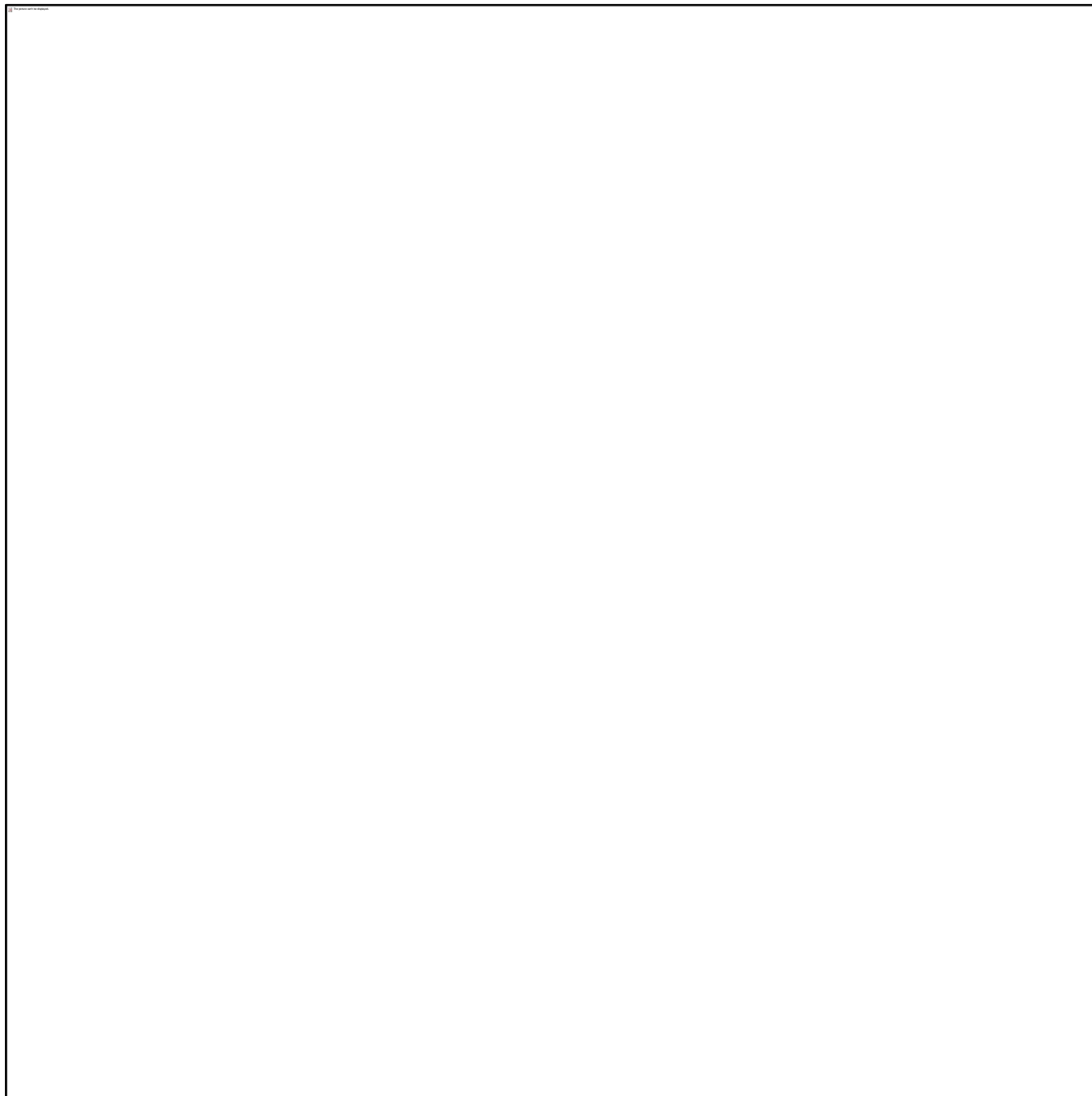
Appendix A – Depositional Dust Monitoring Data





Appendix B – Surface Water Monitoring Data





Appendix C – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
135	Noise	5/5/2023	Dart Street, Oberon	"Reporting noise along Albion Street this morning."	Continued monitoring plant operating conditions.
136	Noise	12/5/2023	Dart Street, Oberon	"Loud noise coming from Albion Street. woke me up this morning."	Monitor plant operating conditions and ensure plant is continuing to comply with license requirements.
137	Noise	2/6/2023	Dart Street, Oberon	"Loud noise banging from Borg."	Reviewed camera footage and plant operating conditions reminded departments about noise requirements for the site.
138	Noise	17/6/2023	Dart Street, Oberon	"All night noise from 7pm along Albion Street and getting worse."	Review operating conditions and weather data. Ensure all roller doors are shut and license requirements are still being met.
140	Noise	26/7/2023	Dart Street, Oberon	"Report Borg noise, all night and now it is just noise, noise, noise."	Review plant operating conditions and review noise logger data. to ensure plant is continuing to operate within license limits.
141	Noise	27/7/2024	Dart Street, Oberon	"Noise from Borg constant since 12:30am."	Check plant operating condition. Ensure that the license requirements are continuing to be met.
142	Noise	22/8/2024	Dart Street, Oberon	"Has been going for hours and has been getting worse. could not tell you what it sounds like, but it is from Borg."	Continue to investigate potential noise impacts in town even though third-party compliance monitoring has been conducted and the site is within compliance.
143	Dust/Debris	20/9/2023	Tasman Street, Oberon	Discuss ongoing concerns from community member. resident has been communicating with us about debris being found on his car on occasions. On this phone call I informed him that we are commencing significant works on C1 cyclones very shortly. We have conducted significant investigations into potential sources and are reviewing the details regularly, however our geographically placed wind rose data doesn't align with the thought that it could be from C1 cyclone.	Advise Peter when C1 works commence. Peter to monitor any changes to debris deposition.

144	Odour	3/11/2023	Lowes Mount Road, Oberon	Working outside and there seemed to be a lot of steam and odour coming from the site. Caller believed there was a strong formaldehyde smell.	Confirmed that the plant was operating under normal conditions. Investigated multiple areas surrounding the site and conducted Formaldehyde monitoring. No evidence of breach found.
145	Dust/Debris	5/2/2024	Tasman Street, Oberon	Resident identified fibre fall out on vehicle soon after washing it.	Reviewed operating conditions.

Annual Review 2022/23

Borg Manufacturing Oberon

124 Lowes Mount Road, Oberon NSW

Borg Manufacturing

31 July 2023

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
1	31/07/2023	Andrew Brady Environmental Manager	For submission to DPE	Victor Bendevski Environmental and Regulatory Compliance	

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Annual Review Title Block

Name of operation	Borg Manufacturing
Name of operator	Borg Manufacturing
Development consent / project approval #	SSD 7016
Name of holder of development consent / project approval	Borg Construction
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	80WA715797
Name of holder of water licence	Borg Panels Pty Ltd.
MOP/RMP start date	N/A
MOP/RMP end date	N/A
<i>I, Victor Bendeovski, certify that this audit report is a true and accurate record of the compliance status of Borg Manufacturing Oberon for the period 1st May 2022 to 30th April 2023 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd</i> Note. a) <i>The Annual Review is an ‘environmental audit’ for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i> b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, \$22,000, or both.)</i>	
Name of authorised reporting officer	Victor Bendeovski
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	31/07/2023

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Borg Manufacturing Oberon site and covers the twelve-month reporting period from 1 May 2022 to 30 April 2023. This Annual Review has been prepared to satisfy condition C11 of Development Consent SSD 7016 issued by the Minister for Planning on 29 May 2017.

The Borg facility is located at 124 Lowes Mount Road, Oberon and consists of three medium density fibreboard (MDF), a particleboard manufacturing plant and a mouldings manufacturing plant.

This Annual Review is submitted to NSW Department of Planning and Environment (DPE), NSW Environment Protection Authority (EPA) and Oberon Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the Borg website:

[BORG - Oberon NSW \(borgs.com.au\)](http://borgs.com.au)

Borg Manufacturing generally maintained compliance with necessary approvals and licenses with the exception of EPL 3035 condition L2.5 and O2.1 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water and Section 7.2 Non-Conformances respectively.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 716	C11	Annual review	Compliant		1.4 Annual Review Requirements
EPL 3035	Section 3 L4.1	Noise	Compliant		
EPL 3035	Section 3 L2.4	Air Quality	Compliant		
EPL 3035	Section 3 L2.5	Water Quality	Non-compliant	Exceedances of EPL 3035 water discharge limits	4.4 Surface Water
WAL28951	N/A	Aquifer extraction	Compliant		
EPL 3035	O2.1	Off-site fugitive fibre discharge	Non-compliant	Plant installed at the premises not maintained in a proper end efficient condition	7.2 Non-Conformances

1.2 Introduction

The Borg Manufacturing facility forms part of the wider Oberon Timber Complex, manufacturing a range of MDF products (Custom wood) and particleboard including:

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

Figure 1 Regional context



1.3 Consent

Development Consent SSD 7016 was issued by the Minister for Planning on 29 May 2017 to construct and operate a particleboard facility, and continuation of and alterations and additions to, the existing medium density fibreboard facilities.

Condition A26 of SSD 7016 required Borg to modify DA27/95. Borg submitted a Section 96 Modification Application requesting removal of condition A26 as compliance with it was not possible. This application also included a minor change to the orientation of the material handling building at particleboard, an increase to the warehouse footprint and amendments to the stormwater management system at the northern section of the site. A determination was received from the Department approving this application on 20 November 2018 (SSD 7016 MOD 1 – Site layout changes).

Modification of Development Consent SSD 7016 MOD 2 proposed to install a high-pressure natural gas pipeline connection and turbine, and ancillary equipment to produce electricity and utilise waste exhaust heat in the particleboard manufacturing process. The Minister for Planning provided approval for MOD 2 on 29 November 2019.

Modification of Development Consent SSD 7016 MOD 3 included the installation of additional equipment to the materials handling area for better separation and removal of undesirable materials found in the recycled wood that is used in the production of particleboard, and the addition of an enclosed awning to the northern end of the Northern Warehouse for more optimized truck loading/unloading. Works to the site stormwater management system were also proposed under MOD 3. These included reclamation of the overflow effluent pond and reinstatement at another location to allow for further hardstand, and changes to the stormwater conveying swales and ponds to allow construction of the hardstand and also to separate surface water flows between Borg and HPP, including the construction of a new HPP discharge point.

Approval was provided by the Minister of Planning for MOD 3 on 22 May 2020.

Modification of Development Consent SSD 7016 MOD 4 was submitted to the Department of Planning and Environment on 26 October 2021. Activities proposed under MOD 4 included the following:

- reclamation of the remaining portion of the man-made spring fed dam to allow for increase in the size of the hardstand at the north eastern corner of the site to facilitate the relocation of the existing site mechanic's workshop;
- modernisation of the old multidaylight press used for producing medium density fibreboard and changes to its exhaust air emissions;
- addition of an enclosure to the site water treatment biological tanks;
- installation of additional reverse osmosis filtered water production;
- construction of a new bunded chemical storage shed for the water treatment plant;
- construction of an additional lined effluent storage dam for the water treatment plant; and
- construction of a new road within the site to better facilitate traffic flow.

Approval was provided by the Minister of Planning for MOD 4 on 20 May 2022.

A summary of development consents including modifications currently held by Borg Manufacturing is presented in Table 2.

Table 2 Borg Manufacturing Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016	29 May 2017	NSW Minister for Planning	Construction and operation of a particle board facility and continuation of, and alterations and additions to, the existing medium density fibreboard facility.
Development Consent SSD 7016 MOD 1	20 November 2018	NSW Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	NSW Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment
Development Consent SSD 7016 MOD 3	22 May 2020	NSW Minister for Planning	Additional material handling equipment, extension to the Northern Warehouse, changes to the site surface water system and construction of further hardstand.
Development Consent SSD 7016 MOD 4	20 May 2022	NSW Minister for Planning	Reclamation of the spring fed dam, increase in hardstand at the north eastern corner of the site, relocation of existing mechanic's workshop, modernisation of multidaylight press and changes to its exhaust air emissions, addition of an enclosure to water treatment biological tanks, installation of reverse osmosis filtered water production, construction of chemical storage shed, construction of a lined effluent storage dam and construction of a new road.

1.4 Annual Review Requirements

In accordance with condition C11 of Development Consent SSD 7016, annual review requirements and the sections within this review where these are addressed have been summarised in Table 3.

Table 3 Annual Review Requirements

Development Consent SSD 7016 – Condition C11	Section of Annual Review
By 31 July 2017, and each year thereafter, unless otherwise agreed by the Secretary, the Applicant must review and submit a report to the Secretary detailing the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This Report
(a) describe the development that was carried out during the reporting period, and the development that is proposed to be carried out over the next reporting period;	Section 2 Section 8

Development Consent SSD 7016 – Condition C11	Section of Annual Review
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 7
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 8

1.5 Environment Protection Licence

Borg Manufacturing operates in accordance with Environment Protection Licence 3035 (EPL 3035), issued on 14 February 2001 by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 24 March 2023.

The EPL was varied and updated during this reporting period to include for a second urban wood residue (UWR) trial whereby Borg would take receipt, storage and process picked UWR to be used as an alternative raw material in the production of particleboard. This trial was to be conducted over a 12 month period. The trial incorporated the following elements:

- All UWR received at the premises must be managed in accordance with the Urban Wood Residue Quality Assurance and Control Plan, v2.0 (UWR QA/QC Plan); and
- The air emissions sampling and testing must be undertaken in accordance with the sampling method, units of measure and sampling frequency specified in condition M2.2. The sampling must be undertaken when UWR input is at its maximum processing rate of 20% (or 6 tonnes of UWR per hour) to monitor for worst case emissions.

Following the conclusion of the trial a report was to be prepared and submitted to the EPA assessing the results of the trial, providing commentary on the effectiveness of the QA/QC Plan, and any deficiencies or problems encountered during the trial and what actions were taken to manage them. The EPA approved the report and its findings, a formal resource recovery order and exemption was not issued during the period covered by this report.

1.6 Water Licences

Borg holds a Water Access Licence for use of groundwater in operations. Current licence details issued under the *Water Management Act 2000* are summarised in Table 4.

Table 4 Water Licences

Approval Details	Approval Number	Validity of Licence	Approval Kind	Extraction Limit
WAL28951	80WA715797	16 January 2012 – 01 March 2026	Water Extraction	28 Units

1.7 Trade Waste Licence

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable this reporting period as there was no renewal of the licence. Borg Manufacturing now treats its liquid trade waste on site.

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7016, construction activities continue to be undertaken in accordance with the Construction Environmental Management Plan (CEMP) and the existing development in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C10 Revision of Strategies, Plans and Programs, environmental management plans were reviewed, and minor amendments made where necessary. In this review period the following Plans were updated:

- Traffic Management
- Waste Management
- Noise Management
- Mobile Wood Chipper Management
- Erosion and Sediment Management
- Spring Fed Dam Reclamation Management Plan
- Operational Noise Management
- Surface Water Management
- Waste Management
- Operational Air Management
- Urban Wood Residue Management Plan

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for managing environmental operations at the Borg Manufacturing facility.

Table 5 Site Personnel

Name	Title	Contact Details
Richard Kaine	Facility Manager	0409 151 094
Victor Bendeviski	Environmental and Regulatory Compliance	(02) 4340 9800
Andrew Brady	Environmental Manager	0447 765 913

1.10 Actions Required from Previous Annual Review

The actions listed in Table 6 were identified in the 2021/22 Annual Review for implementation during this 2022/23 reporting period.

Table 6 Proposed Activities in 2022/23 Reporting Period

Activities Proposed in 2022/23 Reporting Period	Results achieved in 2022/23 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.	Ongoing implementation of the OEMP, CEMP and sub plans including environmental inspections are undertaken at least monthly. Inspections recorded identified issues and actions assigned accordingly, DataStation software package is used to track progress and close out. CEMP, OEMP and sub plans reviewed and updates performed where: a) changes to site operations (existing and project); and b) in accordance with SSD 7016 C10.
Complete installation of additional material handling equipment	Materials handling building construction and installation works were completed including commissioning.
Complete verification studies required for SSD 7016 including modifications	Condition B20A, undertake a noise verification study for the materials handling building and associated wastewood equipment was completed and submitted to DPIE on 1 September 2022. DPIE considered the Study satisfied condition B20A.
Complete reporting requirements related to the commissioning of Materials handling building.	The noise verification study under B20A was completed, no reporting requirements were triggered in this reporting period.
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1, MOD 2, MOD 3 and MOD 4	As reported in this Annual Review. All additional conditions imposed by modifications have been incorporated into Borg's tracking document OBERON Approvals and Licensing Compliance Register.
Complete works as approved under MOD 4	Works commenced once approval was granted. Works will continue into the next reporting period. No other projects associated with MOD 4 were commenced.
Undertake rehabilitation works to areas disturbed by construction activities	Stormwater swales impacted by construction activities established good groundcover to assist with managing erosion control and sediment mobilisation which can affect stormwater quality discharge.
Discuss with EPA licensed water discharge points, referencing EPL 3035, to ensure this is fit for purpose	Discussions with EPA were conducted within this reporting period. They were generally satisfied with the current sampling locations and plan as a short-term solution. Further discussions to be undertaken
Complete the second Urban Wood Residue trial (recycled wood program) and report back to EPA	The second trial was completed, and the positive results were discussed with EPA. A report was submitted.

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7016 allows for production of up to 380,000 m³ of MDF and 500,000 m³ of particleboard per calendar year. During this reporting period Borg manufactured 280,415m³ of MDF and 343,215m³ of particleboard and had a total intake of 69,411 tonnes of UWR.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Installation of Dust Blow line from Particle Board to MDF dust silo. Removing the need for manual transportation of dust. Stopping mess when removing and reducing Natural Gas usage in MDF burner.
- Installation and commissioning of ECS (Eddy current separator/Non-Ferrous material) waste wood Particle board.
- Installation of a conveyor and blow line for removal of oversize material from Particle Board Air graders. Removes the need for open bins that require manual removal.
- Commenced commissioning of Conti 4
- Conti 4. Upgraded screw conveyor for Air grader heavy's removal. Removed blockages and operator intervention and reducing downtime.
- Conti 4. Install heating duct to main fibre bin to eliminate condensation build up causing reject and down time.
- Chip Reclaimer No:1 upgrade. Install new outfeed conveyor and steel structure for chip supply to Conti 1 & 4
- Rebuild and repair of MDF chipper base
- Installation of new enclosed Energy plants fuel feed conveyors and cleaning magnet.

See Figure 2 for location of site infrastructure.

2.3 Site Activities

The following activities associated with the modifications to existing operations occurred during the reporting period:

- Alterations to the site surface water channels at the southern area of the site to facilitate high flows from neighbouring sources and to divert the flows away from the Woodchem facility to improve flood mitigation
- Extensive erosion and sediment control works to the northern and eastern swale systems to improve discharge water quality including rectification to eroded sections, installation/repair of rock check dams in areas of high flow and improvements to the inflow path to the first flush basin; and
- Continued to receive recycled wood material under *The Borg Panels Urban Wood Residue order and exemption March 2021* for inclusion in the production of particleboard.
- Installation of an additional larger reverse osmosis (RO) plant at the water treatment plant for improved water utilisation and recycling
- Commenced works under Modification 4 including partial filling of the spring dam and increase in hardstand in the north eastern corner of the site in preparation for the proposed mechanics workshop

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- construction works undertaken in accordance with the Construction Environmental Management Plan and sub-plans;
- attended noise verification monitoring;
- air emission verification monitoring;
- water quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via EHSR Alerts and Toolbox Talks.

2.4 Wood Recycling Program

During this reporting period Borg continued to accept recycled wood materials in accordance with *The Borg Panels Urban Wood Residue order and exemption March 2021*. Approximately 69,000t of UWR was received on site for inclusion in the production of particleboard. The recycled material is aggregated at one of two Borg sites located in Sydney where it is inspected prior to delivery to Oberon. When this material arrives at Oberon via truck transport it is further inspected as it enters the site, this is conducted by spreading the materials out on a hardstand before being incorporated into the manufacture of particleboard.

Air emission sampling was conducted on the 26th, 27th and 28th of October 2022, 31st of January, 2nd of February 7th, 8th and 9th March 2023 in accordance with EPL 3035 condition M2.2 which included license discharge points 29, 30, 31 and 32 (points associated with air emissions from the recycled wood program) for the following pollutants:

- Total solid particles
- Fine particulate matter (PM10)
- Formaldehyde
- Nitrogen oxides
- Smoke
- Type 1 and 2 substances

Results from the stack testing were all within EPL 3035 specified air concentration discharge limits. See section 4.3.3 Air Monitoring of this report for emission monitoring results.

Figure 2 SSD 7016 Approved Development Area



3 Waste Management

Waste generated at the Borg Manufacturing site is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste removed from Borg facility during the reporting period is provided in Table 7.

Table 7 Waste Management 2022/23

Month	Description				Destination
	Litres	m ³	Tonnes	Waste	
Apr 2023		595		general	Oberon Council Waste Depot
			65.3	waste requiring burial	Bathurst Regional Council
Mar 2023		60		general	Oberon Council Waste Depot
	11900			waste oil	Cleanaway/Nationwide Oil
		47.44		waste requiring burial	Bathurst Regional Council
Feb 2023		640		general	Oberon Council Waste Depot
			1.86	waste requiring burial	Bathurst Regional Council
Jan 2023		440		general	Oberon Council Waste Depot
			19.98	waste requiring burial	Bathurst Regional Council
Dec 2022		600		general	Oberon Council Waste Depot
			23.16	waste requiring burial	Bathurst Regional Council
Nov 2022		470		general	Oberon Council Waste Depot
	16700			waste oil	Cleanaway/Nationwide Oil
			20.74	waste requiring burial	Bathurst Regional Council
Oct 2022		590		general	Oberon Council Waste Depot
			47.72	waste requiring burial	Bathurst Regional Council
Sep 2022		550		general	Oberon Council Waste Depot
			9.74	sludge bi product	Bathurst Regional Council

			26.06	waste requiring burial	Bathurst Regional Council
Aug 2022		620		general	Oberon Council Waste Depot
			33.44	waste requiring burial	Bathurst Regional Council
Jul 2022		740		general	Oberon Council Waste Depot
			47.16	waste requiring burial	Bathurst Regional Council
Jun 2022		572		general	Oberon Council Waste Depot
			7.84	sludge bi product	Bathurst Regional Council
	6800			waste oil	Cleanaway/Nationwide Oil
			1.96	waste requiring burial	Bathurst Regional Council
May 2022		730		general	Oberon Council Waste Depot
	6000			waste oil	Cleanaway/Nationwide Oil
			32.14	waste requiring burial	Bathurst Regional Council
TOTAL		47.44	319.52	Waste requiring Burial	Bathurst Regional Council
			17.58	Sludge bi product	Bathurst Regional Council
		6,607		General Waste	Oberon Council Waste Depot
	41,400			Waste Oil	Cleanaway/Nationwide oil
				Mixed Commercial	Bathurst Regional Council
				Ash	Oberon Council Waste Depot

Waste types in Table 7 are further described as:

- General waste including a mix of both putrescible and non-putrescible waste;
- Waste requiring burial made up of urea formaldehyde spade-able resin and paraffin wax bladders;
- Building and demolition waste including concrete, metal and timber are recycled when appropriate; and
- Used oils from the plant process oil systems and mechanical workshop are recycled off site via third parties. All waste oil is considered trackable. All waste oil collected during the reporting period was collected by waste transporter EPL 7100 and taken to waste facility EPL 854.

3.2 Trade Waste

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable during this reporting period as there was no renewal of the licence. Borg Manufacturing treats its liquid trade waste on site.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

Borg Manufacturing operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental monitoring is conducted in accordance with the requirements of SSD 7016, its subsequent modifications (MOD1, MOD2, MOD3 & MOD4), and EPL 3035. Environmental monitoring is an integral part of Borg's environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Meteorological Data

Borg Manufacturing operate and maintain a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The meteorological station was inspected and serviced on 30 March 2023 by a trained third-party consultant from Envirodata Weather Stations Pty Ltd

The following section summarises the meteorological data for the 2022/23 reporting period.

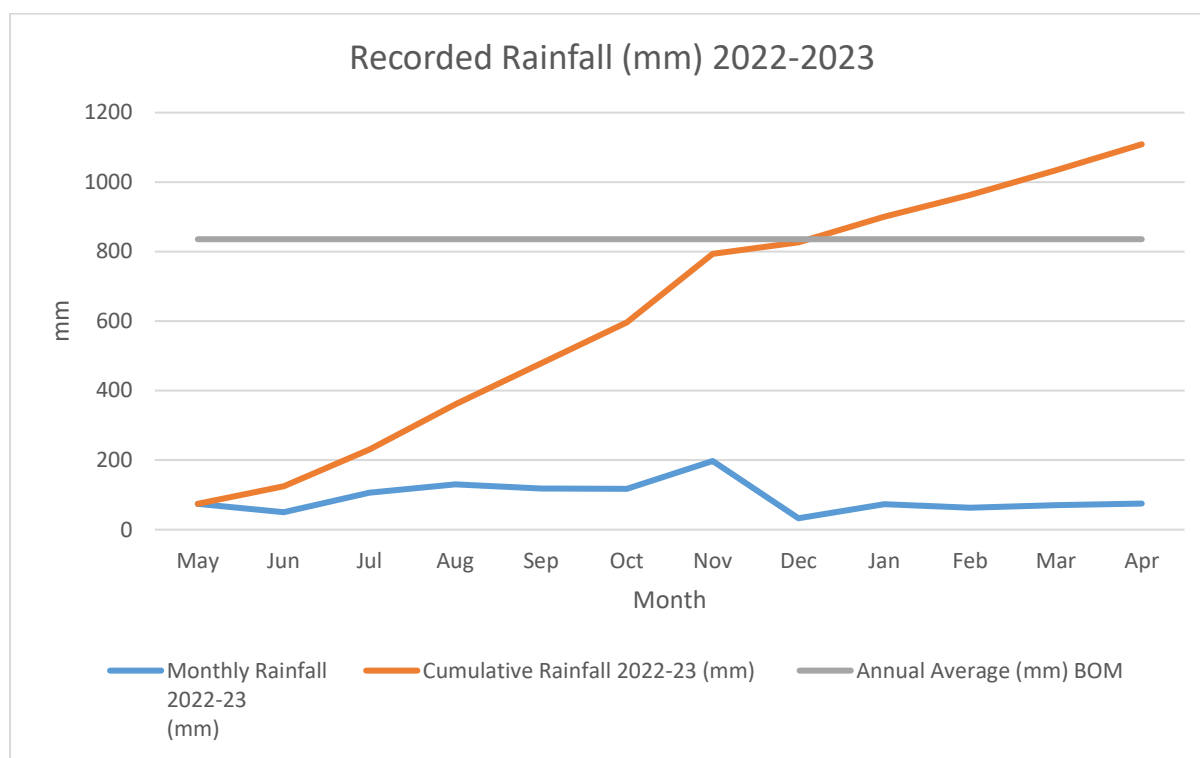
4.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during this reporting period recorded at EPA Point 26 is shown in Table 8 and displayed in Figure 3 below. Total recorded rainfall for the period was 1,108.8mm. This is 273.1mm above the annual mean rainfall of 835.7mm for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2022/23

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
74.4	50.2	106	130	118	117.6	197.6	32.8	73.6	63.2	70.6	74.8	1108.8
Number of Rain Days (≥0.2mm)												
18	21	16	15	16	14	19	24	18	25	20	22	228

Figure 3 Recorded Rainfall (mm) at Borg Manufacturing Meteorological Station 2022/23



4.2.2 Temperature

Monthly maximum and minimum temperatures recorded from the site weather station during the reporting period are shown in Table 9.

Table 9 Monthly Minimum and Maximum Temperatures 2022/23

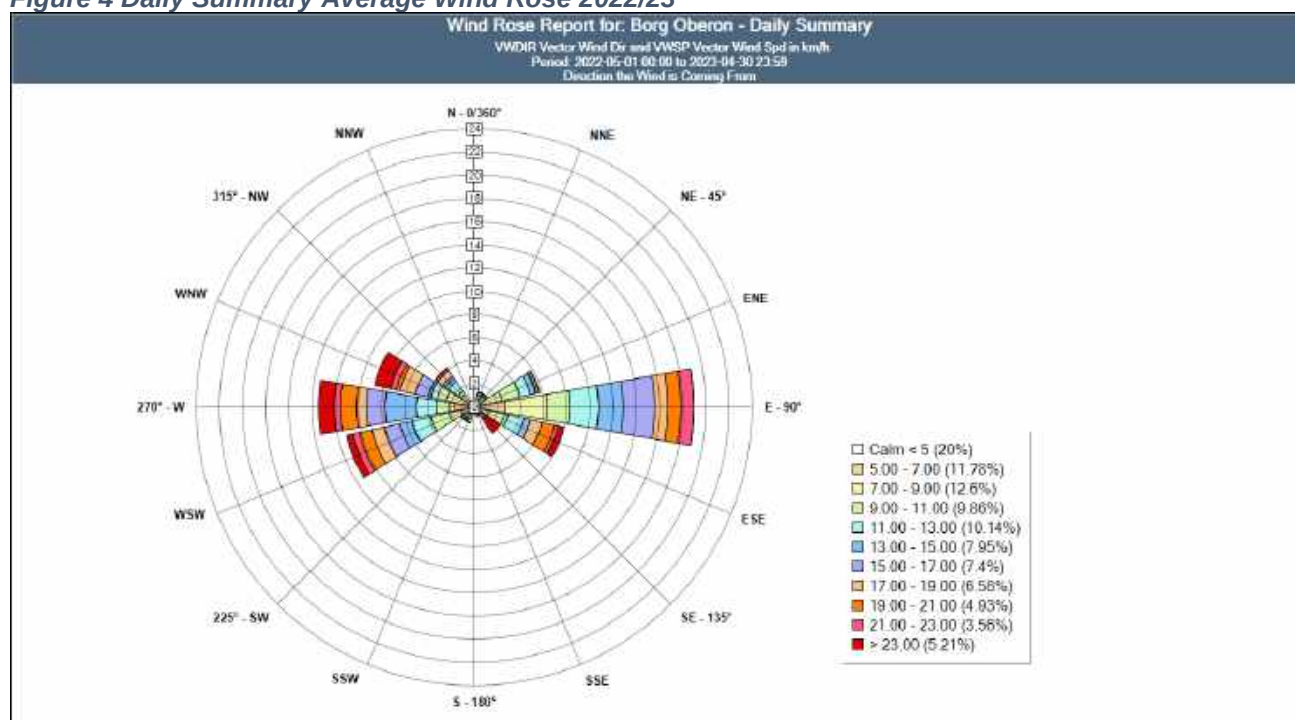
Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-0.7	-2.9	-2.3	-2.3	-2.3	-0.2	0.3	-0.2	6.7	4.9	3	2.1
19.1	13.2	15.2	16.1	16.1	19.2	24.1	28.9	30.9	32	33.7	19.6

4.2.3 Wind Speed and Direction

The site weather station recorded wind speed and direction data which is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4. As can be seen in Table 10 and Figure 4, the dominant wind direction during this reporting period was from an easterly direction.

Table 10 Monthly Daily Wind Data 2022/23

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2022	19.1	12.5	269° (W)
June 2022	11.6	14.7	250° (WSW)
July 2022	13.2	16.6	110° (ESE)
August 2022	15.2	14.1	296° (WNW)
September 2022	16.1	13.5	73° (ENE)
October 2022	19.2	13.8	87° (E)
November 2022	20.5	13.3	269° (W)
December 2022	28.9	12.1	99° (E)
January 2023	30.9	12.2	91° (E)
February 2023	30.7	12	99° (E)
March 2023	33.7	11.4	91° (E)
April 2023	19.6	10.9	92° (E)

Figure 4 Daily Summary Average Wind Rose 2022/23

4.3 Air Quality

4.3.1 Dust Depositional Gauges

Dust deposition monitoring is undertaken in accordance with the Borg Manufacturing Operational Air Quality Management Plan (OAQMP). Condition O3 of EPL 3035 states that:

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

EPL 3035 does not specify dust deposition monitoring be undertaken, Borg conduct this to assist with site management. The air quality criteria adopted for deposited dust is provided in Table 11.

Table 11 Air Quality Criteria Deposited Dust

Averaging Period	Impact	Criteria
Annual	Incremental	2 g/m ² /month
	Total	4 g/m ² /month

There are six dust depositional gauges (DMG) located in and around the site. The six gauges were sampled monthly throughout the year from May to April. The locations of dust depositional gauges are listed in Table 12 and shown in Figure 5.

Table 12 Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description
DMG 1	Borg Manufacturing eastern boundary with Woodchem
DMG 2	Materials handling building
DMG 3	Water treatment plant
DMG 4	Northern boundary
DMG 5	Highlands Motor Inn, South of Borg Manufacturing Plant
DMG 6	Albion Street, East of Borg Manufacturing plant

Figure 5 Depositional Dust Gauge Locations



DMGs 1 to 4 are located on the periphery of the site. DMG 1 is located within the operational boundary of the site immediately adjacent to an unsealed laydown area and in general proximity of an unsealed road. DMG 2 is located adjacent to the materials handling building. DMG 4 is located towards the northern boundary in an area of unsealed compacted surfaces used for storage of large pieces of machinery and reusable material such as steel.

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method*. During the reporting period all dust samples were collected by trained specialists and analysed by NATA certified laboratories.

Table 13 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids (g/m ² /month) 2020/21	Annual Average Insoluble Solids (g/m ² /month) 2021/22	Annual Average Insoluble Solids (g/m ² /month) 2022/23
DMG 1	Borg Manufacturing eastern boundary with Woodchem	5.0	7.9	5.9
DMG 2	Materials handling building	2.4	5.8	5.1
DMG 3	Water treatment plant	1.3	1.2	1.3
DMG 4	Northern boundary	1.7	1.3	1.0
DMG 5	Highlands Motor Inn	0.6	0.9	0.9
DMG 6	Albion Street east of Borg Manufacturing plant	0.6	0.8	1.0

Table 13 shows DMG 1, and DMG 2 returned exceedances of the annual average criteria of 4g/m² for insoluble solids however, both locations had a decrease in the annual average when compared to last year's reporting period. DMG 1 is exposed to regular traffic and day-to-day activities adjacent internal dirt roads. DMG 2 is adjacent the materials handling building which can produce wood dust.

DMG 4 is also exposed to machinery traffic on the unsealed road and adjacent pad however had a low annual average for insoluble solids and was the lowest result in three years. DMG 3 and DMG 6 both had a very slight increase in average insoluble solids when compared to the previous year's reporting period. As gauges DMG 1-4 are on-site gauges the criteria noted in Table 11 does not apply.

There was no exceedance of the dust deposition criteria (4g/m²) at locations DMG 3, DMG 4, DMG 5 and DMG 6 for the 2022/23 reporting period.

4.3.2 Air Emissions Monitoring Points

The locations of air emission monitoring points are listed in Table 14 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 24 March 2023 Full laboratory results are attached to this document as Appendix B.

Table 14 Location of Air Emissions Monitoring

EPA Identification No.	Description
4	DC1 Baghouse
5	DC2 Baghouse
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)
9	Conti 1 Dryer Cyclone #1 (south)
10	Conti 1 Dryer Cyclone #2 (north)
11	Conti 2 Heat Plant
12	Press Vents Conti 1
17	Conti 1 Heat Plant
18	Press exhaust vents
19	Dryer stack
20	Reject cyclone DC 11
21	Reject cyclone DC 12
22	Reject cyclone DC 13
27	Combined Conti 2 Press Vent
29	Forming Line Baghouse
30	Form Station Baghouse
31	Particleboard Press Extraction
32	Wet Electrostatic Precipitator (WESP)
33	Cogeneration Unit 1
34	Cogeneration Unit 2

EPA Identification Points 18, 19, 20, 21 and 22 are recognised as discharge points in EPL 3035 however there is no requirement to monitor the concentration of pollutants discharged at these points. Plant associated with these points has previously been dormant however it was the subject of MOD4 and will be added back to the license once Conti 4 has been commissioned and in operation.

Points 11 and 17 do not produce flow. The exhaust for Conti 2 heat plant (Point 11) is ducted back into Conti 2 dryer cyclones (Points 7&8), and exhaust for Conti 1 heat plant (Point 17) is ducted back into the Conti 1 production system (Points 9&10).

4.3.3 Air Monitoring

Environment Protection Licence 3035 sets pollution concentration limits for emission Points 7, 8, 9 and 10 as shown in Table 15. All plant and equipment must comply with the relevant concentration standards listed in Schedule 2, 3 and 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2022* where pollution limits are not specified in the EPL. Monitoring results are assessed against these criteria to determine compliance with air emission limits.

Table 15 EPL 3035 Air Concentration Limits

Pollutant	ID Point	Units of Measure	100 Percentile Concentration Limit	Reference Condition	Oxygen Correction	Averaging Period
Total Solid Particulates	7,8,9,10	mg/m ³	200	n/a	n/a	n/a
Formaldehyde	7,8,9,10	mg/m ³	5	n/a	n/a	n/a

Source: EPL 3035 (24 March 2023)

Air emission monitoring was undertaken by trained specialists and samples analysed by NATA accredited laboratories. Monitoring equipment is maintained by the consultant and calibrated in accordance with the manufacturer's specifications by qualified specialists. This monitoring is performed in accordance with the methodologies as specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* and the requirements of EPL 3035. USEPA Method GD-008 is the approved method for determining flow rate and sampling for particulate matter in cyclonic flow from licenced discharge Points 7, 8, 9 & 10.

For each discharge point identified in Table 14 above, Borg monitored the concentration of each pollutant as specified in EPL 3035. The results for this period are compared against results from the previous two years as displayed in Tables 16 to 33.

Table 16 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	<2	<2	<12
Formaldehyde	mg/m ³	Yearly	1.5	11	4.2

Table 17 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	<2	<2	<3
Formaldehyde	mg/m ³	Yearly	2.5	5.6	4.1

Table 18 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	79	28	38
Formaldehyde	mg/m ³	Yearly	1.6	4.2	21
Nitrogen oxides	mg/m ³	Yearly	140	250	220
PM10	mg/m ³	Yearly	8.9	11	12
Smoke	Obscuration	Every 6 months	0	0	0

Table 19 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	68	25	47
Formaldehyde	mg/m ³	Yearly	3	4.6	1.3
Nitrogen Oxides	mg/m ³	Yearly	210	220	230
PM10	mg/m ³	Yearly	28	10	16
Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 20 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	38	12	32
Formaldehyde	mg/m ³	Yearly	4.8	3.6	3.7
Nitrogen Oxides	mg/m ³	Yearly	260	84	160
PM10	mg/m ³	Yearly	26	6.8	21
Smoke Emissions	Obscuration	6 Monthly	0	0	0

Table 21 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	41	17	190
Formaldehyde	mg/m ³	Yearly	4.7	3.3	3.2
Nitrogen Oxides	mg/m ³	Yearly	73	48	140
PM10	mg/m ³	Yearly	27	8.3	47
Smoke Emissions	Obscuration	6 Monthly	0	0	0

Tables 16, 17, 19 and 21 show a decrease in formaldehyde at EPA Points 4,5,8 and 20. Formaldehyde emissions can vary depending on plant operating conditions and which product is being processed at the time of sampling. No change in total solid particles (TSP) was shown in Tables 16 and 17 with results remaining below the level of reporting when compared to the previous two years data however, an increase in TSP was noted in Tables 18-21. An increase in PM10 and Nitrogen Oxides was also noted in Tables 18, 20 and 21 (Points 7,9 and 10) when compared to last the previous year's data.

All results shown in Tables 16 to 21 are within EPL 3035 limits as well as the *Protection of the Environment Operations (Clean Air) Regulation 2022*.

Table 22 Air Emissions Monitoring Results EPA Identification Point 12 Vent 1

Pollutant	Units	Frequency	2020/21	2021/2022	2022/23
Total Solid Particles	mg/m ³	Every 3 years	3.3	-	-
Formaldehyde	mg/m ³	Every 3 years	5.4	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	<4	-	-
PM10	mg/m ³	Every 3 years	<3	-	-

Table 23 Air Emissions Monitoring Results EPA Identification Point 12 Vent 2

Pollutant	Units	Frequency	2020/21	2021/2022	2022/23
Total Solid Particles	mg/m ³	Every 3 years	7.2	-	-
Formaldehyde	mg/m ³	Every 3 years	6.5	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	<4	-	-
PM10	mg/m ³	Every 3 years	4.8	-	-

Table 24 Air Emissions Monitoring Results EPA Identification Point 12 Vent 3

Pollutant	Units	Frequency	2020/21	2021/2022	2022/23
Total Solid Particles	mg/m ³	Every 3 years	19	-	-
Formaldehyde	mg/m ³	Every 3 years	3.8	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	<4	-	-
PM10	mg/m ³	Every 3 years	13	-	-

Table 25 Air Emissions Monitoring Results EPA Identification Point 12 Vent 4

Pollutant	Units	Frequency	2020/21	2021/2022	2022/23
Total Solid Particles	mg/m ³	Every 3 years	28	-	-
Formaldehyde	mg/m ³	Every 3 years	1.2	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	<4	-	-
PM10	mg/m ³	Every 3 years	20	-	-

Table 26 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	7.6	12	4.5
Formaldehyde	mg/m ³	Yearly	1.9	7.2	1.6
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	<4
PM10	mg/m ³	Yearly	5.2	3.4	<4

Table 26 shows a decrease in TSP, Formaldehyde and PM10 in comparison to the previous two years data. These results remain within EPL 3035 and *Protection of the Environment Operations (Clean Air) Regulation 2022* limits.

Table 27 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	<2	<2	<2
Formaldehyde	mg/m ³	Yearly	1.7	4.9	1.5
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	<4
PM10	mg/m ³	Yearly	<2	<2	<3
Smoke Emissions	Obscuration	Yearly	0	0	0

Table 28 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	<2	<2	2.3
Formaldehyde	mg/m ³	Yearly	1.5	1.3	1.0
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	<4
PM10	mg/m ³	Yearly	<4	<3	<3
Smoke Emissions	Obscuration	Yearly	0	0	0

Table 29 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	46	30	49
Formaldehyde	mg/m ³	Yearly	4.6	1.5	0.86
Nitrogen Oxides	mg/m ³	Yearly	<4	<4	<4
PM10	mg/m ³	Yearly	40	20	19
Smoke	Obscuration	Yearly	0	0	0

Table 30 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2020/21	2021/22	2022/23
Total Solid Particles	mg/m ³	Yearly	30	39	34
Formaldehyde	mg/m ³	Yearly	0.21	2.3	0.032
Nitrogen Oxides	mg/m ³	Yearly	210	210	190
PM10	mg/m ³	Yearly	*	*	*
Smoke Emissions	Obscuration	Yearly	0	0	0

*Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

Points 29 to 32 have remained fairly consistent with the previous year's results. Generally, there has been a decrease in Formaldehyde across the locations in comparison to the previous years. The results remain within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2022 limits.

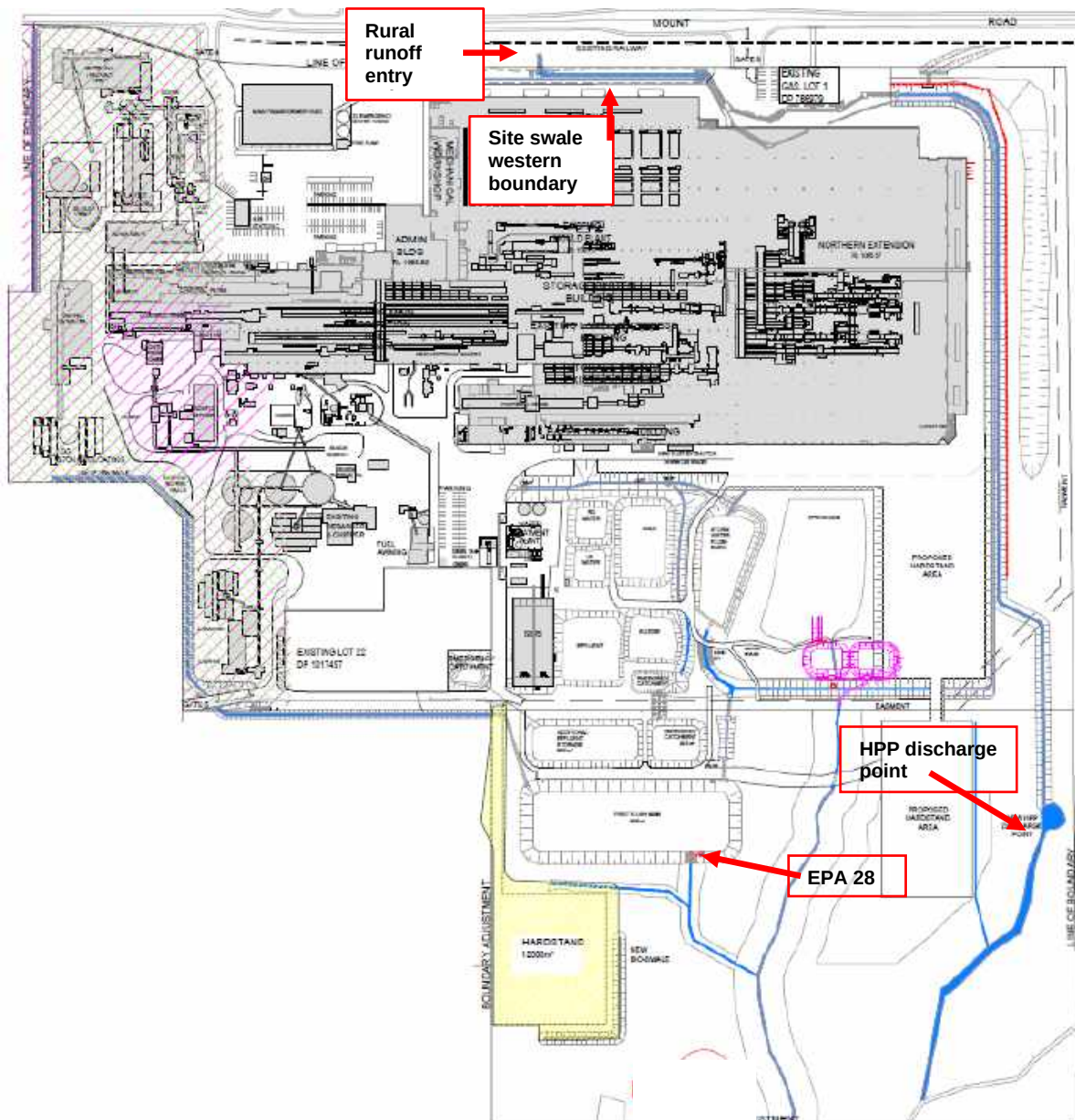
4.4 Surface Water

The existing surface water management system (see Figure 6) includes runoff from Borg Manufacturing site and adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from Structaflor and Highland Pine Products Sawmill 2 flows across Lowes Mount Road and directed onto the site via the swale on the western boundary
- Runoff from rural parcels of land on Lowes Mount Road is also directed into the site from the western boundary, conveyed via a 'clean' water swale, which runs alongside the site swale following the northern boundary before discharging at HPP discharge point to a tributary of Kings Stockyard Creek
- Borg Manufacturing roof and surface runoff from the western side of the facility is directed into the boundary swale and transferred into the first flush basin
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap (GPT) and then into the stormwater flush basin

- Any overflow from the existing stormwater flush basin is directed into the first flush basin
- Water captured in the basins is harvested by the site water treatment plant for reuse in the production system.
- Stormwater harvesting averaged 82m³/day over the reporting period the largest recorded volume of water harvested in one day was 294m³
- Runoff from construction areas is managed in accordance with Erosion Sediment Control Plans as part of the CEMP for SSD7016. Surface water from these zones is directed into the site swale then on to the stormwater basin
- Water discharges from EPL discharge Point 28, and HPP discharge point to a tributary of Kings Stockyard Creek (shown on Figure 6)

Figure 6 Surface water management system - SSD 7016



In accordance with EPL 3035, water quality monitoring is undertaken weekly during discharge to maintain compliance with discharge requirements. During this reporting period water

discharge was monitored from EPA Point 28, additionally samples were taken at the HPP discharge point.

The HPP discharge point was enabled due to earthworks and powerline realignment. Powerlines have been run underground, however the connection back into the grid still needs to occur before the above ground lines can be made redundant and removed before the swale work is completed. At the time of writing this report, the HPP discharge point was not an EPL discharge point though it was managed in accordance with EPL 3035 requirements. Discussion with the EPA have commenced regarding the HPP discharge point and licensing requirements.

EPA Point 1 sampling location has been removed during construction and diversion works for as part of the Mod 4 spring dam reclamation. The removal of Point 1 from the EPL 3035 has been discussed but a formal license variation has not yet been completed to remove the conditions from the licence. This will be completed during the 2023/2024 reporting period.

The concentration limits of a pollutant discharged from EPA 1, EPA 28 (and HPP discharge point) in EPL 3035 is shown below in Table 31.

Table 31 EPA Identification Point 1 and Point 28 Water pollution limits (also adopted for HPP Swale sampling location)

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3
Biochemical Oxygen Demand (BOD)	mg/L		20
Colour	Hazen	80	160
Dieldrin	µg/L		0.3
Methylene Blue Active Substances (MBAS)	mg/L		0.5
Nitrogen (Total)	mg/L		10
Oil and Grease	mg/L		10
pH	pH		6.5-8.5
Phosphorus (Total)	mg/L		0.3
Total Suspended Solids	mg/L		50

Stormwater samples are collected by trained Borg personnel and are analysed by NATA certified laboratories. Full results for the 2022/23 reporting period are provided in Appendix C Surface Water Monitoring Data.

Table 32 provides a summary of Borg Manufacturing historic annual average water monitoring results for discharge from EPA Point 1. No samples were taken from the discharge point as diversion works had commenced in the previous year reporting period.

Table 32 Annual Average Water Quality Monitoring Results EPA Point 1

Pollutant	Units of Measure	2019/20	2020/21
Aldrin	µg/L	0	0
Biochemical Oxygen Demand	mg/L	8.2	6
Colour	Hazen	39.2	18
Dieldrin	µg/L	0	0
Methylene Blue Active Substances	mg/L	0.1	0.2
Nitrogen (Total)	mg/L	6.3	3.7
Oil and Grease	mg/L	7.5	5.1
pH	pH	7.6	7.6
Phosphorus (Total)	mg/L	0.1	0.1
Total Suspended Solids	mg/L	31.3	28.9

Table 33 provides a summary of Borg Manufacturing historic annual average water monitoring results for discharge from EPA Point 28. This shows that for the 2022/23 reporting period, the annual average for all pollutants were generally below the concentration limit set in EPL 3035.

Table 33 Annual Average Water Quality Monitoring Results EPA Point 28

Pollutant	Units of Measure	2020/21	2021/22	2022/23
Aldrin	µg/L	0	0	<0.01
Biochemical Oxygen Demand	mg/L	7.7	5.3	5.8
Colour	Hazen	68.5	31.1	36.0
Dieldrin	µg/L	0	0	<0.01
Methylene Blue Active Substances	mg/L	0.11	0.2	0.2
Nitrogen (Total)	mg/L	8.42	5.7	7.8
Oil and Grease	mg/L	5.8	<5	6.0
pH	pH	7.72	7.4	7.6
Phosphorus (Total)	mg/L	0.09	0.1	0.1
Total Suspended Solids	mg/L	23.5	63	19.3

No samples (sample event) were collected at Point 1 and 15 samples collected and analysed at Point 28 during discharge in the 2022/23 reporting period.

Three additional samples were analysed from Point 28 during the reporting period that were not included in the averages provided. The three additional samples were taken at times of nil discharge and were taken as a precautionary measure due to heavy rains being forecast. One event at Point 28 and one event at the HPP discharge point returned results where water pollution limits noted in Table 31 were exceeded. The EPA and DPIE were notified of the

exceedance (see Appendix I Water Quality Exceedances Notification). Appendix C displays the exceedance information for the events including sample date, pollutant and result.

The exceedances experienced during this period were investigated in an attempt to determine potential pollutant sources that may have contributed to the exceedances. This included upstream inspections (Council, Structaflor and Highland Pine Products stormwater infrastructure), assessment of site activities and ERSED controls, and review of rainfall data from the site weather station.

As discussed above in section 4.2.1 Rainfall Data, the site meteorological station recorded 1,108.8mm of rainfall for the reporting period which was 273.1mm above the annual mean rainfall of 835.7mm for the Oberon region. This excess rainfall combined with heavy snowfall and the significant construction activities that occurred during this reporting period likely contributed to a number of the water quality discharge exceedances discussed below.

Table 34 Annual Average Water Quality Monitoring Results HPP Swale Discharge Point

Pollutant	Units of Measure	2021/2022	2022/23
Aldrin	µg/L	0	<0.010
Biochemical Oxygen Demand	mg/L	3.7	4.2
Colour	Hazen	57.2	39.1
Dieldrin	µg/L	0	<0.010
Methylene Blue Active Substances	mg/L	0.1	<0.1
Nitrogen (Total)	mg/L	1.2	1
Oil and Grease	mg/L	0	0.8
pH	pH	7.7	7.6
Phosphorus (Total)	mg/L	0.06	0.1
Total Suspended Solids	mg/L	14.6	16.8

The HPP Discharge Point was not a formally recognised EPA licence discharge location during the reporting period however it was treated the same. Weekly water samples were undertaken by the Environmental Manager during discharge and analysed under the same conditions of the site EPL. Forty nine samples (sample event) were collected and analysed at the HPP Discharge Point during discharge in the 2022/23 reporting period. The water that passes through the discharge location consists of stormwater that passes through the Highland Pine Products site and historic Structaflor site which is opposite Borg Manufacturing. The water travels approximately 1.7km through open swales, pipelines, natural water ways and artificially constructed ERSED controls to filter it. This combination of both natural and artificial filtration has resulted in low levels analysed at the discharge point over the reporting period as can be seen in Table 34.

One sample taken on 7 June 2022 returned a Total Suspended Solids (TSS) result of 186 mg/L which exceeds the EPA licence limit of 50mg/L. It was noted on the stormwater recording

sheet that the water had moderate to high discharge quantity, appeared disturbed due to high in and outflows following 55.6mm rain and snow event in previous week, no sheen was visible and lots of organic matter floating and suspended in sample. TSS had not previously been an issue in the drainage system. Less than one week after the exceedance event the same discharge point was sampled again and returned a result for TSS of <5.

4.4.1 EPL 3035 Identification Point 28

At EPL discharge Point 28 there was one occurrence where water quality discharge limit for Total Nitrogen (Total N) was exceeded. This occurred on 27 September 2022 with the result being 11.7mg/L. There were significant rain events (i.e. >10mm) in the days prior to monitoring being undertaken. 31.8mm of rain was recorded on site in the 6 days prior to the monitoring event. It is plausible that the exceedance was due to the mobilisation of wood material from site during the rain event which may show that the Total N result is due to organic matter in the sample. A sample was also collected offsite, approximately 800m downstream from Point 28 for analysis on the same day. The point at which the sample was taken incorporates all onsite water activities and returned a result 0.6mg/L for Total Nitrogen.

4.5 Groundwater

In accordance with EPL 3035, Borg monitor four groundwater bores on site. The locations of groundwater monitoring bores are listed in Table 35 and shown on Figure 7.

Table 35 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site
15	East of stormwater treatment pond
16	East of Woodchem
24	Adjacent northern swale

Samples were collected by an appropriately qualified third-party specialist and analysed by NATA accredited laboratories in accordance with “Standard Methods for the Examination of Water & Wastewater,” APHA, AWWA, WEF and Water & Wastewater and Examination Manual (V. Dean Adams). Monitoring equipment is maintained in accordance with the manufacturer’s specifications by qualified specialists.

Figure 7 Groundwater Monitoring Locations

Tables 36 - 39 present results for EPA Identification Points 14, 15, 16 and 24 during the reporting period and compares them with the previous three years data. There are no concentration limits for groundwater set in EPL 3035. Laboratory analysis report provided by ALS Environmental is attached as Appendix D.

Table 36 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.02	0.04	0.06
Chemical Oxygen Demand	mg/L	Yearly	25	<10	16
Electrical Conductivity	µS/cm	Yearly	220	323	266
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.2	<0.1	0.40
pH	pH Units	Yearly	6.8	7.7	7.3
Total Dissolved Solids	mg/L	Yearly	210	244	201
Total Organic Carbon	mg/L	Yearly	3	<1	3
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	606	26	21
Water Height	m	Yearly	1.09	2.21	0.92

Table 37 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	5.95	4.14
Chemical Oxygen Demand	mg/L	Yearly	26	23	296
Electrical Conductivity	µS/cm	Yearly	1040	1336	1527
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	1.10	0.60
pH	pH Units	Yearly	7.1	6.7	6.6
Total Dissolved Solids	mg/L	Yearly	690	982	985
Total Organic Carbon	mg/L	Yearly	3	55	101
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	2230	2290.00
Total Suspended Solids	mg/L	Yearly	45	43	55
Water Height	m	Yearly	0.98	4.28	4.80

At EPA Point 14 (Table 36), it was reported in the last reporting period that the monitoring well had only recently been reinstated, and that excess sediment may have been deposited. As expected, there was a significant decrease in TSS in the 2021/22 followed by a further decrease in the 2022/23 sampling results. A slight increase in Formaldehyde was identified, however a general decrease in all other analytes was shown.

Results for EPA Point 15 (Table 37) show a decrease in Ammonia as N and Formaldehyde in comparison to the last reporting period. All other analytes showed an increase in comparison to the 2021/22 review period.

Table 38 Groundwater Monitoring Results EPA Identification Point 16 (GW01)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0	0.03	0.06
Chemical Oxygen Demand	mg/L	Yearly	26	28	26
Electrical Conductivity	µS/cm	Yearly	257	282	250
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.3	<0.2	4.60
pH	pH Units	Yearly	6.3	6.9	6.8
Total Dissolved Solids	mg/L	Yearly	200	168	176
Total Organic Carbon	mg/L	Yearly	6	8	4
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	173	197	54
Water Height	m	Yearly	0.86	2.02	2.34

Results for this reporting period for Point 16 are generally consistent with the 2021/22 results, however an increase in Formaldehyde was noted and a significant decrease in Total Suspended Solids

Table 39 Groundwater Monitoring Results EPA Identification Point 24 (GW26)

Pollutant	Unit of Measure	Frequency	2020/21	2021/22	2022/23
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	1.12	0.09
Chemical Oxygen Demand	mg/L	Yearly	182	37	28
Electrical Conductivity	µS/cm	Yearly	421	428	374
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	0.1	<0.1
pH	pH Units	Yearly	7.3	7.2	6.7
Total Dissolved Solids	mg/L	Yearly	264	397	340
Total Organic Carbon	mg/L	Yearly	148	3	4
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	142	23	19
Water Height	m	Yearly	5.89	6.5	3.0

Results show decreases at Point 24 for COD, TOC and TSS in this reporting period. All other pollutants remain generally consistent with the previous years results with the exception of Ammonia as N which significantly decreased.

4.6 Noise

In accordance with EPL 3035 and site management plans, Borg Manufacturing monitor noise emissions from the facility. Noise from the premises must not exceed the limits noted in Table 44. In accordance with Development Consent SSD 7016 all construction activities related to the development must also comply with the limits in Table 40.

Table 40 Noise Limits dB(A)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45
Note: <u>Day</u> – The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays <u>Evening</u> – The period from 6:00pm to 10:00pm <u>Night</u> – The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays L _{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.			

These noise limits apply under all meteorological conditions except for the following:

- Wind speeds greater than 3 meters/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.

Data recorded by the site meteorological station identified as EPA Identification Point 26 is used to determine meteorological conditions. Temperature inversion conditions (stability category) are to be determined by the sigma-thetas method referred to in Fact Sheet D in the *Noise policy for Industry* EPA 2017.

4.6.1 Operational Noise

EPL 3035 stipulates that noise monitoring to determine compliance must be carried out at least once annually during the day, evening and night-time hours specified in Table 40. Noise monitoring must be undertaken in accordance with *Australian Standard AS 2659.1 (1998): Guide to use of sound measuring equipment – portable sound level meters*, and the compliance monitoring guidance provided in the *NSW Noise Policy for Industry* (EPA 2017).

During the 2022/23 reporting period, EMM (Formally Global Acoustics) was engaged to conduct attended noise monitoring and provide an *Annual Noise Monitoring Report* for operational noise generated by Borg Manufacturing facility. The noise monitoring event was conducted at four sensitive receiver locations as shown in Figure 8 on 28th and 29th June 2022. Table 41 presents results of the attended annual noise monitoring event.

Figure 8 Borg Manufacturing noise monitoring locations

Table 41 Attended Noise Monitoring L_{Aeq} (15 minute)

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg L_{Aeq} 15 min	Exceedance ^{5,6}
NM1	28/6/2022	2.7	D	50	Yes	43	Nil
NM2	28/06/2022	3.0	D	50	Yes	42	Nil
NM3	28/06/2022	3.3	E	50	No	IA	NA
NM4	28//06/2022	2.9	D	50	Yes	<30	Nil
NM1	28/06/2022	3.9	D	45	No	45	NA
NM2	28/06/2022	4.3	D	45	No	41	NA
NM3	28/06/2022	2.8	D	45	Yes	<25	Nil
NM4	28/06/2022	2.7	E	45	Yes	<30	Nil
NM1	29/06/2022	5.2	D	55	No	48	NA
NM2	29/06/2022	5.7	D	55	No	NM	NA
NM3	29/06/2022	5.2	C	55	No	40	NA

NM4	29/06/2022	5.5	D	55	No	45	NA

NA = Not Applicable means atmospheric conditions outside conditions specified in Development.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible means there was no noise from the source of interest audible at the monitoring location.

1. Atmospheric data is sourced from Borg weather station in Oberon;

2. In accordance with EPL and PA, the noise criteria are to apply under all meteorological conditions except the following:

- Wind speeds greater than 3 m/s at 10 metres above ground level; or

- Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or

- Stability class G temperature inversion conditions.

3. Criterion may or may not apply due to rounding of meteorological data values;

4. Estimated or measured LAeq, 15 minute attributed to the Borg;

5. Bold results in red indicate exceedance of criteria (if applicable); and

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable

The attended noise monitoring conducted by EMM (Formally Global Acoustics) recorded no exceedance of limits identified in Table 40. All measurements were undertaken as per the *Noise policy for Industry EPA 2017*. The report prepared by EMM for the annual noise monitoring event is attached to this document as Appendix E.

4.6.2 Construction Noise

Borg Manufacturing Construction Noise Management Plan (CNMP) includes an attended monitoring regime of one event per quarter. Quarterly noise monitoring is not a compliance requirement under EPL 3035 however it is included as a commitment in Borg Manufacturing Construction Noise Management Plan and therefore, a requirement of SSD 7016 condition C3.

Attended monitoring locations are shown in Figure 8. If any exceedances are identified, additional mitigation measures are implemented, and follow-up monitoring undertaken within one week of the exceedance to determine the effectiveness of the additional controls. EMM conducted the construction noise monitoring for this review period. Tables 42 to 45 show monitoring results for quarterly noise monitoring events. All reference notes are included below Table 45.

Table 42 Construction Noise Quarter 2

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2,3}	Borg LAeq 15 min dB ⁴	Exceedance ^{5,6}
NM1	29/06/2022 10:30	5.2	D	55	No	48	NA
NM2	29/06/2022 10:00	5.7	D	55	No	NM	NA
NM3	29/06/2022 11:37	5.2	C	55	No	40	NA
NM4	29/06/2022 11:06	5.5	D	55	No	45	NA
NM1	28/06/2022 19:05	2.7	D	50	Yes	43	Nil
NM2	28/06/2022 18:35	3.0	D	50	Yes	42	Nil
NM3	28/06/2022 20:15	3.3	E	50	No	IA	NA

NM4	28/06/2022 19:36	2.9	D	50	Yes	<30	Nil
NM1	28/06/2022 22:27	3.9	D	45	No	45	NA
NM2	28/06/2022 22:00	4.3	D	45	No	41	NA
NM3	28/06/2022 23:32	2.8	D	45	Yes	<25	Nil
NM4	28/06/2022 23:00	2.7	E	45	Yes	<30	Nil

Table 43 Construction Noise Quarter 3

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance _{e3,4}
NM1	20/09/2022 10:45	2.5	B	55	Yes	48	Nil
NM2	20/09/2022 11:15	3.5	B	55	No	46	NA
NM3	20/09/2022 12:16	2.9	A	55	Yes	NM	Nil
NM4	20/09/2022 11:41	3.2	A	55	No	41	NA

Table 44 Construction Noise Quarter 4

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance _{e3,4}
NM1	10/11/2022 13:10	2.6	A	55	Yes	46	Nil
NM2	10/11/2022 13:33	2.7	A	55	Yes	IA	Nil
NM3	10/11/2022 12:41	1.6	A	55	Yes	<25	Nil
NM4	10/11/2022 13:56	1.3	A	55	Yes	<25	Nil

Table 45 Construction Noise Quarter 1

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance _{e3,4}
NM1	30/03/2023 09:40	5.7	C	55	No	44	NA
NM2	30/03/2023 10:02	5.7	C	55	No	NM	NA

NM3	30/03/2023 10:28	5.2	B	55	No	NM	NA
NM4	30/03/2023 10:52	5.3	B	55	No	NM	NA

NA = Not Applicable means atmospheric conditions outside conditions specified in Development Consent and so criterion is not applicable.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible, there was no noise from the source of interest audible at the monitoring location.

1. Noise criteria are to apply under all meteorological conditions except the following:

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

2. Site-only LAeq, 15minute attributed to Borg, including modifying factors if applicable;

3. Bold results in red indicate exceedance of criteria (if applicable); and

4. NA in exceedance column means atmospheric conditions outside conditions specified and criterion is not applicable.

No exceedances of EPL 3035 noise limits were recorded during these monitoring events. Reports provided by EMM for each event are attached to this document as Appendix F.

5 Community Relations

5.1 Environmental Complaints

Ten community complaints were received during the 2022/23 reporting period. Site investigations were conducted by the Environmental Manager and team leaders which included a review of plant operational data, noise monitoring and visual inspections. Discussions were conducted with Area Managers/Supervisors regarding site activities to determine if the facility was operating within approved conditions as specified in SSD 7016 and EPL 3035 at the time of the complaints.

One noise complaint was made from the Oberon Football fields on 20 November 2022. The complainant wanted to remain anonymous and said that there was constant noise which disrupted a christening at the venue. It was later discovered the complaint was made by a staff member not a party attendant and when contact was made with the party organiser; they said they did not have any complaints and had an enjoyable day at the venue.

One dust complaint was made directly to the EPA by resident on 20 June 2022. The EPA contacted Borg Manufacturing on 7 July 2022 to notify them of the complaint. The allegations were that there were wood fibres present on a vehicle in Carrington Avenue. Onsite weather data was reviewed for the estimated timeframe. Wind was blowing to the west. Aerial maps indicated the likely location of complaint was south-southwest. An inspection of the roads in that general area conducted on the day of notification on 7 July 2022 and no fibre or dust was identified.

Two separate complaints were made from the Oberon Football fields on 30 July 2022 same day in relation to the same incident. Complaints were related to material fallout and emissions from the south western corner of the site. The Particle Board shift leader was contacted who immediately stopped works at the flaker building. The Facility Manager and Environmental manager were also contacted, and investigations were initiated by undertaking detailed site inspections across the Football fields and along Lowes Mount Road up to Albion Street. No evidence of foreign materials were identified during investigation. A second follow up inspection

was conducted at approximately 3:30pm by the site team leader, where he walked Lowes Mount Road, the football fields and Albion Street and found no evidence of foreign materials.

Six complaints received during this reporting period were related to noise from one resident. The complainant also made multiple complaints in the previous reporting period, all of which were investigated and no breaches were identified. This reporting period and rolling over into next years the complainant has become quite persistent with complaints calling sometimes twice a week. The complainant has given very little to no detail leaving messages for the complaints line such as “Back of Borg near BP.” The complainant has become very difficult to work with, not answering or returning phone calls and so following up these complaints has been quite difficult. A specific site noise investigation project has commenced which will be available in the next reporting period report, which includes ongoing spot checks, detailed noise monitoring and mapping of the surrounding area to build evidence against unsubstantiated illegitimate complaints.

External noise monitoring was completed by EMM quarterly within the reporting period with no evidence of breaches identified.

For each complaint received, Borg provided a response to the complainant in a timely manner. With respect to noise complaints, regardless of our demonstration of compliance with noise limits via compliance noise monitoring events, Borg will continue to undertake ad hoc attended and unattended noise monitoring to ensure nil noise nuisance to local residents from site activities.

A complete summary of complaints received during the reporting period is provided in Appendix G.

5.2 Community Liaison

5.2.1 Community Consultative Committee (CCC)

Borg Manufacturing has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the facility, and the greater Oberon Timber Complex (OTC). The CCC meetings provide a forum to discuss and address general construction and operational impacts, and mitigation measures for the Borg Manufacturing facility. The CCC meetings also allow for feedback from the local community to Borg Manufacturing and the OTC in relation to environmental performance.

Borg hosted three CCC meetings during the reporting period on the 27th of July 2022, 23rd November 2022 and 31st March 2023. All meetings were held in the boardroom of the administration building on the Borg Manufacturing site where members of the community, local council, the mayor and neighbouring businesses (Highland Pine Products and Woodchem) attended and contributed. Some community members also joined online via video call on Teams.

A copy of the Meeting Minutes from this reporting period are attached to this document as Appendix H. The major discussion points relating to Borg Manufacturing in 2022/2023 were:

- Lack of housing and accommodation in Oberon for new employees causing some recruitment struggles.
- Gas outages
- Company assistance with the floods in Forbes/Eugowra
- Increased utilisation of UWR
- Discussions about the proposed Biodigester project
- Transport struggles

5.2.3 Opportunities for Information Exchange

Borg established the following avenues to record inquiries and complaints related to construction and operational activities:

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

The telephone number, postal and email address are displayed on a sign at the entrance to Borg Manufacturing in a position that is clearly visible to the public. This information is also distributed to the local community and is included in public information communications which may include Borg Manufacturing website, local area advertisements, letterbox notifications and project fact sheets.

6 Independent Audit

Development Consent SSD 7016 condition C15 sets out requirements for independent environmental audits of the Development. Borg commissioned environmental consultants Molino Stewart to conduct an Independent Environmental Audit (IEA) of the site for operations and construction for audit period 1 July 2018 to 29 May 2021. In accordance with SSD 7016 condition C15 the next IEA is scheduled for 2024.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through the Borg Manufacturing Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, Borg's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

- (a) Harm to the environment is material if:
 - i. It involves actual or potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
 - ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations),and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there were three reportable environmental pollution incidents at the Borg Manufacturing facility.

7.2 Non-conformances

Environmental non-conformances related to surface water have been discussed in Section 4.4 of this Review and therefore have not been repeated in this section.

On 27 February 2023 Borg reported an incident to the EPA's Environment Line. The incident comprised the unintentional release of wood fibre from one of the Conti 1 cyclones to the nearby receiving community. On 6 March 2023 Borg provided the EPA with an incident report in accordance with EPL 3035 condition R3. Following the submission of the R3 report EPA a Show Cause Letter was issued by the EPA on 15 March 2023. The Show Cause Letter alleged that there had been a contravention of s 64 of the Protection of the Environment Operations Act 1997 (**Act**) due to a failure to comply with Condition O2.1 of Environment Protection Licence 3035.

On 21 June 2023, a request for further information and Draft Notice of Variation to License 3035 was requested by the EPA. Borg collated additional information on the incident and prepared a progress report which was submitted on 21 July 2023. No EPA response has been received as of yet.

8 Activities Proposed for the next Annual Review Period

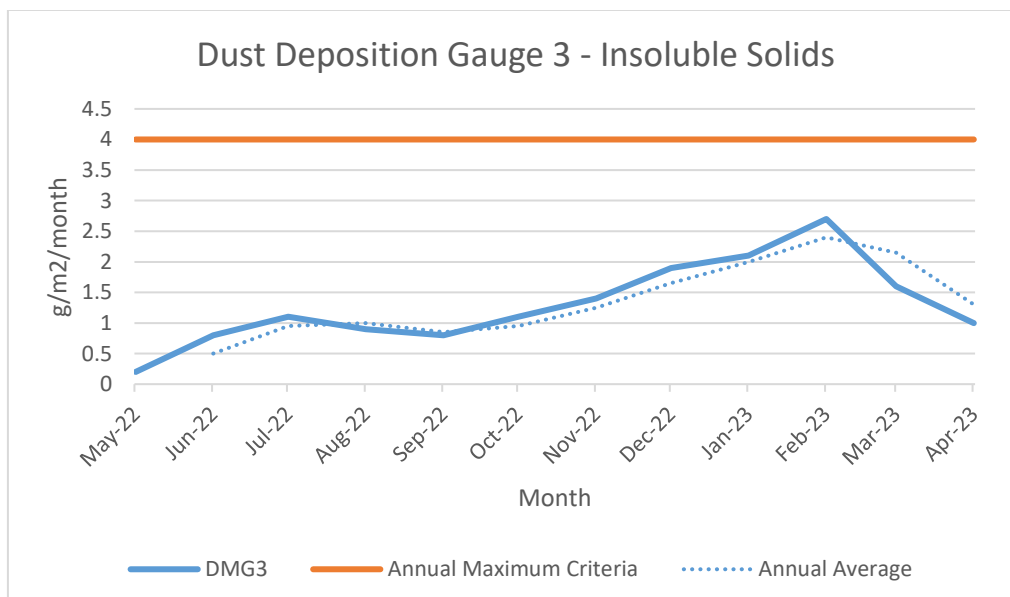
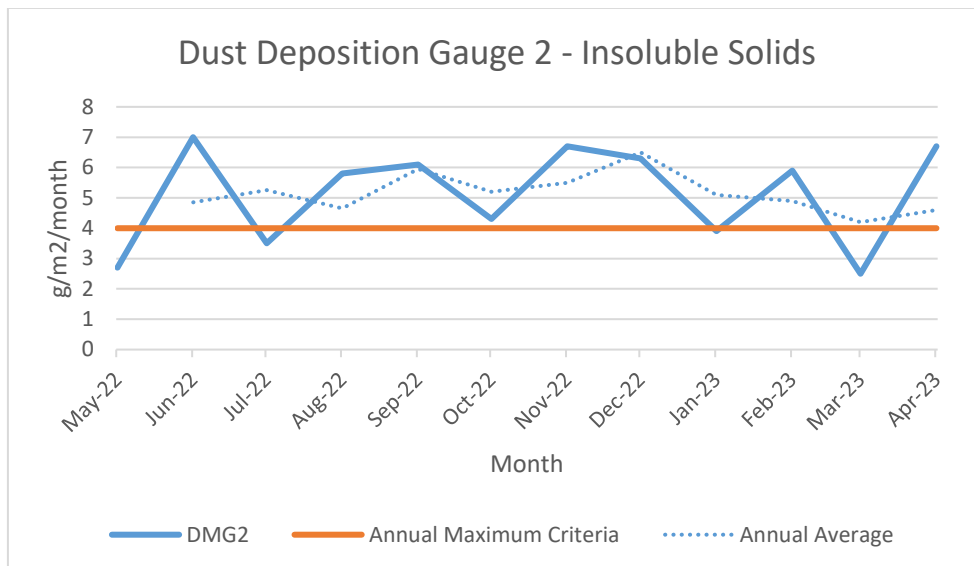
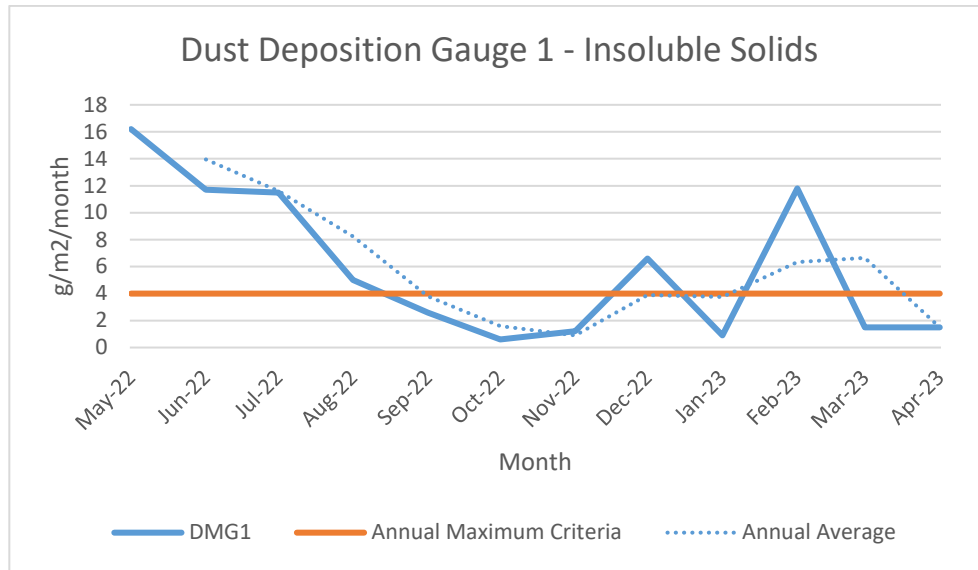
Borg Manufacturing will endeavour to carry out the activities listed in Table 46 during the 2023/24 reporting period to assist with improving the environmental performance of the existing development and the project.

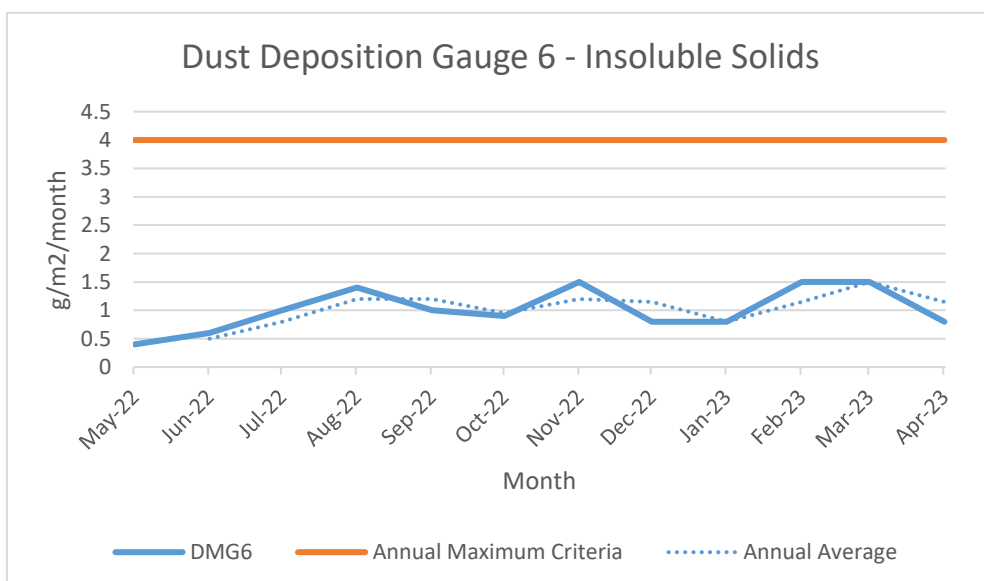
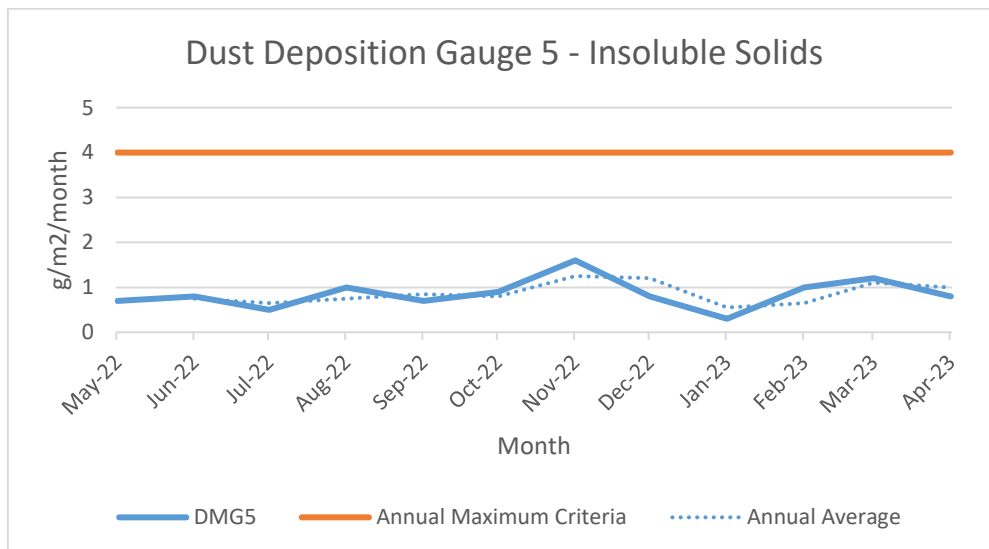
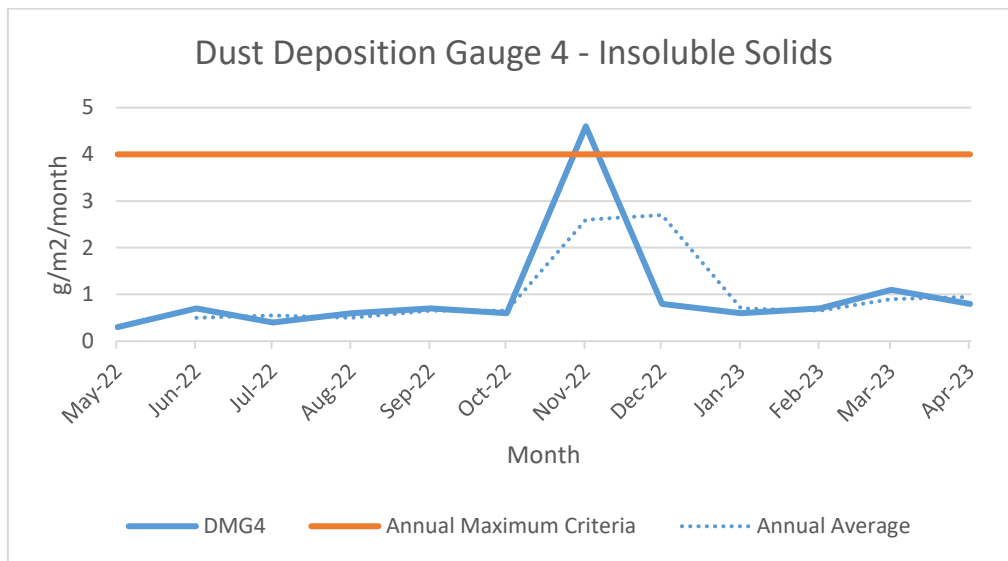
Table 46 Proposed Activities for 2023/24 Reporting Period

Ongoing implementation of Environmental Management Plans for the existing development and the project.
Complete verification studies required for SSD 7016 including modifications
Complete installation of additional material handling equipment
Complete works as approved under Modification 4
Continue erosion and sediment control inspections and rectification works as necessary to manage storm water quality discharge as well as reinstate the original HPP swale design once high voltage electrical works have been completed (movement of powerlines from above ground to below).
Discuss with EPA licensed water discharge points, referencing EPL 3035, to ensure this is fit for purpose
Implement requirements of the new Resource Recovery order and Exemption as a flow on from the completion of the second Urban Wood Residue trial (recycled wood program) and report back to EPA
Ongoing implementation of Environmental Awareness standards training. Finalise an online version for more efficient roll out and traceability.

APPENDICIES

Appendix A – Depositional Dust Monitoring Data





Appendix B – Air Quality Monitoring Report

Borg Manufacturing, Oberon Plant
Emission Testing Report
Report Number R013663

Document Information

Template Version 130223

Client Name: Borg Manufacturing Pty Ltd
Report Number: R013663
Date of Issue: 6 June 2023
Attention: Victor Bendeviski
Address: Lowes Mount Rd
Oberon NSW 2787
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Aaron Davis
Senior Air Monitoring
Consultant

NATA Accredited Laboratory
No. 14601

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

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Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo's terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to 'Test Methods' for full details of testing covered by NATA accreditation.

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1 Executive Summary

1.1 Background

Ektimo was engaged by Borg Manufacturing to perform emission testing at their Oberon plant. Testing was carried out in accordance with Environment Protection Licence 3035.

1.2 Project Objective & Overview

The objectives of the project were to conduct a monitoring programme to quantify emissions from 14 discharge points to determine compliance with Borg Manufacturing's Environment Protection Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 – DC1 Baghouse	31 January 2023	Total solid particles Formaldehyde
EPA 5 – DC2 Baghouse		
EPA 7 – Conti 2 Stage 1 Dryer Cyclone 1 (West)	7 March 2023	Total solid particles, fine particulate matter (PM ₁₀) Smoke Nitrogen oxides, oxygen, carbon dioxide
	8 March 2023	Formaldehyde Oxygen, carbon dioxide
EPA 8 – Conti 2 Stage 1 Dryer Cyclone 2 (East)	7 March 2023	Total solid particles, fine particulate matter (PM ₁₀) Smoke Nitrogen oxides, oxygen, carbon dioxide
	8 March 2023	Formaldehyde Oxygen, carbon dioxide
EPA 9 – Conti 1 Dryer Cyclone 1 (South)	27 October 2022	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
	8 March 2023	Formaldehyde Oxygen, carbon dioxide
EPA 10 – Conti 1 Dryer Cyclone 2 (North)	27 October 2022	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
	8 March 2023	Formaldehyde Oxygen, carbon dioxide

Continued next page

Location	Test Date	Test Parameters*
EPA 19 – Conti 4 Dryer	2 February 2023	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke
EPA 20 – DC11 Reject Cyclone		Total solid particles Formaldehyde
EPA 21 – DC11A Reject Cyclone		
EPA 27 – Conti 2 Press Vent Stack	9 March 2023	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
EPA 29 – Forming Line Baghouse	28 October 2022	
EPA 30 – Form Station Baghouse	26 October 2022	
EPA 31 – Particle Board Press Stack	1 February 2023	
EPA 32 – WESP	26 October 2022	Total solid particles Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide

* Flow rate, velocity, temperature and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence limit and all analytes highlighted in red are outside the licence limit set by the NSW EPA as per licence 3035 (last amended prior to this round of testing on 4 September 2019).

EPA No.	Location Description	Pollutant	Units	Licence limit	Detected values	
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Total Solid Particles	mg/m ³	200	38 ²	
		Formaldehyde	mg/m ³	5	21 ³	
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Total Solid Particles	mg/m ³	200	47 ²	
		Formaldehyde	mg/m ³	5	1.3 ³	
9	Conti 1 Dryer Cyclone 1 (South)	Total Solid Particles	mg/m ³	200	32 ¹	
		Formaldehyde	mg/m ³	5	3.7 ¹	0.51 ³
10	Conti 1 Dryer Cyclone 2 (North)	Total Solid Particles	mg/m ³	200	190 ¹	
		Formaldehyde	mg/m ³	5	3.2 ¹	1.0 ³

1) Testing 27/10/22

2) Testing 7/3/23

3) Testing 8/3/23

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

1.4 Results Summary

The following summary table details results of analytes tested for at locations with no limits as stated in NSW EPA licence 3035 as well as NOx for EPA 7-10.

EPA No.	Location Description	Pollutant	Units	Testing Date	Detected Values
4	DC1 Baghouse	Solid particles	mg/m ³	31/01/2023	<2
		Formaldehyde	mg/m ³	31/01/2023	4.2
5	DC2 Baghouse	Solid particles	mg/m ³	1/02/2023	<3
		Formaldehyde	mg/m ³	1/02/2023	4.1
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Nitrogen oxides	mg/m ³	7/03/2023	220
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Nitrogen oxides	mg/m ³	7/03/2023	230
9	Conti 1 Dryer Cyclone 1 (South)	Nitrogen oxides	mg/m ³	27/10/2022	160
10	Conti 1 Dryer Cyclone 2 (North)	Nitrogen oxides	mg/m ³	27/10/2022	140
19	Conti 4 Dryer	Solid particles	mg/m ³	2/02/2023	45
		Formaldehyde	mg/m ³	2/02/2023	1.6
20	DC11 Reject Cyclone	Solid particles	mg/m ³	2/02/2023	<2
		Formaldehyde	mg/m ³	2/02/2023	3.9
21	DC11A Reject Cyclone	Solid particles	mg/m ³	2/02/2023	<2
		Formaldehyde	mg/m ³	2/02/2023	2.6
27	Combined Stack (C2 Press Vents)	Solid particles	mg/m ³	9/03/2023	4.5
		Formaldehyde	mg/m ³	9/03/2023	1.6
		Nitrogen oxides	mg/m ³	9/03/2023	<4
29	Forming Line Baghouse	Solid particles	mg/m ³	28/10/2022	<2
		Formaldehyde	mg/m ³	28/10/2022	1.5
		Nitrogen oxides	mg/m ³	28/10/2023	<4
30	Form Station Baghouse	Solid particles	mg/m ³	26/10/2022	2.3
		Formaldehyde	mg/m ³	26/10/2022	1.0
		Nitrogen oxides	mg/m ³	26/10/2022	<4
31	Particle Board Press Extraction System	Solid particles	mg/m ³	1/02/2023	49
		Formaldehyde	mg/m ³	1/02/2023	0.86
		Nitrogen oxides	mg/m ³	1/02/2023	<4
32	WESP	Solid particles	mg/m ³	26/10/2022	34
		Formaldehyde	mg/m ³	26/10/2022	0.032
		Nitrogen oxides	mg/m ³	26/10/2022	190

2 Results

2.1 EPA 4 – DC1 Baghouse

Date	31/01/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 4 - DC1 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		

230116

Sampling Plane Details

Sampling plane dimensions	1280 x 680 mm
Sampling plane area	0.87 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 8
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.4	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.97	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1410 & 1525
Temperature, °C	40
Temperature, K	313
Velocity at sampling plane, m/s	8.9
Volumetric flow rate, actual, m ³ /s	7.8
Volumetric flow rate (wet STP), m ³ /s	5.9
Volumetric flow rate (dry STP), m ³ /s	5.8
Mass flow rate (wet basis), kg/hour	27000

Non-isokinetics

Sampling time	Results	
	Concentration mg/m ³	Mass Rate g/min
Formaldehyde	4.2	1.4

Isokinetic Results

Sampling time	Results	
	Concentration mg/m ³	Mass Rate g/min
Solid Particles	<2	<0.7
Isokinetic Sampling Parameters		
Sampling time, min	64	
Isokinetic rate, %	99	
Gravimetric analysis date (total particulate)	14-02-2023	

2.2 EPA 5 – DC2 Baghouse

Date	31/01/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 5 - DC2 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details

Sampling plane dimensions	2800 x 680 mm
Sampling plane area	1.9 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 14
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.4	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.98	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1535 & 1700
Temperature, °C	36
Temperature, K	309
Velocity at sampling plane, m/s	14
Volumetric flow rate, actual, m ³ /s	27
Volumetric flow rate (wet STP), m ³ /s	21
Volumetric flow rate (dry STP), m ³ /s	21
Mass flow rate (wet basis), kg/hour	97000

Non-isokinetics	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		4.1	5.1

Isokinetic Results	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<3	<3
Isokinetic Sampling Parameters			
Sampling time, min		70	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		14-02-2023	

2.3 EPA 7 – Conti 2 Stage 1 Dryer Cyclone 1 (West)

Date	7/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	11	
Gas molecular weight, g/g mole	28.0 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.25 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0935 & 1100
Temperature, °C	50
Temperature, K	324
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	54
Volumetric flow rate (wet STP), m ³ /s	40
Volumetric flow rate (dry STP), m ³ /s	36
Mass flow rate (wet basis), kg/hour	180000

Date	7/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

230302

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	0940 - 1057		0940 - 1057		0940 - 1057	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
Combustion Gases		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
Nitrogen oxides (as NO ₂)		220	470	160	350	280	600
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		1.7		1.4		2.1	
Oxygen		19.1		18.6		19.4	

Isokinetic Results		Results	
Sampling time		0940-1057	0940-1057 (PM10)
		Concentration mg/m³	Mass Rate g/min
	Solid Particles	38	76
	Fine particulates (PM10)	12	24
	D50 cut size, 10µm	10.3	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		71	72
Isokinetic rate, %		99	110
Gravimetric analysis date (total particulate)		16-03-2023	
Gravimetric analysis date (PM ₁₀ /PM _{2.5})		16-03-2023	

Smoke Obscuration	Result
Time of assessment	1000 - 1015
Smoke Obscuration	0

Date	8/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

- The gas profile has a cyclonic component which exceeds 15°
- The highest to lowest differential pressure ratio exceeds 9:1 or the highest to lowest gas velocity ratio exceeds 3:1
- The highest to lowest gas velocity ratio exceeds 1.6:1
- The upstream disturbance is <2D from the sampling plane
- The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	11	
Gas molecular weight, g/g mole	27.9 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.93	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1520 & 1640
Temperature, °C	47
Temperature, K	320
Velocity at sampling plane, m/s	9.9
Volumetric flow rate, actual, m ³ /s	48
Volumetric flow rate (wet STP), m ³ /s	36
Volumetric flow rate (dry STP), m ³ /s	32
Mass flow rate (wet basis), kg/hour	160000

Gas Analyser Results

	Average	Minimum	Maximum
Sampling time	1528 - 1637	1528 - 1637	1528 - 1637
	Concentration	Concentration	Concentration
	%v/v	%v/v	%v/v
Carbon dioxide	1.1	0.6	1.5
Oxygen	19.8	19.4	20.4

Non-isokinetics

	Results	
Sampling time	1525-1639	
	Concentration	Mass Rate
	mg/m ³	g/min
Formaldehyde	21	40

2.4 EPA 8 – Conti 2 Stage 1 Dryer Cyclone 2 (East)

Date	7/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	11	
Gas molecular weight, g/g mole	27.9 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.25 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1105 & 1225
Temperature, °C	50
Temperature, K	324
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	54
Volumetric flow rate (wet STP), m ³ /s	40
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	180000

Date	7/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		1110 - 1223		1110 - 1223		1110 - 1223	
Combustion Gases	Nitrogen oxides (as NO ₂)	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
		230	490	170	370	270	570
Carbon dioxide		Concentration %v/v		Concentration %v/v		Concentration %v/v	
		1.9		1.4		2.3	
Oxygen		18.8		18.4		19.5	

Isokinetic Results	Sampling time	Results	
		1110-1223	1110-1223 (PM10)
Solid Particles		Concentration mg/m ³	Mass Rate g/min
		47	92
Fine particulates (PM10)		16	31
D50 cut size, 10µm		10.4	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		71	73
Isokinetic rate, %		103	106
Gravimetric analysis date (total particulate)		16-03-2023	
Gravimetric analysis date (PM ₁₀ /PM _{2.5})		16-03-2023	

Smoke Obscuration	Time of assessment	Result
		1120 - 1135
Smoke Obscuration		0

Date	8/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The highest to lowest gas velocity ratio exceeds 1.6:1

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	11 (saturated)	
Gas molecular weight, g/g mole	27.8 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.93	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1655 & 1815
Temperature, °C	46
Temperature, K	319
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	49
Volumetric flow rate (wet STP), m ³ /s	37
Volumetric flow rate (dry STP), m ³ /s	32
Mass flow rate (wet basis), kg/hour	160000

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1700 - 1811	1700 - 1811	1700 - 1811
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	1.3	1.1	1.5
Oxygen	19.7	19.5	19.8

Non-isokinetics

Non-Isometrics	Sampling time	Results	
		1700-1814	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		1.3	2.6

2.5 EPA 9 – Conti 1 Dryer Cyclone 1 (South)

Date	27/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has an NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	14	
Gas molecular weight, g/g mole	27.6 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.23 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.90	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1200 & 1430
Temperature, °C	54
Temperature, K	327
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	45
Volumetric flow rate (wet STP), m ³ /s	33
Volumetric flow rate (dry STP), m ³ /s	28
Mass flow rate (wet basis), kg/hour	150000

Reference: R013663

Date: 6/06/2023

Prepared for: Borg Manufacturing Pty Ltd

Ektimo

Date	27/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1305 - 1404	1305 - 1404	1305 - 1404
	Concentration mg/m ³	Concentration mg/m ³	Concentration mg/m ³
Combustion Gases	Mass Rate g/min	Mass Rate g/min	Mass Rate g/min
Nitrogen oxides (as NO ₂)	160	130	180
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	2.3	1.9	2.6
Oxygen	18.9	18.4	19.4

Non-isokinetics	Results
Sampling time	1230-1330
	Concentration mg/m ³
Formaldehyde	3.7
	Mass Rate g/min
	6.3

Isokinetic Results	Results
Sampling time	1215-1421
	Concentration mg/m ³
Solid Particles	32
	Mass Rate g/min
	53
Isokinetic Sampling Parameters	
Sampling time, min	121
Isokinetic rate, %	103
Gravimetric analysis date (total particulate)	02-11-2022

Smoke Obscuration	Result
Time of assessment	1230 - 1245
Smoke Obscuration	0



Date	27/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22.10.25

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has an NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location
The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°
The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	15	
Gas molecular weight, g/g mole	27.5 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.23 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.89	

Gas Flow Parameters

Temperature, °C	54
Temperature, K	327
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	46
Volumetric flow rate (wet STP), m ³ /s	33
Volumetric flow rate (dry STP), m ³ /s	28
Mass flow rate (wet basis), kg/hour	150000

Isokinetic Results

Sampling time	Results	
	1435-1640 (PM10)	
	Concentration mg/m ³	Mass Rate g/min
Fine particulates (PM10)	21	35
Isokinetic Sampling Parameters		
Sampling time, min	120	
Isokinetic rate, %	108	
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	02-11-2022	

Date	8/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

230302

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The highest to lowest gas velocity ratio exceeds 1.6:1

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	12	
Gas molecular weight, g/g mole	27.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0900 & 1025
Temperature, °C	48
Temperature, K	321
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	42
Volumetric flow rate (wet STP), m ³ /s	31
Volumetric flow rate (dry STP), m ³ /s	27
Mass flow rate (wet basis), kg/hour	140000

Gas Analyser Results

Sampling time	Average	Minimum	Maximum
	0908 - 1020 Concentration % v/v	0908 - 1020 Concentration % v/v	0908 - 1020 Concentration % v/v
Carbon dioxide	0.5	<0.4	0.6
Oxygen	20.4	20.3	20.9

Non-isokinetics

Sampling time	Results	
	0905-1020	
	Concentration mg/m ³	Mass Rate g/min
Formaldehyde	0.51	0.84

2.6 EPA 10 – Conti 1 Dryer Cyclone 2 (North)

Date	27/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has an NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	14	
Gas molecular weight, g/g mole	27.6 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.23 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.90	

Gas Flow Parameters

Temperature, °C	51
Temperature, K	325
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	46
Volumetric flow rate (wet STP), m ³ /s	34
Volumetric flow rate (dry STP), m ³ /s	29
Mass flow rate (wet basis), kg/hour	150000

Date	27/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		221025

Gas Analyser Results	Sampling time	Average 0925 - 1024		Minimum 0925 - 1024		Maximum 0925 - 1024	
		Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases							
Nitrogen oxides (as NO ₂)		140	240	110	200	170	300
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		2		1.8		2.3	
Oxygen		19.1		18.8		19.4	

Non-isokinetics	Sampling time	Results 0930-1030	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		3.2	5.4

Isokinetic Results	Sampling time	Results 0910-1115 0910-1115 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		190	320
Fine particulates (PM10)		47	82
D50 cut size, 10µm		10.6	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		121	120
Isokinetic rate, %		105	95
Gravimetric analysis date (total particulate)		02-11-2022	
Gravimetric analysis date (PM ₁₀)		02-11-2022	

Smoke Obscuration	Time of assessment	Result
		0920 - 935
Smoke Obscuration		0

Date	8/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The highest to lowest gas velocity ratio exceeds 1.6:1

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	11	
Gas molecular weight, g/g mole	27.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1100 & 1220
Temperature, °C	46
Temperature, K	320
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	40
Volumetric flow rate (wet STP), m ³ /s	30
Volumetric flow rate (dry STP), m ³ /s	26
Mass flow rate (wet basis), kg/hour	130000

Gas Analyser Results

	Average	Minimum	Maximum
Sampling time	1106 - 1219	1106 - 1219	1106 - 1219
	Concentration	Concentration	Concentration
	%v/v	%v/v	%v/v
Carbon dioxide	0.5	0.4	0.5
Oxygen	20.4	20.3	20.5

Non-isokinetics

	Results
Sampling time	1105-1219
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	1 1.6

2.7 EPA 19 – Conti 4 Dryer

Date	2/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 19 - Conti 4 Dryer Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details	
Sampling plane dimensions	1620 mm
Sampling plane area	2.06 m ²
Sampling port size, number	4" BSP (x2) ext thread
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 4 D
Upstream disturbance	Junction 8 D
No. traverses & points sampled	2 16
Sample plane conformance to AS 4323.1	Ideal sampling plane

Stack Parameters	
Moisture content, %v/v	3.2
Gas molecular weight, g/g mole	28.8 (wet) 29.1 (dry)
Gas density at STP, kg/m ³	1.28 (wet) 1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.90
Gas Flow Parameters	
Flow measurement time(s) (hhmm)	1100 & 1235
Temperature, °C	62
Temperature, K	336
Velocity at sampling plane, m/s	29
Volumetric flow rate, actual, m ³ /s	61
Volumetric flow rate (wet STP), m ³ /s	43
Volumetric flow rate (dry STP), m ³ /s	41
Mass flow rate (wet basis), kg/hour	200000

Non-isokinetics	Results	
	1105-1230	
Sampling time	Concentration mg/m ³	Mass Rate g/min
Formaldehyde	1.6	4

Date	2/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 19 - Conti 4 Dryer Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details	
Sampling plane dimensions	1620 mm
Sampling plane area	2.06 m ²
Sampling port size, number	4" BSP (x2) ext thread
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 4 D
Upstream disturbance	Junction 8 D
No. traverses & points sampled	2 16
Sample plane conformance to AS 4323.1	Ideal sampling plane

Stack Parameters		
Moisture content, %v/v	3.5	
Gas molecular weight, g/g mole	28.7 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.89	
Gas Flow Parameters		
Flow measurement time(s) (hhmm)	0850 & 1025	
Temperature, °C	69	
Temperature, K	342	
Velocity at sampling plane, m/s	28	
Volumetric flow rate, actual, m ³ /s	58	
Volumetric flow rate (wet STP), m ³ /s	40	
Volumetric flow rate (dry STP), m ³ /s	39	
Mass flow rate (wet basis), kg/hour	190000	

Isokinetic Results	Sampling time	Results		
		0855-1020	0855-1020 (PM10)	
		Concentration mg/m³	Mass Rate g/min	
		Solid Particles	45	110
		Fine particulates (PM10)	26	61
		D50 cut size, 10µm	9.7	
		Isokinetic Sampling Parameters		
		Isokinetic	PM 10	
		Sampling time, min	80	79
		Isokinetic rate, %	98	100
Gravimetric analysis date (total particulate)	14-02-2023			
Gravimetric analysis date (PM10)	14-02-2023			

Smoke Obscuration	Time of assessment	Result
		0900 - 0915 0

2.8 EPA 20 – DC11 Reject Cyclone

Date	2/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 20 - Reject Cyclone DC11
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details

Sampling plane dimensions	680 x 1140 mm
Sampling plane area	0.775 m ²
Sampling port size, number	4" BSP (x3)
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	3 9
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.00	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1315 & 1435
Temperature, °C	32
Temperature, K	305
Velocity at sampling plane, m/s	14
Volumetric flow rate, actual, m ³ /s	11
Volumetric flow rate (wet STP), m ³ /s	8.7
Volumetric flow rate (dry STP), m ³ /s	8.5
Mass flow rate (wet basis), kg/hour	40000

Non-isokinetics	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		3.9	2

Isokinetic Results	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<2	<0.8
Isokinetic Sampling Parameters			
Sampling time, min		63	
Isokinetic rate, %		98	
Gravimetric analysis date (total particulate)		14-02-2023	

2.9 EPA 21 – DC11A Reject Cyclone

Date	2/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	Reject Cyclone DC11A
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		

230116

Sampling Plane Details

Sampling plane dimensions	680 x 1140 mm
Sampling plane area	0.775 m ²
Sampling port size, number	4" BSP (x3)
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	3 9
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	1.9	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.00	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1455 & 1610
Temperature, °C	31
Temperature, K	304
Velocity at sampling plane, m/s	15
Volumetric flow rate, actual, m ³ /s	12
Volumetric flow rate (wet STP), m ³ /s	9.2
Volumetric flow rate (dry STP), m ³ /s	9.1
Mass flow rate (wet basis), kg/hour	43000

Non-isokinetics

Sampling time	Results	
	Concentration mg/m ³	Mass Rate g/min
Formaldehyde	2.6	1.4

Isokinetic Results

Sampling time	Results	
	Concentration mg/m ³	Mass Rate g/min
Solid Particles	<2	<0.9
Isokinetic Sampling Parameters		
Sampling time, min	63	
Isokinetic rate, %	98	
Gravimetric analysis date (total particulate)	14-02-2023	

2.10 EPA 27 – Conti 2 Press Vent Stack

Date	9/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 27 - Combined Conti 2 Press Vent Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2.5 D
Upstream disturbance	Junction 4 D
No. traverses & points sampled	2 20
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.5	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.01	

Gas Flow Parameters

Temperature, °C	31
Temperature, K	304
Velocity at sampling plane, m/s	9.5
Volumetric flow rate, actual, m ³ /s	30
Volumetric flow rate (wet STP), m ³ /s	24
Volumetric flow rate (dry STP), m ³ /s	23
Mass flow rate (wet basis), kg/hour	110000

Date	9/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 27 - Combined Conti 2 Press Vent Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		0906 - 1011		0906 - 1011		0906 - 1011	
Combustion Gases		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Nitrogen oxides (as NO ₂)		<4	<6	<4	<6	<4	<6
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.8		20.9	

Isokinetic Results	Sampling time	Results	
		0904-1006 0904-1006 (PM10)	
		Concentration	Mass Rate
		mg/m ³	g/min
Solid Particles		4.5	6.2
Fine particulates (PM10)		<4	<6
D50 cut size, 10µm		10.5	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		60	60
Isokinetic rate, %		100	117
Gravimetric analysis date (total particulate)		16-03-2023	
Gravimetric analysis date (PM ₁₀ /PM _{2.5})		16-03-2023	

Smoke Obscuration	Time of assessment	Result
		0910 - 0925
Smoke Obscuration		0

Date	9/03/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 27 - Combined Conti 2 Press Vent Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		230302

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2.5 D
Upstream disturbance	Junction 4 D
No. traverses & points sampled	2 20
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.5	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	1.01	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1030 & 1135
Temperature, °C	29
Temperature, K	302
Velocity at sampling plane, m/s	9.5
Volumetric flow rate, actual, m ³ /s	30
Volumetric flow rate (wet STP), m ³ /s	23
Volumetric flow rate (dry STP), m ³ /s	23
Mass flow rate (wet basis), kg/hour	110000

Non-isokinetics

Sampling time	Results	
	1032-1134	
	Concentration mg/m ³	Mass Rate g/min
Formaldehyde	1.6	2.2

2.11 EPA 29 – Forming Line Baghouse

Date	28/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Sampling Plane Details

Sampling plane dimensions	1000 mm
Sampling plane area	0.785 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Inclined Circular
Downstream disturbance	Bend 3 D
Upstream disturbance	Bend 3.5 D
No. traverses & points sampled	2 16
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	1	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.98	

Gas Flow Parameters

Temperature, °C	17
Temperature, K	291
Velocity at sampling plane, m/s	35
Volumetric flow rate, actual, m ³ /s	28
Volumetric flow rate (wet STP), m ³ /s	21
Volumetric flow rate (dry STP), m ³ /s	21
Mass flow rate (wet basis), kg/hour	98000

Date	28/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	0959 - 1058		0959 - 1058		0959 - 1058	
		Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
Combustion Gases							
Nitrogen oxides (as NO ₂)		<4	<5	<4	<5	<4	<5
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.9		20.9	

Non-isokinetics	Sampling time	Results	
		1340-1440	
		Concentration	Mass Rate
		mg/m³	g/min
Formaldehyde		1.5	1.8

Isokinetic Results	Results		
	Sampling time	0940-1105 0940-1105 (PM10)	
		Concentration mg/m³	Mass Rate g/min
	Solid Particles	<2	<3
	Fine particulates (PM10)	<3	<3
	D50 cut size, 10µm	10.1	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min	80	80	
Isokinetic rate, %	103	63	
Gravimetric analysis date (total particulate)	02-11-2022		
Gravimetric analysis date (PM ₁₀)	02-11-2022		

Smoke Obscuration	Result
Time of assessment	1340 - 1355
Smoke Obscuration	0

2.12 EPA 30 – Form Station Baghouse

Date	26/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		22 1025

Sampling Plane Details			
Sampling plane dimensions		545 mm	
Sampling plane area		0.233 m ²	
Sampling port size, number		4" BSP (x2)	
Duct orientation & shape		Vertical	Circular
Downstream disturbance		Bend 8 D	
Upstream disturbance		Bend 8 D	
No. traverses & points sampled		2	8
Sample plane conformance to AS 4323.1		Ideal sampling plane	

Stack Parameters			
Moisture content, %v/v		1	
Gas molecular weight, g/g mole	28.9 (wet)		29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)		1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.97		
Gas Flow Parameters			
Flow measurement time(s) (hhmm)	1330 & 1445		
Temperature, °C	34		
Temperature, K	308		
Velocity at sampling plane, m/s	27		
Volumetric flow rate, actual, m ³ /s	6.2		
Volumetric flow rate (wet STP), m ³ /s	4.7		
Volumetric flow rate (dry STP), m ³ /s	4.6		
Mass flow rate (wet basis), kg/hour	22000		

Date	26/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		221025

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	1340 - 1439		1340 - 1439		1340 - 1439	
Combustion Gases		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
	Nitrogen oxides (as NO ₂)	<4	<1	<4	<1	<4	<1
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
	Carbon dioxide	<0.4		<0.4		<0.4	
	Oxygen	20.9		20.9		20.9	

Non-isokinetics	Sampling time	Results	
		1340-1440	
		Concentration	Mass Rate
		mg/m³	g/min
Formaldehyde		1	0.28

Isokinetic Results	Sampling time	Results	
		1335-1442 1335-1443 (PM10)	
		Concentration mg/m³	Mass Rate g/min
		Solid Particles	2.3 0.63
		Fine particulates (PM10)	<3 <0.9
		D50 cut size, 10µm	10.1
		Isokinetic Sampling Parameters	
		Isokinetic	PM 10
		Sampling time, min	64 64
		Isokinetic rate, %	97 89
Gravimetric analysis date (total particulate)	02-11-2022		
Gravimetric analysis date (PM10)	02-11-2022		

Smoke Obscuration	Result
Time of assessment	1340 - 1355
Smoke Obscuration	0

2.13 EPA 31 – Particle Board Press Stack

Date	1/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 31 - Particle Board Press Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Junction 3 D
No. traverses & points sampled	2 20
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	4.7	
Gas molecular weight, g/g mole	28.5 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.27 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.99	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1020 & 1255
Temperature, °C	33
Temperature, K	306
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	35
Volumetric flow rate (wet STP), m ³ /s	27
Volumetric flow rate (dry STP), m ³ /s	26
Mass flow rate (wet basis), kg/hour	120000

Reference: R013663

Date: 6/06/2023

Prepared for: Borg Manufacturing Pty Ltd

Ektimo

Date	1/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 31 - Particle Board Press Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Gas Analyser Results	Sampling time	Average 1112 - 1237		Minimum 1112 - 1237		Maximum 1112 - 1237	
		Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases							
Nitrogen oxides (as NO ₂)		<4	<7	<4	<7	10	16
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.7		20.6		20.7	

Isokinetic Results	Sampling time	Results	
		1105-1250	1105-1250 (PM10)
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		49	75
Fine particulates (PM10)		19	30
D50 cut size, 10µm		9.8	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		100	100
Isokinetic rate, %		100	106
Gravimetric analysis date (total particulate)		14-02-2023	
Gravimetric analysis date (PM ₁₀)		14-02-2023	

Smoke Obscuration	Time of assessment	Result
		1130 - 1145
Smoke Obscuration		0

Date	1/02/2023	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 31 - Particle Board Press Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Scott Woods	State	NSW
Process Conditions	Please refer to client records		230116

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Junction 3 D
No. traverses & points sampled	2 20
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
 The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	3.2	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.00	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0825 & 1020
Temperature, °C	32
Temperature, K	305
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	34
Volumetric flow rate (wet STP), m ³ /s	27
Volumetric flow rate (dry STP), m ³ /s	26
Mass flow rate (wet basis), kg/hour	120000

Non-isokinetics	Sampling time	Results	
		0830-1015	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		0.86	1.3

2.14 EPA 32 – WESP

Date	26/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220920

Sampling Plane Details

Sampling plane dimensions	2520 mm
Sampling plane area	4.99 m ²
Sampling port size, number	4" BSP (x2)
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Change in diameter 4 D
No. traverses & points sampled	2 28
Sample plane conformance to AS 4323.1	Conforming but non-ideal

Comments

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	28 (saturated)	
Gas molecular weight, g/g mole	26.3 (wet)	29.5 (dry)
Gas density at STP, kg/m ³	1.17 (wet)	1.31 (dry)
Gas density at discharge conditions, kg/m ³	0.82	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0935 & 1210
Temperature, °C	64
Temperature, K	338
Velocity at sampling plane, m/s	16
Volumetric flow rate, actual, m ³ /s	79
Volumetric flow rate (wet STP), m ³ /s	55
Volumetric flow rate (dry STP), m ³ /s	40
Mass flow rate (wet basis), kg/hour	230000

Date	26/10/2022	Client	Borg Manufacturing Pty Ltd
Report	R013663	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220920

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	1038 - 1137		1038 - 1137		1038 - 1137	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
Combustion Gases		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
Nitrogen oxides (as NO ₂)		190	460	150	350	220	530
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		4.2		3.2		4.6	
Oxygen		17		16.5		18.1	

Non-isokinetics	Sampling time	Results	
		0950-1050	
		Concentration	Mass Rate
		mg/m³	g/min
Formaldehyde		0.032	0.077

Isokinetic Results	Sampling time	Results	
		0940-1205	
		Concentration	Mass Rate
		mg/m³	g/min
		Solid Particles	34
Isokinetic Sampling Parameters			
Sampling time, min		140	
Isokinetic rate, %		102	
Gravimetric analysis date (total particulate)		01-11-2022	

Smoke Obscuration	Result
Time of assessment	0950 - 1005
Smoke Obscuration	0

* Fine particulate matter (PM₁₀) testing could not be undertaken at this location due to excessively saturated gas stream.

3 Plant Operating Conditions

See Borg Manufacturing Pty Ltd records for complete process conditions.

Borg Manufacturing have collated plant operating condition and will provide them to NSW EPA as required.

From information received from the site operator, unless otherwise noted it is our understanding that samples were collected during normal plant operations. Unless otherwise noted all samples were collected in compliance with Ektimo's QA/QC standards.

4 Test Methods

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited	
				Sampling	Analysis
Sampling points - Selection	NSW EPA TM-1 (AS 4323.1)	NA	NA	✓	NA
Flow rate, temperature & velocity	NSW EPA TM-2 (USEPA Method 2)	NSW EPA TM-2 (USEPA Method 2)	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22 (USEPA Alt-Method 008)	NSW EPA TM-22 (USEPA Alt-Method 008)	19%	✓	✓
Moisture content	NSW EPA TM-22 (USEPA Method 4)	NSW EPA TM-22 (USEPA Method 4)	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24 (USEPA Method 3A)	NSW EPA TM-24 (USEPA Method 3A)	13%	✓	✓
Nitrogen oxides	NSW EPA TM-11 (USEPA Method 7E)	NSW EPA TM-11 (USEPA Method 7E)	12%	✓	✓
Oxygen	NSW EPA TM-25 (USEPA Method 3A)	NSW EPA TM-25 (USEPA Method 3A)	13%	✓	✓
Aldehydes & ketones	Ektimo 332	Ektimo 332	16%	✓	✓ [†]
Particulate matter (PM ₁₀ & PM _{2.5})	NSW EPA OM-5 (USEPA Method 201A)	NSW EPA OM-5 (USEPA Method 201A)	6%	✓	✓ ^{††}
Solid particles (total)	NSW EPA TM-15 (AS 4323.2)	NSW EPA TM-15 (AS 4323.2)	3%	✓	✓ ^{††}
Blackness of smoke	NA	NSW EPA TM-16	not specified	NA	✓

230404

[†] Analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601. Results were reported on
15 November 2022 in report number LV-003561
15 February 2023 in report number LV-003925
27 March 2023 in report number LV-004170

^{††} Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

[†] Sampling has been conducted according to Ektimo Method 332 which uses the same principle as USEPA TO11A stipulated in NSW EPA method OM-11. Analysis has been conducted according to Ektimo Method 332 which uses the same principle (HPLC – high pressure liquid chromatography) as USEPA SW-846 (Method 0011).

5 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director. NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

6 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American Public Health Association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
BaP-TEQ	Benzo(a)pyrene toxic equivalents
BSP	British standard pipe
CARB	Californian Air Resources Board
CEM/CEMS	Continuous emission monitoring/Continuous emission monitoring system
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D ₅₀	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D ₅₀ method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D ₅₀ of that cyclone and less than the D ₅₀ of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
I-TEQ	International toxic equivalents
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	Odour unit. One OU is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
PM ₁₀	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (µm).
PM _{2.5}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those for which an analytical standard is not available), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
TOC	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
WHO05-TEQ	World Health Organisation toxic equivalents
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

7 Appendices

7.1 Appendix 1: Laboratory Chains of Custody

7.2 Appendix 2: Laboratory Results

Reference: R013663

Date: 6/06/2023

Prepared for: Borg Manufacturing Pty Ltd

Ektimo

7.1 Appendix 1. Laboratory Chains of Custody

Ektimo

Checked at Ektimo Dispatch by: Sarah G/L Sign/Date: _____

Sample received in good order? _____ Sign/Date: _____

Fully received 08/02/23 - APE

Only 8 received, 07/02/23 - logged APE

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 17752	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Blank Solution	
N 17753	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Blank Filter in Solution	
N 17754	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17755	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Filter in solution	
N 17756	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17757	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Filter in solution	
N 17758	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17759	R013663	Formaldehyde	ug/litre	Ektimo		Aaron Davis	Filter in solution	
N 17772	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Blank Tube	
N 17773	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17774	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17775	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17776	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17777	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17778	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	
N 17779	R013663	Formaldehyde	ug/sample	Ektimo		Aaron Davis	Tube A	

13-3-23

logged APE 14/3/23

logged 14/03/23 - APE

Ektimo

Checked at Ektimo Dispatch by: 13-3-23 Sign/Date: _____

Sample received in good order? _____ Sign/Date: _____

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 17841	R013663	HCHO	ug/sample	Ektimo		Aaron Davis	Blank Tube	
N 17842	R013663	HCHO	ug/sample	Ektimo		Aaron Davis	Tube	
N 17843	R013663	HCHO	ug/sample	Ektimo		Aaron Davis	Tube	
N 17844	R013663	HCHO	ug/sample	Ektimo		Aaron Davis	Tube	
N 17845	R013663	HCHO	ug/sample	Ektimo		Aaron Davis	Tube	

13-3-23

logged APE 14/3/23

logged 14/03/23 - APE

Ektimo

Checked at Ektimo Dispatch by: 13-3-23 Sign/Date: _____

Sample received in good order? _____ Sign/Date: _____

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 17828	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Blank Solution	
N 17829	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17830	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17831	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17832	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17833	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17834	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17835	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Imp A+B	
N 17836	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Blank Filter in Solution	
N 17837	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	
N 17838	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	
N 17839	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	
N 17840	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	
N 17841	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	
N 17842	R013663	HCHO	ug/litre	Ektimo		Aaron Davis	Filter in Solution	



7.2 Appendix 2. Laboratory Results



CERTIFICATE OF ANALYSIS

Testing Laboratory: Ektimo
26 Redland Drive
Mitcham, VIC 3132

Report Number: LV-003561
Job Number: R013663
Date of Issue: 15/11/2022

Attention: Ektimo Administration
Address: 26 Redland Dr
Mitcham, VIC, 3132

Date samples received: 2/11/2022
Number of samples received: 6
Date samples analysed: 14/11/2022
No of samples analysed: 6

Test method(s) used: Ektimo 330

Comments

QC Acceptance Criteria:	Parameter	Criteria	Pass/Fail
	Standard Curve	$R^2 > 0.99$	Pass
	Range	All samples <110% of highest standard	Pass
	Repeat samples	Between 80% - 120%	Pass
	Method Blanks	All method blanks < PQL	Pass
	QC sample	2 standard deviations of theoretical	Pass
	Chemical Expiry	All chemicals within expiry date	Pass
	Verification samples	Between 80% - 120% of 'normal' samples	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised world-wide.

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

REPORT AUTHORISATION

Version 211220



Aimen Perry
Laboratory Technician



Matthew Cook
Laboratory Manager



NATA Accredited Laboratory 14601

Report No. LV-003561

Job No. R013663

Client Name: Borg Manufacturing

Parameter	Units	N 17226 - All - Blank Tube - R013663	N 17227 - EPA-32 WESP - Tube A - R013663	N 17228 - EPA-30 Form Station Bag house - Tube A - R013663	N 17232 - EPA-10 C1 Cyc (N) - Tube A - R013663	N 17233 - EPA-9 C1 Cyc (S) - Tube A - R013663	N 17234 - EPA-29 Forming Line - Tube A - R013663
Version no. 211220	PQL:	0.04	0.04	0.04	0.08	0.08	0.04
Formaldehyde	µg	<0.04	0.81	10	75	90	15

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

CERTIFICATE OF ANALYSIS

Testing Laboratory: Ektimo
26 Redland Drive
Mitcham, VIC 3132

Report Number: LV-003925
Job Number: R013663
Date of Issue: 15/02/2023

Attention: Ektimo Administration
Address: 26 Redland Dr
Mitcham, VIC, 3132

Date samples received: 8/02/2023
Number of samples received: 16
Date samples analysed: 14/02/2023
No of samples analysed: 16

Test method(s) used: Ektimo 330

Comments

QC Acceptance Criteria:	Parameter	Criteria	Pass/Fail
	Standard Curve	$R^2 > 0.99$	Pass
	Range	All samples <110% of highest standard	Pass
	Repeat samples	Between 80% - 120%	Pass
	Method Blanks	All method blanks < PQL	Pass
	QC sample	2 standard deviations of theoretical	Pass
	Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

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REPORT AUTHORISATION

Version 221129



Aimen Perry
Laboratory Technician



Matthew Cook
Laboratory Manager



NATA Accredited Laboratory 14601

Version no. 221129

Change Units µg

Report No. LV-003925

Job No. R013663

Client Name: Borg Manufacturing Pty Ltd

Parameter		Units	N 17772 - All Locations - Blank Tube - R013663	N 17773 - EPA 32- WESP - Tube A - R013663	N 17774 - EPA 31- PB Press - Tube A - R013663	N 17775dil - EPA 4-DC1 - Tube A - R013663 1:2	N 17776dil - EPA5-DC2 - Tube A - R013663 1:2	N 17777 - EPA 19-C4 Dryer - Tube A - R013663	N 17778dil - EPA20- DC11 - Tube A - R013663 1:2	N 17779 - DC 11 A - Tube A - R013663
Version no. 221129		PQL:	0.04	0.04	0.04	0.08	0.08	0.04	0.08	0.04
Formaldehyde		µg	<0.04	31	32	72	77	45	95	46

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

CERTIFICATE OF ANALYSIS

Testing Laboratory: Ektimo
26 Redland Drive
Mitcham, VIC 3132

Report Number: LV-004170
Job Number: R013663
Date of Issue: 27/03/2023

Attention: Ektimo Administration
Address: 26 Redland Dr
Mitcham, VIC, 3132

Date samples received: 16/03/2023
Number of samples received: 21
Date samples analysed: 22/03/2023
No of samples analysed: 21

Test method(s) used: Ektimo 330

Comments

QC Acceptance Criteria:	Parameter	Criteria	Pass/Fail
	Standard Curve	$R^2 > 0.99$	Pass
	Range	All samples <110% of highest standard	Pass
	Repeat samples	Between 80% - 120%	Pass
	Method Blanks	All method blanks < PQL	Pass
	QC sample	2 standard deviations of theoretical	Pass
	Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised world-wide.

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

REPORT AUTHORISATION

Version 230216

Aimen Perry
Laboratory Technician

Matthew Cook
Laboratory Chemist



NATA Accredited Laboratory 14601

Ektimo PTY LTD • ABN 86 600 381 413

Melbourne, VIC (Head Office)
26 Redland Drive,
Mitcham, VIC 3132

Perth, WA (Postal Address)
52 Cooper Road,
Cockburn Central, WA 6164

Sydney, NSW
6/78 Reserve Road,
Artarmon, NSW 2064

Wollongong, NSW
1/251 Princes Highway,
Unanderra, NSW 2526

Brisbane, QLD
3/109 Riverside Place,
Morningside, QLD 4170

Job No. R013663

Parameter	PQL	N 17843 - Blank - Blank Tube - R013663	N 17844 - EPA 7 - C2 CYC1 (W) - Tube - R013663
		0.02	2.00
Formaldehyde		<0.02	510
Acetaldehyde		<0.02	15
Acrolein		<0.02	<2
Propionaldehyde		<0.02	87
Butrylaldehyde		<0.02	14
Valeraldehyde		<0.02	19
Hexaldehyde		<0.02	25

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

Parameter	PQL		N 17845 - EPA 8 - C2 CYC2 (E) - Tube - R013663	N 17846 - EPA 9 - C1 CYC1 (S) - Tube - R013663	N 17847 - EPA 10 - C1 CYC2 (N) - Tube - R013663	N 17848 - EPA 27 - C2 PRESS - Tube - R013663	N 17849 - EPA 27 - C2 PRESS (UREATRIC) - Tube - R013663
		PQL:	0.20	0.04	0.04	0.04	0.20
Formaldehyde		µg	52	16	25	25	32
Acetaldehyde		µg	8.7	13	11	3.4	4.7
Acrolein		µg	<0.2	<0.04	0.86	<0.04	<0.2
Propionaldehyde		µg	13	6.2	7.7	1.3	<0.2
Butrylaldehyde		µg	0.47	<0.04	1.4	<0.04	<0.2
Valeraldehyde		µg	1.3	1.2	1.3	0.54	0.4
Hexaldehyde		µg	0.83	2.4	1.7	0.96	1.4

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

Ektimo

ektimo.com.au

1300 364 005

MELBOURNE (Head Office)

26 Redland Drive
Mitcham
VIC 3132
AUSTRALIA

SYDNEY

6/78 Reserve Road
Artarmon
NSW 2064
AUSTRALIA

WOLLONGONG

1/251 Princes Highway
Unanderra
NSW 2526
AUSTRALIA

PERTH

52 Cooper Road
Cockburn Central
WA 6164
AUSTRALIA

BRISBANE

3/109 Riverside Place
Morningside
QLD 4170
AUSTRALIA

Appendix C – Surface Water Monitoring Data

SURFACE WATER MONITORING EPL POINT 28											EPA/DPIE Notified
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	
10/05/2022	7.82	7	40	7.3	0.04	<5	5	<0.1	<0.010	<0.010	
23/05/2022	7.85	8	40	7.1	0.03	<5	3	<0.1	<0.010	<0.010	
31/05/2022	7.28	29	30	7.9	0.12	<5	8	<0.1	<0.010	<0.010	
7/06/2022	7.43	40	30	6.9	0.37	6	<2	<0.1	<0.010	<0.010	
13/07/2022	7.55	<5	40	6.3	0.05	6	6	0.1	<0.010	<0.010	
2/08/2022	7.82	26	30	8.9	0.04	6	8	<0.1	<0.010	<0.010	
22/08/2022	7.68	27	30	9.7	0.09	<5	9	<0.1	<0.010	<0.010	
27/09/2022	7.61	<5	30	11.7	0.05	<5	7	0.2	<0.010	<0.010	Y
11/10/2022	7.49	23	35	8.9	0.18	<5	8	<0.1	<0.010	<0.010	
25/10/2022	7.2	5	30	3.8	0.03	<5	4	<0.1	<0.010	<0.010	
3/11/2022	7.15	36	35	6.9	0.07	<5	<2	<0.1	<0.010	<0.010	
9/11/2022	7.9	6	50	8.6	0.09	<5	6	<0.1	<0.010	<0.010	
16/11/2022	7.71	16	40	7.2	0.05	<5	3	<0.1	<0.010	<0.010	
23/11/2022	7.75	<5	50	7	0.07	<5	6	<0.1	<0.010	<0.010	
1/03/2023	7.57	8	30	8.6	0.06	<5	3	<0.1	<0.010	<0.010	
Exceedance											
lowest	7.15	<5	30	3.8	0.03	<5	<2	<0.1	<0.010	<0.010	
Average	7.6	19.3	36.0	7.8	0.1	6.0	5.8	<0.1	<0.010	<0.010	
Highest	7.9	40	50	11.7	0.37	6	9	0.2	<0.010	<0.010	
Total samples required	15										
Total no. samples collected	18										

SURFACE WATER MONITORING HPP SWALE											EPA/ DPIE Notifi
DATE	pH	TSS	Total Calcium	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	
2/05/2022	7.1	14	60	1.2	0.1	<5	2	<0.1	<0.010	<0.010	
10/05/2022	7.72	<5	40	0.8	0.05	<5	5	<0.1	<0.010	<0.010	
18/05/2022	7.62	6	60	1.2	0.07	6	3	<0.1	<0.010	<0.010	
23/05/2022	7.51	<5	40	0.8	0.07	<5	<2	<0.1	<0.010	<0.010	
31/05/2022	6.93	26	60	1.4	0.14	<5	5	<0.1	<0.010	<0.010	
7/06/2022	7.34	186	60	1.2	0.16	6	<2	<0.1	<0.010	<0.010	Y
15/06/2022	7.49	<5	40	0.8	0.03	<5	<2	<0.1	<0.010	<0.010	
20/06/2022	7.06	<5	35	0.8	0.03	8	<2	<0.1	<0.010	<0.010	
27/06/2022	7.48	5	40	0.9	0.04	<5	8	<0.1	<0.010	<0.010	
6/07/2022	7.24	16	60	1.8	0.09	<5	2	<0.1	<0.010	<0.010	
13/07/2022	7.73	6	60	1.6	0.08	<5	4	<0.1	<0.010	<0.010	
20/07/2022	7.66	9	30	0.9	0.03	<5	<2	<0.1	<0.010	<0.010	
28/07/2022	7.58	8	40	1.3	0.06	<5	2	<0.1	<0.010	<0.010	
2/08/2022	7.49	11	35	1	0.04	<5	2	<0.1	<0.010	<0.010	
9/08/2022	7.03	8	40	0.9	0.04	<5	2	<0.1	<0.010	<0.010	
15/08/2022	7.82	10	40	0.9	0.06	<5	<2	<0.1	<0.010	<0.010	
22/08/2022	7.77	7	40	0.9	0.04	<5	2	<0.1	<0.010	<0.010	
29/08/2022	7.94	6	35	0.8	0.03	9	<2	<0.1	<0.010	<0.010	
6/09/2022	7.68	<5	35	1	0.03	<5	<2	<0.1	<0.010	<0.010	
13/09/2022	7.95	9	40	1	0.04	<5	3	<0.1	<0.010	<0.010	
19/09/2022	7.81	<5	35	0.8	0.04	<5	<2	<0.1	<0.010	<0.010	
26/09/2022	7.57	<5	40	0.8	0.04	<5	4	<0.1	<0.010	<0.010	
4/10/2022	7.38	<5	40	0.7	0.04	<5	2	<0.1	<0.010	<0.010	
11/10/2022	7.81	<5	50	1	0.04	<5	3	<0.1	<0.010	<0.010	
25/10/2022	7.93	6	40	1	0.06	<5	<2	<0.1	<0.010	<0.010	
3/11/2022	7.29	8	50	1	0.05	<5	<2	<0.1	<0.010	<0.010	
9/11/2022	7.89	6	40	0.8	0.06	<5	<2	<0.1	<0.010	<0.010	
16/11/2022	7.88	8	50	1	0.06	<5	2	<0.1	<0.010	<0.010	
23/11/2022	7.86	<5	35	0.8	0.04	<5	2	<0.1	<0.010	<0.010	
30/11/2022	7.96	<5	45	0.8	0.06	<5	4	<0.1	<0.010	<0.010	
7/12/2022	7.84	10	35	1	0.04	<5	2	<0.1	<0.010	<0.010	
12/12/2022	7.85	15	35	0.8	0.05	<5	2	<0.1	<0.010	<0.010	
20/12/2022	8.05	8	35	0.8	0.1	<5	3	<0.1	<0.010	<0.010	
5/01/2023	6.97	5	35	0.9	0.05	8	3	<0.1	<0.010	<0.010	
11/01/2023	7.77	12	35	0.8	0.04	<5	2	<0.1	<0.010	<0.010	
18/01/2023	7.36	9	40	1.4	0.09	<5	32	<0.1	<0.010	<0.010	N
24/01/2023	6.9	5	35	1	0.06	<5	<2	<0.1	<0.010	<0.010	
30/01/2023	7.64	15	30	1.2	0.08	<5	2	<0.1	<0.010	<0.010	
7/02/2023	7.31	10	35	1	0.1	<5	2	<0.1	<0.010	<0.010	
14/02/2023	7.5	23	25	1.2	0.08	<5	2	<0.1	<0.010	<0.010	
21/02/2023	7.23	20	25	1.3	0.1	<5	3	<0.1	<0.010	<0.010	
1/03/2023	7.72	16	35	1.2	0.11	<5	7	<0.1	<0.010	<0.010	
6/03/2023	7.36	51	35	1.8	0.13	<5	5	<0.1	<0.010	<0.010	N
15/03/2023	7.97	6	30	1	0.06	<5	2	<0.1	<0.010	<0.010	
29/03/2023	7.42	26	35	1	0.1	<5	<2	<0.1	<0.010	<0.010	
4/04/2023	7.34	10	25	0.9	0.1	<5	11	<0.1	<0.010	<0.010	
12/04/2023	7.21	12	30	1.3	0.07	<5	<2	<0.1	<0.010	<0.010	
19/04/2023	7.44	<5	25	0.8	0.06	<5	2	<0.1	<0.010	<0.010	
24/04/2023	7.9	12	20	0.8	0.08	<5	<2	<0.1	<0.010	<0.010	
Average	7.6	16.8	39.1	1.0	0.1	7.4	4.2				
Exceedance											

Appendix D – Groundwater Monitoring Data

ACIRL Pty Ltd
ABN 66 003 451 876
Unit 3, 16 Donald Street
Lithgow, NSW, 2790, Australia
Tel: +61 2 6350 7400
Fax: +61 2 6352 3583



**ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT**

REPORT TO: Victor Bendevski
2 Lowes Mount Rd, Oberon NSW 2787

REPORT ON: Borg Panels, Oberon
Bore Monitoring Results

REPORT NO: 2400-7292-03-01

SAMPLED BY: J.Sharp & A.McManus

REPORTED BY: T. MacPhee

DATE: 6/04/2023

These reported results only relate to the items sampled and tested

Sampling and Analysis performed by: ACIRL Lithgow NSW NATA Accreditation No. 15784, Site No. 11436 in accordance with AS Standards listed on Page 6.

Adriana Hernandez
Environmental Project/Quality Officer– Lithgow NSW



Accredited for compliance with ISO 17025 - Testing
Accreditation Number 15784

right solutions.
right partner.

ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT



Purging of Bores

	Units				
REPORT NO:		2400-7292-03-01			
ALS Sydney Report No.		ES2310562			
Date of Sample		29/03/2023	29/03/2023	29/03/2023	29/03/2023
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
General Comments/ Observations		Cloudy	Cloudy	Clear	Clear
Water Depth	m	2.34	4.80	5.20	0.92
Volume Purged	Lt	3.0	3.0	3.0	3.0

ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT



	Units				
REPORT NO:		2400-7292-03-01			
ALS Sydney Report No.		ES2310562			
Date of Sample		29/03/2023	29/03/2023	29/03/2023	29/03/2023
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
General Comments/ Observations		Cloudy	Cloudy	Clear	Clear
Temperature	°C	6.8	7.8	8.2	8.1
pH	pH Units	6.8	6.6	6.7	7.3
Electrical Conductivity	µS/cm	250	1527	374	266
Total Suspended Solids	mg/L	54	55	19	21
Total Dissolved Solids	mg/L	176	985	340	201
Water Height	m	2.34	4.80	5.20	0.92
Ammonia as N by Discrete Analyser					
Ammonia as N	mg/L	0.06	4.14	0.09	0.06
Total Organic Carbon (TOC)					
Total Organic Carbon	mg/L	4	101	4	3
Formaldehyde					
Formaldehyde	mg/L	4.6	0.6	<0.1	0.4
Chemical Oxygen Demand (Spectrophotometric)					
Chemical Oxygen Demand	mg/L	26	296	28	16
Organochlorine Pesticides (OC)					
alpha-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	µg/L	<0.5	<0.5	<0.5	<0.5
beta-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
gamma-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
delta-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
Heptachlor	µg/L	<0.5	<0.5	<0.5	<0.5
Aldrin	µg/L	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	µg/L	<0.5	<0.5	<0.5	<0.5

ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT



	Units				
REPORT NO:		2400-7292-03-01			
ALS Sydney Report No.		ES2310562			
Date of Sample		29/03/2023	29/03/2023	29/03/2023	29/03/2023
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
Organochlorine Pesticides (OC) Continued					
trans-Chlordane	µg/L	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	µg/L	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	µg/L	<0.5	<0.5	<0.5	<0.5
Dieldrin	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	µg/L	<0.5	<0.5	<0.5	<0.5
Endrin	µg/L	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	µg/L	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	µg/L	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	µg/L	<2.0	<2.0	<2.0	<2.0
Endrin ketone	µg/L	<0.5	<0.5	<0.5	<0.5
Methoxychlor	µg/L	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	µg/L	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	µg/L	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	µg/L	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate					
Dibromo-DDE	%	65.0	70.9	67	68.6
Organophosphorus Pesticide Surrogate					
DEF	%	69	74.8	68.9	69.8
Total Petroleum Hydrocarbons					
C6 - C9 Fraction	µg/L	<20	<20	<20	<20
C10 - C14 Fraction	µg/L	<50	580	<50	<50
C15 - C28 Fraction	µg/L	<100	1620	<100	<100

ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT



	Units				
REPORT NO:		2400-7292-03-01			
ALS Sydney Report No.		ES2310562			
Date of Sample		29/03/2023	29/03/2023	29/03/2023	29/03/2023
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
Total Petroleum Hydrocarbons					
C29 - C36 Fraction	µg/L	<50	90	<50	<50
C10 - C36 Fraction (sum)	µg/L	<50	2290	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	µg/L	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	µg/L	<20	<20	<20	<20
>C10 - C16 Fraction	µg/L	<100	830	<100	<100
>C16 - C34 Fraction	µg/L	<100	1430	<100	<100
>C34 - C40 Fraction	µg/L	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	µg/L	<100	2260	<100	<100
>C10 - C16 Fraction minus Naphthalene	µg/L	<100	830	<100	<100
BTEXN					
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<2	<2	<2	<2
Ethylbenzene	µg/L	<2	<2	<2	<2
meta- & para-Xylene	µg/L	<2	<2	<2	<2
ortho-Xylene	µg/L	<2	<2	<2	<2
Total Xylenes	µg/L	<2	<2	<2	<2
Sum of BTEX	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<5	<5	<5	<5
TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	%	87.4	111	106	108.0
Toluene-D8	%	86.4	110	106	104
4-Bromofluorobenzene	%	86.9	108	107	104

**ALS Coal Division
BORG PANELS AIRBORNE DUST
ANALYSIS AND TESTING REPORT**



METHODS OF WATER ANALYSIS

NATA accreditation covers the following test

TEST	METHOD	Measure of Uncertainty
Electrical Conductivity uS/cm	APHA 2510 B	2.0%
pH value	APHA 4500 H	0.10 pH Units
Total Suspended Solids (mg/l)	APHA 2540 D	± 5.0%
Total Dissolved Solids (mg/l)	APHA 2540 C	± 8.8%

NATA Accreditation does not cover the performance of this test.

TEST
Temperature Field

The remaining analysis performed at ALS Environmental, 277-289 Woodpark Rd, Smithfield, NSW 2164.

REPORT NO: 2400-7292-03-01
ALS Report No: ES2310562

Low yielding bores have been purged to dryness, otherwise bores purged to constant Electrical Conductivity

In accordance with "Standard Methods for the Examination of Water & Wastewater"
APHA, AWWA, WEF and Water & Wastewater
Examination Manual (V. Dean Adams)

Samples were analysed in accordance with the following Australian Standards or equivalent:

Australian Standards	Description
AS/NZS 5667.1	Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of
ISO 5667-3	Part 3: Preservation and handling of water samples
AS/NZS 5667.11	Part 11: Guidance on sampling of ground waters

Appendix E – Annual Noise Monitoring Report

Borg Panels Facility

Noise Verification Study of Material Handling Equipment

Prepared for Borg Construction Pty Ltd

August 2022

Borg Panels Facility

Noise Verification Study of Material Handling Equipment

Borg Construction Pty Ltd

E22075 RP#1

August 2022

Version	Date	Prepared by	Approved by	Comments
0.1	24/08/2022	Will Moore	Jesse Tribby	Draft

Approved by



Jesse Tribby

Senior Acoustic Consultant

24/08/2022

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Borg Construction Pty Ltd and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of Borg Construction Pty Ltd and no responsibility will be taken for its use by other parties. Borg Construction Pty Ltd may, at its discretion, use the report to inform regulators and the public.

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1 Introduction

1.1 Background

Global Acoustics (now part of EMM) was engaged by Borg Manufacturing Pty Ltd to undertake a noise verification study for commissioning of a gas turbine and ancillary equipment at the Borg panel manufacturing facility (Borg) at Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Condition B20(B) of the Borg Development Consent SSD 7016 requires a noise validation survey within three months of commissioning of material handling equipment, with assessment against noise limits specified in Condition B16. Commissioning of the material handling equipment was completed on 1 June 2022.

Attended environmental noise monitoring described in this report was done during the day, evening, and night periods of 28 and 29 June 2022 at four monitoring locations. Borg was confirmed to be fully operating during all measurements.

1.2 Monitoring locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not the location of residences.

Table 1.1 **Attended monitoring locations**

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



Figure 1.1 Borg noise monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2

Table 1.2 Terminology and abbreviations

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 Regulator requirements and noise criteria

2.1 Development consents

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 20 May 2022. Relevant conditions of the consent, requiring commissioning testing described in this report, are reproduced in Appendix B.

2.2 Environment protection licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 2 February 2022.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1 Impact assessment criteria

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

2.5 Meteorological conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- *During rain and 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.*

2.6 Modifying factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been done in accordance with Fact Sheet C of the NPfI.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended monitoring was done during the day, evening and night period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were also measured at each monitoring location.

This survey presents noise levels gathered during attended monitoring that can be the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (eg. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed.
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (eg breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer.
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only noise.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site only L_{Aeq} was not “NM” or less than a maximum cut off value (eg “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site only L_{Aeq} when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} if Borg was the only contributing low-frequency noise source.

3.4 Attended noise monitoring equipment

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix A.

Table 3.1 **Attended noise monitoring equipment**

Model	Serial number	Calibration due date
Rion NA-28 sound level meter	01070590	09/06/2024
Pulsar 106 acoustic calibrator	74813	09/06/2024

4 Results

4.1 Total measured noise levels

Overall noise levels measured at each location during attended monitoring are provided in Table 4.1.

Table 4.1 Measured noise levels¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	28/06/2022 19:05	53	50	48	46	46	45	43
NM1	28/06/2022 22:27	55	49	47	46	45	44	42
NM1	29/06/2022 10:30	65	60	55	52	51	49	27
NM2	28/06/2022 18:35	52	49	48	46	46	45	43
NM2	28/06/2022 22:00	50	46	45	43	43	41	39
NM2	29/06/2022 10:00	60	54	50	48	47	45	43
NM3	28/06/2022 20:15	73	65	44	50	42	40	35
NM3	28/06/2022 23:32	58	52	43	42	39	36	30
NM3	29/06/2022 11:37	76	70	58	57	46	44	41
NM4	28/06/2022 19:36	44	40	36	34	33	31	29
NM4	28/06/2022 23:00	46	41	37	35	34	33	31
NM4	29/06/2022 11:06	61	54	50	48	48	45	42

1. Levels in this table are not necessarily the result of activity at Borg

4.2 Modifying factors

Measured site only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended noise monitoring results

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ from Borg with project specific noise criteria.

Table 4.2 $L_{Aeq,15\text{minute}}$ generated by Borg against criteria

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{minute}}$ dB ²	Exceedance ^{3 4}
NM1	28/06/2022 19:05	2.7	D	50	Yes	43	Nil
NM1	28/06/2022 22:27	3.9	D	45	No	45	NA
NM1	29/06/2022 10:30	5.2	D	55	No	48	NA
NM2	28/06/2022 18:35	3.0	D	50	Yes	42	Nil
NM2	28/06/2022 22:00	4.3	D	45	No	41	NA
NM2	29/06/2022 10:00	5.7	D	55	No	NM	NA
NM3	28/06/2022 20:15	3.3	E	50	No	IA	NA
NM3	28/06/2022 23:32	2.8	D	45	Yes	<25	Nil
NM3	29/06/2022 11:37	5.2	C	55	No	40	NA
NM4	28/06/2022 19:36	2.9	D	50	Yes	<30	Nil
NM4	28/06/2022 23:00	2.7	E	45	Yes	<30	Nil
NM4	29/06/2022 11:06	5.5	D	55	No	45	NA

- Noise criteria apply under all meteorological conditions except those detailed in Section 2.5.
- Site only $L_{Aeq,15\text{minute}}$ attributed to Borg including modifying factors if applicable.
- Bold results in red indicate exceedance of criterion (if applicable).
- NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter are shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3 Measured atmospheric conditions

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	28/06/2022 19:05	6	0.0	-	0
NM1	28/06/2022 22:27	6	1.1	250	8
NM1	29/06/2022 10:30	7	2.8	80	4
NM2	28/06/2022 18:35	5	1.2	270	0
NM2	28/06/2022 22:00	6	1.6	240	7
NM2	29/06/2022 10:00	6	3.1	130	3
NM3	28/06/2022 20:15	5	0.4	260	3
NM3	28/06/2022 23:32	6	1.1	250	8
NM3	29/06/2022 11:37	11	2.0	100	3
NM4	28/06/2022 19:36	4	0.6	300	0
NM4	28/06/2022 23:00	6	3.3	270	8
NM4	29/06/2022 11:06	9	2.7	80	3

1. "-" indicates calm conditions at monitoring location

Meteorological data for compliance assessment is sourced from Borg AWS.

5 Summary

Global Acoustics (now part of EMM) was engaged by Borg Manufacturing Pty Ltd to undertake a noise verification study for commissioning of a gas turbine and ancillary equipment at the Borg panel manufacturing facility (Borg) at Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Condition B20(B) of the Borg Development Consent SSD 7016 requires a noise validation survey within three months of commissioning of material handling equipment, with assessment against noise limits specified in Condition B16. Commissioning of the material handling equipment was completed on 1 June 2022.

Attended environmental noise monitoring described in this report was done during the day, evening, and night periods of 28 and 29 June 2022 at four monitoring locations. Borg was confirmed to be fully operating during all measurements.

Borg operations complied with the relevant criteria at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Appendix A

Calibration certificates

A.1 Calibration certificates



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate Calibration Number C22373

Client Details		EMM Consulting Suite 6, Level 1, 146 Hunter Street Newcastle NSW 2300	
Equipment Tested/ Model Number :		Rion NA-28	
Instrument Serial Number :		01070590	
Microphone Serial Number :		08184	
Pre-amplifier Serial Number :		52329	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 25.7°C		Ambient Temperature : 25.4°C	
Relative Humidity : 31.9%		Relative Humidity : 32.4%	
Barometric Pressure : 100.18kPa		Barometric Pressure : 100.11kPa	
Calibration Technician : Lucky Jaiswal		Secondary Check: Max Moore	
Calibration Date : 9 Jun 2022		Report Issue Date : 20 Jun 2022	
Approved Signatory :		Ken Williams	
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Acoustic Tests		Uncertainties of Measurement - Environmental Conditions	
125Hz	±0.13dB	Temperature	±0.1°C
1kHz	±0.13dB	Relative Humidity	±1.9%
8kHz	±0.14dB	Barometric Pressure	±0.014kPa
Electrical Tests	±0.13dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator
IEC 60942:2017

Calibration Certificate

Calibration Number C22374

Client Details EMM Consulting
Suite 6, Level 1, 146 Hunter Street
Newcastle NSW 2300

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 74813

Atmospheric Conditions

Ambient Temperature : 25.8°C
Relative Humidity : 33.6%
Barometric Pressure : 100.19kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 09 Jun 2022
Secondary Check: Max Moore
Report Issue Date : 20 Jun 2022

Approved Signatory : 

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.09	1000.30

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Uncertainties of Measurement -

Specific Tests	Environmental Conditions
Generated SPL	Temperature
Frequency	Relative Humidity
Distortion	Barometric Pressure

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Appendix B

Regulatory requirements

B.1 Development Consent SSD 7016 MOD 4

Operational Noise Limits

- B16 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)

Location	Day	Evening	Night
	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)
All sensitive receivers	55	50	45

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.

- B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSE 7016 MOD 3, the Applicant must undertake a Noise Verification Study for the Department to the satisfaction of the Secretary. The Study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16, and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Australia

SYDNEY

Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA

Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE

Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Suite 8.03 Level 8
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH

Suite 9.02 Level 9
109 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO

2345 Young Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER

60 W 6th Ave Suite 200
Vancouver BC V5Y 1K1
T 604 999 8297



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



emmconsulting.com.au

Appendix F – Construction Noise Monitoring Reports

Borg Manufacturing Facility

Quarter 1 - Construction noise monitoring

Prepared for Borg Manufacturing Pty Ltd

April 2023

Borg Manufacturing Facility

Quarter 1 - Construction noise monitoring

Borg Manufacturing Pty Ltd

E221226 RP1

April 2023

Version	Date	Prepared by	Reviewed by	Comments
1	17/04/2023	Will Moore	Tony Welbourne	

Approved by



Tony Welbourne

Associate Director

21 April 2023

Level 3 175 Scott Street
Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Borg Manufacturing Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Borg Manufacturing Pty Ltd's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Borg Manufacturing Pty Ltd (and subject to the terms of EMM's agreement with Borg Manufacturing Pty Ltd).

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of construction at the Borg panel manufacturing facility (Borg, the site) located near Oberon, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 30 March 2023 at four monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 **Attended noise monitoring locations**

Location descriptor	Description	Coordinates (MGA 55)	
		Easting	Northing
NM1	Oberon Caravan Park	764986	6267411
NM2	Intersection of Pine Street and Herborn Street	764474	6267289
NM3	127 Hazelgrove Road	766477	6268464
NM4	Intersection of Tasman Street and Earl Street	765602	6267117



Figure 1.1 Attended noise monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
L _{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L _{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The energy average A-weighted noise level.
L _{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L _{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Development consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 20 May 2022. Relevant sections of the consent are reproduced in Appendix B.1.

2.2 Environment protection licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 8 September 2022. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Construction noise management plan

Noise monitoring requirements are detailed in the Borg Construction Noise Management Plan (CNMP). The most recent version of the CNMP was approved in August 2022. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise impact limits based on the consent and EPL are provided in Table 2.1.

Table 2.1 Impact assessment criteria, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2 General construction noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Table 2.3 Rock/concrete breaking noise limit, dB

Location	Day $L_{Aeq,15minute}$
All sensitive receivers	75

2.5 Meteorological conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- During rain and 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.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirements. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured site noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15\text{minute}}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range, but they were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of it may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were extremely low and unlikely, in many cases, to be noticed
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment, such as breeze in foliage or continuous road traffic noise, that cannot be eliminated by monitoring at an alternate or intermediate location
- It was not feasible or reasonable to employ methods such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1\text{minute}}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1\text{minute}}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} noise levels.

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.4 Instrumentation

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 **Attended noise monitoring equipment**

Item	Serial number	Calibration due date	Relevant standard
B&K 2250 sound level meter	3008201	26/07/2023	IEC 61672-1:2002
SV36 Svantek acoustic calibrator	106879	17/03/2024	IEC 60942:2003

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1. Discussion as to the noise sources responsible for these measured levels is provided in Section 5 of this report.

Table 4.1 Total measured noise levels – Quarter 1 2023 ¹

Location	Start date and time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	30/03/2023 09:40	72	65	55	54	52	49	47
NM2	30/03/2023 10:02	61	52	46	44	43	41	38
NM3	30/03/2023 10:28	76	68	52	55	48	46	43
NM4	30/03/2023 10:52	67	61	52	51	48	46	43

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Quarter 1 2023

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north ¹	Cloud cover 1/8s
NM1	30/03/2023 09:40	15	2.0	230	6
NM2	30/03/2023 10:02	15	1.9	215	6
NM3	30/03/2023 10:28	15	2.0	235	6
NM4	30/03/2023 10:52	14	2.8	200	5

Notes: 1. “-” indicates calm conditions at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – Quarter 1 2023

Location	Start Date and Time	Wind		Stability Class	Limits apply? ¹	Limits, dB	Site levels, dB	Exceedances, dB ¹
		Speed m/s	Direction ³			L _{Aeq,15minute}	L _{Aeq,15minute} ²	L _{Aeq,15minute}
NM1	30/03/2023 09:40	5.7	254	C	No	55	44	NA
NM2	30/03/2023 10:02	5.7	248	C	No	55	NM	NA
NM3	30/03/2023 10:28	5.2	250	B	No	55	NM	NA
NM4	30/03/2023 10:52	5.3	250	B	No	55	NM	NA

Notes:

1. Noise emission limits are applicable if weather conditions were within parameters specified in Section 3.3. NA in exceedance column indicates that limits were not applicable due to weather conditions
2. Site-only L_{Aeq,15minute}, includes modifying factor penalties if applicable.
3. Degrees magnetic north, “-” indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this section. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1} , L_{A10} , L_{Aeq} , L_{A50} , and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is observed at frequencies less than 1000 Hz.

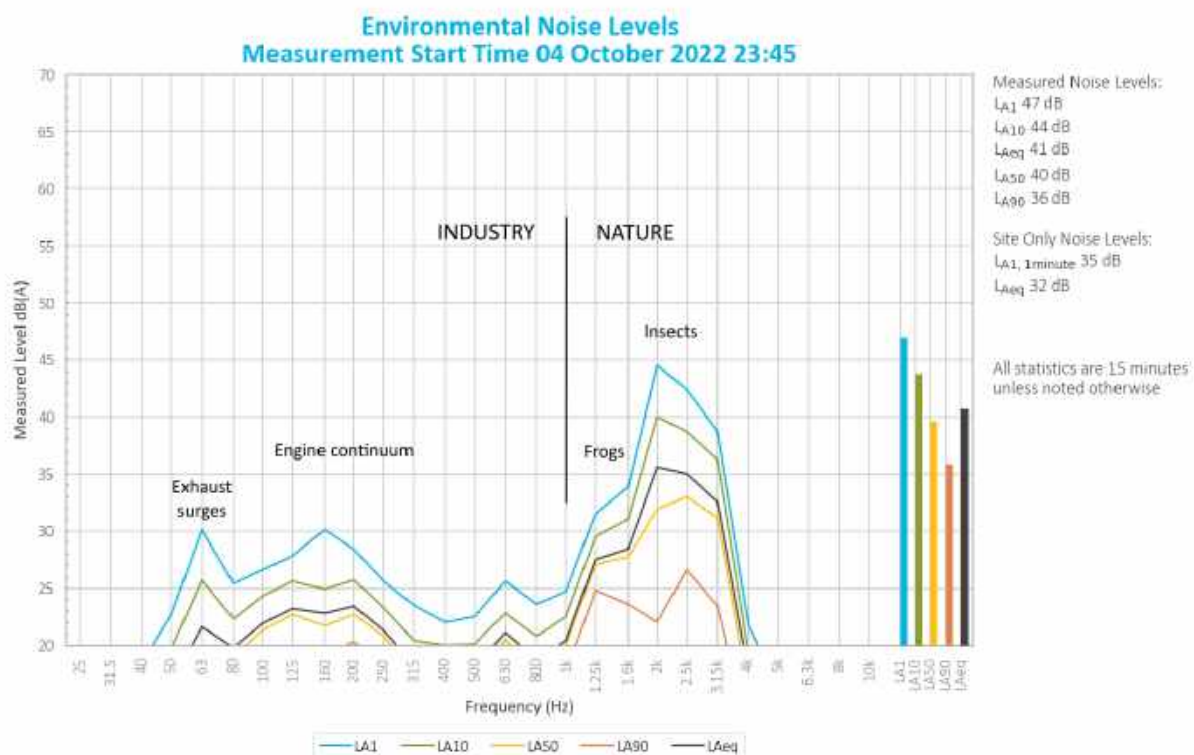


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 NM1

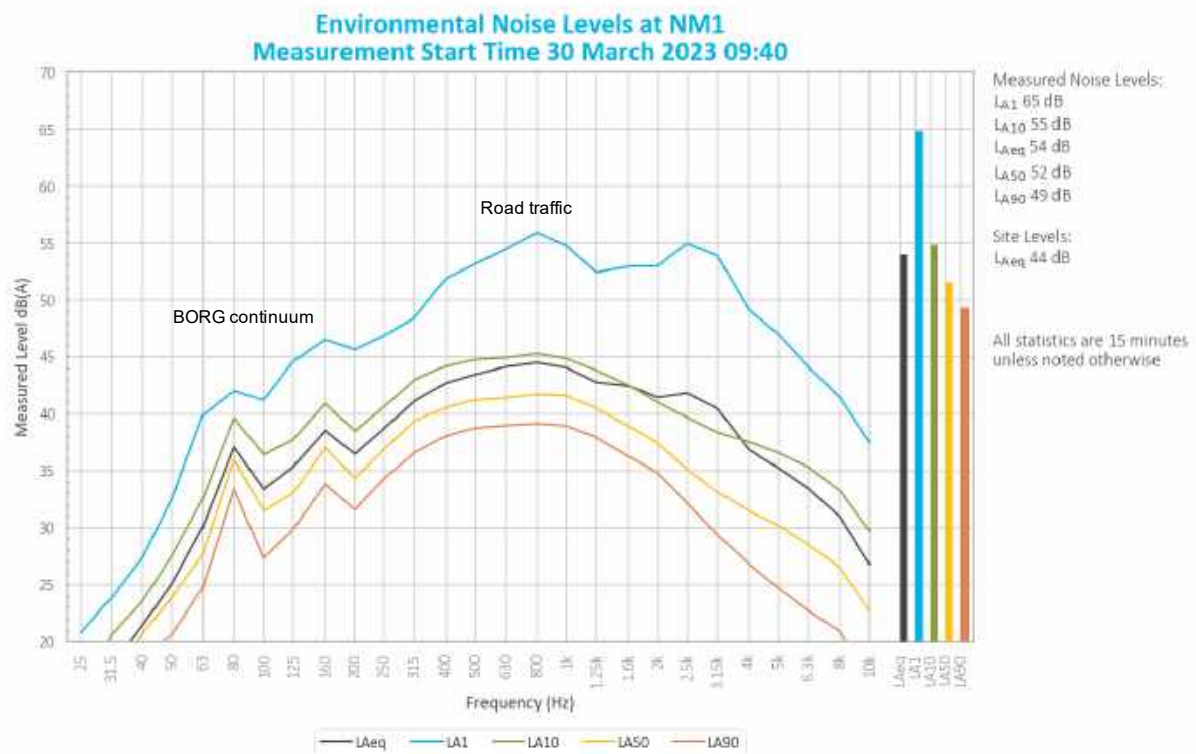


Figure 5.2 Environmental Noise Levels - NM1, Oberon caravan park

A construction continuum from Borg was audible throughout the measurement, generating a site-only L_{Aeq} of 44 dB.

Road traffic generated measured noise levels. Birds contributed to the measured L_{A1} .

5.3 NM2

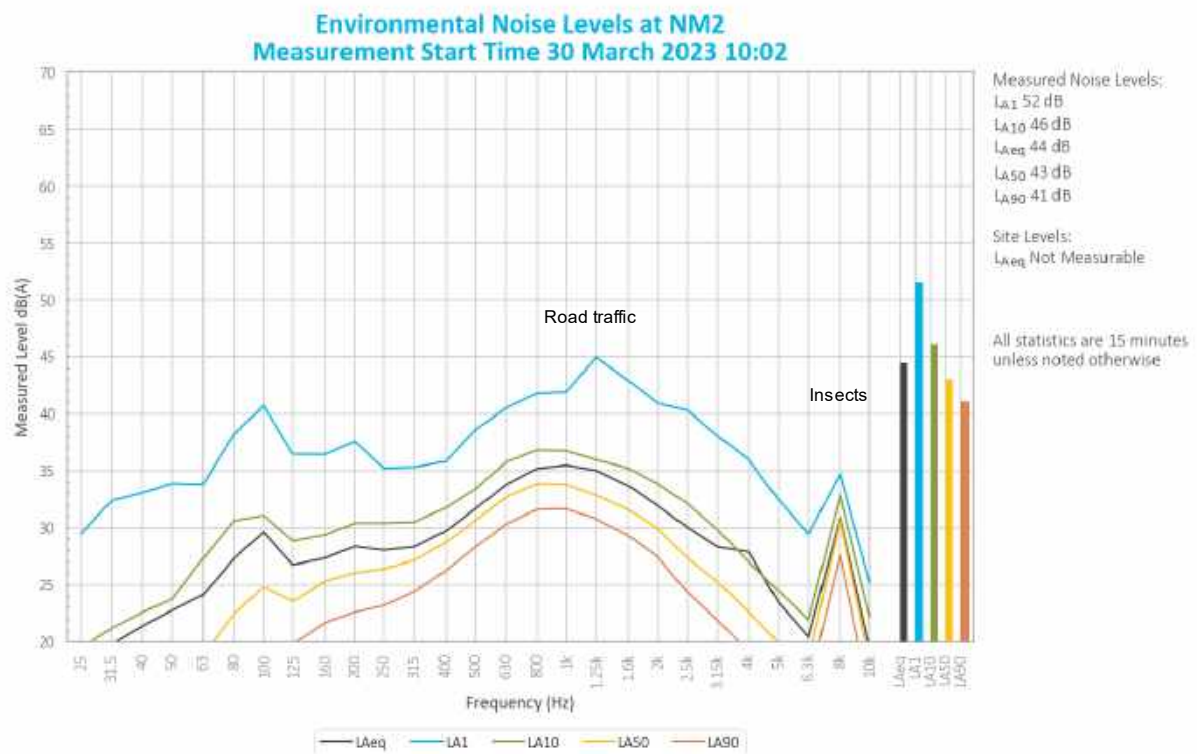


Figure 5.3 Environmental Noise Levels – NM2, Intersection of Pine Street and Herborn Street

A construction continuum from Borg was audible throughout the measurement, however it was not measurable due to the continuum of road traffic nearby.

Road traffic generated measured noise levels. Birds contributed to the measured L_{A1} and insects contributed to the measured L_{A50} and L_{A90} .

Noise from dogs was also noted.

5.4 NM3

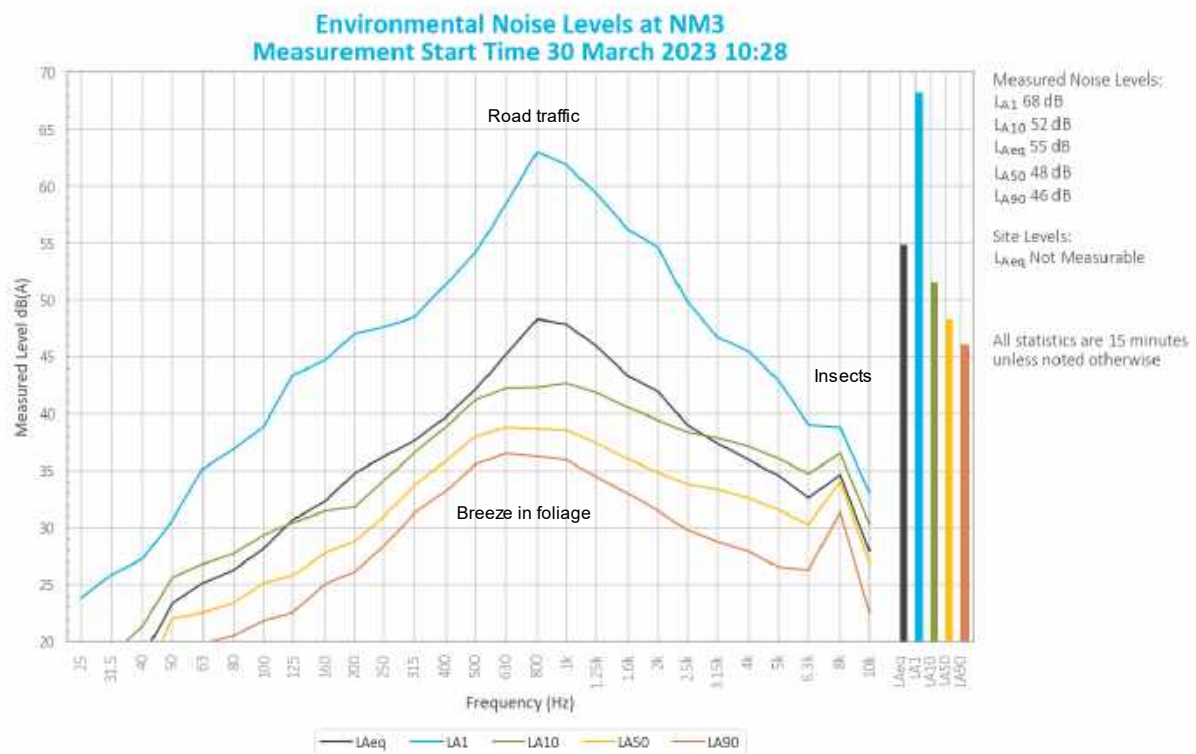


Figure 5.4 Environmental Noise Levels – NM3, 127 Hazelgrove Road

A construction continuum from Borg was audible throughout the measurement, however it was not measurable due to the continuous breeze in nearby foliage.

Road traffic generated the measured L_{A1} , L_{A10} and L_{Aeq} . Breeze in the nearby foliage generated the measured L_{A50} and L_{A90} . Dogs contributed to the L_{A1} and L_{A10} .

Noise from birds and insects was also noted.

5.5 NM4

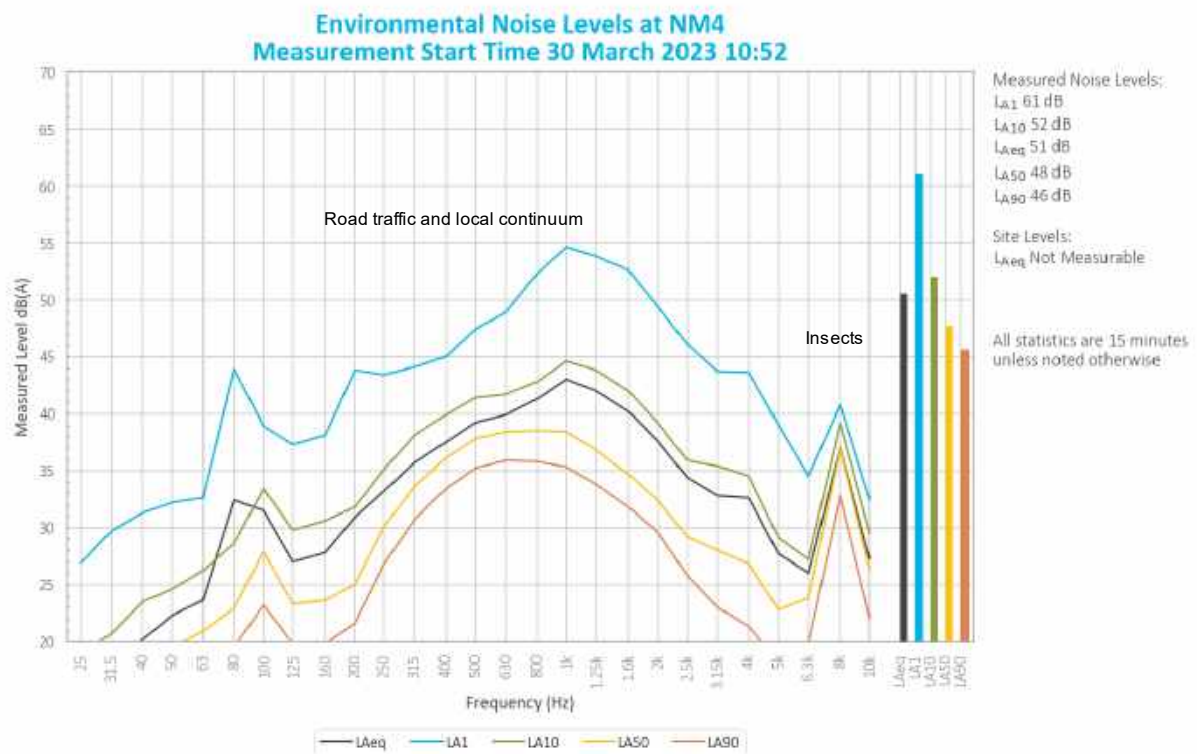


Figure 5.5 Environmental Noise Levels – NM4, Intersection of Tasman Street and Earl Street

A construction continuum from Borg was audible throughout the measurement, however it was not measurable due to the local continuum and road traffic nearby.

A local continuum and road traffic generated measured noise levels. Insects contributed to the measured L_{A50} and L_{A90} .

Noise from birds was also noted.

6 Summary

EMM was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of construction at the Borg panel manufacturing facility. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 30 March 2023 at four monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Quarter 1 survey.

Appendix A

Noise perception and examples

A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

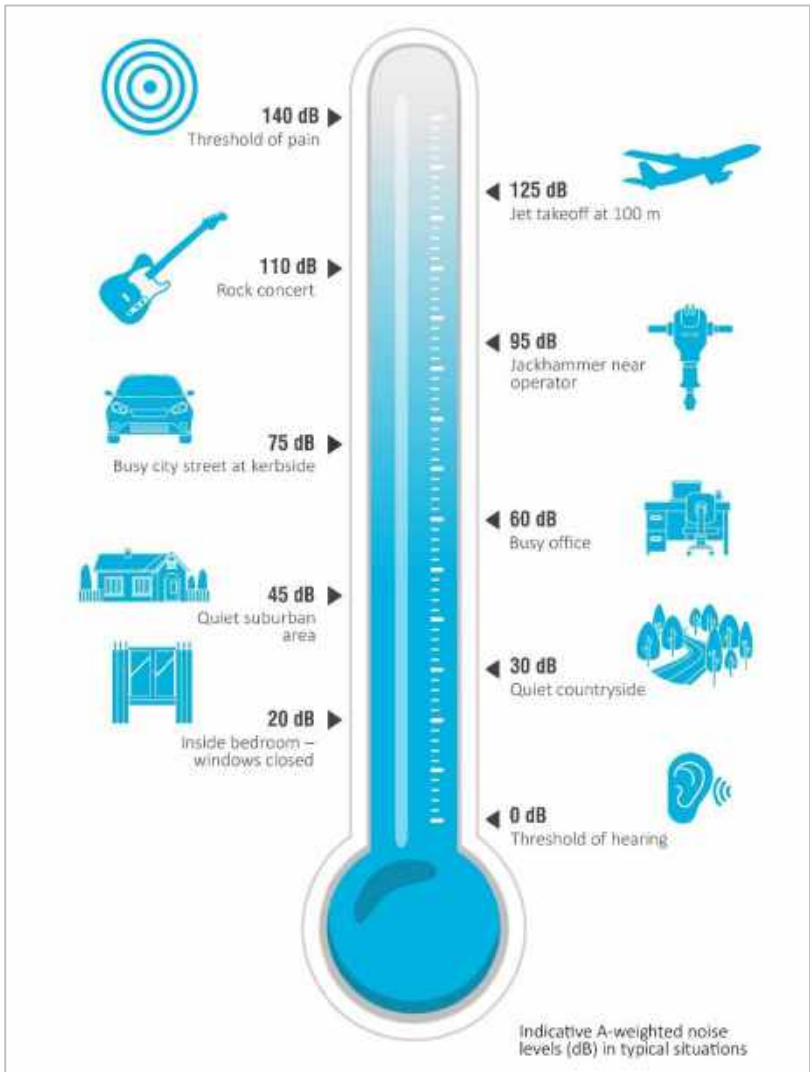


Figure A.1 Common noise levels

Appendix B

Regulator documents

B.1 Development consent SSD 7016

NOISE

Hours of Work

- B13 The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14 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.

Construction Noise Management Plan

- B15 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17 The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18 Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) include a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19 Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; ~~and~~
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL; ~~and~~
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area; ~~and~~
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD 7016 MOD 3.

Noise Verification

- B20 Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Department to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and

- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSE 7016 MOD 3, the Applicant must undertake a Noise Verification Study for the Department to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21 Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26 Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27 Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any

management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B.2 Environmental protection licence

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq(15\text{ minute})}$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq(15\text{ minute})}$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq(15\text{ minute})}$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

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.

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 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. All site environment officers 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).

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.

Appendix C

Calibration certificates

C.1 Calibration certificates

CERTIFICATE OF CALIBRATION			
CERTIFICATE NO: SLM 30138			
EQUIPMENT TESTED: Sound Level Meter			
Manufacturer:	B & K	Serial No:	3008201
Type No:	2250	Serial No:	2888134
Mic. Type:	B&K 4189	Serial No:	16037
Pre-Amp. Type:	ZC0032		
Filter Type:	1/3 Octave	Test No:	FILT 6597
Owner: EMM Consulting Ground Floor, Suite 01, 20 Chandos St St Leonards NSW 2065			
Tests IEC 61672-3:2013,			
Performed: IEC 1260:1995, & AS/NZS 4476:1997			
Comments: All Test passed for Class 1. (See overleaf for details)			
CONDITIONS OF TEST:			
Ambient Pressure	1001 hPa ± 1 hPa	Date of Receipt :	23/07/2021
Temperature	22 $^{\circ}\text{C} \pm 1^{\circ}\text{C}$	Date of Calibration :	26/07/2021
Relative Humidity	36 % $\pm 5\%$	Date of Issue :	26/07/2021
Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)			
CHECKED BY:		AUTHORISED SIGNATURE:	 Hua See
Accredited for compliance with ISO/IEC 17025 - Calibration			
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.			
This report applies only to the item identified in the report and may not be reproduced in part.			
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.			
 WORLD RECOGNISED ACCREDITATION		 Acu-Vib Electronics CALIBRATIONS SALES RENTALS REPAIRS	
Accredited Lab No. 9382 Acoustic and Vibration Measurements		Head Office & Calibration Laboratory Unit 14, 22 Hudson Rvrt, Castle Hill NSW 2154 (02) 9650 8112 www.acu-vib.com.au	
Page 1 of 2 Calibration Certificate AVCERT10.16 Rev 2.0 14/04/2021			

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C32071

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek

Type No: SV-36

Serial No: 106879

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: Measured Output Pressure level, Frequency & Distortion

Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.05 dB	999.99 Hz	0.50 %
Level2:	NA	N	114.03 dB	999.98 Hz	0.50 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %

Uncertainty (at 95% c.i.) k=2

CONDITION OF TEST:

Ambient Pressure 1001 hPa ±1 hPa

Temperature 22 °C ±1° C

Relative Humidity 52 % ±5%

Date of Receipt : 17/03/2022

Date of Calibration : 17/03/2022

Date of Issue : 17/03/2022

Acu-Vib Test AVP02 (Calibrators)

Procedure: Test Method: AS IEC 60942 - 2017

CHECKED BY:

AUTHORISED
SIGNATURE:

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.



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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave, Castle Hill NSW 2154
(02) 9638 9133
www.acu-vib.com.au

Page 1 of 2 Calibration Certificate
AVCERT02.1 Rev 2.0 14.04.2021

Australia

SYDNEY

Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA

Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE

Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Suite 8.03 Level 8
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH

Suite 9.02 Level 9
109 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO

2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER

60 W 6th Ave
Vancouver BC V5Y 1K1
T 604 999 8297



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



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Borg Panels Facility

Environmental Noise Monitoring

Q2 2022

Prepared for Borg Manufacturing Pty Ltd

Borg Panels Facility

Environmental Noise Monitoring

Q2 2022

Borg Manufacturing Pty Ltd

22075 RP# 1

Version	Date	Prepared by	Approved by	Comments
1	04/07/2022	Will Moore	Tony Welbourne	

Approved by



Tony Welbourne

Associate Director

5 July 2022

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Borg Manufacturing Pty Ltd and has relied upon the information collected at the time

and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of Borg Manufacturing Pty Ltd and no responsibility will be taken for its use by other parties. Borg Manufacturing Pty Ltd may, at its discretion, use the report to inform regulators and the public.

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1 Introduction

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day, evening and night period of 28/29 June 2022 at four monitoring locations around Borg.

1.2 Attended noise monitoring locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not the location of residences.

Table 1.1 **Attended monitoring locations**

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



Figure 1.1 Borg noise monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 Regulator requirements and noise criteria

2.1 Development consents

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 20 May 2022. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment protection licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 2 February 2022. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1 Impact assessment criteria

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3

Table 2.2 General construction noise limits

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Table 2.3 Rock/Concrete breaking noise limits

Location	Day $L_{Aeq,15minute}$
All sensitive receivers	75

2.5 Meteorological conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- *During rain and 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.*

2.6 Modifying factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been done in accordance with Fact Sheet C of the NPfI.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended monitoring was done during the day, evening and night period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also done at each monitoring location.

This survey presents noise levels gathered during attended monitoring that can be the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (eg. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed.
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (eg breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer.
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only noise.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site only L_{Aeq} was not “NM” or less than a maximum cut off value (eg “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site only L_{Aeq} when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} if Borg was the only contributing low-frequency noise source.

3.4 Attended noise monitoring equipment

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix B.

Table 3.1 **Attended noise monitoring equipment**

Model	Serial number	Calibration due date
Rion NA-28 sound level meter	01070590	09/06/2024
Pulsar 106 acoustic calibrator	74813	09/06/2024

4 Results

4.1 Total measured noise levels

Overall noise levels measured at each location during attended monitoring are provided in Table 4.1.

Table 4.1 Measured noise levels - Q2 2022

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
Day								
NM1	29/06/2022 10:30	65	60	55	52	51	49	27
NM2	29/06/2022 10:00	60	54	50	48	47	45	43
NM3	29/06/2022 11:37	76	70	58	57	46	44	41
NM4	29/06/2022 11:06	61	54	50	48	48	45	42
Evening								
NM1	28/06/2022 19:05	53	50	48	46	46	45	43
NM2	28/06/2022 18:35	52	49	48	46	46	45	43
NM3	28/06/2022 20:15	73	65	44	50	42	40	35
NM4	28/06/2022 19:36	44	40	36	34	33	31	29
Night								
NM1	28/06/2022 22:27	55	49	47	46	45	44	42
NM2	28/06/2022 22:00	50	46	45	43	43	41	39
NM3	28/06/2022 23:32	58	52	43	42	39	36	30
NM4	28/06/2022 23:00	46	41	37	35	34	33	31

Notes: 1. Levels in this table are not necessarily the result of activity at Borg

4.2 Modifying factors

Measured site only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended noise monitoring results

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ from Borg with project specific noise criteria.

Table 4.2 $L_{Aeq,15\text{minute}}$ generated by Borg against criteria - Q2 2022

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{minute}}$ dB ²	Exceedance ^{3 4}
Day							
NM1	29/06/2022 10:30	5.2	D	55	No	48	NA
NM2	29/06/2022 10:00	5.7	D	55	No	NM	NA
NM3	29/06/2022 11:37	5.2	C	55	No	40	NA
NM4	29/06/2022 11:06	5.5	D	55	No	45	NA
Evening							
NM1	28/06/2022 19:05	2.7	D	50	Yes	43	Nil
NM2	28/06/2022 18:35	3.0	D	50	Yes	42	Nil
NM3	28/06/2022 20:15	3.3	E	50	No	IA	NA
NM4	28/06/2022 19:36	2.9	D	50	Yes	<30	Nil
Night							
NM1	28/06/2022 22:27	3.9	D	45	No	45	NA
NM2	28/06/2022 22:00	4.3	D	45	No	41	NA
NM3	28/06/2022 23:32	2.8	D	45	Yes	<25	Nil
NM4	28/06/2022 23:00	2.7	E	45	Yes	<30	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 0;
2. Site only $L_{Aeq,15\text{minute}}$ attributed to Borg including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter are shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3 Measured atmospheric conditions – Q2 2022

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction °Magnetic North ¹	Cloud Cover 1/8s
Day					
NM1	29/06/2022 10:30	7	2.8	80	4
NM2	29/06/2022 10:00	6	3.1	130	3
NM3	29/06/2022 11:37	11	2.0	100	3
NM4	29/06/2022 11:06	9	2.7	80	3
Evening					
NM1	28/06/2022 19:05	6	0.0	-	0
NM2	28/06/2022 18:35	5	1.2	270	0
NM3	28/06/2022 20:15	5	0.4	260	3
NM4	28/06/2022 19:36	4	0.6	300	0
Night					
NM1	28/06/2022 22:27	6	1.1	250	8
NM2	28/06/2022 22:00	6	1.6	240	7
NM3	28/06/2022 23:32	6	1.1	250	8
NM4	28/06/2022 23:00	6	3.3	270	8

Notes: 1. “-” indicates calm conditions at monitoring location

Meteorological data for compliance assessment is sourced from Borg AWS

5 Summary

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey is to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day, evening, and night periods of 28/29 June 2022 at four monitoring locations around Borg.

Borg operations complied with all relevant criteria during the Q2 2022 survey, at all monitoring locations.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Appendix A

Regulator documents

A.1 Development consent SSD 7016

NOISE

Hours of Work

- B13 The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14 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.

Construction Noise Management Plan

- B15 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17 The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18 Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) include a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19 Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; ~~and~~
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL; ~~and~~
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area; ~~and~~
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD 7016 MOD 3.

Noise Verification

- B20 Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Department to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and

- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSE 7016 MOD 3, the Applicant must undertake a Noise Verification Study for the Department to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21 Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26 Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27 Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any

management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

A.2 Environmental Protection Licence

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq(15\text{ minute})}$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq(15\text{ minute})}$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq(15\text{ minute})}$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 Operations Noise Management Plan

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A30} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

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.

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 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. All site environment officers 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).

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.

Appendix B

Calibration certificates

B.1 Calibration Certificates



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate Calibration Number C22373

Client Details		EMM Consulting Suite 6, Level 1, 146 Hunter Street Newcastle NSW 2300	
Equipment Tested/ Model Number :		Rion NA-28	
Instrument Serial Number :		01070590	
Microphone Serial Number :		08184	
Pre-amplifier Serial Number :		52329	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 25.7°C		Ambient Temperature : 25.4°C	
Relative Humidity : 31.9%		Relative Humidity : 32.4%	
Barometric Pressure : 100.18kPa		Barometric Pressure : 100.11kPa	
Calibration Technician : Lucky Jaiswal		Secondary Check: Max Moore	
Calibration Date : 9 Jun 2022		Report Issue Date : 20 Jun 2022	
Approved Signatory :		Ken Williams	
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.13dB	Temperature	±0.1°C
1kHz	±0.13dB	Relative Humidity	±1.9%
8kHz	±0.14dB	Barometric Pressure	±0.014kPa
Electrical Tests	±0.13dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C22374

Client Details EMM Consulting
Suite 6, Level 1, 146 Hunter Street
Newcastle NSW 2300

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 74813

Atmospheric Conditions

Ambient Temperature : 25.8°C
Relative Humidity : 33.6%
Barometric Pressure : 100.19kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 09 Jun 2022
Secondary Check: Max Moore
Report Issue Date : 20 Jun 2022

Approved Signatory :  **Ken Williams**

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.09	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Uncertainties of Measurement -			
Specific Tests	Environmental Conditions		
	Generated SPL	±0.10dB	Temperature ±0.1°C
	Frequency	±0.13%	Relative Humidity ±1.9%
	Distortion	±0.20%	Barometric Pressure ±0.014kPa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1

Australia

SYDNEY

Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA

Level 2 Suite 2.04
15 London Circuit
Canberra City ACT 2601

ADELAIDE

Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Suite 8.03 Level 8 454 Collins
Street
Melbourne VIC 3000
T 03 9993 1900

PERTH

Suite 9.02 Level 9 109 St
Georges Terrace
Perth WA 6000

Canada

TORONTO

2345 Young Street Suite 300
Toronto ON M4P 2E5

VANCOUVER

60 W 6th Ave Suite 200
Vancouver BC V5Y 1K1



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



emmconsulting.com.au

Borg Manufacturing Facility

Quarter 3 - Construction Noise Monitoring

Prepared for Borg Manufacturing Pty Ltd

October 2022

Borg Manufacturing Facility

Quarter 3 - Construction Noise Monitoring

Borg Manufacturing Pty Ltd

E220481 RP#1

October 2022

Version	Date	Prepared by	Approved by	Comments
1	11/10/2022	Harry Flick	Tony Welbourne	Final

Approved by



Tony Welbourne

Associate Director

11 October 2022

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Borg Manufacturing Pty Ltd and has relied upon the information collected at the time

and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of Borg Manufacturing Pty Ltd and no responsibility will be taken for its use by other parties. Borg Manufacturing Pty Ltd may, at its discretion, use the report to inform regulators and the public.

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1 Introduction

1.1 Background

Global Acoustics (now part of EMM) was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 20 September at four monitoring locations around Borg.

1.2 Attended noise monitoring locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not the location of residences.

Table 1.1 **Attended monitoring locations**

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



Figure 1.1 Borg noise monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 Regulator requirements and noise criteria

2.1 Development consents

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 20 May 2022. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment protection licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 8 September 2022. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Construction Noise Management Plan

Noise monitoring requirements are detailed in the Borg Construction Noise Management Plan (CNMP). The most recent version of the CNMP was approved in May 2021. Relevant sections of the CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1 Impact assessment criteria

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3

Table 2.2 General construction noise limits

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Table 2.3 Rock/Concrete breaking noise limits

Location	Day $L_{Aeq,15minute}$
All sensitive receivers	75

2.5 Meteorological conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- *During rain and 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.*

2.6 Modifying factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been done in accordance with Fact Sheet C of the NPfI.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended monitoring was done during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition observations were also made at each monitoring location.

This report presents noise levels gathered during attended monitoring that can be the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed.
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (eg breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer.
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of site only noise.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site only L_{Aeq} was not “NM” or less than a maximum cut off value (e.g. “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site only L_{Aeq} when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} if Borg was the only contributing low-frequency noise source.

3.4 Attended noise monitoring equipment

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix B.

Table 3.1 Attended noise monitoring equipment

Model	Serial number	Calibration due date
Brüel & Kjær 2250 Type 1 sound analyser	2759405	02/02/2023
Svantek SV-36 calibrator	86311	20/10/2022

4 Results

4.1 Total measured noise levels

Overall noise levels measured at each location during attended monitoring are provided in Table 4.1.

Table 4.1 Measured noise levels - Q3 2022

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	20/09/2022 10:45	62	55	52	50	49	47	43
NM2	20/09/2022 11:15	67	54	50	48	47	45	42
NM3	20/09/2022 12:16	77	72	63	61	57	53	47
NM4	20/09/2022 11:41	64	59	50	47	42	39	36

Notes: 1. Levels in this table are not necessarily the result of activity at Borg

4.2 Modifying factors

Measured site only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended noise monitoring results

Table 4.2 compares measured L_{Aeq,15minute} from Borg with project specific noise criteria.

Table 4.2 L_{Aeq,15minute} generated by Borg against criteria – Q3 2022

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg L _{Aeq,15minute} dB ²	Exceedance ^{3 4}
NM1	20/09/2022 10:45	2.5	B	55	Yes	48	Nil
NM2	20/09/2022 11:15	3.5	B	55	No	46	NA
NM3	20/09/2022 12:16	2.9	A	55	Yes	NM	Nil
NM4	20/09/2022 11:41	3.2	A	55	No	41	NA

Notes: 1. Noise criteria apply under all meteorological conditions except those detailed in Section 0;
 2. Site only L_{Aeq,15minute} attributed to Borg including modifying factors if applicable;
 3. Bold results in red indicate exceedance of criterion (if applicable); and
 4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric conditions

Atmospheric condition observations made by the operator during each measurement are shown in Table 4.3. Wind speed, direction and cloud cover were observed by the operator and temperature was taken from Borg AWS. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3 Observed atmospheric conditions – Q3 2022

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction °Magnetic North ¹	Cloud Cover 1/8s
NM1	20/09/2022 10:45	12	Light	360	0
NM2	20/09/2022 11:15	14	Calm	-	0
NM3	20/09/2022 12:16	15	Light	20	0
NM4	20/09/2022 11:41	14	Light	20	0

Notes: 1. “-” indicates calm conditions at monitoring location

Meteorological data for compliance assessment is sourced from Borg AWS

5 Summary

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey is to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 20 September 2022 at four monitoring locations around Borg.

Borg operations complied with all relevant criteria during the Q3 2022 survey, at all monitoring locations.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Appendix A

Regulator documents

A.1 Development consent SSD 7016

NOISE

Hours of Work

- B13 The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14 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.

Construction Noise Management Plan

- B15 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17 The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18 Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) include a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19 Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; ~~and~~
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL; ~~and~~
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area; ~~and~~
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD 7016 MOD 3.

Noise Verification

- B20 Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Department to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and

- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSE 7016 MOD 3, the Applicant must undertake a Noise Verification Study for the Department to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21 Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26 Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27 Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any

management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

A.2 Environmental Protection Licence

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq(15\text{ minute})}$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq(15\text{ minute})}$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq(15\text{ minute})}$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

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.

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 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. All site environment officers 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).

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:

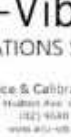
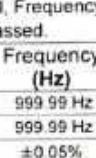
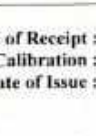
- Wind speeds greater than 3 metres/second at 10 metres above ground level; or
- Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
- Stability category G temperature inversion conditions.

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

Appendix B

Calibration certificates

B.1 Calibration Certificates

CERTIFICATE OF CALIBRATION					
CERTIFICATE NO: C30881					
EQUIPMENT TESTED : Sound Level Calibrator					
Manufacturer:		Svantek			
Type No:		SV-36		Serial No: 86311	
Owner:		EMM Consulting Suite 01, 20 Chandos St St Leonards NSW 2065			
Tests Performed:		Measured Output Pressure level, Frequency & Distortion			
Comments:		See Details overleaf. All Test Passed.			
Parameter	Pre-Adj	Adj Y/N	Output (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.05 dB	999.99 Hz	1.00 %
Level2:	NA	N	114.05 dB	999.99 Hz	1.00 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.i.) k=2					
CONDITION OF TEST:					
Ambient Pressure	1002	hPa ±1 hPa	Date of Receipt : 20/10/2021		
Temperature	23	°C ±1° C	Date of Calibration : 20/10/2021		
Relative Humidity	41	% ±5%	Date of Issue : 20/10/2021		
Acu-Vib Test		AVP02 (Calibrators)			
Procedure:		Test Method: AS IEC 60942 - 2017			
CHECKED BY:			AUTHORISED SIGNATURE: 		
Accredited for compliance with ISO/IEC 17025 - Calibration					
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.					
This report applies only to the item identified in the report and may not be reproduced in part.					
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.					
					
WORLD RECOGNISED ACCREDITATION		CALIBRATIONS SALES RENTALS REPAIRS			
Accredited Lab No. 9262		Head Office & Calibration Laboratory			
Acoustic and Vibration Measurements		Unit 14, 23 Hutton Ave. Castle Hill NSW 2154			
		(02) 9440 9111			
		www.acu-vib.com.au			
Page 1 of 2 Calibration Certificate					
AVCERT02.1 Rev 2.0 - 14/04/2021					

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM31670

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K	Serial No:	2759405
Type No:	2250	Serial No:	2983733
Mic. Type:	4189	Serial No:	22666
Pre-Amp. Type:	ZC0032		
Filter Type:	1/3 Octave	Test No:	F031671

Owner: EMM Consulting
Level 3, 175 Scott Street
Newcastle, NSW 2300

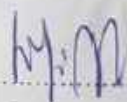
Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	992 hPa ± 1 hPa	Date of Receipt:	02/02/2022
Temperature	26 $^{\circ}\text{C} \pm 1^{\circ}\text{C}$	Date of Calibration:	02/02/2022
Relative Humidity	48 % $\pm 5\%$	Date of Issue:	03/02/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY:  AUTHORIZED SIGNATURE: 

Jack Kiele

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

Page 1 of 2 Calibration Certificate
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Australia

SYDNEY

Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA

Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE

Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Suite 8.03 Level 8
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH

Suite 9.02 Level 9
109 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO

2345 Young Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER

60 W 6th Ave Suite 200
Vancouver BC V5Y 1K1
T 604 999 8297



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



emmconsulting.com.au

Borg Manufacturing Facility

Quarter 4 - Construction Noise Monitoring

Prepared for Borg Manufacturing Pty Ltd

November 2022

Borg Manufacturing Facility

Quarter 4 - Construction Noise Monitoring

Borg Manufacturing Pty Ltd

E220481 RP#1

November 2022

Version	Date	Prepared by	Approved by	Comments
1.0	14/11/2022	Will Moore	Jesse Tribby	Final

Approved by



Jesse Tribby

Senior Acoustic Consultant

15 November 2022

Level 3 175 Scott Street

Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Borg Manufacturing Pty Ltd and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of Borg Manufacturing Pty Ltd and no responsibility will be taken for its use by other parties. Borg Manufacturing Pty Ltd may, at its discretion, use the report to inform regulators and the public.

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1 Introduction

1.1 Background

Global Acoustics (now part of EMM) was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 10 November 2022 at four monitoring locations around Borg.

1.2 Attended noise monitoring locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not the location of residences.

Table 1.1 **Attended monitoring locations**

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

Figure 1.1 Borg noise monitoring locations



1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 Regulator requirements and noise criteria

2.1 Development consents

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 20 May 2022. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment protection licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 8 September 2022. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Construction Noise Management Plan

Noise monitoring requirements are detailed in the Borg Construction Noise Management Plan (CNMP). The most recent version of the CNMP was approved in August 2022. Relevant sections of the CNMP are reproduced in Appendix A.

2.4 Noise criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1 Impact assessment criteria

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2 General construction noise limits

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$
All sensitive receivers	55	50	45

Table 2.3 Rock/Concrete breaking noise limits

Location	Day $L_{Aeq,15minute}$
All sensitive receivers	75

2.5 Meteorological conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- During rain and 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.

2.6 Modifying factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been done in accordance with Fact Sheet C of the NPfI.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended monitoring was done during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition observations were also made at each monitoring location.

This report presents noise levels gathered during attended monitoring that can be the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfl. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking, but estimated to be significant in relation to a relevant criterion, we would employ methods (eg measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- site noise levels were masked by another relatively loud noise source that is characteristic of the environment (eg breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- it was not feasible, nor reasonable, to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of site only noise.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site only L_{Aeq} was not “NM” or less than a maximum cut off value (eg “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site only L_{Aeq} when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} if Borg was the only contributing low-frequency noise source.

3.4 Attended noise monitoring equipment

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix B.

Table 3.1 **Attended noise monitoring equipment**

Model	Serial number	Calibration due date
Rion NA-28 sound level meter	00370304	31/10/2024
Pulsar 105 acoustic calibrator	81334	29/11/2023

4 Results

4.1 Total measured noise levels

Overall noise levels measured at each location during attended monitoring are provided in Table 4.1.

Table 4.1 Measured noise levels – Quarter 4 2022

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	10/11/2022 13:10	61	54	51	48	48	45	43
NM2	10/11/2022 13:33	63	57	49	47	45	42	40
NM3	10/11/2022 12:41	80	75	57	60	37	34	31
NM4	10/11/2022 13:56	74	60	52	50	45	38	33

Notes: 1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended noise monitoring results

Table 4.2 compares measured L_{Aeq,15minute} from Borg with project specific noise criteria.

Table 4.2 L_{Aeq,15minute} generated by Borg against criteria – Quarter 4 2022

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg L _{Aeq,15minute} dB ²	Exceedance ^{3 4}
NM1	10/11/2022 13:10	2.6	A	55	Yes	46	Nil
NM2	10/11/2022 13:33	2.7	A	55	Yes	1A	Nil
NM3	10/11/2022 12:41	1.6	A	55	Yes	<25	Nil
NM4	10/11/2022 13:56	1.3	A	55	Yes	<25	Nil

Notes: 1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5.
 2. Site only L_{Aeq,15minute} attributed to Borg including modifying factors if applicable.
 3. Bold results in red indicate exceedance of criterion (if applicable).
 4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric conditions

Atmospheric condition observations made by the operator during each measurement are shown in Table 4.3. Wind speed, direction and cloud cover were observed by the operator and temperature was taken from Borg AWS. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3 Observed atmospheric conditions – Quarter 4 2022

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	10/11/2022 13:10	19	1.1	220	2
NM2	10/11/2022 13:33	27	0.7	230	2
NM3	10/11/2022 12:41	30	1.3	220	2
NM4	10/11/2022 13:56	22	2.2	240	2

Notes: 1. “-” indicates calm conditions at monitoring location

Meteorological data for compliance assessment is sourced from Borg AWS.

5 Summary

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey is to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 10 November 2022 at four monitoring locations around Borg.

Borg operations complied with relevant criteria during the Quarter 4 2022 survey at all monitoring locations.

Appendix A

Regulator documents

A.1 Development consent SSD 7016

NOISE

Hours of Work

- B13 The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14 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.

Construction Noise Management Plan

- B15 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16 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)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17 The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18 Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) include a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19 Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; ~~and~~
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL; ~~and~~
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area; ~~and~~
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD 7016 MOD 3.

Noise Verification

- B20 Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Department to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and

- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSE 7016 MOD 3, the Applicant must undertake a Noise Verification Study for the Department to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21 Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26 Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27 Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any

management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

A.2 Environmental Protection Licence

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq(15 \text{ minute})}$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq(15 \text{ minute})}$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq(15 \text{ minute})}$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

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.

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 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. All site environment officers 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).

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.

Appendix B

Calibration certificates

B.1 Calibration certificates



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Octave Band Filter IEC 61260-3:2016 Calibration Certificate

Calibration Number C22699A

Client Details: EMM Consulting
Level 3/175 Scott Street
Newcastle NSW 2300

Filter Model Number : Rion NA-28
Filter Serial Number : N/A
Instrument Serial Number : 00370304
Microphone Serial Number : 10421
Pre-amplifier Serial Number : 60313
Firmware Version : 2.0

Atmospheric Conditions
Ambient Temperature : 23.8°C
Relative Humidity : 47.8%
Barometric Pressure : 98.77kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 31 Oct 2022
Secondary Check: Dhanush Bonu
Report Issue Date : 31 Oct 2022

Approved Signatory:

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
Midband Relative Attenuation (Clause 10)	Pass	Operating Range Lower Limit (Clause 12)	Pass
Linearity, Range and Overload (Clause 11)	Pass	Relative Attenuation (Clause 13)	Pass

The filter submitted for testing successfully completed the periodic tests of IEC 61260-3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the filter to the full specifications of IEC 61260-1:2014 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of filter fully conformed to the class 1 specifications in IEC 61260-1:2014 and (b) because the periodic tests of IEC 61260-3 cover only a limited subset of the specifications in IEC 61260-1:2014.

Uncertainties of Measurement -			
Electrical Tests		Environmental Conditions	
$-5dB < \Delta A(f) \leq 40dB$	$\pm 0.12dB$	Temperature	$\pm 0.1^{\circ}C$
$40dB < \Delta A(f) \leq 120dB$	$\pm 0.2dB$	Relative Humidity	$\pm 1.9\%$
		Barometric Pressure	$\pm 0.014kPa$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C21832

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 81334

Atmospheric Conditions

Ambient Temperature : 25°C
Relative Humidity : 49.6%
Barometric Pressure : 100.8kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 29 Nov 2021

Secondary Check: Harrison Kim
Report Issue Date : 2 Dec 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.19	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	$\pm 0.1 \text{ dB}$	Temperature	$\pm 0.1^\circ\text{C}$
Frequency	$\pm 0.07\%$	Relative Humidity	$\pm 1.9\%$
Distortion	$\pm 0.50\%$	Barometric Pressure	$\pm 0.014 \text{ kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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Page 1 of 1



Australia

SYDNEY

Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE

Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE

Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA

Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE

Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE

Suite 8.03 Level 8
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH

Suite 9.02 Level 9
109 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO

2345 Young Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER

60 W 6th Ave Suite 200
Vancouver BC V5Y 1K1
T 604 999 8297



[linkedin.com/company/emm-consulting-pty-limited](https://www.linkedin.com/company/emm-consulting-pty-limited)



emmconsulting.com.au

Appendix G – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
125	Fibre/Dust	22/06/2022	Carrington Avenue, Oberon	Resident directly contacted EPA about wood fibres present on a vehicle in Carrington Avenue, Oberon around 20/6/22. EPA notified Borg Oberon on 7/7/22 via email	Reviewed onsite weather data for the estimated timeframe. wind was blowing to the west. Aerial maps indicated the likely location of complaint was south-southwest. Road was driven and no fibre or dust was identified.
126	Noise	12/07/2022	Dart Street, Oberon	"Sounds like a hot air balloon, loud metal banging like a drum being thrown into a pit"	Called relevant department managers to ensure site is doing all they can (roller doors etc closed) insufficient evidence of breach. Recent external noise monitoring found no breaches for daytime, evening and night period monitoring. Also drove around the site and location of complaint.
127	Material fallout and smoke	30/07/2022	Oberon Football Fields	"Stacks creating cloud football field, Dropping sediment on top of the field"	Contacted PB shift leader who immediately stopped works at the flaker building. Contacted Facility Manager and Environmental manager and walked across the fields, Lowes Mount Road up to Albion Street. No evidence of foreign materials were identified during investigation. Second team leader did a follow up inspection at approximately 3:30pm where he walked Lowes Mount Road, the football fields and Albion Street and found no evidence of foreign materials.
128	Material fallout	30/07/2022	Oberon Football Fields	"Wood particle emissions coming from site to the football fields."	Shift leader contacted Facility Manager and Environmental manager and walked across the fields, Lowes Mount Road up to Albion Street. No evidence of foreign materials were identified during. Second team leader did a follow up inspection at approximately 3:30pm where he walked Lowes Mount Road, the football fields and Albion Street and found no evidence of foreign materials. Emailed the complainants regarding the issue.

129	Noise	20/11/2022	Oberon Football Fields	"Christening party/first bday 10am-3pm, noise is constant has disrupted the party."	Complaint was made by a staff member not a party attendant. Spoke to party organiser who said they did not have any complaints about the noise being generated and had an enjoyable day at the venue.
130	Noise	11/02/2023	Dart Street, Oberon	"Back of Borg Near BP"	MDF Team leader went for a walk immediately to try and identify the source of the noise. As no detail was given it was hard to determine the source. No obvious noise was identified during walk around. Monitoring of conditions continuing, noise monitors set up off site. no evidence of noise breaches identified.
131	Noise	18/03/2023	Dart Street, Oberon	"Alarm going off sounds like its at the front door of Conti 1 & Conti 2"	MDF team leader did a site walk around/investigation at time of the complaint. Monitor operating conditions and ensure roller doors are closed. Conti 1 was not in operation and no record of alarms going off on site.
132	Noise	15/04/2023	Dart Street, Oberon	"Steam been escaping - noise on Lowes Mount Road and Albion Street."	Particle board Coordinator investigated at time of complaint. No obvious signs of noise from site. Steam production is a regular part of the industry and is covered under the EPA license requirements set for the site.
133	Fibre/Dust	28/04/2023	Dart Street, Oberon	Fibre or dust on car in the morning	Check plant operating conditions. Inspect town for any signs of fibre or dust. Secondary inspection across town for signs of dust or fibre. Very windy in Oberon on day of the complaint. Dust and debris was present all over town source could not be identified as one location.
134	Noise		Dart Street, Oberon	"Last two nights noise on Albion Street has been unbelievable."	Check plant operating condition. Ensure that the license requirements are continuing to be met.

Appendix H – Community Consultative Committee Meeting Minutes



Community Consultative Committee

Agenda/Minutes

Meeting: Community Consultative Committee Meeting

Venue: Borg Panels Board Room

Date: Wednesday 27th July 2022

:Time: 4.00 pm – 17:30

1. **Welcome**

Richard Witham, Andrew Brady, Mike Bitzer, Spiro Kavalieros, Bryan Dellow, Ian and Trish Gordon, Damian_O'Shaughnessy, Fran and Tim Charge

2. **Apologies**

Mark Kellem, Julie Booth

3. **Minutes from last meeting and follow-up**

Accepted

4. **Community Issues** – complaints and concerns

All

Borg had received noise complaints throughout the year. Investigations found no breaches.

5. **Site Updates**

HPP update - M Bitzer

Renewed 10-year forestry contract. Demolition works underway across the site of old buildings and offices, over 300 tonnes of steel recycled, reclaiming all old timber for reuse. Over 2000 tonnes of concrete at rubble masters Bathurst for reuse. 1000 tonnes of ash recycled per year into fertiliser. Looking to bring all storage onsite with new dispatch warehouse. Southern noise berm proposed to minimise noise impacts on the town. Schools and gap year programmes to bring new employment. Reduced injuries by 30%. Down 20% on employees with 10% vacancies over duration of covid had to shut site for 14 days.

Borg Update - R Whitham

Northern extension finished, to new lam lines looking to commission a new thinboard line. Struggles with employment and covid. Energy price increases plus freight and imports taking a toll on production at times. New 9Megawatt solar farm helping to take the toll off the grid. Employed 29 people in last two months. Currently at 330 full time staff approx. 400 in total. Lack of electrical and mechanical trade qualified staff. Approx 30% women staff at laminating-push to see more women in the industry. Large focus on waste wood due to timber shortages and recycling goals.

6. General Business and Questions

Potential plans for heritage train line to push product and minimise truck traffic. Constant battles with timber – sourcing from as far as Walka, mount gambier and Tumut. Staffing issues are ongoing but slowly improving now for both sites. Contact council prior to taking loads of paper to the tip to ensure adequate prep work can be done. Council looking to get some concrete crushed for reuse at the tip. Both sites confirmed that tours are welcomed and encouraged moving forward.

7. Next Meeting Date & Close of Meeting

4pm, Wednesday 26th October 2022



Community Consultative Committee

Agenda/Minutes

Meeting: Community Consultative Committee Meeting

Venue: Borg Panels Board Room

Date: Wednesday 23rd November 2022

:Time: 4.00 pm – 17:30

1. **Welcome**

Richard Whitham, Andrew Brady, Mike Bitzer, Spiro Kavalieros, Brian Dellow, Ian and Trish Gordon, Damian O'Shannassy, Mark Kellam

2. **Apologies**

Mike Bitzer

3. **Minutes from last meeting and follow-up**

Accepted Ian Gordon and Brian Dellow

4. **Community Issues** – complaints and concerns

One noise complaint from Oberon Leagues Club.

Borg is looking to change the complaints line by having its own phone line directly to Borg.

5. **Site Updates**

6.

HPP update - M Bitzer

Report from July 2022

Renewed 10-year forestry contract. Demolition works underway across the site of old buildings and offices, over 300 tonnes of steel recycled, reclaiming all old timber for reuse. Over 2000 tonnes of concrete at rubble masters Bathurst for reuse. 1000 tonnes of ash recycled per year into fertiliser. Looking to bring all storage onsite with new dispatch warehouse. Southern noise berm proposed to minimise noise impacts on the town. Schools and gap year programmes to bring new employment. Reduced injuries by 30%. Down 20% on employees with 10% vacancies over duration of covid had to shut site for 14 days.

Borg Update - R Whitham

The gas outage caused a significant impact to the business

Lack of housing and accommodation in Oberon for new employees causing some recruitment struggles.

Improvement in wood supply and accessibility to the forests. The Particle Board line itself can consume 700 tonnes a day.

We are currently able to consume about 50% urban waste which is helping with the processes and raw materials. We are still learning the mixing process for the waste to achieve maximum consistency.

The Company has employees helping with the flood disaster at Forbes and the affected areas. The northern extension now completed.

We are seeing the new lines starting to produce volume running at approximately 60% uptime. The new Conti IV line is currently at 20%-30% capacity.

No real issues with commissioning.

The Company will be having its Christmas party again this year on the 10th of December @4pm at the Oberon League ground.

The site is looking to introduce a new evacuation process with the tunnel now completed.

General Business and Questions

Mark Kellam wanted to congratulate Borg on the handling and their help with a job well done during the trying gas shortage.

Mark Kellam asked regarding the leaflet being circulated in the township around waste and energy and had already received comments regarding the digester and the concerns around waste/feed coming into the town.

Questions were asked about how it would arrive and what the effects will be.

Concern is also odour and rodent pests.

Highly recommend community consultation with facts and information presented as awareness and answers can often alleviate concerns and factual information helps the town to understand fully what this means for their township.

21st February meeting for information to council.

The council recognises the accommodation/housing shortage and with new rezoning planning in the pipeline it may help with new housing and accommodation.

On the 18th of December there is an open day for all museums in Oberon which are well worth visiting with historical and informative equipment, photos etc.

Believe it would be beneficial for a site tour to be organised for councillors, and the CCC committee to see the new lines and site processes.

7. Next Meeting Date & Close of Meeting

4pm, Wednesday 22nd February 2023



Community Consultative Committee

Agenda/Minutes

Meeting: Community Consultative Committee Meeting

Venue: Borg Panels Board Room

Date: Friday 31st March 2023

:Time: 3:30pm

1. **Welcome**

Richard Whitham, Julie Booth, Andrew Brady, Mike Bitzer, Spiro Kavalieros, Brian Dellow, Ian and Trish Gordon, Damian O'Shannassy, Mark Kellam, Peter Hartland, Lauren Trembath, Fran Charge, Tim Charge

2. **Apologies**

3. **Minutes from last meeting and follow-up**

Accepted Ian Gordon and Brian Dellow

4. **Community Issues** – Fibre stack issue

Hotline not getting response

Noise complaint – on a Sunday

Fibre spill from Conti 1 hatch released, causing fibre to be released. Clean up completed and talked to neighbours. E.P.A coming to site.

Damian O'Shannassy – Poor communication from Borgs regarding follow up and communication to council.

Mark Kellam – Needs better expectation on and how the hot line is to work. When people ring the hotline, they are treated poorly.

Fran Charge noise complaints tough as the facility is a 24x7 operation and people have brought or built since the factory was open

Digester

Meetings were not a success. As far as Borgs, Victor didn't even introduce himself and technically sounded a bit ill prepared. Need a good presentation. Much larger than expected and people could not hear. Victor trying to do a good job, but message not getting out there. Details not circulated correctly and very poor communication. Share the information if you want buy in.

Brian Dellow – People were rude. Victor didn't have a chance.

Intentions were honourable but not thought through.

Lauren Trembath – Mayor should prepare a letter to CEO of re-Direct to express concerns.

Richard Whitham to pass on feedback to the Head Office.

5. Site Updates

HPP update - M Bitzer

Report from March 2023

Safety - No major incidents 30% reduction in incidents this year. Safety awareness very good now

Not fully manned for 2.5 years. Turnover rate high.

Noise complaint recently, first in years since I have been here horn sound used to clean was the issue.

E.P.A on site Tuesday for annual visit, received really good feedback.

Taking our ash from site and taking to farmlands as a great nutrient agent instead of taking to landfill.

Automated grading system in the dry mill helping also with manual handling.

New Helix Spiral Feeder to reduce noise. Noise from dry mill drastically reduced with machines.

Production going well. Market conditions awful on our end with a dramatic decline in sales. Labour shortages not helping

Green mill going down at Easter for 1 week, going to redeploy employees to other areas.

Demolishing old Boral site with the steel from the site being recycled. Timber given to Borg for use. Hardwood being recycled and deploying to employees and charities.

Tim Charge question, asked as to build up of trucks trying to get into gate 3?

Borg Update - R Whitham

Short shut at Christmas started up 10/01/23 with a good start up.

Our market is still strong.

Change of shift structure to consolidate skills.

2 new lines commissioned and running paint line operation and Shelving Line.

Cyclone issue causing fibre discharge issue should be resolved to prevent any other incidents as all new cyclones to replace old cyclones.

Waste wood usage 60% → 75% waste and recycled timber in the process.

Big push on recycling and shredding of material for production.

People update we are still struggling to employ trades.

Taking down time now to avoid Easter so will run through Easter.

Richard Kaine our new Facility Manager coming 3rd April.

Woodchem Update – P Hartland

Busy supplying and keeping up with supply to MDF. Projects underway to help with manufacturing.

General Business and Questions

Question asked as to whether the Borg Facility would be open to allow those in the public to be able to go through the factory to get an understanding of how the facility works.

6. Next Meeting Date & Close of Meeting

4pm, Date to be confirmed

Appendix I – Water Quality Exceedance Notifications



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

10 October 2022

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Manufacturing Oberon had an exceedance of concentration limit for Total Nitrogen for stormwater sample event undertaken on 27 September 2022. Results reviewed from ALS Environmental show that the concentration limit for Total Nitrogen of 10mg/L was exceeded by 1.7mg/L.

There were significant rain events (i.e. >10mm) in the days prior to monitoring. 31.8mm of rain was recorded on site in the 6 days prior to the monitoring event.

It is plausible that this exceedance was due to the mobilisation of wood material from site during the rain event which may show that the Total N result is due to organic matter in the sample.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

A sample was also collected onsite, approximately 800m downstream from Point 28 for analysis on the same day. The point that the sample was taken from incorporates all onsite water activities and returned a result for Total Nitrogen at 0.6mg/L.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "AB", followed by a horizontal line.

Andrew Brady
Environmental and Safety Manager
Borg Manufacturing



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

1 March 2023

Re: Borg Panels Oberon Environmental Incident

This notification has been prepared in accordance with SSD 7016 condition C12.

On Monday 27th of Feb 2023 at approximately 6:30am it was identified by site operators that there had been a discharge of fugitive fibre at the Borg Panels site with potential for some off site fibre discharge.

Borg Panels Environmental Manager was immediately contacted and commenced an inspection of the surrounding community area to determine the extent of the discharge and coordinate clean up.

A site investigation has commenced to determine the cause of the discharge. DPIE will be kept informed of any outcomes from the investigation.

Oberon Council and the NSW EPA were immediately informed of this incident.

Yours sincerely

A handwritten signature in black ink, appearing to read "AB", with a horizontal line extending to the right.

Andrew Brady
Environmental Manager
Borg Manufacturing
Mobile: 0447 765 913

Annual Review 2021/22

Borg Manufacturing Oberon

124 Lowes Mount Road, Oberon NSW

Borg Manufacturing

1 August 2022

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
1	1/08/2022	Andrew Brady Environmental Manager	For submission to DPE	Victor Bendevski Environmental and Regulatory Compliance	

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Annual Review Title Block

Name of operation	Borg Manufacturing
Name of operator	Borg Manufacturing
Development consent / project approval #	SSD 7016
Name of holder of development consent / project approval	Borg Construction
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	80WA715797
Name of holder of water licence	Borg Panels Pty Ltd.
MOP/RMP start date	N/A
MOP/RMP end date	N/A
<i>I, Victor Bendeovski, certify that this audit report is a true and accurate record of the compliance status of Borg Manufacturing Oberon for the period 1st May 2021 to 30th April 2022 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd</i> Note. a) <i>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i> b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, \$22,000, or both.)</i>	
Name of authorised reporting officer	Victor Bendeovski
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	1/08/2022

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Borg Manufacturing Oberon site and covers the twelve-month reporting period from 1 May 2021 to 30 April 2022. This Annual Review has been prepared to satisfy condition C11 of Development Consent SSD 7016 issued by the Minister for Planning on 29 May 2017.

The Borg facility is located at 124 Lowes Mount Road, Oberon and consists of a medium density fibreboard (MDF) and particleboard manufacturing plant and a mouldings manufacturing plant..

This Annual Review is submitted to NSW Department of Planning and Environment (DPE), NSW Environment Protection Authority (EPA) and Oberon Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the Borg website:

[BORG - Oberon NSW \(borgs.com.au\)](http://borgs.com.au)

Borg Manufacturing generally maintained compliance with necessary approvals and licenses with the exception of EPL 3035 condition L2.5 and O2.1 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water and Section 7.2 Non-Conformances respectively.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 716	C11	Annual review	Compliant		1.4 Annual Review Requirements
EPL 3035	Section 3 L4.1	Noise	Compliant		
EPL 3035	Section 3 L2.4	Air Quality	Compliant		
EPL 3035	Section 3 L2.5	Water Quality	Non-compliant	Exceedances of EPL 3035 water discharge limits	4.4 Surface Water
WAL28951	N/A	Aquifer extraction	Compliant		
EPL 3035	O2.1	Off-site fugitive fibre discharge	Non-compliant	Plant installed at the premises not maintained in a proper end efficient condition	7.2 Non-Conformances

1.2 Background

In March 2010, Borg acquired the former Carter Holt Harvey MDF and mouldings plant at Oberon. In 2012 Borg further acquired the associated JeldWen factory that adjoins the MDF plant. Borg have integrated the facilities into one site, which they own and operate (see Figure 1).

Figure 1 Regional context



The Borg Panels facility forms part of the wider Oberon Timber Complex, manufacturing a range of MDF products (Custom wood) and particleboard including:

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

1.3 Consent

Development Consent SSD 7016 was issued by the Minister for Planning on 29 May 2017 to construct and operate a particleboard facility, and continuation of and alterations and additions to, the existing medium density fibreboard facility.

Condition A26 of SSD 7016 required Borg to modify DA27/95. Borg submitted a Section 96 Modification Application requesting removal of condition A26. This application also included a minor change to the orientation of the material handling building at particleboard, an increase to the warehouse footprint and amendments to the stormwater management system at the northern section of the site. A determination was received from the Department approving this application on 20 November 2018 (SSD 7016 MOD 1 – Site layout changes).

Under Modification of Development Consent SSD 7016 MOD 2 Borg proposed to install a high-pressure natural gas pipeline connection and turbine, and ancillary equipment to produce electricity and utilise waste exhaust heat in the particleboard manufacturing process. The Minister for Planning provided approval for MOD 2 on 29 November 2019.

Activities proposed under Modification 3 include the installation of additional equipment to the materials handling area for better separation and removal of undesirable materials found in the recycled wood that is used in the production of particleboard, and the addition of an enclosed awning to the northern end of the Northern Warehouse for more optimized truck loading/unloading. Works to the site stormwater management system are also occurring under MOD 3. These include reclamation of the overflow effluent pond and reinstatement at another location to allow for further hardstand, and changes to the stormwater conveying swales and ponds to allow construction of the hardstand and also to separate surface water flows between Borg and HPP, including the construction of a new HPP discharge point.

Approval was provided by the Minister of Planning for MOD 3 on 22 May 2020.

An application to modify SSD 7016 (Modification 4) was submitted to the Department of Planning and Environment on 26 October 2021. Activities proposed under MOD 4 include the following:

- reclamation of the remaining portion of the man-made spring fed dam to allow for increase in the size of the hardstand at the north eastern corner of the site to facilitate the relocation of the existing site mechanic's workshop;
- modernisation of the old multidaylight press used for producing medium density fibreboard and changes to its exhaust air emissions;
- addition of an enclosure to the site water treatment biological tanks;
- installation of additional reverse osmosis filtered water production;
- construction of a new bunded chemical storage shed for the water treatment plant;
- construction of an additional lined effluent storage dam for the water treatment plant; and
- construction of a new road within the site to better facilitate traffic flow.

This modification was still under review during this reporting period (i.e. approval had not yet been granted).

A summary of development consents including modifications currently held by Borg Manufacturing is presented in Table 2.

Table 2 Borg Manufacturing Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016	29 May 2017	NSW Minister for Planning	Construction and operation of a particle board facility and continuation of, and alterations and additions to, the existing medium density fibreboard facility.
Development Consent SSD 7016 MOD 1	20 November 2018	NSW Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	NSW Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment
Development Consent SSD 7016 MOD 3	22 May 2020	NSW Minister for Planning	Additional material handling equipment, extension to the Northern Warehouse, changes to the site surface water system and construction of further hardstand.

1.4 Annual Review Requirements

In accordance with condition C11 of Development Consent SSD 7016, annual review requirements and the sections within this review where these are addressed have been summarised in Table 3.

Table 3 Annual Review Requirements

Development Consent SSD 7016 – Condition C11	Section of Annual Review
By 31 July 2017, and each year thereafter, unless otherwise agreed by the Secretary, the Applicant must review and submit a report to the Secretary detailing the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This Report
(a) describe the development that was carried out during the reporting period, and the development that is proposed to be carried out over the next reporting period;	Section 2 Section 8
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 7
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 8

1.5 Environment Protection Licence

Borg Panels operates in accordance with Environment Protection Licence 3035 (EPL 3035), issued on 14 February 2001 by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 02 February 2022.

The EPL was varied and updated during this reporting period to include for a second urban wood residue (UWR) trial whereby Borg will take receipt, storage, processing of UWR to be used as an alternative raw material in the production of particleboard. This trial will be conducted over a 12 month period. The trial will incorporate the following elements:

- All UWR received at the premises must be managed in accordance with the Urban Wood Residue Quality Assurance and Control Plan, v2.0 (UWR QA/QC Plan); and
- The sampling and testing must be undertaken in accordance with the sampling method, units of measure and sampling frequency specified in condition M2.2. The sampling must be undertaken when UWR input is at its maximum processing rate of 20% (or 6 tonnes of UWR per hour) to monitor for worst case emissions.

Following the conclusion of the trial a report will be prepared and submitted to the EPA assessing the results of the trial, providing commentary on the effectiveness of the QA/QC Plan, and any deficiencies or problems encountered during the trial and what actions were taken to manage them.

1.6 Water Licences

Borg holds a Water Access Licence for use of groundwater in operations. Current licence details issued under the *Water Management Act 2000* are summarised in Table 4.

Table 4 Water Licences

Approval Details	Approval Number	Validity of Licence	Approval Kind	Extraction Limit
WAL28951	80WA715797	16 January 2012 – 01 March 2026	Water Extraction	28 Units

1.7 Trade Waste Licence

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable this reporting period as there was no renewal of the licence. Borg Panels now treats its liquid trade waste on site.

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7016, construction activities continue to be undertaken in accordance with the Construction Environmental Management Plan (CEMP) and the existing development in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C10 Revision of Strategies, Plans and Programs, environmental management plans were reviewed, and minor amendments made where necessary. In this review period the following Plans were updated:

- Traffic Management

- Waste Management
- Noise Management
- Mobile Wood Chipper Management
- Erosion and Sediment Management
- Spring Fed Dam Reclamation Management Plan
- Operational Noise Management
- Surface Water Management
- Waste Management
- Operational Air Management
- Urban Wood Residue Management Plan

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for managing environmental operations the Borg Panels facility.

Table 5 Site Personnel

Name	Title	Contact Details
Richard Witham	Facility Manager	0466 055 094
Victor Bendeviski	Environmental and Regulatory Compliance	(02) 4340 9827
Andrew Brady	Environmental Manager	0447 765 913

1.10 Actions Required from Previous Annual Review

The actions listed in Table 6 were identified in the 2020/21 Annual Review for implementation during this 2021/22 reporting period.

Table 6 Proposed Activities in 2020/21 Reporting Period

Activities Proposed in 2020/21 Reporting Period	Results achieved in 2021/22 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.	Ongoing implementation of the OEMP, CEMP and sub plans including environmental inspections undertaken at least monthly. Inspections recorded and actions assigned accordingly, and use of DataStation to track progress and close out. CEMP, OEMP and sub plans reviewed and updates performed where: a) changes to site operations (existing and project); and b) in accordance with SSD 7016 C10.
Carry out independent environmental audit (IEA) as per condition C15	IEA was completed by Molino Stewart and submitted to DPIE on 18 October 2021. See Section 6 Independent Audit for details.
Complete verification studies required for SSD 7016 including modifications	Condition B20A, undertake a noise verification study for the gas turbines and ancillary equipment was completed and submitted to DPIE on 15 September. DPIE considered the Study generally satisfied condition B20A.

Complete reporting requirements related to the commissioning of particleboard plant	Aside from the noise verification study under B20A, no reporting requirements were triggered in this reporting period.
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1, MOD 2 and MOD 3	As reported in this Annual Review. All additional conditions imposed by modifications have been incorporated into Borg's tracking document OBERON Approvals and Licensing Compliance Register.
Complete commissioning of the gas turbine (MOD 2)	Commissioning completed 28 May 2021. Noise Verification Study (condition B20A) was submitted to DPIE on 15 September 2021.
Complete construction of sorting tower for recycled wood (MOD 3)	Works complete within this reporting period.
Undertake required environmental monitoring associated with the newly installed gas turbine	Verification noise monitoring was undertaken as per condition B20A. Ongoing quarterly and annual noise monitoring also performed during this reporting period captures the operation of this plant.
Undertake rehabilitation works to areas disturbed by construction activities	Stormwater swales impacted by construction activities established good groundcover to assist with managing erosion control and sediment mobilisation which can affect stormwater quality discharge.

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7016 allows for production of up to 380,000 m³ of MDF and 500,000 m³ of particleboard per calendar year. During this reporting period Borg manufactured 281,577m³ of MDF and 369,369m³ of particleboard and had a total intake of 33,281 wet tonnes of UWR.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Complete the installation of the roller screen, conveyors and the extra air grader to better separate the recycled wood used in the production of particleboard;
- Completed the construction of the sorting tower and the installation of equipment to identify and remove physical contaminants from the recycled wood used in the production of particleboard;
- Construction of the eastern hardstand area was completed for the storage of surplus equipment/construction storage;
- Upgrades undertaken to reclaimer footings;
- Fit out of new office and meal room areas; and
- Installation of insulation room above the laminating lines.

See Figure 2 for location of site infrastructure.

2.3 Site Activities

The following activities associated with the construction of the particleboard facility and modifications to existing operations occurred during the reporting period:

- Alterations to the site surface water channels at the northern area of the site to facilitate the integration of the new hardstand and provide further separation of Borg and HPP surface water runoff including the creation of a new discharge point (HPP);
- Installation of new headwall and pipe infrastructure for the new HPP discharge point;
- Extensive erosion and sediment control works to the norther and eastern swale system to improve discharge water quality including rectification to eroded sections, installation of rock check dams in areas of high flow and improvements to the inflow path to the first flush basin; and
- Continued to receive recycled wood material under *The Borg Panels Urban Wood Residue order and exemption March 2021* for inclusion in the production of particleboard.

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- construction works undertaken in accordance with the Construction Environmental Management Plan and sub-plans;
- attended noise verification monitoring;
- air emission verification monitoring;
- water quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via EHSR Alerts and Toolbox Talks.

2.4 Wood Recycling Program

During this reporting period Borg continued to accept recycled wood materials in accordance with *The Borg Panels Urban Wood Residue order and exemption March 2021*. Approximately 33,000t of UWR was received on site for inclusion in the production of particleboard. The recycled material is aggregated at one of two Borg sites located in Sydney where it is inspected prior to delivery to Oberon. When this material arrives at Oberon it is again inspected as it enters the site in trucks, then is spread out on a hardstand for further inspection before being incorporated into the manufacture of particleboard.

Air emission sampling was conducted on the 1st of March 2022 in accordance with EPL 3035 condition M2.2 and included license discharge points 29, 30, 31 and 32 (points associated with air emissions from the recycled wood program) for the following pollutants:

- Total solid particles
- Fine particulate matter (PM10)
- Formaldehyde
- Nitrogen oxides
- Smoke

Results from the stack testing were all within EPL 3035 specified air concentration discharge limits. See section 4.3.3 Air Monitoring of this report for emission monitoring results.

Figure 2 SSD 7016 Approved Development Area



3 Waste Management

Waste generated at the Borg Manufacturing site is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste removed from Borg facility during the reporting period is provided in Table 7.

Table 7 Waste Management 2021/22

Month	Description				Destination
	Litres	m ³	Tonnes	Waste	
May 2021		730		General	Oberon Council Waste Depot
			30.82	Waste requiring burial	Bathurst Regional Council
	4500			Oil	Cleanaway/Nationwide Oil
June 2021		580		General	Oberon Council Waste Depot
			2.4	Waste requiring burial	Bathurst Regional Council
	6900			Oil	Cleanaway/Nationwide Oil
July 2021		600		General	Oberon Council Waste Depot
		290	16.34	Waste requiring burial	Bathurst Regional Council
August 2021		750		General	Oberon Council Waste Depot
			30.18	Waste requiring burial	Bathurst Regional Council
September 2021		580		General	Oberon Council Waste Depot
			37.84	Waste requiring burial	Bathurst Regional Council
		180		General	Oberon Council Waste Depot
		10		Ash	Oberon Council Waste Depot
October 2021		650		General	Oberon Council Waste Depot
			24.98	Waste requiring burial	Bathurst Regional Council
		200		Ash	Oberon Council Waste Depot
	6500			Oil	Cleanaway/Nationwide Oil
November 2021			20.5	Waste requiring burial	Bathurst Regional Council
		490		Ash	Oberon Council Waste Depot
	9400			Oil	Cleanaway/Nationwide Oil

December 2021		50		Ash	Oberon Council Waste Depot
		420		General	Oberon Council Waste Depot
			13.1	Waste requiring burial	Bathurst Regional Council
January 2022		400		General	Oberon Council Waste Depot
			12.68	Waste requiring burial	Bathurst Regional Council
February 2022		570		General	Oberon Council Waste Depot
			10.96	Waste requiring burial	Bathurst Regional Council
			0.16	mixed commercial	Bathurst Regional Council
			11.88	sludge bi product	Bathurst Regional Council
March 2022		710		General	Oberon Council Waste Depot
			46.12	Waste requiring burial	Bathurst Regional Council
April 2022		790		General	Oberon Council Waste Depot
			11.36	Waste requiring burial	Bathurst Regional Council
TOTAL			257.28	Waste requiring Burial	Bathurst Regional Council
			11.88	Sludge bi product	Bathurst Regional Council
			0.16	Mixed Commercial	Bathurst Regional Council
			750	Ash	Oberon Council Waste Depot
		6960		General Waste	Oberon Council Waste Depot
	27300			Waste Oil	Cleanaway/Nationwide oil

Waste types in Table 7 are further described as:

- General waste including a mix of both putrescible and non-putrescible waste;
- Waste requiring burial made up of urea formaldehyde spade-able resin and paraffin wax bladders;
- Building and demolition waste including concrete, metal and timber are recycled when appropriate; and
- Used oils from the plant process oil systems and mechanical workshop are recycled off site via third parties.

There was no trackable waste generated during this reporting period.

3.2 Trade Waste

Borg's Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable during this reporting period as there was no renewal of the licence. Borg Panels treats its liquid trade waste on site.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

Borg Manufacturing operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental monitoring is conducted in accordance with the requirements of SSD 7016, its subsequent modifications (MOD1, MOD2 & MOD3), and EPL 3035. Environmental monitoring is an integral part of Borg's environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Meteorological Data

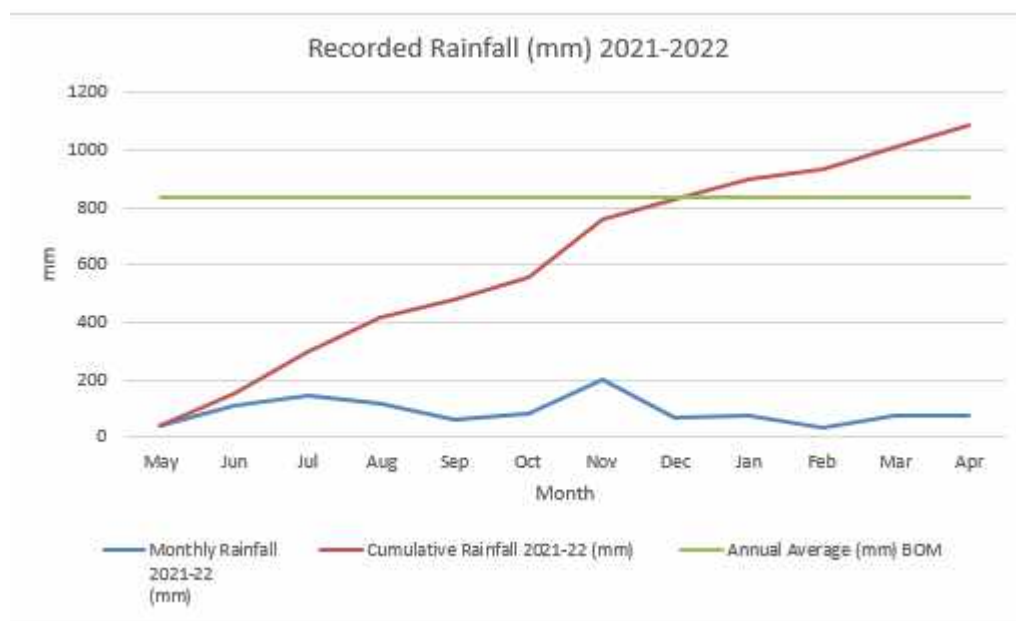
Borg Panels operate and maintain a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The following section summarises the meteorological data for the 2021/22 reporting period.

4.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during this reporting period recorded at EPA Point 26 is shown in Table 8 and displayed in Figure 3 below. Total recorded rainfall for the period was 1,085mm. This is 249.3mm above the annual mean rainfall of 835.7mm for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2021/22

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
39.6	111	148.2	114.6	63.4	79.8	200.4	68.2	73.1	43.4	76.8	74.6	1085
Number of Rain Days (≥0.2mm)												
21	15	13	22	22	20	13	20	21	14	17	21	219

Figure 3 Recorded Rainfall (mm) at Borg Panels Meteorological Station 2021/22

4.2.2 Temperature

Monthly maximum and minimum temperatures recorded from the site weather station during the reporting period are shown in Table 9.

Table 9 Monthly Minimum and Maximum Temperatures 2021/22

Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-5.4	-3.5	-6.4	-3.6	-1.4	-0.3	2.6	4	9.6	5.6	4.7	3.2
19	14	12.9	17.8	18.9	24.4	21.1	27.5	28.7	27.8	25.1	22.1

4.2.3 Wind Speed and Direction

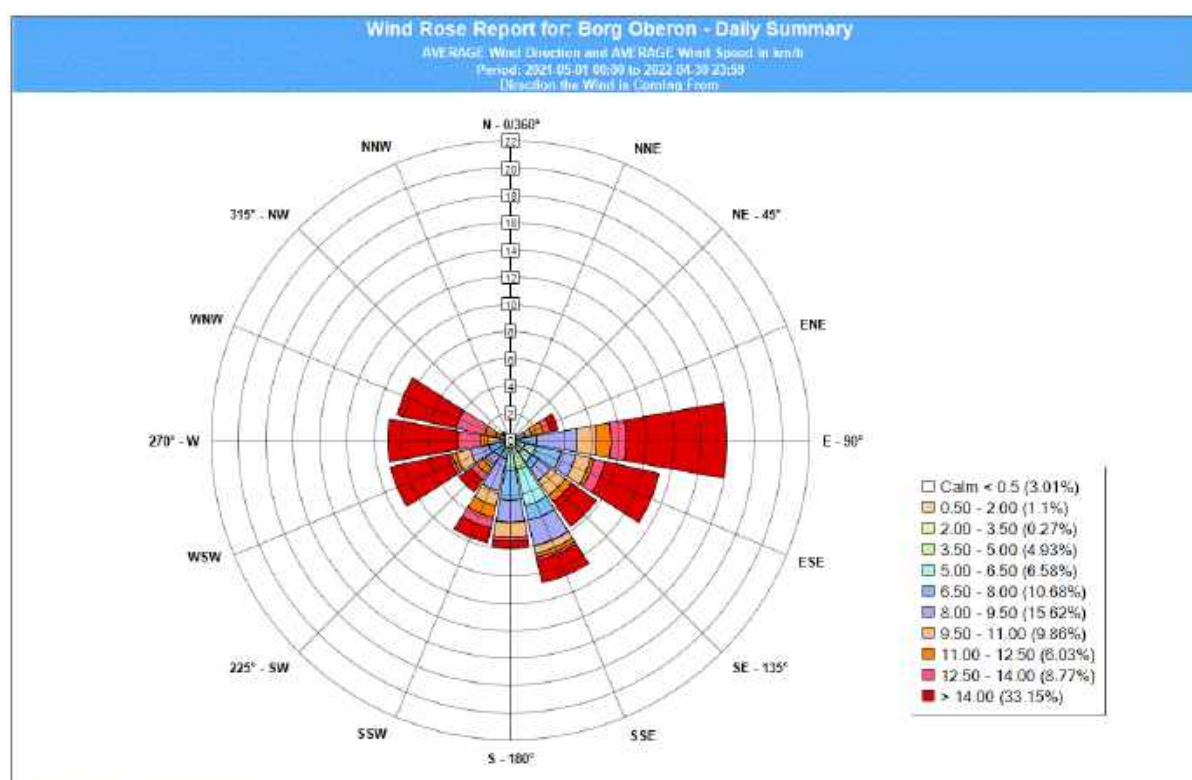
The site weather station recorded wind speed and direction data is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4. As can be seen in Table 10 and Figure 4, the dominant wind direction during this reporting period was from an easterly direction.

Table 10 Monthly Daily Wind Data 2021/22

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2021	58.3	10.1	278° (W)
June 2021	49.4	12.0	273° (W)
July 2021	55.9	14.3	274° (W)
August 2021	43.1	12.5	233° (SW)
September 2021	57.1	12.9	278° (W)
October 2021	51.1	12.8	270° (W)

November 2021	57.1	14.7	93° (E)
December 2021	46.2	10.9	96° (E)
January 2022	56.4	13.4	91° (E)
February 2022	95.1	9.3	95° (E)
March 2022	96.6	8.2	93° (E)
April 2022	45.6	12.5	89° (E)

Figure 4 Daily Summary Average Wind Rose 2021/22



4.3 Air Quality

4.3.1 Dust Depositional Gauges

Dust deposition monitoring is undertaken in accordance with the Borg Panels Operational Air Quality Management Plan (OAQMP). Condition O3 of EPL 3035 states that:

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

EPL 3035 does not specify dust deposition monitoring be undertaken, Borg conduct this to assist with site management. The air quality criteria adopted for deposited dust is provided in Table 11.

Table 11 Air Quality Criteria Deposited Dust

Averaging Period	Impact	Criteria
Annual	Incremental	2 g/m ² /month
	Total	4 g/m ² /month

There are six dust depositional gauges (DMG) located in and around the site. The six gauges were sampled monthly throughout the year from May to April. The locations of dust depositional gauges are listed in Table 12 and shown in Figure 5.

Table 12 Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description
DMG 1	Borg Panels eastern boundary with Woodchem
DMG 2	Materials handling building
DMG 3	Water treatment plant
DMG 4	Northern boundary
DMG 5	Highlands Motor Inn, South of Borg Panels Plant
DMG 6	Albion Street, East of Borg Panels plant

Figure 5 Depositional Dust Gauge Locations

DMGs 1 to 4 are located on the periphery of the site. DMG 1 is located within the operational boundary of the site immediately adjacent to an unsealed laydown area and in general proximity of an unsealed road. DMG 2 is located adjacent to the materials handling building. DMG 4 is located towards the northern boundary in an area of unsealed compacted surfaces

used for storage of large pieces of machinery and reusable material such as steel. DMG 1, DMG 2 and DMG 4 returned results showing exceedances of the annual average criteria of 4g/m^2 . DMG 1 is exposed to regular traffic and day-to-day activities with DMG 2 near the materials handling building which can produce wood dust. and DMG 4 is also exposed to machinery traffic on the unsealed road and adjacent pad. As these are on-site gauges the criteria noted in Table 11 does not apply.

DMG 5 and DMG 6 are located at off-site receivers. There was no exceedance of the dust deposition criteria (4g/m^2) at these locations.

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method*. During the reporting period all dust samples were collected by trained specialists and analysed by NATA certified laboratories.

Table 13 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids ($\text{g/m}^2/\text{month}$) 2019/20	Annual Average Insoluble Solids ($\text{g/m}^2/\text{month}$) 2020/21	Annual Average Insoluble Solids ($\text{g/m}^2/\text{month}$) 2021/22
DMG 1	Borg Panels eastern boundary with Woodchem	7.1	5.0	7.9
DMG 2	Materials handling building	4.6	2.4	5.8
DMG 3	Water treatment plant	2.8	1.3	1.2
DMG 4	Northern boundary	3.9	1.7	1.3
DMG 5	Highlands Motor Inn	2.3	0.6	0.9
DMG 6	Albion Street east of Borg Panels plant	2.4	0.6	0.8

Table 13 shows a reduction in average annual insoluble solids over time across two dust gauge locations (DMG 3 and 4). However, four of the six (DMG 1, 2, 5 and 6) showed a slight increase in average annual insoluble solids over time.

4.3.2 Air Emissions Monitoring Points

The locations of air emission monitoring points are listed in Table 14 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 02 February 2022 Full laboratory results are attached to this document as Appendix B.

Table 14 Location of Air Emissions Monitoring

EPA Identification No.	Description
4	DC1 Baghouse
5	DC2 Baghouse
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)

EPA Identification No.	Description
9	Conti 1 Dryer Cyclone #1 (south)
10	Conti 1 Dryer Cyclone #2 (north)
11	Conti 2 Heat Plant
12	Press Vents Conti 1
17	Conti 1 Heat Plant
18	Press exhaust vents
19	Dryer stack
20	Reject cyclone DC 11
21	Reject cyclone DC 12
22	Reject cyclone DC 13
27	Combined Conti 2 Press Vent
29	Forming Line Baghouse
30	Form Station Baghouse
31	Particleboard Press Extraction
32	Wet Electrostatic Precipitator (WESP)

EPA Identification Points 18, 19, 20, 21 and 22 are recognised as discharge points in EPL 3035 however there is no requirement to monitor the concentration of pollutants discharged at these points. In any case, this plant is dormant. Similarly, Points 11 and 17 do not produce flow. The exhaust for Conti 2 heat plant (Point 11) is ducted back into Conti 2 dryer cyclones (Points 7&8), and exhaust for Conti 1 heat plant (Point 17) is ducted back into the Conti 1 production system (Points 9&10).

4.3.3 Air Monitoring

Environment Protection Licence 3035 sets pollution concentration limits for emission Points 7, 8, 9 and 10 as shown in Table 15. All plant and equipment must comply with the relevant concentration standards listed in Schedule 2, 3 and 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* where pollution limits are not specified in the EPL. Monitoring results are assessed against these criteria to determine compliance with air emission limits.

Table 15 EPL 3035 Air Concentration Limits

Pollutant	ID Point	Units of Measure	100 Percentile Concentration Limit	Reference Condition	Oxygen Correction	Averaging Period
Total Solid Particulates	7,8,9,10	mg/m ³	200	n/a	n/a	n/a
Formaldehyde	7,8,9,10	mg/m ³	5	n/a	n/a	n/a

Source: EPL 3035 (04 September 2019)

Air emission monitoring was undertaken by trained specialists and samples analysed by NATA certified laboratories. Monitoring equipment is maintained by the consultant and calibrated in accordance with the manufacturer's specifications by qualified specialists. This

monitoring is performed in accordance with the methodologies as specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* and the requirements of EPL 3035. USEPA Method GD-008 is the approved method for determining flow rate and sampling for particulate matter in cyclonic flow from licenced discharge Points 7, 8, 9 & 10.

For each discharge point identified in Table 14 above, Borg monitored the concentration of each pollutant as specified in EPL 3035. The results for this period are compared against results from the previous two years as displayed in Tables 16 to 33.

Table 16 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	<2	<2	<2
Formaldehyde	mg/m ³	Yearly	2.4	1.5	11

Table 17 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	<2	<2	<2
Formaldehyde	mg/m ³	Yearly	1.1	2.5	5.6

Table 18 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	45	79	28
Formaldehyde	mg/m ³	Yearly	2	1.6	4.2
Nitrogen oxides	mg/m ³	Yearly	210	140	250
PM10	mg/m ³	Yearly	32	8.9	11
Smoke	Obscuration	Every 6 months	0	0	0

Table 19 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	26	68	25
Formaldehyde	mg/m ³	Yearly	2.8	3	4.6
Nitrogen Oxides	mg/m ³	Yearly	170	210	220
PM10	mg/m ³	Yearly	24	28	10

Smoke Emissions	Obscuration	Every 6 months	0	0	0

Table 20 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	71	38	12
Formaldehyde	mg/m ³	Yearly	1.5	4.8	3.6
Nitrogen Oxides	mg/m ³	Yearly	190	260	84
PM10	mg/m ³	Yearly	9.1	26	6.8
Smoke Emissions	Obscuration	6 Monthly	0	0	0

Table 21 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	110	41	17
Formaldehyde	mg/m ³	Yearly	2	4.7	3.3
Nitrogen Oxides	mg/m ³	Yearly	200	73	48
PM10	mg/m ³	Yearly	21	27	8.3
Smoke Emissions	Obscuration	6 Monthly	0	0	0

Tables 16 to 19 show an increase in formaldehyde at EPA Points 4,5,7 and 9. Formaldehyde emissions can vary depending on plant operating conditions due to which product is being processed at the time of sampling. No change in total solid particles (TSP) was shown in Tables 16 and 17 with results remaining below the level of reporting when compared to the previous two years data. A reduction in TSP was noted in Tables 18, 19, 20 and 21. A reduction in PM10 was also noted in Tables 19, 20 and 21. Nitrogen oxides decreased in Tables 20 and 21 however increased in Tables 18 and 19 compared to last the previous year's data.

All results shown in Tables 16 to 21 are within EPL 3035 limits as well as the *Protection of the Environment Operations (Clean Air) Regulation 2010*.

Table 22 Air Emissions Monitoring Results EPA Identification Point 12 Vent 1

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Every 3 years	-	3.3	-
Formaldehyde	mg/m ³	Every 3 years	-	5.4	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	<4	-
PM10	mg/m ³	Every 3 years	-	<3	-

Table 23 Air Emissions Monitoring Results EPA Identification Point 12 Vent 2

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Every 3 years	-	7.2	-
Formaldehyde	mg/m ³	Every 3 years	-	6.5	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	<4	-
PM10	mg/m ³	Every 3 years	-	4.8	-

Table 24 Air Emissions Monitoring Results EPA Identification Point 12 Vent 3

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Every 3 years	-	19	-
Formaldehyde	mg/m ³	Every 3 years	-	3.8	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	<4	-
PM10	mg/m ³	Every 3 years	-	13	-

Table 25 Air Emissions Monitoring Results EPA Identification Point 12 Vent 4

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Every 3 years	-	28	-
Formaldehyde	mg/m ³	Every 3 years	-	1.2	-
Nitrogen Oxides	mg/m ³	Every 3 years	-	<4	-
PM10	mg/m ³	Every 3 years	-	20	-

Table 26 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	13	7.6	12
Formaldehyde	mg/m ³	Yearly	1.6	1.9	7.2
Nitrogen Oxides	mg/m ³	Yearly	<3	<4	<4
PM10	mg/m ³	Yearly	9.6	5.2	3.4

Table 26 shows a minor increase in TSP and an increase in formaldehyde at this press vent from the previous year however these results remain within EPL 3035 and *Protection of the Environment Operations (Clean Air) Regulation 2010* limits. The increase in formaldehyde may be as a result of a trial change in the resin recipe.

Table 27 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	<2	<2	<2
Formaldehyde	mg/m ³	Yearly	0.8	1.7	4.9
Nitrogen Oxides	mg/m ³	Yearly	<3	<4	<4
PM10	mg/m ³	Yearly	<2	<2	<2
Smoke Emissions	Obscuration	Yearly	0	0	0

Table 28 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	1.8	<2	<2
Formaldehyde	mg/m ³	Yearly	0.87	1.5	1.3
Nitrogen Oxides	mg/m ³	Yearly	<3	<4	<4
PM10	mg/m ³	Yearly	<3	<4	<3
Smoke Emissions	Obscuration	Yearly	0	0	0

Table 29 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	27	46	30
Formaldehyde	mg/m ³	Yearly	0.57	4.6	1.5
Nitrogen Oxides	mg/m ³	Yearly	<3	<4	<4
PM10	mg/m ³	Yearly	25	40	20
Smoke	Obscuration	Yearly	0	0	0

Table 30 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2019/20	2020/21	2021/22
Total Solid Particles	mg/m ³	Yearly	3.6	30	39
Formaldehyde	mg/m ³	Yearly	0.63	0.21	2.3
Nitrogen Oxides	mg/m ³	Yearly	180	210	210
PM10	mg/m ³	Yearly	*	*	*
Smoke Emissions	Obscuration	Yearly	0	0	0

*Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

Points 29 to 32 have remained fairly consistent with the previous year's results with the exception of formaldehyde. This may be due to trial changes in the resin recipe. Regardless, the results remain within EPL 3035 and Protection of the Environment Operations (Clean Air) Regulation 2010 limits.

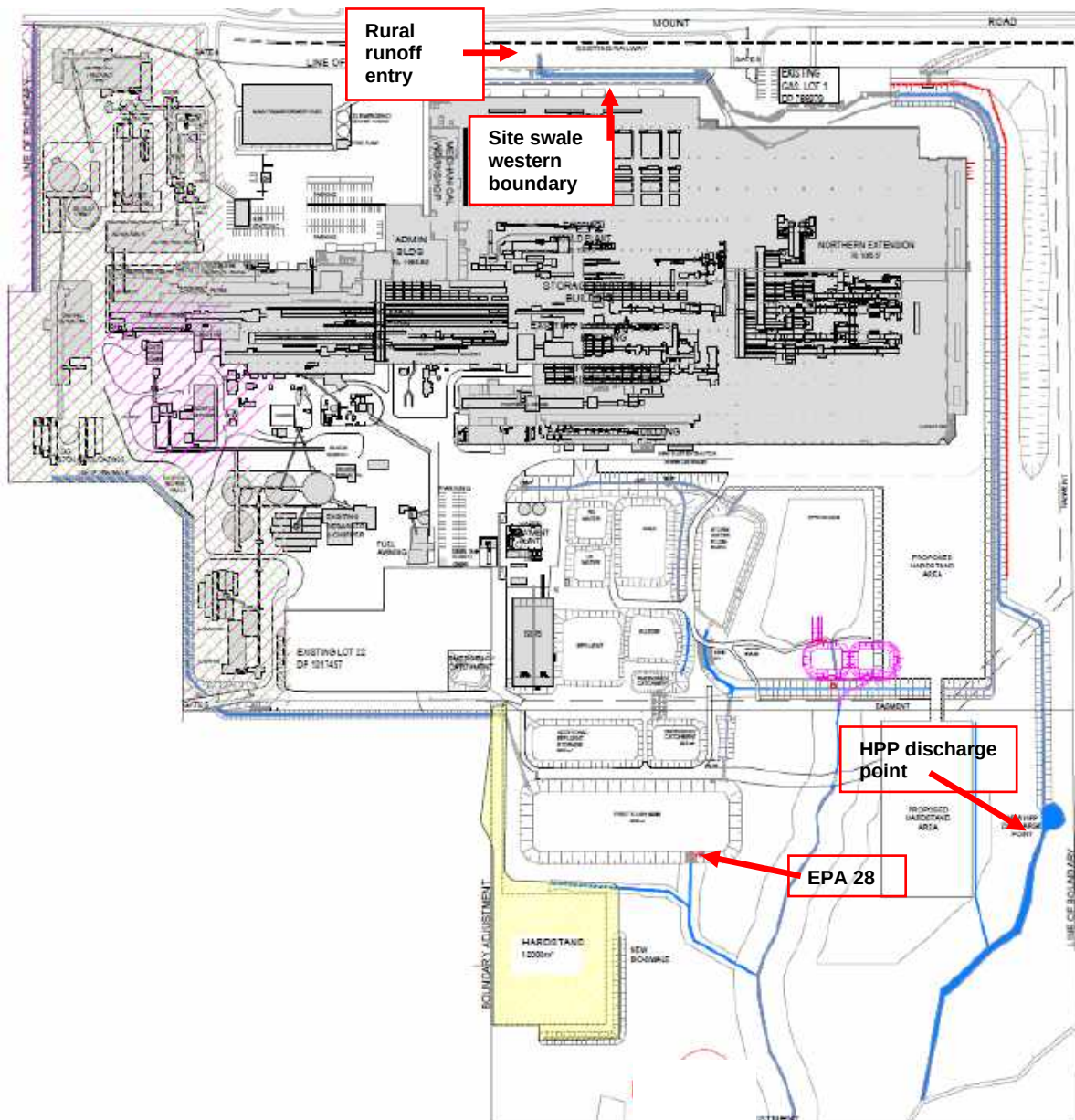
4.4 Surface Water

The existing surface water management system (see Figure 6) includes runoff from Borg Panels site and adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from Structaflor and Highland Pine Products Sawmill 2 flows across Lowes Mount Road and directed onto the site via the swale on the western boundary
- Runoff from rural parcels of land on Lowes Mount Road is also directed into the site from the western boundary, conveyed via a 'clean' water swale, which runs alongside the site swale following the northern boundary before discharging at HPP discharge point to a tributary of Kings Stockyard Creek
- Borg Manufacturing roof and surface runoff from the western side of the facility is directed into the boundary swale and transferred into the first flush basin
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap (GPT) and then into the stormwater flush basin

- Any overflow from the existing stormwater flush basin is directed into the first flush basin
- Water captured in the basins is harvested by the site water treatment plant for reuse in the production system
- Stormwater harvesting averaged 123m³/day over the reporting period the largest volume of water harvested in one day was 657m³
- Runoff from construction areas is managed in accordance with Erosion Sediment Control Plans as part of the CEMP for SSD7016. Surface water from these zones is directed into the site swale then on to the stormwater basin
- Water discharges from EPL discharge Points 1 and 28, and HPP discharge point to a tributary of Kings Stockyard Creek (shown on Figure 6)

Figure 6 Surface water management system - SSD 7016



In accordance with EPL 3035, water quality monitoring is undertaken weekly during discharge to manage discharge compliance requirements. During this reporting period water discharge was from EPA Point 1 and Point 28, and the HPP discharge point.

The HPP discharge point was enabled due to earthworks and powerline realignment. At the time of writing this report, the HPP discharge point was not a EPL discharge point though it was managed in accordance with EPL 3035 requirements. Discussion with the EPA has commenced regarding the HPP discharge point and licensing requirements.

The concentration limit of a pollutant discharged from EPA Point 1 & 28 (and HPP discharge point) in EPL 3035 is shown below in Table 31.

Table 31 EPA Identification Point 1- Water pollution limits

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3
Biochemical Oxygen Demand (BOD)	mg/L		20
Colour	Hazen	80	160
Dieldrin	µg/L		0.3
Methylene Blue Active Substances (MBAS)	mg/L		0.5
Nitrogen (Total)	mg/L		10
Oil and Grease	mg/L		10
pH	pH		6.5-8.5
Phosphorus (Total)	mg/L		0.3
Total Suspended Solids	mg/L		50

Stormwater samples are collected by trained Borg personnel and are analysed by NATA certified laboratories. Full results for the 2021/22 reporting period are provided in Appendix C Surface Water Monitoring Data. Table 32 provides a summary of Borg Panels annual average water monitoring results for discharge from EPA Point 1 and Table 33 for EPA Point 28 during the reporting period and for the previous two years for Point 1 only and previous year for Point 28. This shows that for the 2021/22 reporting period, the annual average for all pollutants were generally below the concentration limit set in EPL 3035.

Table 32 Annual Average Water Quality Monitoring Results EPA Point 1

Pollutant	Units of Measure	2018/19	2019/20	2021/22
Aldrin	µg/L	0	0	0
Biochemical Oxygen Demand	mg/L	15.1	8.2	6
Colour	Hazen	120.1	39.2	18
Dieldrin	µg/L	0	0	0
Methylene Blue Active Substances	mg/L	0.3	0.1	0.2
Nitrogen (Total)	mg/L	6.3	3.7	2.3

Oil and Grease	mg/L	7.5	5.1	<5
pH	pH	7.6	7.6	7.38
Phosphorus (Total)	mg/L	0.1	0.1	0.23
Total Suspended Solids	mg/L	31.3	28.9	290

Table 33 Annual Average Water Quality Monitoring Results EPA Point 28

Pollutant	Units of Measure	2020/21	2021/22
Aldrin	µg/L	0	0
Biochemical Oxygen Demand	mg/L	7.7	5.3
Colour	Hazen	68.5	31.1
Dieldrin	µg/L	0	0
Methylene Blue Active Substances	mg/L	0.11	0.2
Nitrogen (Total)	mg/L	8.42	5.7
Oil and Grease	mg/L	5.8	<5
pH	pH	7.72	7.4
Phosphorus (Total)	mg/L	0.09	0.1
Total Suspended Solids	mg/L	23.5	63

One sample (sample event) was collected and analysed at Point 1 and 22 samples collected and analysed at Point 28 during discharge in the 2021/22 reporting period.

One event at Point 1 and four events at Point 28 returned results where water pollution limits noted in Table 31 were exceeded. The EPA and DPIE were notified of all exceedances (see Appendix H Water Quality Exceedances Notification). Appendix C displays the exceedance information for each event including sample date, pollutant and result.

The exceedances experienced during this period were investigated in an attempt to determine potential pollutant sources that may have contributed to the exceedance. This included upstream inspections (Structaflor and Highland Pine Products stormwater infrastructure), assessment of site activities and ERSED controls, and review of rainfall data from the site weather station.

As discussed above in section 4.2.1 Rainfall Data, the site meteorological station recorded 1,085mm of rainfall for the reporting period which was 249.3mm above the annual mean rainfall of 835.7mm for the Oberon region. This excess rainfall combined with heavy snowfall and the significant construction activities that occurred during this reporting period likely contributed to a number of the water quality discharge exceedances discussed below.

Table 34 Annual Average Water Quality Monitoring Results HPP Discharge Point

Pollutant	Units of Measure	2021/2022
Aldrin	µg/L	0
Biochemical Oxygen Demand	mg/L	3.7
Colour	Hazen	57.2
Dieldrin	µg/L	0
Methylene Blue Active Substances	mg/L	0.1
Nitrogen (Total)	mg/L	1.2
Oil and Grease	mg/L	0
pH	pH	7.7
Phosphorus (Total)	mg/L	0.06
Total Suspended Solids	mg/L	14.6

The HPP Discharge Point was not a formally recognised EPA licence discharge location during the reporting period however it was treated the same. Weekly water samples were undertaken by the Environmental Manager during discharge and analysed under the same conditions of the site EPL. Thirty one samples (sample event) were collected and analysed at the HPP Discharge Point during discharge in the 2021/22 reporting period. The water that passes through the discharge location consists of stormwater that passes through the Highland Pine Products site and historic Structaflor site which is opposite Borg Manufacturing. The water travels approximately 1.7km through open swales, pipelines, natural water ways and artificially constructed ERSED controls to filter it. This combination of both natural and artificial filtration has resulted in low levels analysed at the discharge point over the reporting period as can be seen in Table 34.

One sample taken on 3 November 2021 returned an oil and grease result of 17 mg/L which exceeds the EPA licence limit of 10mg/L however after requesting additional analysis (Silica Gel Clean-up on TPH and TRH) the results indicated the elevated oil and grease was due to excess broken down organic matter rather than a petroleum based hydrocarbon.

4.4.1 EPL 3035 Identification Point 1

Water quality discharge limit for Total Suspended Solids (TSS) was exceeded on 5th May 2021 with result being 290mg/l. It is possible that this exceedance was due to a section of the batter at the north eastern section of the swale system eroding resulting in deposition of sediment into the swale during the rain event which occurred immediately prior to sampling. The site weather station recorded 9.4mm on the day of the sample event. All other TSS results were below the EPL upper discharge concentration limit for the remainder of this reporting period

4.4.2 EPL 3035 Identification Point 28

At EPL discharge Point 28 there were three occurrences where water quality discharge limit for Total Suspended Solids (TSS) was exceeded. These occurred on 21 and 28 July and 4 August 2021 with results being 688mg/L, 238mg/L and 135mg/L respectively.

In mid-July 2021, the Construction Coordinator had been monitoring the effectiveness of the erosion and sediment (ERSED) controls within the north-eastern swale, as earthworks (including rectification works to the swale batter) were continuing in this area. Rainfall recorded for the seven-day period preceding this sample event totalled 74.2mm. The significant rainfall during this time would have mobilised the dry sediment within the swale system and runoff from off-site sources. It was noted by the sampler that the water at the sampling location appeared to be turbid but there was no mention of heavy sediment flows or highly disturbed water.

There were two rain events prior to sampling. One on 24 July (10.8mm) and another, significant event, on 25 July (19.4mm). In total, there was 48.4mm of rainfall in the week prior to the second exceedance. In addition to these rain events, a snowfall event prior to the sampling event was noted. The snowmelt when combined with the volume of rainfall (and increase the volume of rainfall) would have mobilised sediment within the swale system and contributed to the second exceedance.

In the seven days preceding the third exceedance, there was a total of 33.8mm of rainfall and one recorded snowfall event. It is our view that the additional controls put in place since the first exceedance reduced the severity of the third exceedance.

Since the TSS exceedances on 21 and 28 July, and 4 August, there have been no other TSS exceedances during this reporting period.

On 6 September 2021 a minor exceedance for oil and grease was reported (13mg/l). No unusual site conditions were recorded for this sample event and 25.2mm of rain was recorded the day prior. After requesting additional analysis (Silica Gel Clean-up on TPH and TRH) the results indicated the elevated oil and grease was due to excess broken down organic matter rather than a petroleum based hydrocarbon. No other exceedances were reported for this event.

4.5 Groundwater

In accordance with EPL 3035, Borg monitor four groundwater bores on site. The locations of groundwater monitoring bores are listed in Table 35 and shown on Figure 7.

Table 35 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site
15	East of stormwater treatment pond
16	East of Woodchem
24	Adjacent northern swale

Samples were collected by an appropriately qualified third-party specialist and analysed by NATA certified laboratories. This work is carried out in accordance with statutory requirements and relevant standards. Monitoring equipment is maintained in accordance with the manufacturer's specifications by qualified specialists.

Figure 7 Groundwater Monitoring Locations

Tables 36 - 39 present results for EPA Identification Points 14, 15, 16 and 24 during the reporting period and compares them with the previous two years data. There are no concentration limits for groundwater set in EPL 3035. Laboratory analysis report provided by ALS Environmental is attached as Appendix D.

Table 36 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2019/20	2020/21	2021/22
Aldrin	µg/L	Yearly	-	<0.5	<0.5
Ammonia as N	mg/L	Yearly	-	0.02	0.04
Chemical Oxygen Demand	mg/L	Yearly	-	25	<10
Electrical Conductivity	µS/cm	Yearly	-	220	323
Dieldrin	µg/L	Yearly	-	<0.5	<0.5
Formaldehyde	mg/L	Yearly	-	0.2	<0.1
pH	pH Units	Yearly	-	6.8	7.7
Total Dissolved Solids	mg/L	Yearly	-	210	244
Total Organic Carbon	mg/L	Yearly	-	3	<1
Total Petroleum Hydrocarbons	µg/L	Yearly	-	<50	<50
Total Suspended Solids	mg/L	Yearly	-	606	26
Water Height	m	Yearly	-	1.09	2.21

Table 37 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2019/20	2020/21	2021/22
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.02	<0.01	5.95
Chemical Oxygen Demand	mg/L	Yearly	<10	26	23
Electrical Conductivity	µS/cm	Yearly	918	1040	1336
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	0.1	1.10
pH	pH Units	Yearly	6.6	7.1	6.7
Total Dissolved Solids	mg/L	Yearly	483	690	982
Total Organic Carbon	mg/L	Yearly	4	3	55
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	2230
Total Suspended Solids	mg/L	Yearly	40	45	43
Water Height	m	Yearly	-	0.98	4.28

At EPA Point 14 (Table 36), it was reported in last years review that the monitoring well had only recently installed, and that excess sediment may have been deposited. As expected, there was a significant decrease in TSS in the 2021/22 sampling results.

Results for EPA Point 15 (Table 37) show a significant increase in Ammonia as N, Total dissolved Solids and Total Organic Carbon from the 2020/21 review period. There was also a notable increase of in Total Petroleum Hydrocarbons between the previous three years.

Table 38 Groundwater Monitoring Results EPA Identification Point 16 (GW01)

Pollutant	Unit of Measure	Frequency	2019/20	2020/21	2021/22
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.03	0	0.03
Chemical Oxygen Demand	mg/L	Yearly	11	26	28
Electrical Conductivity	µS/cm	Yearly	228	257	282
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	0.3	<0.2
pH	pH Units	Yearly	6.2	6.3	6.9
Total Dissolved Solids	mg/L	Yearly	127	200	168
Total Organic Carbon	mg/L	Yearly	5	6	8
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	52	173	197
Water Height	m	Yearly	0.74	0.86	2.02

Results for this reporting period for Point 16 are generally consistent with the 2020/21 results.

Table 39 Groundwater Monitoring Results EPA Identification Point 24 (GW26)

Pollutant	Unit of Measure	Frequency	2019/20	2020/21	2021/22
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	<0.01	1.12
Chemical Oxygen Demand	mg/L	Yearly	<10	182	37
Electrical Conductivity	µS/cm	Yearly	486	421	428
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	0.1	0.1
pH	pH Units	Yearly	6.8	7.3	7.2
Total Dissolved Solids	mg/L	Yearly	283	264	397
Total Organic Carbon	mg/L	Yearly	1	148	3
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	6	142	23
Water Height	m	Yearly	1.52	5.89	6.5

Results show significant decreases in this reporting period at Point 24 for COD, TOC and TSS. All other pollutants remain generally consistent with the previous years results with the exception of ammonia.

4.6 Noise

In accordance with EPL 3035 and site management plans, Borg Panels monitor noise emissions from the facility. Noise from the premises must not exceed the limits noted in Table 44. In accordance with Development Consent SSD 7016 all construction activities related to the development must also comply with the limits in Table 40.

Table 40 Noise Limits dB(A)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45
Note: <u>Day</u> – The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays <u>Evening</u> – The period from 6:00pm to 10:00pm <u>Night</u> – The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays L _{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.			

These noise limits apply under all meteorological conditions except for the following:

- Wind speeds greater than 3 meters/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.

Data recorded by the site meteorological station identified as EPA Identification Point 26 is used to determine meteorological conditions. Temperature inversion conditions (stability category) are to be determined by the sigma-thetas method referred to in Fact Sheet D in the *Noise policy for Industry EPA 2017*.

4.6.1 Operational Noise

EPL 3035 stipulates that noise monitoring to determine compliance must be carried out at least once annually during the day, evening and night time hours specified in Table 40. Noise monitoring must be undertaken in accordance with *Australian Standard AS 2659.1 (1998): Guide to use of sound measuring equipment – portable sound level meters*, and the compliance monitoring guidance provided in the *NSW Noise Policy for Industry (EPA 2017)*.

During the 2021/22 reporting period, Global Acoustics were engaged to conduct attended noise monitoring and provide an *Annual Noise Monitoring Report* for operational noise generated by Borg Panels facility. The noise monitoring event was conducted at four sensitive receiver locations as shown in Figure 8 and was undertaken on 30 June and 1 July 2021. Table 41 presents results of the attended annual noise monitoring event.

Figure 8 Borg Panels noise monitoring locations

Table 41 Attended Noise Monitoring L_{Aeq} (15 minute)

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ^{2, 3}	Borg L_{Aeq} 15 min	Exceedance ^{5,6}
NM1	01/07/2021 10:43	3.2	B	55	No	51	NA
NM2	01/07/2021 10:00	2	C	55	Yes	46	Nil
NM3	30/06/2021 17:17	1.7	E	55	Yes	NM	Nil
NM4	30/06/2021 17:33	1.8	E	55	Yes	<30	Nil
NM1	30/06/2021 20:47	2	E	50	Yes	46	Nil
NM2	30/06/2021 18:17	1.6	E	50	Yes	47	Nil
NM3	30/06/2021 21:45	1.5	F	50	Yes	NM	Nil
NM4	30/06/2021 21:09	1.4	F	50	Yes	<30	Nil
NM1	30/06/2021 22:54	2.3	F	45	No	46	NA
NM2	30/06/2021 23:20	1.9	F	45	Yes	43	Nil
NM3	30/06/2021 22:03	2.7	D	45	Yes	NM	Nil

NM4	30/06/2021 22:29	3.1	D	45	No	35	NA

NA = Not Applicable means atmospheric conditions outside conditions specified in Development.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible means there was no noise from the source of interest audible at the monitoring location.

1. Atmospheric data is sourced from Borg weather station in Oberon;

2. In accordance with EPL and PA, the noise criteria are to apply under all meteorological conditions except the following:

- Wind speeds greater than 3 m/s at 10 metres above ground level; or

- Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or

- Stability class G temperature inversion conditions.

3. Criterion may or may not apply due to rounding of meteorological data values;

4. Estimated or measured LAeq, 15 minute attributed to the Borg;

5. Bold results in red indicate exceedance of criteria (if applicable); and

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable

The attended noise monitoring conducted by Global Acoustics recorded no exceedance of limits identified in Table 40. All measurements were undertaken as per the *Noise policy for Industry* EPA 2017. The report prepared by Global Acoustics for the annual noise monitoring event is attached to this document as Appendix E.

4.6.2 Construction Noise

Borg Panels Construction Noise Management Plan (CNMP) includes for an attended monitoring regime of one event per quarter. Quarterly noise monitoring is not a compliance requirement under EPL 3035 however it is included as a commitment in Borg Panels Construction Noise Management Plan and therefore, a requirement of SSD 7016 condition C3.

Attended monitoring locations are shown in Figure 8. If any exceedances are identified, additional mitigation measures are implemented, and follow-up monitoring undertaken within one week of the exceedance to determine the effectiveness of the additional controls. Global Acoustics conducted the construction noise monitoring for this review period. Tables 42 to 45 show monitoring results for quarterly noise monitoring events. All reference notes are included below Table 45.

Table 42 Construction Noise Quarter 2

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{3, 4}
NM1	01/07/2021 10:43	3.2	B	55	No	51	NA
NM2	01/07/2021 10:00	2.0	C	55	Yes	46	Nil
NM3	30/06/2021 17:17	1.7	E	55	Yes	NM	Nil
NM4	30/06/2021 17:33	1.8	E	55	Yes	<30	Nil

Table 43 Construction Noise Quarter 3

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{e3,4}
NM1	16/09/2021 14:21	1.6	A	55	Yes	43	Nil
NM2	16/09/2021 14:45	1.4	S	55	Yes	44	Nil
NM3	16/09/2021 15:11	1.6	B	55	Yes	35	Nil
NM4	16/09/2021 13:54	1.6	A	55	Yes	34	Nil

Table 44 Construction Noise Quarter 4

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{e3,4}
NM1	17/11/2021 11:21	3.1	A	55	No	50	NA
NM2	17/11/2021 10:42	2.1	A	55	Yes	44	Nil
NM3	17/11/2021 11:52	2.3	A	55	Yes	33	Nil
NM4	17/11/2021 12:28	2.3	A	55	Yes	42	Nil

Table 45 Construction Noise Quarter 1

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{e3,4}
NM1	10/03/2022 09:46	0.4	C	55	Yes	44	Nil
NM2	10/03/2022 09:10	0.0	D	55	Yes	38	Nil
NM3	10/03/2022 10:57	0.0	B	55	Yes	28	Nil
NM4	10/03/2022 10:20	0.0	C	55	Yes	<25	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development Consent and so criterion is not applicable.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible, there was no noise from the source of interest audible at the monitoring location.

1. Noise criteria are to apply under all meteorological conditions except the following:

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

2. Site-only LAeq, 15minute attributed to Borg, including modifying factors if applicable;

3. Bold results in red indicate exceedance of criteria (if applicable); and

4. NA in exceedance column means atmospheric conditions outside conditions specified and criterion is not applicable.

No exceedances of EPL 3035 noise limits were recorded during these monitoring events. Reports provided by Global Acoustics for each event are attached to this document as Appendix F.

5 Community Relations

5.1 Environmental Complaints

Twelve community complaints were received during the 2021/22 reporting period. Site investigations were conducted by the Environmental Manager which included a review of plant operational data. Discussions were conducted with Area Managers/Supervisors regarding site activities to determine if the facility was operating within approved conditions as specified in SSD 7016 and EPL 3035 at the time of the complaints.

The NSW EPA advised they had received a complaint on 16 May 2021 from Oberon Council regarding loads of waste being received that were not covered. The Mechanics workshop Manager and Grounds Manager discussed at length a suitable solution and for items to be purchased to ensure loads can safely be covered.

An anonymous complaint was received on 13 September 2021 regarding alleged blue dust pollution and glue odours. The complainant reported that *blue dust pollution fallout* was reportedly *noticed on various occasions* at their premises *from 7.30am* prior to the complaint being made. It was also noted that there was a *blanket fallout on all cars and everything outside*. The Environmental Manager investigated potential sources of dust and odour onsite. He also drove to Tarana Crescent where the complaint was made from and investigated any foreign materials on surfaces, none were identified. A second investigation revealed no evidence of any foreign materials or dust in the area and no unusual odours.

One traffic complaint was received on 19 October 2021 regarding a truck using Clover Lane which had only recently been resurfaced by Oberon Council. The resident was concerned that *the truck may damage the new road surface that had been installed*. Environmental Manager investigated and found no evidence of damage to the road or roadside in Clover Lane. Environmental Manager also informed the truck driver, who was dropping off a work colleague to his residence on Clover Lane, that he is not to use Clover Lane and instead, drop the colleague at Lowes Mount Road/Clover Lane intersection.

Nine complaints received during this reporting period were related to noise from two different residents and locations. One complainant made constant reference to the *sound of banging/crashing and drums being thrown into a pit*. Site investigation undertaken by the Environmental Manager found that the source of the noise was the unloading of logs by the Sennebogen into the debarker conveyor. Noise monitoring was undertaken at the address from which the complaints were made from for a two week period, no evidence of noise breaches were identified at any time (day, evening and night period). External noise monitoring was also completed by Global Acoustics within the reporting period with no evidence of breaches identified. The remaining complaint was investigated and found no evidence of noise breaches from the property. No further action was required, no further complaint was made.

For each complaint received, Borg provided a response to the complainant in a timely manner. With respect to noise complaints, regardless of our demonstration of compliance with noise limits via compliance noise monitoring events, Borg will continue to undertake ad hoc attended and unattended noise monitoring where necessary to ensure nil noise nuisance to local residents from site activities.

A complete summary of complaints received during the reporting period is provided in Appendix G.

5.2 Community Liaison

5.2.1 Community Consultative Committee (CCC)

Borg Manufacturing has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the facility, and the greater Oberon Timber Complex (OTC). The CCC meetings provide a forum to discuss and address general construction and operational impacts, and mitigation measures for the Borg Panels facility. The CCC meetings also allow for feedback from the local community to Borg Panels and the OTC in relation to environmental performance.

All meetings planned during the reporting period were cancelled due to the coronavirus pandemic. The next meeting is proposed for 27th July 2022 and then on the last Wednesday of every quarter. These will be reported in the future Annual Reviews.

5.2.3 Opportunities for Information Exchange

Borg established the following avenues to record inquiries and complaints related to construction and operational activities:

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

The telephone number, postal and email address are displayed on a sign at the entrance to Borg Panels in a position that is clearly visible to the public. This information is also distributed to the local community and is included in public information communications which may include Borg Panels website, local area advertisements, letterbox notifications and project fact sheets.

6 Independent Audit

Development Consent SSD 7016 condition C15 sets out requirements for independent environmental audits of the Development. Borg commissioned environmental consultants Molino Stewart to conduct an Independent Environmental Audit (IEA) of the site for operations and construction for audit period 1 July 2018 to 29 May 2021 aligning with the anniversary of the SSD 7016 consent approval. Borg submitted a letter to DPIE on 7 April 2021 seeking approval for this audit team for the IEA. DPIE endorsed Molino Stewart on 14 April 2021.

Due to the covid pandemic restricting the site visit component of this audit, it was necessary to seek extensions from DPIE for the submission of the final Report. Approval was granted to extend the submission date and was therefore submitted to DPIE on 18 October 2021.

Molino Stewart concluded that the Development was undertaken generally in accordance with SSD 7016, the EIS and RTS, development layout plans and drawings, management and mitigation measures, and documents and drawings of the Existing Development.

The audit considered a total of 161 conditions from the Project Approval and the EPL, of which there were 238 separately assessable sub-conditions (items). In general, the redevelopment works were found to be compliant with the approval consent requirements. There were 23 non-compliances (items) with 13 associated corrective actions raised.

The IEA Report was submitted to DPIE on 18 October 2021.

In accordance with SSD 7016 condition C15 the next IEA is scheduled for 2023.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through the Borg Panels Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, Borg's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

- (a) Harm to the environment is material if:
 - i. It involves actual or potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
 - ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations),and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there were no reportable environmental pollution incidents at the Borg Panels facility.

7.2 Non-conformances

Environmental non-conformances related to surface water have been discussed in Section 4.4 of this Review and therefore have not been repeated in this section.

On 20 September 2021 the EPA issued borg with a Show Cause Letter under Section 64 Alleged Failure to Comply with Condition, Breach of Licence Condition, *Protection of the Environment Operations Act 1997* relating to water quality exceedances reported in the 2020/2021 EPA Annual Return. The EPA's review of the Annual Return found the concentration of oil and grease, pH, biological oxygen demand, total nitrogen and total suspended solids reported in the AR exceeded the concentration limits specified in condition L2.5 of the licence (EPL 3035). Borg provided their response to this Letter on 8 October 2021 detailing reasons why the EPA should not take regulatory action in response to the alleged offences. On 22 December 2021 the EPA advised Borg that after considering Borg's response that they would not issue a Penalty Infringement Notice, but instead an Official Caution.

A Show Cause Letter was issued to Borg from the EPA on 28 September 2021 under Section 64 Alleged Failure to Comply with Condition, Breach of Licence Condition, *Protection of the Environment Operations Act 1997* for three alleged offences under condition L2.5 of EPL 3035 occurring on 21 July 2021, 28 July 2021 and 4 August 2021 (incident reports provided to the EPA at the time of each offence being water quality discharge limit exceedance). Each of the three alleged offences were related to water quality discharge concentration limit exceedances for total suspended solids. The EPA invited Borg to provide

a response to the Show Cause Letter. Borg issued the response on 15 October 2021 detailing reasons why the EPA should not take regulatory action. The EPA issued Borg with an Official Caution in regards to this offence on 22 December 2021.

A Show Cause Letter was issued by the EPA on 18 November 2021 alleging failure to comply with licence condition – emission of wood fibre. On 24 September 2021 Borg reported an incident to the EPA's Environment Line. The incident comprised the unintentional release of wood fibre from one of the Conti 1 cyclones to the nearby receiving community. On 8 October 2021 Borg provided the EPA with an incident report in accordance with EPL 3035 condition R3. On 25 October 2021, following a request from the EPA, Borg provided additional information on this incident. The EPA considered that there were reasonable and feasible measures available that could have been taken to eliminate the risk of fibre release. The EPA therefore alleged that there was a failure to comply with licence condition O2.1. The EPA invited Borg to provide any information, facts, or circumstances to the EPA to consider whether to take regulatory action. Borg submitted a response to this Show Cause Letter on 10 December 2021. No response as received from the EPA.

8 Activities Proposed for the next Annual Review Period

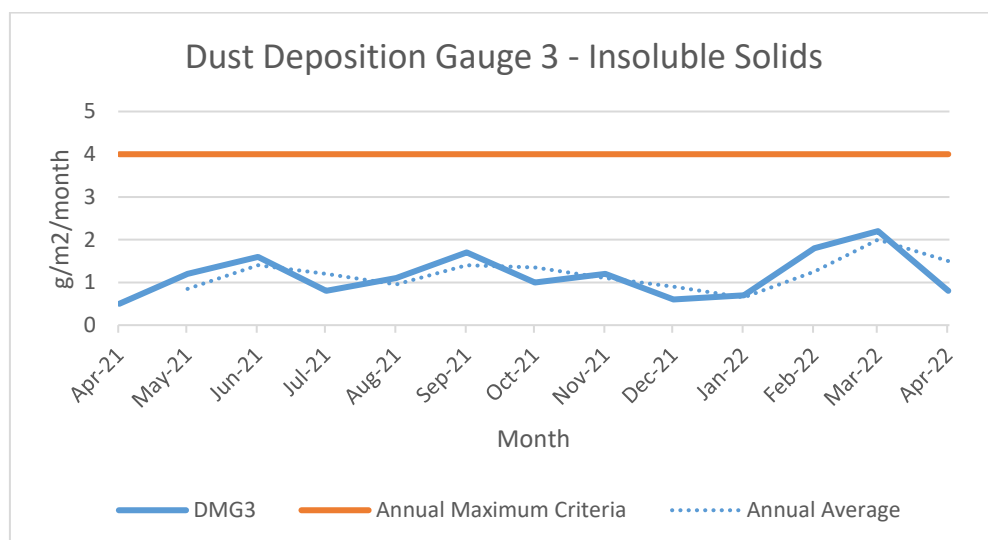
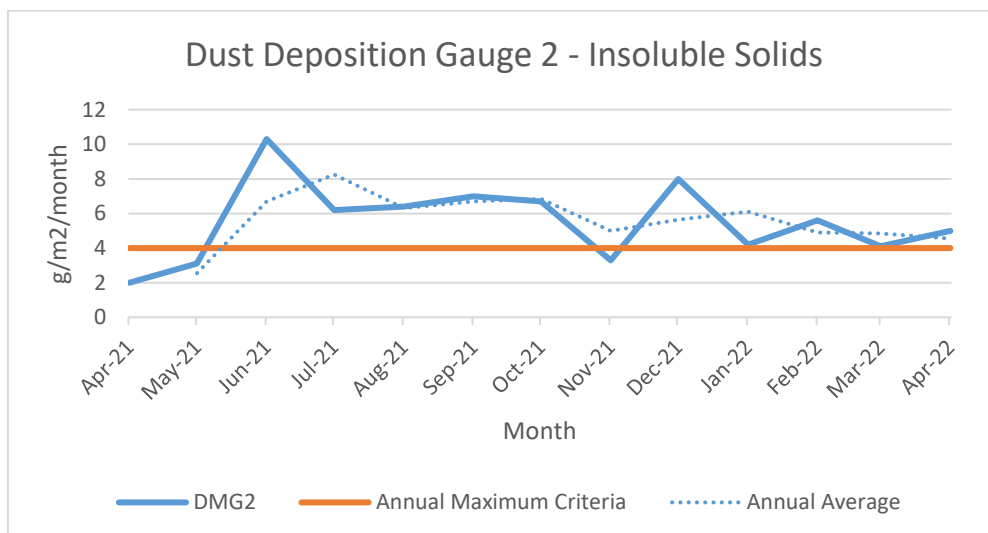
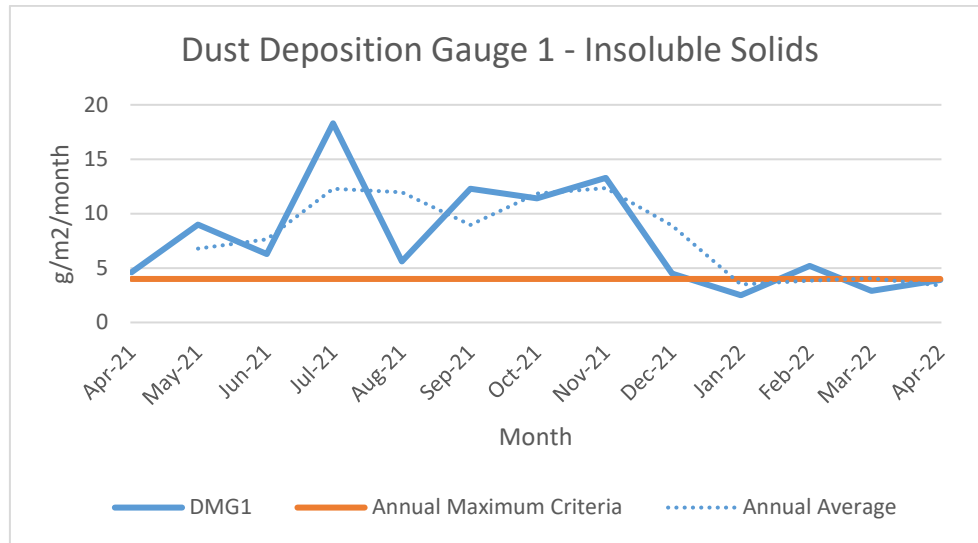
Borg Panels will endeavour to carry out the activities listed in Table 46 during the 2022/23 reporting period to assist with improving the environmental performance of the existing development and the project.

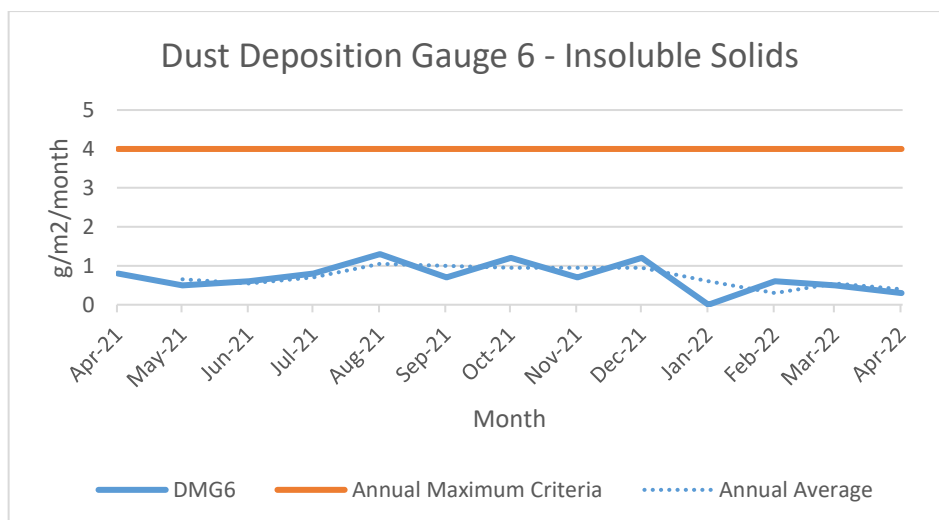
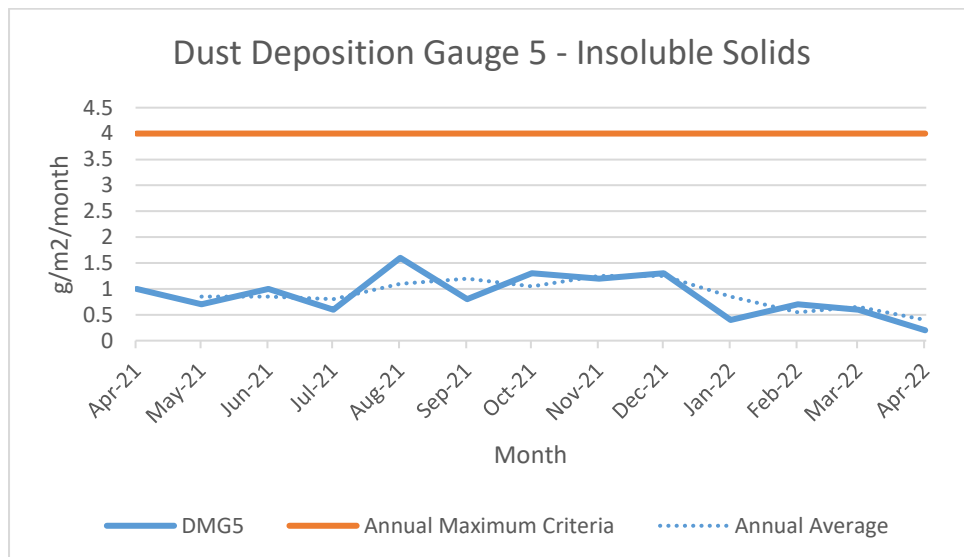
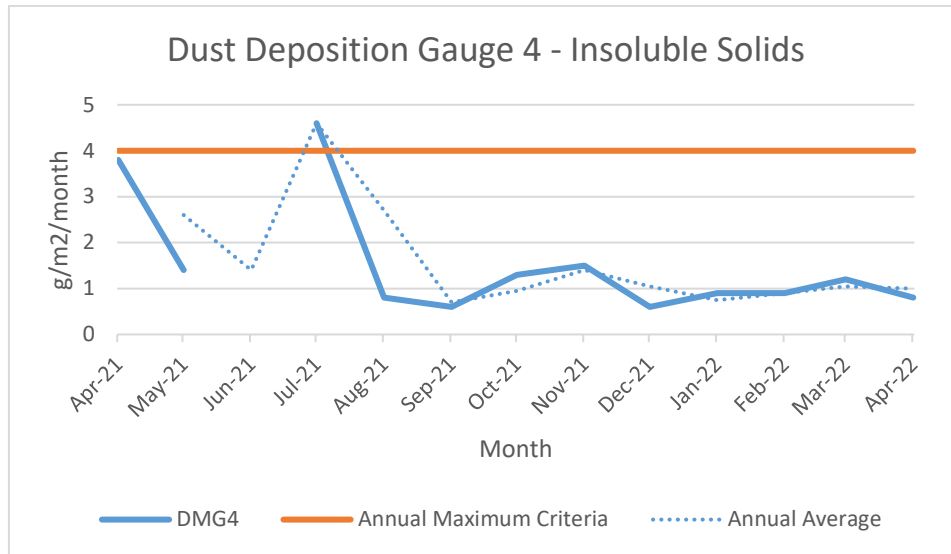
Table 46 Proposed Activities for 2022/23 Reporting Period

Ongoing implementation of Environmental Management Plans for the existing development and the project.
Complete verification studies required for SSD 7016 including modifications
Complete installation of additional material handling equipment
Complete works as approved under Modification 4
Continue erosion and sediment control inspections and rectification works as necessary to manage water quality discharge
Discuss with EPA licensed water discharge points, referencing EPL 3035, to ensure this is fit for purpose
Complete the second Urban Wood Residue trial (recycled wood program) and report back to EPA

APPENDICIES

Appendix A – Depositional Dust Monitoring Data





Appendix B – Air Quality Monitoring Report

Borg Manufacturing, Oberon Plant
Annual Emission Testing Report
Report Number R012463-1

Document Information

Template Version 211117

Client Name: Borg Manufacturing
Report Number: R012463-1
Date of Issue: 6 July 2022
Attention: Jacqueline Blomberg
Address: Lowes Mount Rd
Oberon NSW 2787
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Steven Cooper
Senior Air Monitoring
Consultant



NATA Accredited Laboratory
No. 14601

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration, and inspection reports.

This document is confidential and is prepared for the exclusive use of Borg Manufacturing and those granted permission by Borg Manufacturing.

The report shall not be reproduced except in full.

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo's terms of NATA accreditation. This does not include comments, conclusions or recommendations based upon the results. Refer to 'Test Methods' for full details of testing covered by NATA accreditation.

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1 Executive Summary

1.1 Background

Ektimo was engaged by Borg Manufacturing to perform emission testing at their Oberon plant. Testing was carried out in accordance with Environment Protection Licence 3035.

1.2 Project Objective

The objectives of the project were to conduct a monitoring programme to quantify emissions from nine discharge points to determine compliance with Borg Manufacturing's Environment Protection Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
MDF and Particle Board Plants		
EPA 4 – DC1 Baghouse	3 March 2022	Solid particles (Total) Formaldehyde (CH ₂ O)
EPA 5 – DC2 Baghouse		
EPA 7 – Conti 2 Stage 1 Dryer Cyclone #1 (West)	10 March 2022	Solid particles (Total) Fine particulate matter (PM ₁₀) Formaldehyde (CH ₂ O) Smoke Nitrogen oxides (as NO ₂)
EPA 8 – Conti 2 Stage 1 Dryer Cyclone #2 (East)		
EPA 27 – Conti 2 Press Vent Stack	9 March 2022	
EPA 29 – Forming Line Baghouse	1 March 2022	
EPA 30 – Form Station Baghouse		
EPA 31 – Particle Board Press Extraction System		
EPA 32 – WESP		

* Flow rate, velocity, temperature, and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence limit set by the NSW EPA as per licence 3035 (last amended on 2 February 2022).

EPA No.	Location Description	Pollutant	Units	Licence limit	Detected values
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Total Solid Particles	mg/m ³	200	28
		Formaldehyde	mg/m ³	5	4.2
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Total Solid Particles	mg/m ³	200	25
		Formaldehyde	mg/m ³	5	4.6

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

1.4 Result Summary

The following result summary table details results of all analytes for locations tested.

EPA No.	Location Description	Pollutant	Units	Detected Values March 2022
4	DC1 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	11
5	DC2 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	5.6
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Solid particles	mg/m ³	28
		Formaldehyde	mg/m ³	4.2
		Nitrogen oxides	mg/m ³	250
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Solid particles	mg/m ³	25
		Formaldehyde	mg/m ³	4.6
		Nitrogen oxides	mg/m ³	220
27	Combined Stack (C2 Press Vents)	Solid particles	mg/m ³	12
		Formaldehyde	mg/m ³	7.2
		Nitrogen oxides	mg/m ³	<4
29	Forming Line Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	4.9
		Nitrogen oxides	mg/m ³	<4
30	Form Station Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	1.3
		Nitrogen oxides	mg/m ³	<4
31	Particle Board Press Extraction System	Solid particles	mg/m ³	30
		Formaldehyde	mg/m ³	1.5
		Nitrogen oxides	mg/m ³	<4
32	WESP	Solid particles	mg/m ³	39
		Formaldehyde	mg/m ³	2.3
		Nitrogen oxides	mg/m ³	210

2 Results

2.1 EPA 4 – DC1 Baghouse

Date	3/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 4 - DC1 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220218

Sampling Plane Details

Sampling plane dimensions	1280 x 680 mm
Sampling plane area	0.87 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 8
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	3.1	
Gas molecular weight, g/g mole	28.6 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.98	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0935 & 1050
Temperature, °C	40
Temperature, K	313
Velocity at sampling plane, m/s	9.4
Volumetric flow rate, actual, m ³ /s	8.1
Volumetric flow rate (wet STP), m ³ /s	6.2
Volumetric flow rate (dry STP), m ³ /s	6
Mass flow rate (wet basis), kg/hour	29000

Formaldehyde	Results
Sampling time	0942-1042
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	11 3.9

Isokinetic Results	Results
Sampling time	0940-1047
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	<2 <0.6
Isokinetic Sampling Parameters	
Sampling time, min	64
Isokinetic rate, %	97
Gravimetric analysis date (total particulate)	08-03-2022

2.2 EPA 5 – DC2 Baghouse

Date	3/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 5 - DC2 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220218

Sampling Plane Details

Sampling plane dimensions	2800 x 680 mm
Sampling plane area	1.9 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 14
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.1	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.01	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1115 & 1235
Temperature, °C	30
Temperature, K	303
Velocity at sampling plane, m/s	13
Volumetric flow rate, actual, m ³ /s	25
Volumetric flow rate (wet STP), m ³ /s	20
Volumetric flow rate (dry STP), m ³ /s	19
Mass flow rate (wet basis), kg/hour	91000

Aldehydes	Sampling time	Results	
		1132-1232	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		5.6	6.4

Isokinetic Results	Sampling time	Results	
		1120-1234	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<2	<2
Isokinetic Sampling Parameters			
Sampling time, min		70	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		08-03-2022	

2.3 EPA 7 – Conti 2 Stage 1 Dryer Cyclone #1 (West)

Date	10/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 2 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220218

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS4323.1 (2021)	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	14	
Gas molecular weight, g/g mole	27.7 (wet)	29.3 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.31 (dry)
Gas density at discharge conditions, kg/m ³	0.93	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1135 & 1350
Temperature, °C	48
Temperature, K	321
Velocity at sampling plane, m/s	9.9
Volumetric flow rate, actual, m ³ /s	48
Volumetric flow rate (wet STP), m ³ /s	36
Volumetric flow rate (dry STP), m ³ /s	31
Mass flow rate (wet basis), kg/hour	160000

Gas Analyser Results	Average		Minimum		Maximum	
	1155 - 1254		1155 - 1254		1155 - 1254	
Sampling time	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	250	470	210	390	280	520

Date	10/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 2 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		220218

Formaldehyde	Results
Sampling time	1145-1245
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	4.2 7.8

Isokinetic Results	Results
Sampling time	1140-1345 1140-1345 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	28 52
Fine particulates (PM10)	11 20
D50 cut size, 10µm	9.8
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	120 120
Isokinetic rate, %	102 105
Gravimetric analysis date (total particulate)	24-03-2022
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	24-03-2022

Smoke Obscuration	Result
Time of assessment	1145-1200
Smoke Obscuration	0

2.4 EPA 8 – Conti 2 Stage 1 Dryer Cyclone #2 (East)

Date	10/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane conformance to AS4323.1 (2021)	Non-conforming

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-conforming due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	14	
Gas molecular weight, g/g mole	27.7 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.30 (dry)
Gas density at discharge conditions, kg/m ³	0.93	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0910 & 1125
Temperature, °C	47
Temperature, K	320
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	50
Volumetric flow rate (wet STP), m ³ /s	37
Volumetric flow rate (dry STP), m ³ /s	32
Mass flow rate (wet basis), kg/hour	170000

Gas Analyser Results

Sampling time	Average		Minimum		Maximum	
	0925 - 1024		0925 - 1024		0925 - 1024	
	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	220	430	200	380	250	490

Reference: R012463-1

Date: 6/07/2022

Prepared for: Borg Manufacturing Pty Ltd

Ektimo

Date	10/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Formaldehyde	Results
Sampling time	0930-1030
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	4.6 9

Isokinetic Results	Results
Sampling time	0915-1120 0915-1120 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	25 49
Fine particulates (PM10)	10 19
D50 cut size, 10µm	10.6
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	120 120
Isokinetic rate, %	97 90
Gravimetric analysis date (total particulate)	24-03-2022
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	24-03-2022

Smoke Obscuration	Result
Time of assessment	1000 - 1015
Smoke Obscuration	0



2.5 EPA 27 – Combined Conti 2 Press Vent Stack

Date	9/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 27 - Combined Conti 2 Press Vent
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2.5 D
Upstream disturbance	Junction 4 D
No. traverses & points sampled	2 20
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2.1	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.03	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1515 & 1710
Temperature, °C	24
Temperature, K	297
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	32
Volumetric flow rate (wet STP), m ³ /s	25
Volumetric flow rate (dry STP), m ³ /s	25
Mass flow rate (wet basis), kg/hour	120000

Gas Analyser Results	Average		Minimum		Maximum	
	1525 - 1624		1525 - 1624		1525 - 1624	
	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	<4	<6	<4	<6	<4	<6

Date	9/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 27 - Combined Conti 2 Press Vent Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

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Formaldehyde	Results
Sampling time	1535-1635
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	7.2 11

Isokinetic Results	Results
Sampling time	1520-1705 1520-1705 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	12 18
Fine particulates (PM10)	3.4 5.2
D50 cut size, 10µm	9.9
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	100 100
Isokinetic rate, %	104 113
Gravimetric analysis date (total particulate)	24-03-2022
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	24-03-2022

Smoke Obscuration	Result
Time of assessment	1530 - 1545
Smoke Obscuration	0

2.6 EPA 29 – Forming Line Baghouse

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	1000 mm
Sampling plane area	0.785 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Inclined Circular
Downstream disturbance	Bend 3 D
Upstream disturbance	Bend 3.5 D
No. traverses & points sampled	2 16
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	1.3	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.96	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1540 & 1710
Temperature, °C	25
Temperature, K	299
Velocity at sampling plane, m/s	39
Volumetric flow rate, actual, m ³ /s	30
Volumetric flow rate (wet STP), m ³ /s	23
Volumetric flow rate (dry STP), m ³ /s	23
Mass flow rate (wet basis), kg/hour	110000

Gas Analyser Results	Average		Minimum		Maximum	
	1550 - 1649		1550 - 1649		1550 - 1649	
	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	<4	<6	<4	<6	<4	<6

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

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Formaldehyde	Results
Sampling time	1550-1650
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	4.9 6.6

Isokinetic Results	Results
Sampling time	1545-1707 1545-1707 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	<2 <3
Fine particulates (PM10)	<2 <3
D50 cut size, 10µm	9.8
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	80 80
Isokinetic rate, %	103 62
Gravimetric analysis date (total particulate)	08-03-2022
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	08-03-2022

Smoke Obscuration	Result
Time of assessment	1600 - 1615
Smoke Obscuration	0

*Isokinetic rate for fine particulate matter (PM₁₀) could not be attained due to the high stack velocity.

2.7 EPA 30 – Form Station Baghouse

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	545 mm
Sampling plane area	0.233 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Inclined Circular
Downstream disturbance	Bend 8 D
Upstream disturbance	Bend 8 D
No. traverses & points sampled	2 8
Sample plane conformance to AS4323.1 (2021)	Ideal sampling plane

Stack Parameters

Moisture content, %v/v	0.93
Gas molecular weight, g/g mole	28.9 (wet) 29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet) 1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.97

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1720 & 1835
Temperature, °C	25
Temperature, K	298
Velocity at sampling plane, m/s	29
Volumetric flow rate, actual, m ³ /s	6.7
Volumetric flow rate (wet STP), m ³ /s	5
Volumetric flow rate (dry STP), m ³ /s	5
Mass flow rate (wet basis), kg/hour	23000

Gas Analyser Results		Average		Minimum		Maximum	
Sampling time		1730 - 1829		1730 - 1829		1730 - 1829	
Combustion Gases	Concentration	Mass Rate		Mass Rate		Mass Rate	
	mg/m ³	g/min		g/min		g/min	
Nitrogen oxides (as NO ₂)		<4		<4		<4	
		<1		<1		<1	

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

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Formaldehyde	Results
Sampling time	1730-1830
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	1.3 0.39

Isokinetic Results	Results
Sampling time	1725-1831 1725-1831 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	<2 <0.5
Fine particulates (PM10)	<3 <0.9
D50 cut size, 10µm	9.8
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	64 64
Isokinetic rate, %	98 84
Gravimetric analysis date (total particulate)	08-03-2022
Gravimetric analysis date (PM ₁₀ /PM _{2.5})	08-03-2022

Smoke Obscuration	Result
Time of assessment	1600 - 1615
Smoke Obscuration	0

2.8 EPA 31 – Particle Board Press Extraction System

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 30 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Junction 3 D
No. traverses & points sampled	2 20
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	3.3	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	1.00	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1255 & 1500
Temperature, °C	33
Temperature, K	307
Velocity at sampling plane, m/s	11
Volumetric flow rate, actual, m ³ /s	35
Volumetric flow rate (wet STP), m ³ /s	28
Volumetric flow rate (dry STP), m ³ /s	27
Mass flow rate (wet basis), kg/hour	130000

Gas Analyser Results	Average		Minimum		Maximum	
	1315 - 1414		1315 - 1414		1315 - 1414	
Sampling time	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	<4	<7	<4	<7	<4	<7

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

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Formaldehyde	Sampling time	Results	
		1320-1420	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.5	2.5

Isokinetic Results	Sampling time	Results	
		1315-1457 1315-1457 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		30	48
Fine particulates (PM10)		20	33
D50 cut size, 10µm		10.0	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		100	100
Isokinetic rate, %		100	105
Gravimetric analysis date (total particulate)		08-03-2022	
Gravimetric analysis date (PM ₁₀ /PM _{2.5})		08-03-2022	

Smoke Obscuration	Time of assessment	Result
		1330 - 1335
Smoke Obscuration		0

2.9 EPA 32 – WESP

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

220218

Sampling Plane Details

Sampling plane dimensions	2520 mm
Sampling plane area	4.99 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Crane 40 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Change in diameter 4 D
No. traverses & points sampled	2 28
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

Comments

The gas temperature of the sampling plane is below the dew point

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	23	
Gas molecular weight, g/g mole	26.8 (wet)	29.4 (dry)
Gas density at STP, kg/m ³	1.20 (wet)	1.31 (dry)
Gas density at discharge conditions, kg/m ³	0.85	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0925 & 1155
Temperature, °C	63
Temperature, K	336
Velocity at sampling plane, m/s	15
Volumetric flow rate, actual, m ³ /s	77
Volumetric flow rate (wet STP), m ³ /s	55
Volumetric flow rate (dry STP), m ³ /s	42
Mass flow rate (wet basis), kg/hour	240000

Gas Analyser Results	Average		Minimum		Maximum	
	0945 - 1044		0945 - 1044		0945 - 1044	
	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	210	520	170	430	240	600

Date	1/03/2022	Client	Borg Manufacturing Pty Ltd
Report	R012463	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Ahmad Ramiz	State	NSW
Process Conditions	Please refer to client records.		

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Formaldehyde	Sampling time	Results	
		0940-1040	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		2.3	5.7

Isokinetic Results	Sampling time	Results	
		0930-1152	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		39	100
Isokinetic Sampling Parameters			
Sampling time, min		140	
Isokinetic rate, %		93	
Gravimetric analysis date (total particulate)		08-03-2022	

Smoke Obscuration	Time of assessment	Result
		0940 - 0955
Smoke Obscuration		0

* Fine particulate matter (PM₁₀) testing could not be undertaken at this location due to excessively saturated gas stream.

3 Plant Operating Conditions

Borg Manufacturing have collated plant operating conditions and will provide them to NSW EPA as required.

See Borg Manufacturing's records for complete process conditions.

4 Test Methods

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sampling points - Selection	NSW EPA TM-1	NA	NA	✓	NA
Flow rate, temperature and velocity	NSW EPA TM-2	NSW EPA TM-2	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22	NSW EPA TM-22	8%	✓	✓
Dry gas density	NA	NSW EPA TM-23	not specified	NA	✓
Molecular weight	NA	USEPA Method 3	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24	NSW EPA TM-24	13%	✓	✓
Nitrogen oxides	NSW EPA TM-11	NSW EPA TM-11	12%	✓	✓
Oxygen	NSW EPA TM-25	NSW EPA TM-25	13%	✓	✓
Aldehydes and ketones	Ektimo 332	Ektimo 332	16%	✓	✓ [†]
Particulate matter (PM ₁₀)	NSW EPA OM-5	NSW EPA OM-5	6%	✓	✓ ^{††}
Solid particles (total)	NSW EPA TM-15	NSW EPA TM-15	3%	✓	✓ ^{††}
Blackness of smoke	NA	NSW EPA TM-16	not specified	NA	✓

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[†] Analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601. Results were reported on
31 March 2022 in report LV-002562
16 March 2022 in report LV-002505
24 March 2022 in report LV-002542
21 March 2022 in report LV-002514

^{††} Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

5 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

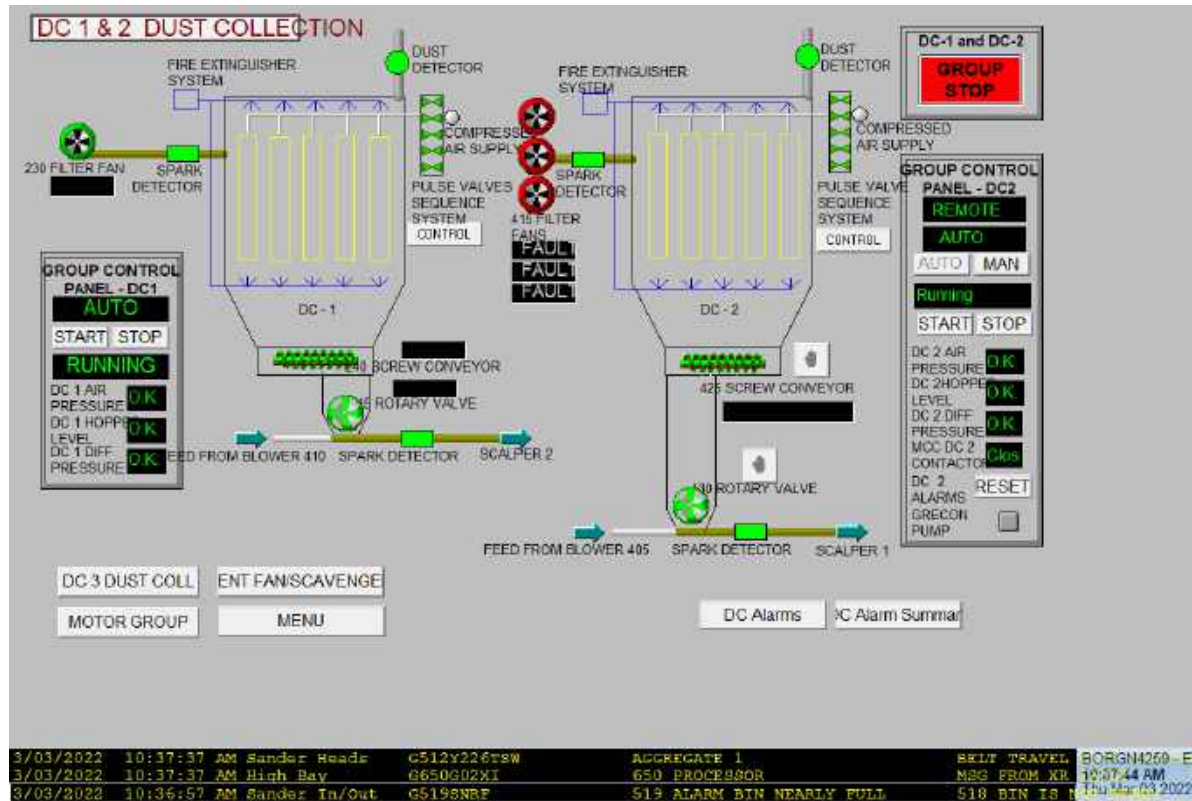
NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

6 Definitions

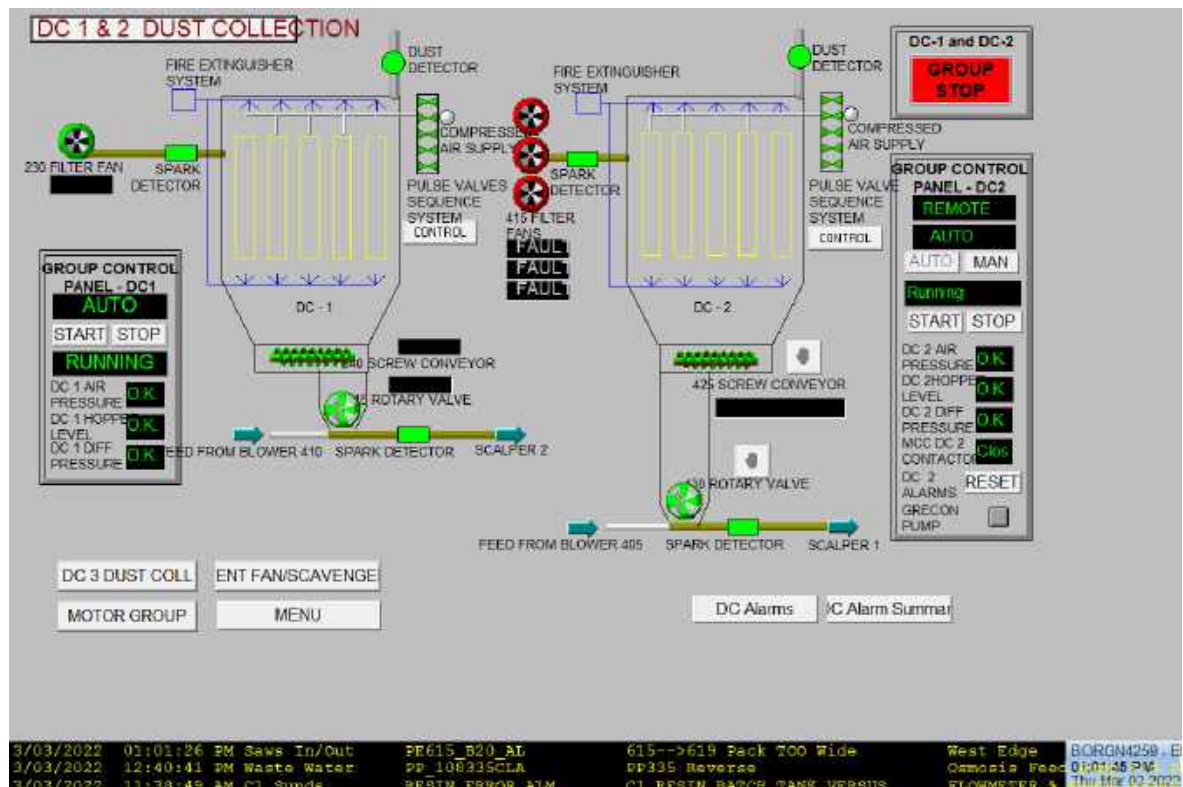
The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
CEM/CEMS	Continuous Emission Monitoring/Continuous Emission Monitoring System
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D ₅₀	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D ₅₀ method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D ₅₀ of that cyclone and less than the D ₅₀ of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
EPA	Environment Protection Authority
FTIR	Fourier Transform Infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NT	Not tested or results not required
OM	Other approved method
PM ₁₀	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those not matching a standard compound), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TM	Test method
TOC	The sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

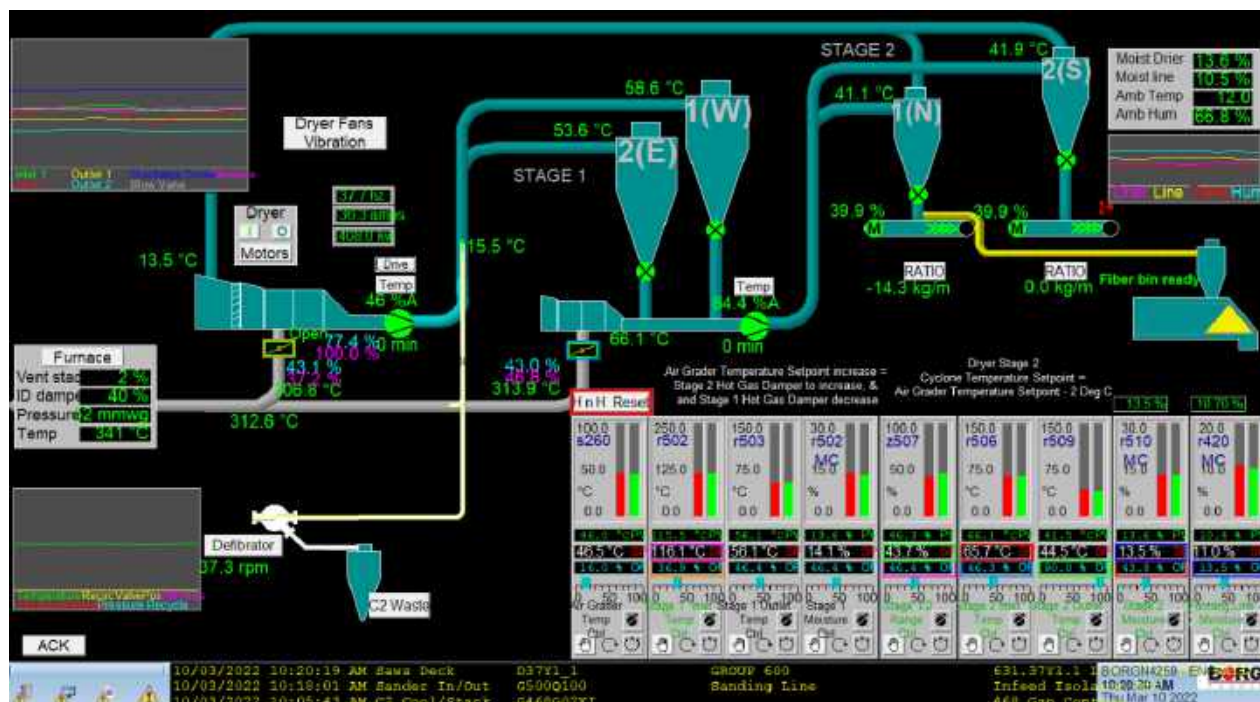
EPA 4 - DC1 Baghouse & EPA 5 - DC2 Baghouse (3 March 2022, 10:37)



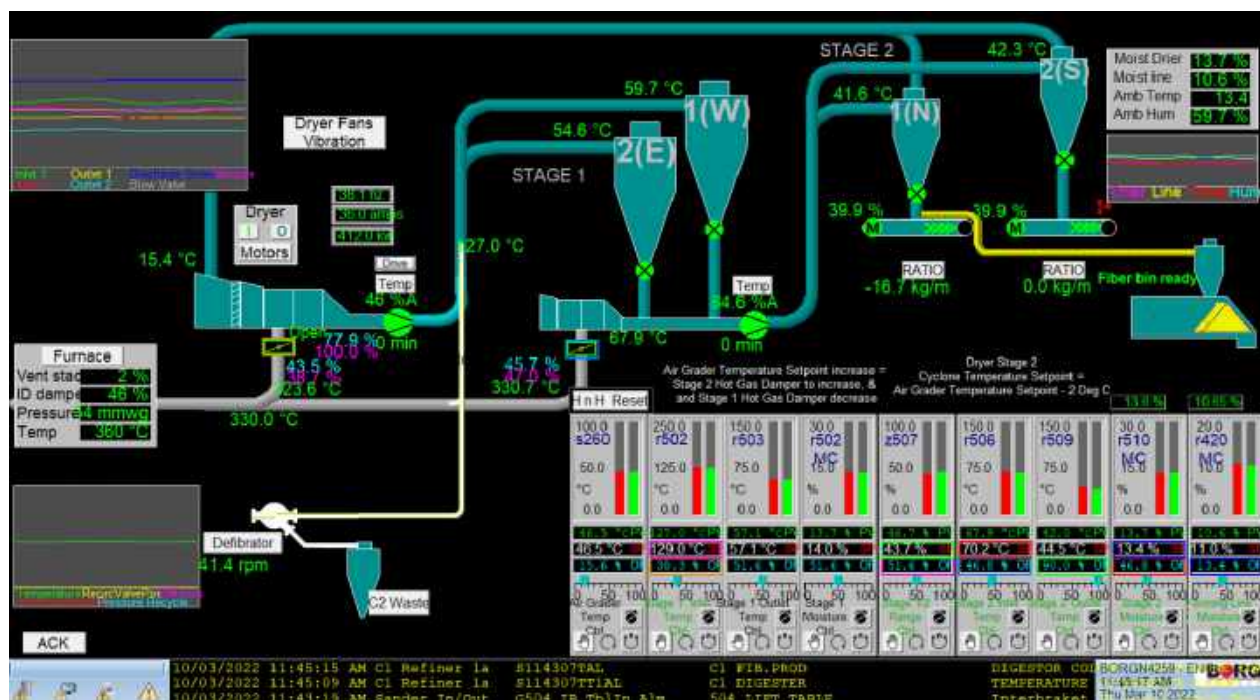
EPA 4 - DC1 Baghouse & EPA 5 - DC2 Baghouse (3 March 2022, 13:01)



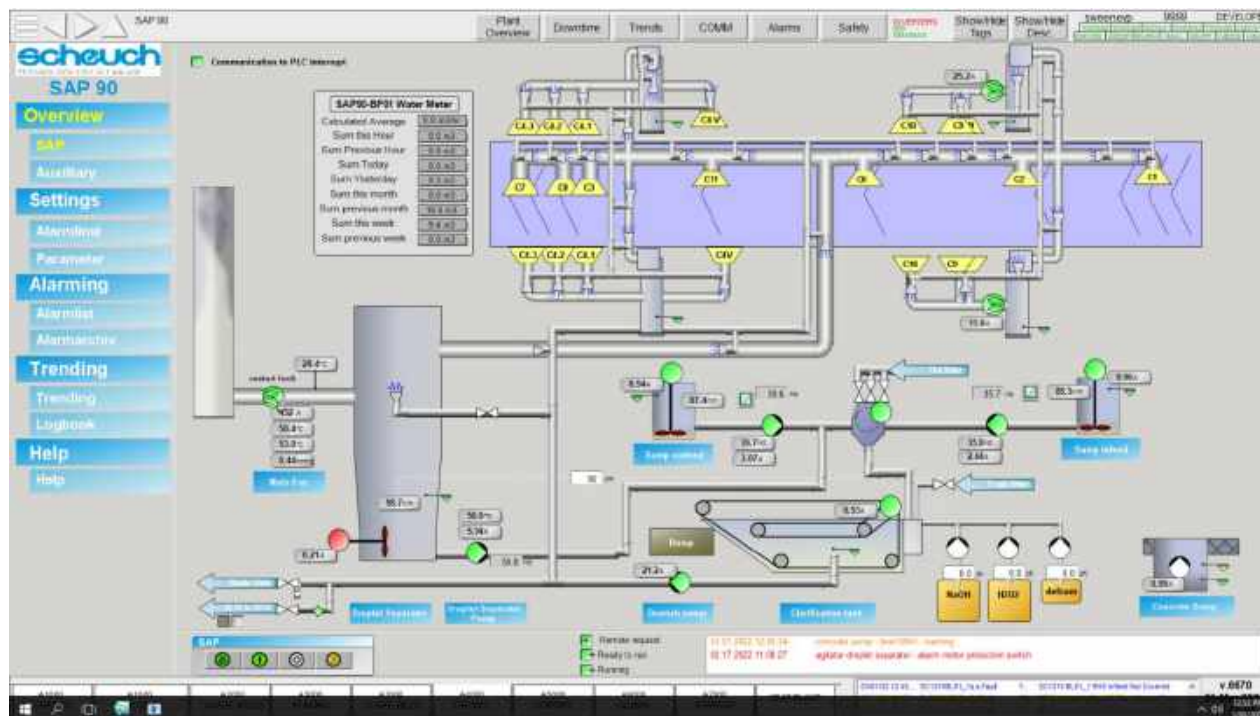
EPA 7 Conti 2 Stage 1 Dryer Cyclone # 1 (West) & EPA 8 Conti 2 Stage 1 Dryer Cyclone # 2 (East) (10 March 2022, 10:20)



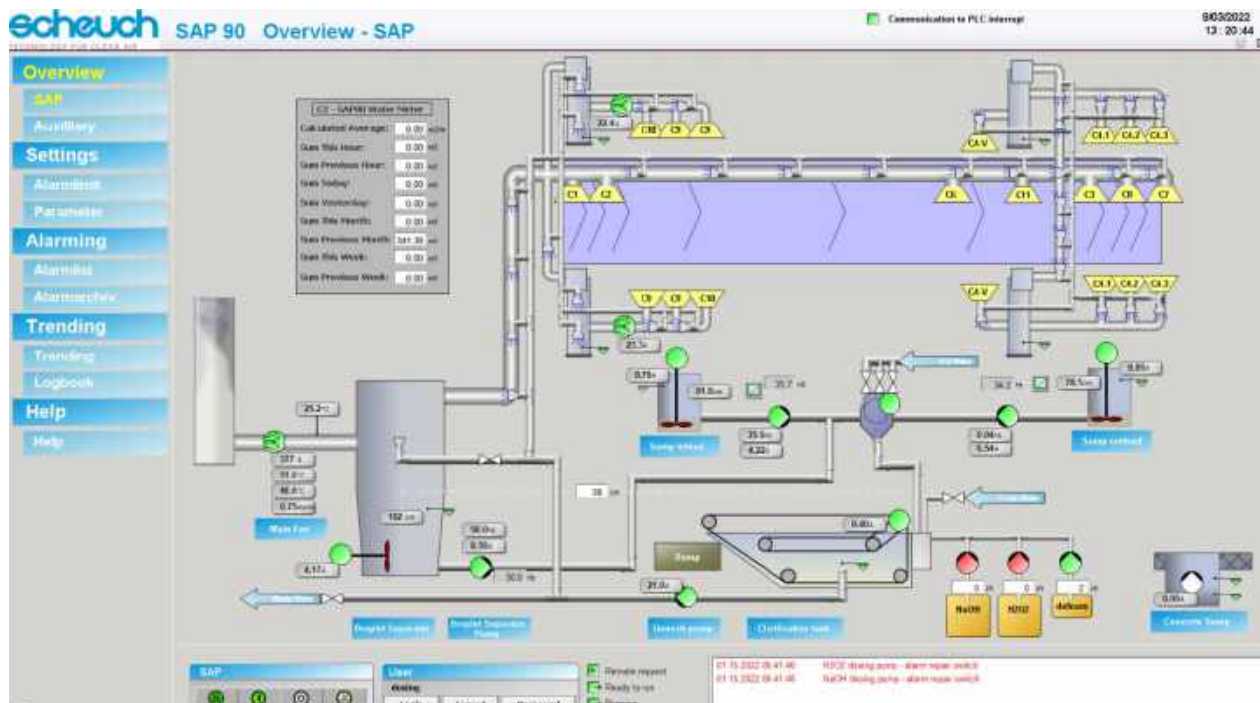
EPA 7 Conti 2 Stage 1 Dryer Cyclone # 1 (West) & EPA 8 Conti 2 Stage 1 Dryer Cyclone # 2 (East) (10 March 2022, 11:45)



SAP 90 (1 March 2022, 12:53)



SAP 90 (9 March 2022, 13:20)



8 Appendix 2. Site Location Photos



EPA 4 – DC1 Baghouse



EPA 5 – DC2 Baghouse



EPA 7 – Conti 2 Stage 1 Dryer Cyclone #1 (West) &
EPA 8 – Conti 2 Stage 1 Dryer Cyclone #2 (East)



EPA 27 – Conti 2 Press Vent Stack



EPA 29 – Forming Line Baghouse



EPA 30 – Form Station Baghouse



EPA 31 – Particle Board Press Extraction System



EPA 32 – WESP

Ektimo

ektimo.com.au

1300 364 005

MELBOURNE (Head Office)

26 Redland Drive

Mitcham

VIC 3132

AUSTRALIA

SYDNEY

6/78 Reserve Road,

Artarmon

NSW 2064

AUSTRALIA

WOLLONGONG

1/251 Princes Highway

Unanderra

NSW 2526

AUSTRALIA

PERTH

52 Cooper Road

Cockburn Central

WA 6164

AUSTRALIA

BRISBANE

3/109 Riverside Place

Morningside

QLD 4170

AUSTRALIA



Ektimo

DRAFT



EPA 9 – Conti 1 Dryer Cyclone 1 (South) & EPA 10 – Conti 1 Dryer Cyclone 2 (North)

REPORT NUMBER R011918[DRAFT]

Emission Testing Report

Borg Manufacturing, Oberon Plant

Document Information

Template Version: 230621

Client Name: Borg Manufacturing
Report Number: R011918[DRAFT]
Date of Issue: 29 November 2021
Attention: Victor Bendeviski
Address: Lowes Mount Rd
Oberon NSW 2787
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Adnan Latif
Air Monitoring Consultant

NATA Accredited Laboratory
No. 14601

Aaron Davis
Ektimo Signatory

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

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1 EXECUTIVE SUMMARY

1.1 Background

Ektimo was engaged by Borg Manufacturing to perform emission testing at their Oberon plant. Testing was carried out in accordance with Environment Protection Licence 3035.

1.2 Project Objective

The objectives of the project were to conduct a monitoring programme to quantify emissions from 2 discharge points to determine compliance with Borg Manufacturing's Environment Protection Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 9 - Conti 1 Dryer Cyclone 1 (South)	9 November 2021	Total solid particles, fine particulate matter (PM ₁₀)
EPA 10 - Conti 1 Dryer Cyclone 2 (North)		Formaldehyde Nitrogen oxides, oxygen, carbon dioxide

* Flow rate, velocity, temperature and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence limit set by the NSW EPA as per licence 3035 (last amended on 4 September 2019).

EPA No.	Location Description	Pollutant	Units	Licence limit	Detected values Nov-21
9	Conti 1 Dryer Cyclone 1 (South)	Total Solid Particles	mg/m ³	200	12
		Formaldehyde	mg/m ³	5	3.6
10	Conti 1 Dryer Cyclone 2 (North)	Total Solid Particles	mg/m ³	200	17
		Formaldehyde	mg/m ³	5	3.3

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

2 RESULTS

2.1 EPA 9 - Conti 1 Dryer Cyclone 1 (South)

Date	9/11/2021	Client	Borg Manufacturing Pty Ltd
Report	R011918	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Adnan Latif / Scott Woods	State	NSW
Process Conditions	Plant running at normal operating condition		

211104

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°
 The highest to lowest differential pressure ratio exceeds 9:1
 The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
 The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	7.9	
Gas molecular weight, g/g mole	28.1 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.26 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1005 & 1220
Temperature, °C	53
Temperature, K	326
Velocity at sampling plane, m/s	14
Volumetric flow rate, actual, m ³ /s	53
Volumetric flow rate (wet STP), m ³ /s	39
Volumetric flow rate (dry STP), m ³ /s	36
Mass flow rate (wet basis), kg/hour	180000

Gas Analyser Results

Sampling time	Average 1013 - 1112		Minimum 1013 - 1112		Maximum 1013 - 1112	
	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	84	180	76	160	87	190
	Concentration % v/v		Concentration % v/v		Concentration % v/v	
Carbon dioxide	0.7		0.6		0.7	
Oxygen	19.6		19.6		19.7	

Date	9/11/2021	Client	Borg Manufacturing Pty Ltd
Report	R011918	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Adnan Latif / Scott Woods	State	NSW
Process Conditions	Plant running at normal operating condition		

211104

Formaldehyde	Results
Sampling time	1055-1155
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	3.6 7.7

Isokinetic Results	Results
Sampling time	1010-1210 1010-1212 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	12 25
Fine particulates (PM10)	6.8 15
D50 cut size, 10µm	10.7
Isokinetic Sampling Parameters	Isokinetic PM10
Sampling time, min	120 120
Isokinetic rate, %	95 94
Velocity difference, %	9 9
Gravimetric analysis date (total particulate)	11-11-2021
Gravimetric analysis date (PM ₁₀)	11-11-2021

2.2 EPA 10 - Conti 1 Dryer Cyclone 1 (North)

Date	9/11/2021	Client	Borg Manufacturing Pty Ltd
Report	R011918	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Adnan Latif / Scott Woods	State	NSW
Process Conditions	Plant running at normal operating condition		

211104

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

- The gas profile has a cyclonic component which exceeds 15°
- The highest to lowest differential pressure ratio exceeds 9:1
- The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
- The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	9.1	
Gas molecular weight, g/g mole	28.0 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.25 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m ³	0.92	

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1250 & 1510
Temperature, °C	51
Temperature, K	324
Velocity at sampling plane, m/s	14
Volumetric flow rate, actual, m ³ /s	54
Volumetric flow rate (wet STP), m ³ /s	39
Volumetric flow rate (dry STP), m ³ /s	36
Mass flow rate (wet basis), kg/hour	180000

Gas Analyser Results

Sampling time	Average 1315 - 1414		Minimum 1315 - 1414		Maximum 1315 - 1414	
	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	48	100	9	19	110	240
	Concentration % v/v		Concentration % v/v		Concentration % v/v	
Carbon dioxide	0.6		<0.4		0.9	
Oxygen	19.9		19.7		20.1	

Date	9/11/2021	Client	Borg Manufacturing Pty Ltd
Report	R011918	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Adnan Latif / Scott Woods	State	NSW
Process Conditions	Plant running at normal operating condition		

211104

Formaldehyde	Results
Sampling time	1305-1405
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	3.3 7.1

Isokinetic Results	Results
Sampling time	1300-1502 1300-1502 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	17 36
Fine particulates (PM10)	8.3 18
D50 cut size, 10µm	10.1
Isokinetic Sampling Parameters	
Sampling time, min	Isokinetic PM10
Isokinetic rate, %	120 120
Velocity difference, %	98 91
Gravimetric analysis date (total particulate)	-8 -8
Gravimetric analysis date (PM ₁₀)	15-11-2021
	11-11-2021

3 PLANT OPERATING CONDITIONS

Borg Manufacturing have collated plant operating conditions and will provide them to NSW EPA as required.

See Borg Manufacturing's records for complete process conditions.

4 TEST METHODS

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sampling points - Selection	NSW EPA TM-1	NA	NA	✓	NA
Flow rate, temperature and velocity	NSW EPA TM-2	NSW EPA TM-2	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22	NSW EPA TM-22	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24	NSW EPA TM-24	13%	✓	✓
Nitrogen oxides	NSW EPA TM-11	NSW EPA TM-11	12%	✓	✓
Oxygen	NSW EPA TM-25	NSW EPA TM-25	13%	✓	✓
Aldehydes and ketones	Ektimo 332	Ektimo 332	16%	✓	✓ [†]
Particulate matter (PM ₁₀)	NSW EPA OM-5	NSW EPA OM-5	6%	✓	✓ ^{††}
Solid particles (total)	NSW EPA TM-15	NSW EPA TM-15	3%	✓	✓ ^{††}

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* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

† Analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601. Results were reported on 18 November 2021 in report LV-002114.

†† Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

5 QUALITY ASSURANCE/QUALITY CONTROL INFORMATION

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

6 DEFINITIONS

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American Public Health Association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
BSP	British standard pipe
CARB	Californian Air Resources Board
CEM/CEMS	Continuous Emission Monitoring/Continuous Emission Monitoring System
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D ₅₀	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D ₅₀ method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D ₅₀ of that cyclone and less than the D ₅₀ of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier Transform Infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	Odour unit. One OU is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
PM ₁₀	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm).
PM _{2.5}	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 2.5 microns (µm).
PSA	Particle size analysis
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those not matching a standard compound), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TM	Test method
TOC	The sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

Address (Head Office)

26 Redland Drive
Mitcham VIC 3132

Postal Address

52 Cooper Road
Cockburn Central WA 6164

Office Locations

VIC NSW WA QLD

Freecall: 1300 364 005

www.ektimo.com.au

ABN 86 600 381 413

Appendix C – Surface Water Monitoring Data

SURFACE WATER MONITORING EPL POINT 28											EPA/DPIE Notified
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	
6/07/2021	7.54	28	30	3.9	0.1	<5	5	<0.1	<0.010	<0.010	
21/07/2021	7	688	35	4.9	0.19	7	9	<0.1	<0.010	<0.010	Y
28/07/2021	7.22	238	30	3.1	0.23	<5	4	<0.1	<0.010	<0.010	Y
4/08/2021	6.88	135	35	2.6	0.16	<5	6	<0.1	<0.010	<0.010	Y
11/08/2021	7.41	50	35	2.8	0.1	<5	<2	<0.1	<0.010	<0.010	
18/08/2021	7.61	37	30	2.8	0.04	<5	<2	0.2	<0.010	<0.010	
23/08/2021	7.53	20	30	3.1	0.06	<5	3	<0.1	<0.010	<0.010	
20/09/2021	7.35	7	30	5.7	0.06	<5	5	<0.1	<0.010	<0.010	
28/09/2021	7.39	6	30	5.7	0.03	<5	<2	0.2	<0.010	<0.010	
11/10/2021	6.75	15	35	6.5	0.06	<5	7	<0.1	<0.010	<0.010	
20/10/2021	7.81	7	35	8.6	0.04	<5	6	<0.1	<0.010	<0.010	
3//11/2021	7.38	20	35	8.3	0.08	<5	4	<0.1	<0.010	<0.010	
9/11/2021	7.82	21	25	6.9	0.1	<5	4	<0.1	<0.010	<0.010	
23/11/2021	7.47	<5	30	5.9	0.09	<5	6	<0.1	<0.010	<0.010	
30/11/2021	7.5	6	35	5.7	0.02	<5	4	<0.1	<0.010	<0.010	
15/12/2021	7.52	16	30	5.7	0.05	<5	<2	<0.1	<0.010	<0.010	
6/01/2022	7.89	14	30	7.3	0.04	<5	<2	<0.1	<0.010	<0.010	
25/01/2022	7.48	14	30	6.4	0.12	<5	<2	<0.1	<0.010	<0.010	
1/02/2022	6.91	7	30	6	0.02	<5	<2	<0.1	<0.010	<0.010	
8/03/2022	7.68	14	5	6.6	0.07	<5	5	<0.1	<0.010	<0.010	
10/05/2022	7.82	7	40	7.3	0.04	<5	5	<0.1	<0.010	<0.010	
23/05/2022	7.85	8	40	7.1	0.03	<5	3	<0.1	<0.010	<0.010	
31/05/2022	7.28	29	30	7.9	0.12	<5	8	<0.1	<0.010	<0.010	
Average	7.4	63.0	31.1	5.7	0.1	<5	5.3	0.2	<0.010	<0.010	
Exceedance											

SURFACE WATER MONITORING EPL POINT 1											
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	EPA/DPIE Notified
5/05/2021	7.38	290	18	2.3	0.23	<5	6	0.2	<0.010	<0.010	Y
Average	7.4	290.0	18.0	2.3	0.2	<5	6.0	0.2	<0.010	<0.010	
Exceedance											

SURFACE WATER MONITORING HPP SWALE											EPA/DPIE Notified
DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin	
6/09/2021	6.95	11	55	1	0.06	<5	<2	0.2	<0.010	<0.010	
15/09/2021	7.07	12	35	0.7	<0.01	<5	<2	<0.1	<0.010	<0.010	
20/09/2021	7.43	7	55	0.9	0.03	<5	<2	<0.1	<0.010	<0.010	
27/09/2021	8	8	40	0.6	0.02	<5	<2	0.1	<0.010	<0.010	
6/10/2021	7.89	9	60	1.1	0.02	<5	2	<0.1	<0.010	<0.010	
11/10/2021	7.27	11	70	1.3	0.05	<5	9	<0.1	<0.010	<0.010	
20/10/2021	8.05	8	80	1.7	0.02	<5	<2	<0.1	<0.010	<0.010	
27/10/2021	7.92	14	90	0.4	0.03	<5	<2	<0.1	<0.010	<0.010	
3/11/2021	7.73	27	100	1.6	0.05	17	<2	<0.1	<0.010	<0.010	N
9/11/2021	7.38	8	110	1.7	0.06	<5	4	<0.1	<0.010	<0.010	
17/11/2021	8.07	<5	75	1.2	0.04	<5	<2	<0.1	<0.010	<0.010	
23/11/2021	7.86	6	65	1.3	0.06	<5	4	0.1	<0.010	<0.010	
30/11/2021	7.7	7	100	1.3	0.06	<5	2	<0.1	<0.010	<0.010	
6/12/2021	7.96	12	80	1.9	0.1	<5	5	<0.1	<0.010	<0.010	
15/12/2021	8.08	18	60	1.3	0.08	<5	<2	<0.1	<0.010	<0.010	
22/12/2021	7.01	17	70	1.3	0.06	<5	<2	<0.1	<0.010	<0.010	
6/01/2022	7.68	18	35	1.1	0.05	<5	<2	<0.1	<0.010	<0.010	
12/01/2022	7.5	16	50	1.4	0.09	<5	3	<0.1	<0.010	<0.010	
19/01/2022	7.34	41	60	1.6	0.14	<5	2	<0.1	<0.010	<0.010	
25/01/2022	7.57	11	50	0.9	0.06	<5	<2	<0.1	<0.010	<0.010	
1/02/2022	7.27	11	55	1.5	0.08	<5	2	<0.1	<0.010	<0.010	
9/02/2022	7.4	10	40	1	0.05	<5	2	<0.1	<0.010	<0.010	
15/02/2022	7.81	13	40	1.1	0.05	<5	<2	<0.1	<0.010	<0.010	
22/02/2022	6.99	30	35	0.9	0.07	<5	2	<0.1	<0.010	<0.010	
28/02/2022	7.45	25	30	1.2	0.12	<5	5	<0.1	<0.010	<0.010	
7/03/2022	7.28	16	60	1.6	0.06	5	6	<0.1	<0.010	<0.010	
16/03/2022	7.58	22	60	1.1	0.3	<5	<2	<0.1	<0.010	<0.010	
23/03/2022	7.78	28	40	1.1	0.09	<5	5	<0.1			
30/03/2022	7.83	7	25	2.2	0.05	<5	<2	<0.1	<0.010	<0.010	
5/04/2022	7.43	12	30	1	0.05	<5	<2	0.1	<0.010	<0.010	
11/04/2022	7.35	8	40	0.9	0.04	<5	<2	<0.1	<0.010	<0.010	
26/04/2022	7.7	11	35	0.8	0.06	<5	2	0.1	<0.010	<0.010	
Average	7.6	14.6	57.2	1.2	0.1	11.0	3.7	0.1	0.0	0.0	
Exceedance											

Appendix D – Groundwater Monitoring Data



**ALS WATER
ANALYSIS AND TESTING REPORT**

REPORT TO: Victor Bendevski

REPORT ON: Borg Panels, Oberon
Bore Monitoring Results

REPORT NO: 2400-7228-04

SAMPLED BY: L. Pyne

REPORTED BY: T. MacPhee

Adriana Hernandez
Environmental Project/Quality Officer– Lithgow NSW



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ACIRL Pty Ltd
ABN 41 000 513 888
Part of the ALS Laboratory Group
Unit 3, 16 Donald Street
LITHGOW NSW 2790
Phone +61 2 6350 7400 Fax +61 2 6352 3583 www.alsglobal.com
A Campbell Brothers Limited Company

ALS WATER
ANALYSIS AND TESTING REPORT



BORG PANELS
Purging of Bores

	Units				
REPORT NO:		2400-7228-04			
ALS Sydney Report No.		ES2211588			
Date of Sample		28/03/2022	28/03/2022	28/03/2022	28/03/2022
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
General Comments/ Observations		Cloudy	Slightly Cloudy	Slightly Cloudy	Slightly Cloudy
Water Depth	m	1.85	3.50	6.15	0.68
Volume Purged	Lt	4.000	5.000	4.000	2.000

ALS WATER ANALYSIS AND TESTING REPORT



BORG PANELS

	Units				
REPORT NO:		2400-7228-04			
ALS Sydney Report No.		ES2211588			
Date of Sample		31/03/2022	31/03/2022	31/03/2022	31/03/2022
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
General Comments/ Observations		Cloudy	Slightly cloudy	Slightly cloudy	Slightly cloudy
Temperature	°C	13.4	12.6	12.5	12.5
pH	pH Units	6.9	6.7	7.2	7.7
Electrical Conductivity	µS/cm	282	1336	428	323
Total Suspended Solids	mg/L	197	43	23	26
Total Dissolved Solids	mg/L	168	982	397	244
Water Height	m	2.02	4.28	6.50	2.21
Ammonia as N by Discrete Analyser					
Ammonia as N	mg/L	0.03	5.95	1.12	0.04
Total Organic Carbon (TOC)					
Total Organic Carbon	mg/L	8	55	3	<1
Formaldehyde					
Formaldehyde	mg/L	<0.2	1.1	0.1	<0.1
Chemical Oxygen Demand (Spectrophotometric)					
Chemical Oxygen Demand	mg/L	28	23	37	<10
Organochlorine Pesticides (OC)					
alpha-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	µg/L	<0.5	<0.5	<0.5	<0.5
beta-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
gamma-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
delta-BHC	µg/L	<0.5	<0.5	<0.5	<0.5
Heptachlor	µg/L	<0.5	<0.5	<0.5	<0.5
Aldrin	µg/L	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	µg/L	<0.5	<0.5	<0.5	<0.5

ALS WATER ANALYSIS AND TESTING REPORT



BORG PANELS

	Units				
REPORT NO:		2400-7228-04			
ALS Sydney Report No.		ES2211588			
Date of Sample		31/03/2022	31/03/2022	31/03/2022	31/03/2022
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
Organochlorine Pesticides (OC) Continued					
trans-Chlordane	µg/L	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	µg/L	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	µg/L	<0.5	<0.5	<0.5	<0.5
Dieldrin	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	µg/L	<0.5	<0.5	<0.5	<0.5
Endrin	µg/L	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	µg/L	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	µg/L	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	µg/L	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	µg/L	<2.0	<2.0	<2.0	<2.0
Endrin ketone	µg/L	<0.5	<0.5	<0.5	<0.5
Methoxychlor	µg/L	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	µg/L	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	µg/L	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	µg/L	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate					
Dibromo-DDE	%	86.6	80.2	65.1	80.2
Organophosphorus Pesticide Surrogate					
DEF	%	91.8	94.1	69.4	80.4
Total Petroleum Hydrocarbons					
C6 - C9 Fraction	µg/L	<20	<20	<20	<20
C10 - C14 Fraction	µg/L	<50	680	<50	<50
C15 - C28 Fraction	µg/L	<100	1470	<100	<100

ALS WATER ANALYSIS AND TESTING REPORT



BORG PANELS

	Units				
REPORT NO:		2400-7228-04			
ALS Sydney Report No.		ES2211588			
Date of Sample		31/03/2022	31/03/2022	31/03/2022	31/03/2022
Site Name #1		GW01	GW02	GW03	GW05
Site Name #2		Woodchem	Pond	Fence	Drain
Total Petroleum Hydrocarbons					
C29 - C36 Fraction	µg/L	<50	80	<50	<50
C10 - C36 Fraction (sum)	µg/L	<50	2230	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	µg/L	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	µg/L	<20	<20	<20	<20
>C10 - C16 Fraction	µg/L	<100	900	<100	<100
>C16 - C34 Fraction	µg/L	<100	1310	<100	<100
>C34 - C40 Fraction	µg/L	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	µg/L	<100	2210	<100	<100
>C10 - C16 Fraction minus Naphthalene	µg/L	<100	900	<100	<100
BTEXN					
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<2	<2	<2	<2
Ethylbenzene	µg/L	<2	<2	<2	<2
meta- & para-Xylene	µg/L	<2	<2	<2	<2
ortho-Xylene	µg/L	<2	<2	<2	<2
Total Xylenes	µg/L	<2	<2	<2	<2
Sum of BTEX	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<5	<5	<5	<5
TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	%	88.0	106	89.4	89.9
Toluene-D8	%	106	126	102	104
4-Bromofluorobenzene	%	98.5	112	95.8	94.2



METHODS OF WATER ANALYSIS

NATA accreditation covers the following test

TEST	METHOD	Measure of Uncertainty
Electrical Conductivity uS/cm	APHA 2510 B	2.0%
pH value	APHA 4500 H	0.10 pH Units
Total Suspended Solids (mg/l)	APHA 2540 D	± 5.0%
Total Dissolved Solids (mg/l)	APHA 2540 C	± 8.8%

* NATA Accreditation does not cover the performance of this test.

TEST
* Temperature Field

The remaining analysis performed at ALS Environmental, 277-289 Woodpark Rd, Smithfield, NSW 2164.

In accordance with "Standard Methods for the Examination of Water & Wastewater"
APHA, AWWA, WEF and Water & Wastewater
Examination Manual (V. Dean Adams)

ALS Report No: ES2211588

Preservation procedures in accordance with AS/NZS 5667/1 when sampled by
ACIRL staff unless otherwise stated.

Appendix E – Annual Noise Monitoring Report

Borg Panels Facility

Annual Operational Noise Monitoring 2021

*Prepared for
Borg Construction Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Annual Operational Noise Monitoring 2021

Reference: 21114_R02_RevA

Report date: 26 August 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Ryan Bruniges
Consultant



QA Review: Jesse Tribby
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct an annual noise survey of operations at the Borg panel manufacturing facility (Borg) at Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

The Operational Noise Management Plan (ONMP) recommends annual noise monitoring be conducted during the winter period, as this season represents the likely worst-case season due to temperature inversions.

Attended environmental noise monitoring described in this report was undertaken during the day, evening and night periods of 30 June/1 July 2021 at four monitoring locations.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations, which may be used in this report, are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
L_A	The A-weighted root mean squared (RMS) noise level at any instant
L_{Amax}	The maximum A-weighted noise level over a time period or for an event
L_{A1}	The noise level which is exceeded for 1 per cent of the time
L_{A10}	The noise level which is exceeded for 10 percent of the time, which is approximately the average of the maximum noise levels
L_{A50}	The noise level which is exceeded for 50 per cent of the time
L_{A90}	The level exceeded for 90 percent of the time, which is approximately the average of the minimum noise levels. The L_{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes
L_{Amin}	The minimum A-weighted noise level over a time period or for an event
L_{Aeq}	The average noise energy during a measurement period
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise
SPL	Sound pressure level (SPL), fluctuations in pressure measured as 10 times a logarithmic scale, the reference pressure being 20 micropascals
Hertz (Hz)	Cycles per second, the frequency of fluctuations in pressure, sound is usually a combination of many frequencies together
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude. Estimated from wind speed and sigma theta data
IA	Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
NM	Not Measurable. If site only noise is noted as NM, this means some noise from the source of interest was audible at low-levels, but could not be quantified
Day	This is the period 7:00am to 6:00pm
Evening	This is the period 6:00pm to 10:00pm
Night	This is the period 10:00pm to 7:00am

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

2.5 Meteorological Conditions

Condition L4.3 of the EPL outlines meteorological conditions required for criteria to be applicable. Noise criteria detailed in the EPL apply under all meteorological conditions except for the following:

- (a) Wind speeds greater than 3 metres/second at 10 metres above the ground level;
- (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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day, evening and night period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	3013882	08/02/2023
Pulsar 105 acoustic calibrator	78226	08/02/2023

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – 2021¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{A50} dB	L _{Aeq} dB	L _{A90} dB	L _{Amin} dB
NM1	30/06/2021 20:47	57	53	48	47	46	45	42
NM1	30/06/2021 22:54	69	62	49	50	46	45	42
NM1	01/07/2021 10:43	66	64	61	56	51	49	47
NM2	30/06/2021 18:17	58	53	49	48	47	46	45
NM2	30/06/2021 23:20	55	49	46	44	44	43	41
NM2	01/07/2021 10:00	67	56	49	48	46	45	43
NM3	30/06/2021 17:17	68	58	45	46	38	36	33
NM3	30/06/2021 21:45	55	47	44	41	41	35	31
NM3	30/06/2021 22:03	49	47	45	42	41	37	32
NM4	30/06/2021 17:33	74	63	53	53	49	44	38
NM4	30/06/2021 21:09	57	55	52	47	41	36	33
NM4	30/06/2021 22:29	56	54	52	48	45	37	35

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – 2021

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	30/06/2021 20:47	2.0	E	50	Yes	46	Nil
NM1	30/06/2021 22:54	2.3	F	45	No	46	NA
NM1	01/07/2021 10:43	3.2	B	55	No	51	NA
NM2	30/06/2021 18:17	1.6	E	50	Yes	47	Nil
NM2	30/06/2021 23:20	1.9	F	45	Yes	43	Nil
NM2	01/07/2021 10:00	2.0	C	55	Yes	46	Nil
NM3	30/06/2021 17:17	1.7	E	55	Yes	NM	Nil
NM3	30/06/2021 21:45	1.5	F	50	Yes	NM	Nil
NM3	30/06/2021 22:03	2.7	D	45	Yes	NM	Nil
NM4	30/06/2021 17:33	1.8	E	55	Yes	<30	Nil
NM4	30/06/2021 21:09	1.4	F	50	Yes	<30	Nil
NM4	30/06/2021 22:29	3.1	D	45	No	35	NA

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – 2021

Location	Start Date and Time	Temperature (degrees)	Wind Speed (m/s)	Wind Direction ¹	Cloud Cover (1/8s)
NM1	30/06/2021 20:47	7	1.5	60	8
NM1	30/06/2021 22:54	7	0.7	95	7
NM1	01/07/2021 10:43	7	1.0	70	8
NM2	30/06/2021 18:17	7	0.3	60	0
NM2	30/06/2021 23:20	7	1.5	100	7
NM2	01/07/2021 10:00	7	0.0	-	8
NM3	30/06/2021 17:17	8	0.4	60	0
NM3	30/06/2021 21:45	7	1.0	90	8
NM3	30/06/2021 22:03	8	1.4	50	8
NM4	30/06/2021 17:33	8	0.0	-	0
NM4	30/06/2021 21:09	8	0.3	70	8
NM4	30/06/2021 22:29	7	1.1	70	7

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct an annual noise survey of operations at the Borg panel manufacturing facility (Borg) at Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day, evening and night periods of 30 June/1 July 2021 at four monitoring locations.

Borg complied with relevant criteria during the 2021 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

- B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:
- be undertaken by a suitably qualified expert;
 - include an analysis of compliance with noise limits specified in Condition B16;
 - include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.
- B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.
- B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.
- Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.
- B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: - Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. - Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. - Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: - Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. - Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. - Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		L _{Aeq} (15 min)	L _{Aeq} (15 min)	L _{Aeq} (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.

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 within one week of the exceedance.

Construction noise performance is reported as detailed in Section 10.

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. All site environment officers 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).

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.

APPENDIX

B CALIBRATION CERTIFICATES



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C21058

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Rion NA-28
Instrument Serial Number : 30131882
Microphone Serial Number : 04739
Pre-amplifier Serial Number : 11942

Pre-Test Atmospheric Conditions
Ambient Temperature : 23.5°C
Relative Humidity : 46.7%
Barometric Pressure : 100.28kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.25kPa

Calibration Technician : Jeff Yu
Calibration Date : 8 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	$\pm 0.12dB$	Temperature	$\pm 0.2^{\circ}C$
1kHz	$\pm 0.11dB$	Relative Humidity	$\pm 2.4\%$
8kHz	$\pm 0.13dB$	Barometric Pressure	$\pm 0.015kPa$
Electrical Tests	$\pm 0.10dB$		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number: C21059

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.27kPa

Calibration Technician : Jeff Yu
Calibration Date : 08 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	P_{A13}
Frequency Generated	P_{A13}
Total Distortion	P_{A13}

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.02	1000.40

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942-2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	$\pm 0.14\text{dB}$	Temperature	$\pm 0.2^\circ\text{C}$
Frequency	$\pm 0.09\%$	Relative Humidity	$\pm 2.4\%$
Distortion	$\pm 0.09\%$	Barometric Pressure	$\pm 0.015\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1

Appendix F – Construction Noise Monitoring Reports

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 2 2021*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 2 2021

Reference: 21114_R01

Report date: 17 August 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Ryan Bruniges
Consultant



QA Review: Jesse Tribby
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day periods of 30 June and 1 July 2021 at four monitoring locations. Measurements at NM1 and NM2 were conducted on 1 July 2021 due to travel delays and unsuitable weather conditions earlier in the quarter.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

Condition L4.3 of the EPL outlines meteorological conditions required for criteria to be applicable. Noise criteria detailed in the EPL apply under all meteorological conditions except for the following:

- (a) *Wind speeds greater than 3 metres/second at 10 metres above the ground level;*
- (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.*

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	3013882	08/02/2023
Pulsar 105 acoustic calibrator	78226	08/02/2023

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 2 2021¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	01/07/2021 10:43	66	64	61	56	51	49	47
NM2	01/07/2021 10:00	67	56	49	48	46	45	43
NM3	30/06/2021 17:17	68	58	45	46	38	36	33
NM4	30/06/2021 17:33	74	63	53	53	49	44	38

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 2 2021

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	01/07/2021 10:43	3.2	B	55	No	51	NA
NM2	01/07/2021 10:00	2.0	C	55	Yes	46	Nil
NM3	30/06/2021 17:17	1.7	E	55	Yes	NM	Nil
NM4	30/06/2021 17:33	1.8	E	55	Yes	<30	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 2 2021

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	01/07/2021 10:43	7	1.0	70	8
NM2	01/07/2021 10:00	7	0.3	60	0
NM3	30/06/2021 17:17	8	0.4	60	0
NM4	30/06/2021 17:33	8	0.0	-	0

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a quarterly noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 30 June and 1 July 2021 at four monitoring locations. Measurements at NM1 and NM2 were conducted on 1 July 2021 due to travel delays and unsuitable weather conditions earlier in the quarter.

Borg complied with the relevant criteria during the Quarter 2 2021 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: • Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. • Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. • Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: 1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. 2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. 3. Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		L _{Aeq} (15 min)	L _{Aeq} (15 min)	L _{Aeq} (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.

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 within one week of the exceedance.

Construction noise performance is reported as detailed in Section 10.

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. All site environment officers 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).

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.

APPENDIX

B CALIBRATION CERTIFICATES



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C21058

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Rion NA-28
Instrument Serial Number : 30131882
Microphone Serial Number : 04739
Pre-amplifier Serial Number : 11942

Pre-Test Atmospheric Conditions
Ambient Temperature : 23.5°C
Relative Humidity : 46.7%
Barometric Pressure : 100.28kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.25kPa

Calibration Technician : Jeff Yu
Calibration Date : 8 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests	Environmental Conditions		
	125Hz	Temperature	±0.2°C
	1kHz	Relative Humidity	±2.4%
Electrical Tests	8kHz	Barometric Pressure	±0.015kPa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number: C21059

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.27kPa

Calibration Technician : Jeff Yu
Calibration Date : 08 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	P_{A13}
Frequency Generated	P_{A13}
Total Distortion	P_{A13}

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.02	1000.40

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942-2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	$\pm 0.14\text{dB}$	Temperature	$\pm 0.2^\circ\text{C}$
Frequency	$\pm 0.09\%$	Relative Humidity	$\pm 2.4\%$
Distortion	$\pm 0.09\%$	Barometric Pressure	$\pm 0.15\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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Borg Panels Facility

*Environmental Noise Monitoring
Quarter 3 2021*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 3 2021

Reference: 21228_R01_RevA

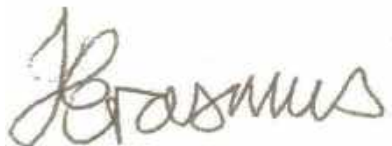
Report date: 26 October 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Jonathan Erasmus
Consultant



QA Review: Robert Kirwan
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 16 September 2021 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{Aeq,15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only L_{Aeq} was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only L_{Aeq} noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	30131882	08/02/2023
Pulsar 105 acoustic calibrator	78226	08/02/2023

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 3 2021¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	16/09/2021 14:21	65	61	58	53	47	43	41
NM2	16/09/2021 14:45	64	53	47	46	44	43	40
NM3	16/09/2021 15:11	63	50	40	39	35	33	31
NM4	16/09/2021 13:54	56	51	47	44	43	38	33

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 3 2021

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	16/09/2021 14:21	1.6	A	55	Yes	43	Nil
NM2	16/09/2021 14:45	1.4	A	55	Yes	44	Nil
NM3	16/09/2021 15:11	1.6	B	55	Yes	35	Nil
NM4	16/09/2021 13:54	1.6	A	55	Yes	34	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 3 2021

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	16/09/2021 14:21	16	0.0	-	4
NM2	16/09/2021 14:45	16	0.0	-	4
NM3	16/09/2021 15:11	13	0.0	-	3
NM4	16/09/2021 13:54	16	0.0	-	5

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 16 September 2021 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 3 2021 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A REGULATOR DOCUMENTS

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise

Attenuation, as detailed in the NIA, will be implemented as follows:

- Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required.
- Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required.
- Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required.

In short, the approach taken by Borg to mitigate noise is based on a number of factors:

1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions.
2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above.
3. Provision of sound attenuation structures and enclosures to other equipment where appropriate.

Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment – portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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	Evening	Night
		(7am-6pm) LAeq (15 min)	(6pm-10pm) LAeq (15 min)	(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.

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 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. All site environment officers 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).

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.

APPENDIX

B CALIBRATION CERTIFICATES



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate

Calibration Number C21058

Client Details		Global Acoustics Pty Ltd 12/16 Huntingdale Drive Thornton NSW 2322	
Equipment Tested/ Model Number :		Rion NA-28	
Instrument Serial Number :		30131882	
Microphone Serial Number :		04739	
Pre-amplifier Serial Number :		11942	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 23.5°C		Ambient Temperature : 23.3°C	
Relative Humidity : 46.7%		Relative Humidity : 47.7%	
Barometric Pressure : 100.28kPa		Barometric Pressure : 100.25kPa	
Calibration Technician : Jeff Yu		Secondary Check: Max Moore	
Calibration Date : 8 Feb 2021		Report Issue Date : 9 Feb 2021	
Approved Signatory :		Ken Williams	
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.12dB	Temperature	±0.2°C
1kHz	±0.11dB	Relative Humidity	±2.4%
8kHz	±0.13dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C21059

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.27kPa

Calibration Technician : Jeff Yu
Calibration Date : 08 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.02	1000.40

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	±0.14dB	Temperature	±0.2°C
Frequency	±0.09%	Relative Humidity	±2.4%
Distortion	±0.09%	Barometric Pressure	±0.015kPa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 4 2021*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd
PO Box 3115 | Thornton NSW 2322
Telephone +61 2 4966 4333
Email global@globalacoustics.com.au
ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 4 2021

Reference: 21267_R01

Report date: 9 December 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Robert Kirwan
Consultant



QA Review: Ryan Bruniges
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 17 November 2021 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB	Evening L _{Aeq,15minute} dB	Night L _{Aeq,15minute} dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only noise.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only L_{Aeq} was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only L_{Aeq} noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	1070590	11/06/2022
Pulsar 105 acoustic calibrator	74813	10/06/2022

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 4 2021¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	17/11/2021 11:21	61	57	54	52	51	49	47
NM2	17/11/2021 10:42	58	52	48	46	45	43	40
NM3	17/11/2021 11:52	70	61	43	46	37	34	31
NM4	17/11/2021 12:28	65	61	54	51	48	45	41

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 4 2021

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	17/11/2021 11:21	3.1	A	55	No	50	NA
NM2	17/11/2021 10:42	2.1	A	55	Yes	44	Nil
NM3	17/11/2021 11:52	2.3	A	55	Yes	33	Nil
NM4	17/11/2021 12:28	2.3	A	55	Yes	42	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 4 2021

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	17/11/2021 11:21	13	2.0	10	6
NM2	17/11/2021 10:42	16	0.0	0	6
NM3	17/11/2021 11:52	17	1.1	340	5
NM4	17/11/2021 12:28	18	1.2	Not recorded	5

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 17 November 2021 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 4 2021 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the-Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: • Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. • Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. • Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: 1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. 2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. 3. Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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	Evening	Night
		(7am-6pm) LAeq (15 min)	(6pm-10pm) LAeq (15 min)	(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.

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 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. All site environment officers 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).

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.

APPENDIX

B CALIBRATION CERTIFICATES



Unit 35/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 150 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate Calibration Number C20331

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Rion NA-28
Instrument Serial Number : 01070590
Microphone Serial Number : 08184
Pre-amplifier Serial Number : 52329

Pre-Test Atmospheric Conditions
Ambient Temperature : 21.1°C
Relative Humidity : 57.8%
Barometric Pressure : 101.27kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 21.8°C
Relative Humidity : 56.5%
Barometric Pressure : 101.17kPa

Calibration Technician : Jeff Yu
Calibration Date : 11 Jun 2020

Secondary Check: Max Moore
Report Issue Date : 15 Jun 2020

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity (incl. the level range control)	Pass
17: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-3:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-3:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-3:2013.

Least Uncertainties of Measurement -			
Environmental Conditions			
Acoustic Tests		Temperature	±0.2°C
125Hz	±0.12dB	Relative Humidity	±2.4%
100Hz	±0.12dB	Barometric Pressure	±0.015kPa
800Hz	±0.14dB		
Electrical Tests	±0.1dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number: C20332

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 74813

Atmospheric Conditions

Ambient Temperature : 21.5°C
Relative Humidity : 56.9%
Barometric Pressure : 101.46kPa

Calibration Technician : Jeff Yu
Calibration Date : 10 Jun 2020

Secondary Check: Max Moore
Report Issue Date : 15 Jun 2020

Approved Signatory :

Kent Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
91	1000	93.36	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -

Specific Test	Environmental Conditions
Generated SPL	Temperature $\pm 0.2^\circ\text{C}$
Frequency	Relative Humidity $\pm 2.4\%$
Distortion	Barometric Pressure $\pm 0.013\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

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Page 1 of 1

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 1 2022*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 1 2022

Reference: 22056_R01

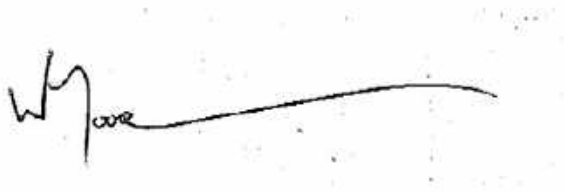
Report date: 18 April 2022

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Will Moore
Consultant



QA Review: Jesse Tribby
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 10 March 2022 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 2 February 2022. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in May 2021. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only noise.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	00370304	24/11/2022
Pulsar 105 acoustic calibrator	81334	29/11/2023

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 1 2022¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	10/03/2022 09:46	67	56	52	50	49	46	43
NM2	10/03/2022 09:10	58	51	47	45	43	41	39
NM3	10/03/2022 10:57	76	65	44	51	37	35	33
NM4	10/03/2022 10:20	69	60	53	49	45	37	33

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 1 2022

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	10/03/2022 09:46	0.4	C	55	Yes	44	Nil
NM2	10/03/2022 09:10	0.0	D	55	Yes	38	Nil
NM3	10/03/2022 10:57	0.0	B	55	Yes	28	Nil
NM4	10/03/2022 10:20	0.0	C	55	Yes	<25	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 1 2022

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	10/03/2022 09:46	13	0.4	340	8
NM2	10/03/2022 09:10	12	0.4	330	8
NM3	10/03/2022 10:57	15	0.7	305	8
NM4	10/03/2022 10:20	14	1.4	320	8

Notes:

1. "-" indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 10 March 2022 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 1 2022 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

- B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:
- be undertaken by a suitably qualified expert;
 - include an analysis of compliance with noise limits specified in Condition B16;
 - include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

- B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

- B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: - Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. - Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. - Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: - Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. - Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. - Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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	Evening	Night
		(7am-6pm) LAeq (15 min)	(6pm-10pm) LAeq (15 min)	(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.

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 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. All site environment officers 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).

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.

APPENDIX

B CALIBRATION CERTIFICATES



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate

Calibration Number C20674

Client Details	Global Acoustics Pty Ltd 12/16 Huntingdale Drive Thornton NSW 2322
Equipment Tested/ Model Number :	Rion NA-28
Instrument Serial Number :	00370304
Microphone Serial Number :	10421
Pre-amplifier Serial Number :	60313
Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions
Ambient Temperature : 22°C	Ambient Temperature : 21.9°C
Relative Humidity : 50.6%	Relative Humidity : 50.1%
Barometric Pressure : 100.08kPa	Barometric Pressure : 100.09kPa
Calibration Technician : Lucky Jaiswal	Secondary Check: Max Moore
Calibration Date : 24 Nov 2020	Report Issue Date : 25 Nov 2020
Approved Signatory : 	Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	$\pm 0.12\text{dB}$	Temperature	$\pm 0.2^\circ\text{C}$
1kHz	$\pm 0.11\text{dB}$	Relative Humidity	$\pm 2.4\%$
8kHz	$\pm 0.13\text{dB}$	Barometric Pressure	$\pm 0.015\text{kPa}$
Electrical Tests	$\pm 0.10\text{dB}$		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C21832

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 81334

Atmospheric Conditions

Ambient Temperature : 25°C
Relative Humidity : 49.6%
Barometric Pressure : 100.8kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 29 Nov 2021
Secondary Check: Harrison Kim
Report Issue Date : 2 Dec 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.19	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Uncertainties of Measurement -			
Specific Tests	Environmental Conditions		
	Generated SPL	Temperature	$\pm 0.1^{\circ}\text{C}$
	Frequency	Relative Humidity	$\pm 1.9\%$
	Distortion	Barometric Pressure	$\pm 0.014\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Appendix G – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
112	Transport	6/05/2021	Oberon Council	EPA received complaint from Council Depot that an uncovered load of waste had been received at their site	Environmental Manager discussed with relevant Borg personnel solution to ensure all waste was covered before leaving site. Items purchased by site to solve this issue.
113	Noise	25/05/2021	Not provided	Low frequency noise being heard over the past few months, suggested coming from site	WHS Coordinator investigated and found no unusual site conditions Annual compliance noise monitoring scheduled for June. Manager will review results.
114	Noise	1/09/2021	O'Connell Rd OBERON	Resident phoned to complain about ongoing noise, seemingly coming from site	Environmental Manager followed up with resident. Undertook unattended noise monitoring at resident's property. Insufficient evidence of breach found. May undertake further noise monitoring in consultation with resident.
115	Dust and odour	13/09/2021	Tarana Crescent OBERON	Blue dust pollution and glue odours from Borg Panels. Blue dust pollution fallout was noticed on Thu 9/9/21 morning, Fri 10/9/21 morning and Sat 11/9/21 morning from 7.30am. There is a blanket fallout on all cars and everything outside- this happens at night times, this is causing a lot of respiratory problems. Caller heard from someone there was a problem with saw dust being blown into the paddock on Sat 11/9/21, the blue saw dust is from treated wood. This has happened previously in the past 1-2 months and the glue odours are at night times	Check weatheration data for wind direction and speed. Try to obtain more specific details about reported incident. Investigate potential sources of dust and odour onsite. Drive to Tarana Crescent and investigate any foreign materials on surfaces. No further follow up required. Second investigation revealed no evidence of any foreign materials or dust in the area and no unusual odours identified.

116	Traffic	19/10/2021	Clover Lane OBERON	Resident called when he noticed a Borg truck using Clover Lane which had recently been resurfaced by Oberon Council. Resident was concerned that the truck may damage the new surface.	Construction Manager discussed with the truck driver who advised he was dropping off a work colleague to his residence on Clover Lane. Environmental Manager inspected Clover Lane and found no damage to the road.
117	Noise	9/02/2022	Anonymous	"Freight train through house"	Monitor plant conditions and operational hours. Toolboxed department managers.
118	Noise	10/02/2022	Dart Street, Oberon	"Loud banging of metal"	Attempted to contact resident for more details. Monitor plant conditions and operational hours. Toolboxed department managers.
119	Noise	17/02/2022	Dart Street, Oberon	"Big plates"	Attempted to contact resident for more details. Monitored plant conditions and operational hours. Contacted suppliers to ensure no tile deliveries before 7am.
121	Noise	20/02/2022	Dart Street, Oberon	"Barrels into pit"	Attempted to contact resident for more details. Monitor plant conditions and operational hours. Particle board chipper started after 9:50am.
122	Noise	21/02/2022	Dart Street, Oberon	"Since 6am"	Attempted to contact resident for more details. Monitor plant conditions and operational hours. Particle board chipper started after 7:10am. Toolboxed department managers. Arranged noise monitoring investigation with resident.
123	Noise	17/03/2022	Dart Street, Oberon	"Freight trains running through the house again today and banging and crashing"	Organise internal monitoring to investigate potential noise.
124	Noise	17/04/2022	Dart Street, Oberon	"Thursday Friday today noise is unbelievable from Borg."	Review CCTV footage and continue with noise monitoring investigations.

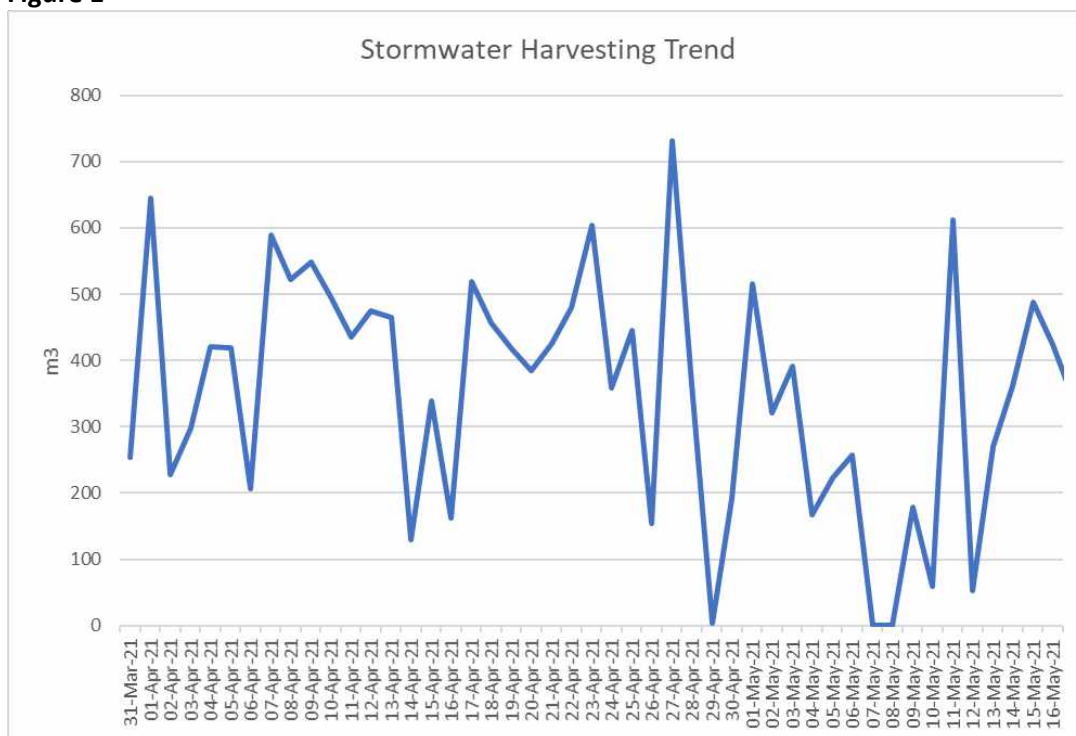
Appendix H – Water Quality Exceedance Notifications

18 May 2021**EPL 3035 Water Quality Exceedance**

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids (TSS) for stormwater sample event undertaken on 5th May 2021 at EPL identification point 1 (v-notch). Results reviewed from ALS Environmental on 17th May reports exceedance for TSS at 290mg/l (L2.5 concentration limit 50mg/l).

Fill works to the north eastern hardstand area were complete with the hardstand and batter compacted however, it is possible that this exceedance was due to a section of the batter eroding resulting in deposition of sediment into the swale during rain event which occurred prior to sampling. The site weather station recorded 9.4mm at 9am on the day of the sample event.

To control site discharge going forward, civil works to the stormwater management system were escalated. This involved closing off the v-notch and diverting the stormwater to the new EPL identification point 28 in an attempt to create a nil discharge site as water from this basin (point 28) is harvested and used in the production at site. Figure 1 below displays stormwater harvesting trends from 31st March 2021 to 16th May 2021. Using this data, the average volume harvested is 351m³/day. This date range has been selected as 31st March was the last date a sample event was performed at point 28 confirming nil discharge from this location.

Figure 1

The works to the stormwater management system commenced week beginning 10th May with the v-notch 'closed' on 11th May (see photos below). Since 11th May there has been no discharge from either point 1 or point 28.

Blocking V-notch with geofabric



Earthworks to 'close' ponds



V-notch nil discharge



Swale conveying pond water to first flush basin





Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a large, stylized loop at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Borg Timber Complex Oberon - SSD-7016-PA-37

Name of Document

Water Quality Discharge Limit Exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

exceedance of discharge limit of TSS for sample event on 5th May 2021

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

30 July 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids for stormwater sample event undertaken on 21 July 2021. Results reviewed from ALS Environmental reports exceedance for TSS at 688mg/l (L2.5 concentration limit 50mg/l).

Construction activities to the site stormwater swale system are currently underway with ERSED controls installed as works progress. Significant rain events leading up to the sampling would have mobilised sediment within the swales and contributed to this result (total 65.8mm, on site rain gauge).

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", written over a horizontal line.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Borg Timber Complex Oberon - SSD-7016-PA-49

Name of Document
Water Quality Exceedance Notification

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
notification of water quality discharge limit for total suspended solids on 21 July 2021

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?
No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

5 August 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids for stormwater sample event undertaken on 28 July 2021. Results reviewed from ALS Environmental show that the concentration limit for Total Suspended Solids of 50mg/L was exceeded by 188mg/L.

There was a snowfall event and two significant rain events (i.e. >10mm) prior to sampling which would have increased stormwater flow and mobilised sediment within the swales contributing to this result. With construction activities continuing, additional ERSSED controls have been installed within the swale system and flocking agents have been ordered to assist with management of this issue.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Borg Timber Complex Oberon - SSD-7016-PA-50

Name of Document

water quality discharge limit exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

notification of water quality discharge limit exceedance for TSS on 28 July 2021

Applicable Conditions

Schedule	Condition
2	C12
2	C13

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

13 August 2021

EPL 3035 Water Quality Discharge Limit Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids for stormwater sample event undertaken on 4 August 2021. Results reviewed from ALS Environmental show that the concentration limit for Total Suspended Solids of 50mg/L was exceeded by 85mg/L.

There was a snowfall event and one significant rain event (i.e. >10mm) prior to sampling. This would have increased stormwater flow and mobilise sediment within the swales contributing to this result. With construction activities continuing to the site swale system, flocking agents have been applied and additional ERSED controls have been installed. Further flocking agents have been ordered to assist with management of this issue.

All other pollutants listed in condition L2.5 of EPL 3035 were within their discharge concentration limits.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Borg Timber Complex Oberon - SSD-7016-PA-51

Name of Document

Water quality discharge limit exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

exceedance of water quality discharge limit for TSS on 4 August 2021

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

24 November 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of discharge concentration limit for oil & grease for stormwater sample event undertaken on 3 November 2021 from the site surface water discharge point identified as the HPP Discharge Point. Results received from ALS Environmental on 18 of November showed that the concentration limit for oil & grease of 10mg/L was exceeded by 7mg/L.

The sampler did not notice any hydrocarbon sheen during the sampling event and so upon receiving the results on 18 November, requested ALS run TPH and TRH with Silica Gel clean-up on the sample to determine the nature of this exceedance. These results were received on 22 November 2021 and indicate that organic content was the more likely source of the oil & grease result rather than hydrocarbon.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in dark ink, appearing to read "AB", followed by a horizontal line.

Andrew Brady
Environmental Manager
Borg Manufacturing

Annual Review 2020/21

Borg Panels Oberon

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

23 JULY 2021

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
0	17/06/2021	Jacqueline Blomberg Environmental Manager	Draft for review		
1	23/07/2021	Jacqueline Blomberg Environmental Manager	For submission to DPIE	Victor Bendevski Environmental and Regulatory Compliance	

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Annual Review Title Block

Name of operation	Borg Panels Pty Ltd.
Name of operator	Borg Manufacturing
Development consent / project approval #	SSD 7016
Name of holder of development consent / project approval	Borg Construction
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	80WA715797
Name of holder of water licence	Borg Panels Pty Ltd.
MOP/RMP start date	N/A
MOP/RMP end date	N/A
<i>I, Victor Bendeovski, certify that this audit report is a true and accurate record of the compliance status of Borg Panels Oberon for the period 1st May 2020 to 30th April 2021 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd</i> Note. a) <i>The Annual Review is an ‘environmental audit’ for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i> b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, \$22,000, or both.)</i>	
Name of authorised reporting officer	Victor Bendeovski
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	23/07/2021

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Borg Panels Oberon site and covers the twelve-month reporting period from 1 May 2020 to 30 April 2021. This Annual Review has been prepared to satisfy condition C11 of Development Consent SSD 7016 issued by the Minister for Planning on 29 May 2017.

The Borg Panels facility is located at 124 Lowes Mount Road, Oberon and consists of a medium density fibreboard (MDF) and particleboard manufacturing plant and a mouldings manufacturing plant. During this reporting period Borg undertook a trial of the receipt, processing and use of urban wood residue (UWR) as an alternative raw material to be used in the production of particleboard. The trial was conducted over a 12-month period and concluded on 30th August 2020 under EPL 3035 section 8 Special Conditions.

This Annual Review is submitted to NSW Department of Planning, Industry and Environment (DPIE), NSW Environment Protection Authority (EPA) and Oberon Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the Borg Panels website:

<https://www.borgmanufacturing.com.au/oberon-panels-site-information/>

Borg Panels generally maintained compliance with necessary approvals and licenses with the exception of EPL 3035 condition L2.5 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water. There were no EPA reportable incidents during this review period.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 716	C11	Annual review	Compliant		1.4 Annual Review Requirements
EPL 3035	Section 3 L4.1	Noise	Compliant		
EPL 3035	Section 3 L2.4	Air Quality	Compliant		
EPL 3035	Section 3 L2.5	Water Quality	Non-compliant	Exceedances of EPL 3035 water discharge limits	4.4 Surface Water
WAL28951	N/A	Aquifer extraction	Compliant		

1.2 Background

In March 2010, Borg Panels acquired the former Carter Holt Harvey MDF and mouldings plant at Oberon. In 2012 Borg Panels further acquired the associated JeldWen factory that adjoins the MDF plant. Borg have integrated the facilities into one site, which they own and operate (see Figure 1).

The Borg Panels facility forms part of the wider Oberon Timber Complex, manufacturing a range of MDF products (Custom wood) and particleboard including:

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

Figure 1 Regional context



1.3 Consent

Development Consent SSD 7016 was issued by the Minister for Planning on 29 May 2017 to construct and operate a particleboard facility, and continuation of and alterations and additions to, the existing medium density fibreboard facility.

Condition A26 of SSD 7016 required Borg Panels to modify DA27/95. Borg submitted a Section 96 Modification Application requesting removal of condition A26. This application also included a minor change to the orientation of the material handling building at particleboard, an increase to the warehouse footprint and amendments to the stormwater management system at the northern section of the site. A determination was received from the Department approving this application on 20 November 2018 (SSD 7016 MOD 1 – Site layout changes).

Under Modification of Development Consent SSD 7016 MOD 2 Borg proposed to install a high-pressure natural gas pipeline connection and turbine, and ancillary equipment to produce electricity and utilise waste exhaust heat in the particleboard manufacturing process. The Minister for Planning provided approval for MOD 2 on 29 November 2019.

Activities proposed under Modification 3 include the installation of additional equipment to the materials handling area for better separation and removal of undesirable materials found in the recycled wood that is used in the production of particleboard, and the addition of an enclosed awning to the northern end of the Northern Warehouse for more optimized truck loading/unloading. Works to the site stormwater management system are also occurring under MOD 3. These include reclamation of the overflow effluent pond and reinstatement at another location to allow for further hardstand, and changes to the stormwater conveying swales and ponds to allow construction of the hardstand and also to separate surface water flows between Borg and HPP, including the construction of a new HPP discharge point.

Approval was provided by the Minister of Planning for MOD 3 on 22 May 2020.

A summary of development consents including modifications currently held by Borg Panels is presented in Table 2.

Table 2 Borg Panels Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7016	29 May 2017	NSW Minister for Planning	Construction and operation of a particle board facility and continuation of, and alterations and additions to, the existing medium density fibreboard facility.
Development Consent SSD 7016 MOD 1	20 November 2018	NSW Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	NSW Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment
Development Consent SSD 7016 MOD 3	22 May 2020	NSW Minister for Planning	Additional material handling equipment, extension to the Northern Warehouse, changes to the site surface water system and construction of further hardstand.

1.4 Annual Review Requirements

In accordance with condition C11 of Development Consent SSD 7016, annual review requirements and the sections within this review where these are addressed have been summarised in Table 3.

Table 3 Annual Review Requirements

Development Consent SSD 7016 – Condition C11	Section of Annual Review
By 31 July 2017, and each year thereafter, unless otherwise agreed by the Secretary, the Applicant must review and submit a report to the Secretary detailing the environmental performance of the Development to the satisfaction of the Secretary. This review must:	This Report
(a) describe the development that was carried out during the reporting period, and the development that is proposed to be carried out over the next reporting period;	Section 2 Section 7
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 6
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 7

1.5 Environment Protection Licence

Borg Panels operates in accordance with Environment Protection Licence 3035 (EPL 3035), issued on 14 February 2001 by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 04 September 2019.

1.6 Water Licences

Borg Panels holds a Water Access Licence for use of groundwater in operations. Current licence details issued under the *Water Management Act 2000* are summarised in Table 4.

Table 4 Water Licences

Approval Details	Approval Number	Validity of Licence	Approval Kind	Extraction Limit
WAL28951	80WA715797	16 January 2012 – 01 March 2026	Water Extraction	28 Units

1.7 Trade Waste Licence

Borg Panels Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable this reporting period as there was no renewal of the licence. Borg Panels now treats its liquid trade waste on site.

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7016, construction activities continue to be undertaken in accordance with the Construction Environmental Management Plan (CEMP) and the existing development in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C10 Revision of Strategies, Plans and Programs, environmental management plans were reviewed, and minor amendments made where necessary. In this review period the following Plans were updated:

- Operational Environmental Management Plan
- Operational Noise Management Plan
- Operational Air Quality Management Plan
- Surface Water Management Plan
- Erosion and Sediment Control Plan
- Waste Management Plan

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for managing environmental operations the Borg Panels facility.

Table 5 Site Personnel

Name	Title	Contact Details
Tony Truscott	Facility Manager	+61 436 613292
Victor Bendevski	Environmental and Regulatory Compliance	(02) 4340 9827
Jacqueline Blomberg	Environmental Manager	+61 436 609 556

1.10 Actions Required from Previous Annual Review

The actions listed in Table 6 were identified in the 2019/20 Annual Review for implementation during this 2020/21 reporting period.

Table 6 Proposed Activities in 2019/20 Reporting Period

Activities Proposed in 2019/20 Reporting Period	Results achieved in 2020/21 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.	Ongoing implementation of the OEMP, CEMP and sub plans including environmental inspections undertaken at least monthly. Inspections recorded and actions assigned accordingly, and use of DataStation to track progress and close out. CEMP, OEMP and sub plans reviewed and updates performed where: a) changes to site operations (existing and project); and b) in accordance with SSD 7016 C10.

Carry out comprehensive Hazard Audit (SSD 7016 condition B42)	Hazard Audit undertaken and findings submitted to DPIE on 17 December 2020. DPIE issued an RFI which Borg provided a response to on 11 March 2021. DPIE were satisfied with the response and no further information was required (DPIE response letter dated 1 April 2021).
Complete verification studies required for the particleboard plant under SSD 7016 conditions of consent	• B11 Air Emission Verification Study, DPIE approval provided on 8 February 2021 • B20 Noise Verification Study, DPIE approval provided on 11 January 2021 • B23 Cogen Noise Study submitted to EPA for consultation(via Major Project portal) on 26 November 2020 (SSD-7016-PA-18). Email correspondence with EPA on 20 January 2021 and 1 June 2021 requesting update on review. Advised review still underway.
Complete reporting requirements related to the commissioning of particleboard plant under SSD 7016 conditions of consent	• B9 Cogen Post Commissioning Report, response from DPIE received 4 August 2020. Ongoing (annual) air monitoring required as per EPA direction. • B41 Post Start Up Compliance Report, acceptance letter from DPIE received 18 December 2020
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1 and MOD 2	As reported in this Annual Review. All additional conditions pertaining to MODs have been incorporated into Borg document OBERON Approvals and Licencing Compliance Register.
Complete the installation of the gas turbine and construction of the associated ancillary infrastructure (MOD 2)	Construction activities were completed during this reporting period. Commissioning to occur during next reporting period.
Install Cleaning tower for recycled wood	Construction was not complete during this reporting period
Undertake required environmental monitoring associated with the newly installed gas turbine	To be undertaken during next reporting period
Continue research into plant/equipment with potential to further reduce pollutants emitted from the facility	Pollution Reduction Program undertaken by Todoroski Air Science Pty Ltd. Report issued 27 November 2020.

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7016 allows for production of up to 380,000 m³ of MDF and 500,000 m³ of particleboard per calendar year. During this reporting period Borg Panels manufactured 258,936m³ of MDF and 334,874m³ of particleboard.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Reclamation of the effluent overflow process water dam to allow for construction of further hardstand to facilitate further parking and improve operability of the site;

- Reinstatement of effluent overflow process water dam adjacent the water treatment plant;
- Addition of enclosed awning to the northern extension where loading and unloading activities occur, to better minimise potential noise disturbance;
- Creation of additional emergency catchment dam and associated site drainage channels;
- Commence stormwater harvesting from first flush basin; and
- Installation of roof top solar panels to the northern extension building.

2.3 Site Activities

The following activities associated with the construction of the particleboard facility and modifications to existing operations occurred during the reporting period:

- major earthworks at the northern boundary complete.
- construction of storage warehouse and northern building extension complete. Infrastructure points 22 and 25 in Figure 2.
- installation of new electricity generating gas turbine and ancillary equipment complete. Infrastructure point 36 in Figure 2.
- commenced construction of sorting tower at the materials handling area
- completed construction of northern warehouse extension awning. Included as part of Infrastructure point 22 in Figure 2.
- commenced construction of further hardstand at the northern section of site
- continue alterations to the existing site surface water system.

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- construction works undertaken in accordance with the Construction Environmental Management Plan and sub-plans;
- attended noise verification monitoring;
- air emission verification monitoring;
- water quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via EHSR Alerts and Toolbox Talks.

2.4 Wood Recycling Program

As mentioned above in section 1.1 Scope, as a sustainability initiative Borg undertook a trial of the receipt, processing and use of urban wood residue (UWR) as an alternative raw material used in the production of particleboard during this reporting period. Authority for the trial of UWR was provided by the EPA and was included in Special Condition E.1 of EPL 3035. The EPA also issued The Borg Panels Urban Wood Residue trial order and exemption September 2019 under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 for this initiative.

Borg developed a Quality Control Plan (QCP) to define a standard approach for ensuring that the quality of recovered UWR received by Borg during this trial met with our specified requirements, our EPA licence conditions (EPL 3035) and Development Consent SSD 7016 as well as relevant NSW Government statutory regulations, and policies. The trial was conducted over a period of 12 months and concluded on 30 August 2020.

During the trial Borg utilised 11,000 tonnes of UWR – diverting this waste material from landfill into productive use in new and high-quality particleboard products. As UWR has a much lower moisture content compared to virgin forest wood fibre, this initiative also resulted in an energy saving of approximately 8,000 MW, a substantial reduction in our natural gas consumption and greenhouse gas emissions.

Air emission sampling and testing were required to be undertaken in accordance with the sampling method, units of measure and sampling frequency specified in condition M2.2 of EPL 3035 at licence discharge points 29, 30, 31 and 32 for the following analytes:

- Formaldehyde
- Nitrogen Oxides
- PM10
- Smoke Emissions
- Total Solid Particles

Following the conclusion of the trial a report was submitted to the EPA assessing the results of the UWR characterisation and air emission sampling, and also providing commentary on whether the UWR Quality Control Plan (QC Plan) was 'fit for purpose' over the period of the trial. The report also identified, where appropriate, any deficiencies or problems encountered during the trial and actions taken to prevent a recurrence.

The report concluded that the use of UWR collected to our specification made little or no difference to air emissions, and the UWR QC Plan, with some refinements, was 'fit for purpose' over the trial period.

The EPA issued *The Borg Panels Urban Wood Residue order March 2021(RRO)* and *The Borg Panels Urban Wood Residue exemption March 2021(RRE)* on 30 March 2021. The order and exemption commenced on 30 March 2021 and are valid until 30 March 2023.

Figure 2 SSD 7016 Approved Development Area



3 Waste Management

Waste generated at the Borg Panels site is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste removed from Borg Panels during the reporting period is provided in Table 7.

Table 7 Waste Management 2020/21

Month	Description				Destination
	Litres	m ³	Tonnes	Waste	
May 2020		870		General	Oberon Council Waste Depot
			34.32	Waste requiring burial	Bathurst Regional Council
June 2020		600		General	Oberon Council Waste Depot
			22.76	Waste requiring burial	Bathurst Regional Council
July 2020		860		General	Oberon Council Waste Depot
			21.02	Waste requiring burial	Bathurst Regional Council
August 2020	3100			Oil	Nationwide Oil
		850		General	Oberon Council Waste Depot
			1.88	Waste requiring burial	Bathurst Regional Council
September 2020	9000			Oil	Nationwide Oil
		820		General	Oberon Council Waste Depot
			32.84	Waste requiring burial	Bathurst Regional Council
October 2020		680		General	Oberon Council Waste Depot
			53.52	Waste requiring burial	Bathurst Regional Council
November 2020	4700			Oil	Nationwide Oil
		820		General	Oberon Council Waste Depot
		60		Building/demolition	Oberon Council Waste Depot
			15.18	Waste requiring burial	Bathurst Regional Council
December 2020	5900			Oil	Nationwide Oil
		450		General	Oberon Council Waste Depot

Month	Description				Destination
	Litres	m ³	Tonnes	Waste	
January 2021		550		General	Oberon Council Waste Depot
			13.3	Waste requiring burial	Bathurst Regional Council
February 2021	2100			Oil	Nationwide Oil
		590		General	Oberon Council Waste Depot
			13.64	Waste requiring burial	Bathurst Regional Council
March 2021	4900			Oil	Nationwide Oil
		860		General	Oberon Council Waste Depot
			43.92	Waste requiring burial	Bathurst Regional Council
April 2021		542		General	Oberon Council Waste Depot
TOTAL		8492		General Waste	Oberon Council Waste Depot
		60		Building/Demolition Waste	Oberon Council Waste Depot
			252.38	Waste requiring Burial	Bathurst Regional Council
	29700			Waste Oil	Nationwide Oil Pty Ltd

Waste types in Table 7 are further described as:

- General waste including a mix of both putrescible and non-putrescible waste;
- Waste requiring burial made up of urea formaldehyde spade-able resin and paraffin wax bladders;
- Building and demolition waste including concrete, metal and timber are recycled when appropriate; and
- Used oils from the plant process oil systems and mechanical workshop are recycled off site via third parties.

There was no trackable waste generated during this reporting period.

3.2 Trade Waste

Borg Panels Trade Waste Service Contract with Oberon Council for the discharge of liquid trade wastes into Council's sewerage system was not applicable during this reporting period as there was no renewal of the licence. Borg Panels treats its liquid trade waste on site.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

Borg Panels operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental monitoring is conducted in accordance with the requirements of SSD 7016, its subsequent modifications (MOD1, MOD2 & MOD3), and EPL 3035. Environmental monitoring is an integral part of Borg Panels environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Meteorological Data

Borg Panels operate and maintain a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The following section summarises the meteorological data for the 2020/21 reporting period.

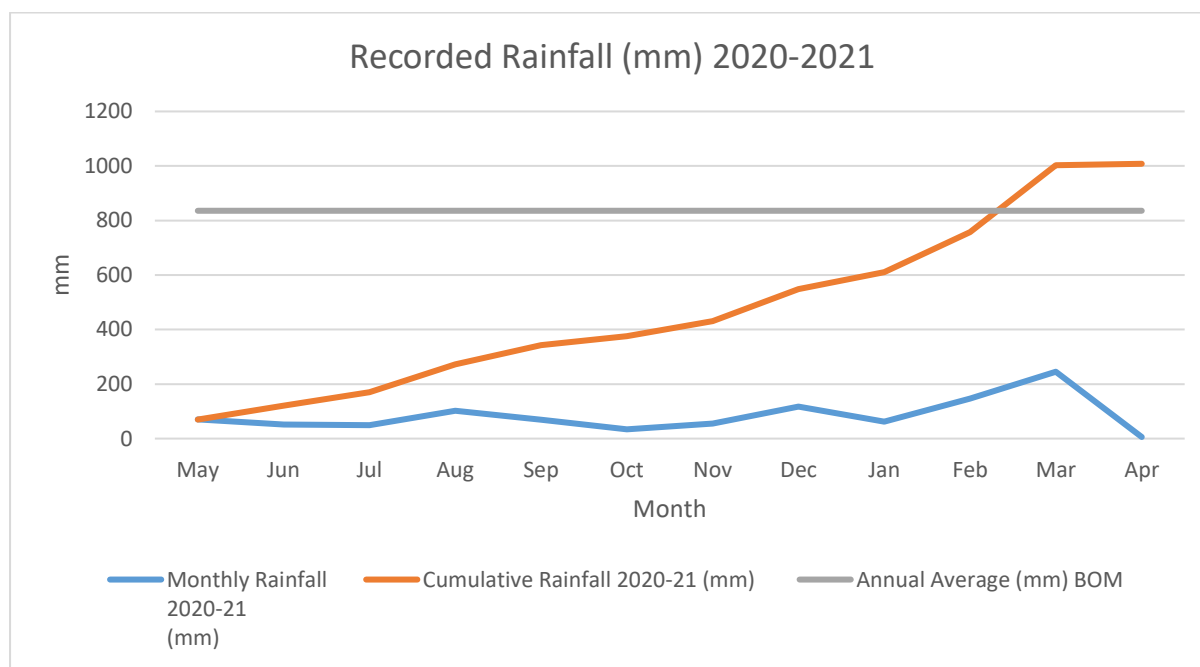
4.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during this reporting period recorded at EPA Point 26 is shown in Table 8 and displayed in Figure 3 below. Total recorded rainfall for the period was 1,008mm. This is 172.3mm above the annual mean rainfall of 835.7mm for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2020/21

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
69.8	51	49.6	102.4	69.4	33.8	55.2	117.2	62.2	146.4	245.2	5.8	1008
Number of Rain Days (≥0.2mm)												
8	9	10	16	11	8	9	11	11	11	13	3	120

Figure 3 Recorded Rainfall (mm) at Borg Panels Meteorological Station 2020/21



4.2.2 Temperature

Monthly maximum and minimum temperatures recorded from the site weather station during the reporting period are shown in Table 9.

Table 9 Monthly Minimum and Maximum Temperatures 2020/21

Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-4.2	-4.7	-5.2	-4.7	-3.5	-0.1	2.4	0.6	5.1	8.7	2.1	-2.6
16.7	14.5	13.5	16.9	21	22.8	30.4	31.6	33.4	27.7	26.4	24

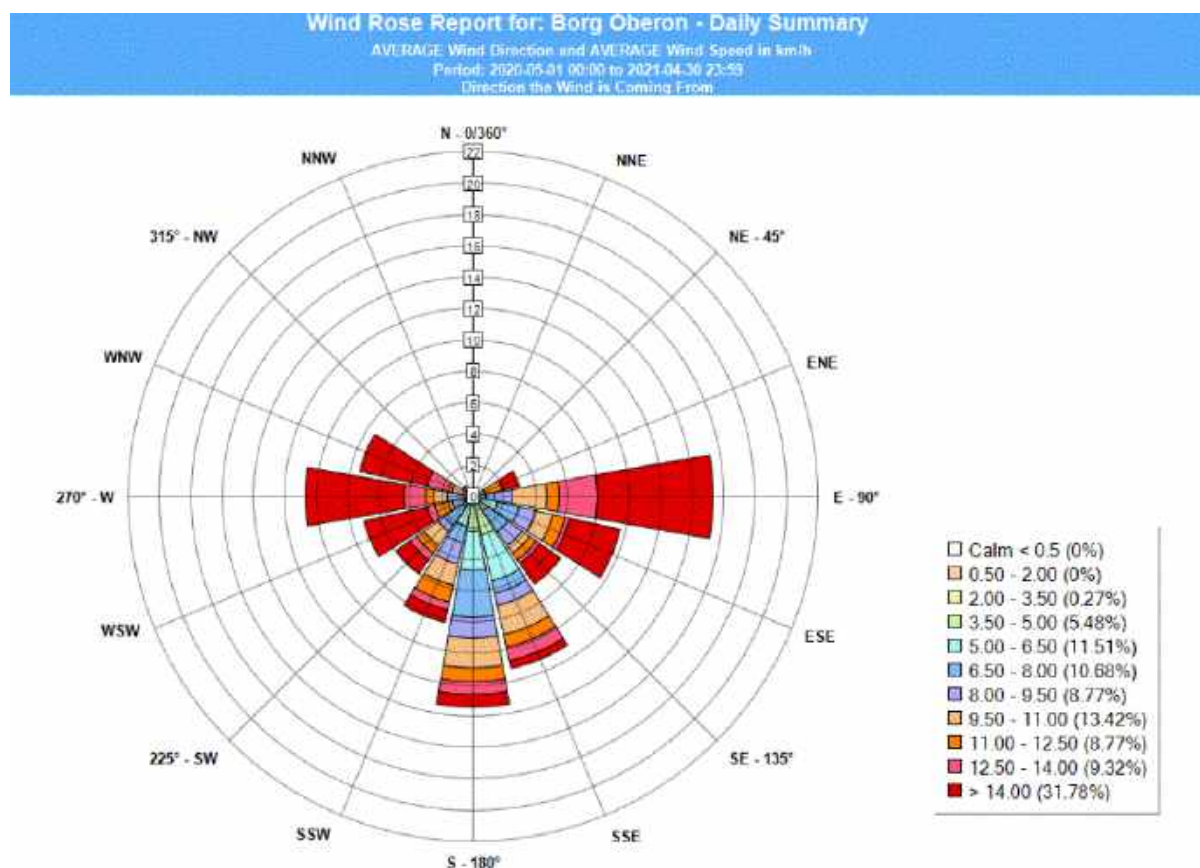
4.2.3 Wind Speed and Direction

The site weather station recorded wind speed and direction data is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4.

Table 10 Monthly Daily Wind Data 2020/21

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2020	54.4	11.9	184° (S)
June 2020	42.4	11.4	180° (S)
July 2020	50.5	10.2	183° (S)
August 2020	56.5	14.4	222° (SW)
September 2020	52.8	13	201° (SSW)
October 2020	71.5	12.4	180° (S)
November 2020	57.3	11	184° (S)
December 2020	53.8	14.9	165° (SSE)
January 2021	53.8	13	156° (SSE)
February 2021	45.8	13.5	141° (SE)
March 2021	51.5	13.7	160° (SSE)
April 2021	42.2	9.1	179° (S)

Figure 4 Daily Summary Average Wind Rose 2020/21



4.3 Air Quality

4.3.1 Dust Depositional Gauges

Dust deposition monitoring is undertaken in accordance with the Borg Panels Operational Air Quality Management Plan (OAQMP). Condition O3 of EPL 3035 states that:

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

EPL 3035 does not specify dust deposition monitoring be undertaken, Borg conduct this to assist with site management. The air quality criteria adopted for deposited dust is provided in Table 11.

Table 11 Air Quality Criteria Deposited Dust

Averaging Period	Impact	Criteria
Annual	Incremental	2 g/m ² /month
	Total	4 g/m ² /month

There are six dust depositional gauges (DMG) located in and around the site. Five were sampled from May to November 2020 as the sixth (DMG4) had been removed to allow completion of construction activities in the immediate location of DMG4. This dust gauge was ultimately relocated further east of its original location on the northern boundary as the initial location was no longer suitable to access. The locations of dust depositional gauges are listed in Table 12 and shown in Figure 5.

Table 12 Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description
DMG 1	Borg Panels eastern boundary with Woodchem
DMG 2	Materials handling building
DMG 3	Water treatment plant
DMG 4	Northern boundary
DMG 5	Highlands Motor Inn, South of Borg Panels Plant
DMG 6	Albion Street, East of Borg Panels plant

Figure 5 Depositional Dust Gauge Locations

DMGs 1 to 4 are located on the periphery of the site. DMG 1 is located within the operational boundary of the site immediately adjacent to an unsealed laydown area and in general proximity of an unsealed road. DMG 2 is located adjacent to the materials handling building. DMG 1 and DMG 2 returned results showing exceedances of the annual average criteria of 4g/m^2 . DMG 1 is exposed to regular traffic and day-to-day activities with DMG2 near the materials handling building which can produce wood dust. As these are on-site gauges the criteria noted in Table 11 does not apply.

DMG 5 and DMG 6 are located at off-site receivers. There was no exceedance of the dust deposition criteria (4g/m^2) at these locations.

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method*. During the reporting period all dust samples were collected by trained specialists and analysed by NATA certified laboratories.

Table 13 provides a summary of Borg Panels annual average results for insoluble solids during the reporting period and for the previous two years. Monthly data and rolling annual average data is provided in Appendix A.

Dust management measures are listed in Section 7.5 Air Quality (Dust) Management within the CEMP. Measures include but are not limited to evaluation of weather conditions (wind speed and direction), use of water cart to spray unsealed surfaces and stockpiles, limited stockpile heights, and clear communication to workers regarding their responsibilities to assist with managing dust via toolbox meetings and environmental training sessions.

Table 13 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids (g/m ² /month) 2018/19	Annual Average Insoluble Solids (g/m ² /month) 2019/20	Annual Average Insoluble Solids (g/m ² /month) 2020/21
DMG 1	Borg Panels eastern boundary with Woodchem	9.3	7.1	5.0
DMG 2	Materials handling building	5.2	4.6	2.4
DMG 3	Water treatment plant	2.7	2.8	1.3
DMG 4	Northern boundary	2.9	3.9	1.7
DMG 5	Highlands Motor Inn	1.9	2.3	0.6
DMG 6	Albion Street east of Borg Panels plant	1.7	2.4	0.6

Table 13 generally shows a reduction in average annual insoluble solids over time across all dust gauge locations.

4.3.2 Air Emissions Monitoring Points

The locations of air emission monitoring points are listed in Table 14 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 4 September 2019. Note there are two additional monitoring points identified in Table 14 which are not listed on the current version of EPL 3035. These points were provided by the EPA as a result of the Cogen Plant Post Commissioning Report dated 23 June 2020 (condition B9 of SSD 7016), to allow Borg to demonstrate ongoing compliance with air quality standards at these locations. Annual air emission monitoring included these two new locations being EPA Identification Points 33 and 34.

There are no air emission monitoring requirements under SSD 7016. Full laboratory results are attached to this document as Appendix B.

Table 14 Location of Air Emissions Monitoring

EPA Identification No.	Description
4	DC1 Baghouse
5	DC2 Baghouse
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)
9	Conti 1 Dryer Cyclone #1 (south)
10	Conti 1 Dryer Cyclone #2 (north)
11	Conti 2 Heat Plant
12	Press Vents Conti 1
17	Conti 1 Heat Plant
18	Press exhaust vents
19	Dryer stack
20	Reject cyclone DC 11
21	Reject cyclone DC 12
22	Reject cyclone DC 13
27	Combined Conti 2 Press Vent
29	Forming Line Baghouse
30	Form Station Baghouse
31	Particleboard Press Extraction
32	Wet Electrostatic Precipitator (WESP)
33	Cogeneration Unit 1
34	Cogeneration Unit 2

EPA Identification Points 18, 19, 20, 21 and 22 are recognised as discharge points in EPL 3035 however there is no requirement to monitor the concentration of pollutants discharged at these points. In any case, this plant is dormant. Similarly, Points 11 and 17 do not produce flow. The exhaust for Conti 2 heat plant (Point 11) is ducted back into Conti 2 dryer cyclones (Points 7&8), and exhaust for Conti 1 heat plant (Point 17) is ducted back into the Conti 1 production system (Points 9&10).

EPL 3035 licence version date 4 September 2019 removed the requirement to monitor for volatile organic compounds (VOCs) from monitoring points 7, 8, 9 and 10. Under this EPL additional monitoring requirements (pollutants) were included for Points 7 and 8, and new licence and discharge monitoring points 29, 30, 31, 32, 33 and 34 as described in Table 14.

4.3.3 Air Monitoring

Environment Protection Licence 3035 sets pollution concentration limits for emission Points 7, 8, 9, 10, 33 and 34 as shown in Table 15. All plant and equipment must comply with the relevant concentration standards listed in Schedule 2, 3 and 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* where pollution limits are not specified

in the EPL. Monitoring results are assessed against these criteria to determine compliance with air emission limits.

Table 15 EPL 3035 Air Concentration Limits

Pollutant	ID Point	Units of Measure	100 Percentile Concentration Limit	Reference Condition	Oxygen Correction	Averaging Period
Total Solid Particulates	7,8,9,10	mg/m ³	200	n/a	n/a	n/a
Formaldehyde	7,8,9,10	mg/m ³	5	n/a	n/a	n/a
Nitrogen Oxides	33,34	mg/m ³	450	Dry, 273K, 101.3kPa	5%	1 hour
VOC (as n-propane equivalents)	33,34	mg/m ³	20	Dry, 273K, 101.3kPa	5%	1 hour

Source: EPL 3035 (04 September 2019)

Air emission monitoring was undertaken by trained specialists and samples analysed by NATA certified laboratories. Monitoring equipment is maintained by the consultant and calibrated in accordance with the manufacturer's specifications by qualified specialists. This monitoring is performed in accordance with the methodologies as specified in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* and the requirements of EPL 3035. USEPA Method GD-008 is the approved method for determining flow rate and sampling for particulate matter in cyclonic flow from licenced discharge Points 7, 8, 9 & 10.

For each discharge point identified in Table 14 above, Borg Panels monitored the concentration of each pollutant as specified in EPL 3035. The results for this period are compared against results from the previous two years as displayed in Tables 16-35.

Table 16 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	3.3	<2	<2
Formaldehyde	mg/m ³	Yearly	2.8	2.4	1.5

Table 17 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	3.1	<2	<2
Formaldehyde	mg/m ³	Yearly	1.5	1.1	2.5

Table 18 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	43	45	79
Formaldehyde	mg/m ³	Yearly	-	2	1.6
Nitrogen oxides	mg/m ³	Yearly	-	210	140
PM10	mg/m ³	Yearly	-	32	8.9
Smoke	Obscuration	Every 6 months	-	0	0

Table 19 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	43	26	68
Formaldehyde	mg/m ³	Yearly	-	2.8	3
Nitrogen Oxides	mg/m ³	Yearly	-	170	210
PM10	mg/m ³	Yearly	-	24	28
Smoke Emissions	Obscuration	Every 6 months	-	0	0

Table 20 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	21	71	38
Formaldehyde	mg/m ³	Yearly	4.8	1.5	4.8
Nitrogen Oxides	mg/m ³	Yearly	88	190	260
PM10	mg/m ³	Yearly	18	9.1	26
Smoke Emissions	Obscuration	6 Monthly	0	0	0
Volatile Organic Compounds	mg/m ³	Yearly	5.5	-	-

Table 21 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	28	110	41
Formaldehyde	mg/m ³	Yearly	4.9	2	4.7
Nitrogen Oxides	mg/m ³	Yearly	63	200	73
PM10	mg/m ³	Yearly	23	21	27
Smoke Emissions	Obscuration	6 Monthly	0	0	0
Volatile Organic Compounds	mg/m ³	Yearly	8.2	-	-

Table 20 and Table 21 show an increase in Total Solid Particles from the 2018/2019 to the 2019/2020 data. This is likely due to a reduced fan velocity at these dryer cyclones which was necessary as part of an investigation into a power reduction program for the site. As a result of this, the cyclones were readjusted with effectiveness evident in the 2020/21 TSP results.

Table 22 Air Emissions Monitoring Results EPA Identification Point 11

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
* Total Solid Particles	mg/m ³	Yearly	140*	-	-
Formaldehyde	mg/m ³	Yearly	0.34	-	-
Nitrogen Oxides	mg/m ³	Yearly	550	-	-
PM10	mg/m ³	Yearly	78	-	-

Volatile Organic Compounds	mg/m ³	Yearly	0.4	-	-
Smoke Emissions	Obscuration	6 Monthly	0	-	-

Note: *Corrected to 6.5% CO₂ mg/m³

Table 23 Air Emissions Monitoring Results EPA Identification Point 12 Vent 1

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Every 3 years	-	-	3.3
Formaldehyde	mg/m ³	Every 3 years	-	-	5.4
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	<3

Table 24 Air Emissions Monitoring Results EPA Identification Point 12 Vent 2

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Every 3 years	-	-	7.2
Formaldehyde	mg/m ³	Every 3 years	-	-	6.5
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	4.8

Table 25 Air Emissions Monitoring Results EPA Identification Point 12 Vent 3

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Every 3 years	-	-	19
Formaldehyde	mg/m ³	Every 3 years	-	-	3.8
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	13

Table 26 Air Emissions Monitoring Results EPA Identification Point 12 Vent 4

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Every 3 years	-	-	28
Formaldehyde	mg/m ³	Every 3 years	-	-	1.2
Nitrogen Oxides	mg/m ³	Every 3 years	-	-	<4
PM10	mg/m ³	Every 3 years	-	-	20

Table 27 Air Emissions Monitoring Results EPA Identification Point 18

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Every 3 years	Dormant	Dormant	Dormant
Formaldehyde	mg/m ³	Every 3 years	Dormant	Dormant	Dormant
Volatile Organic Compounds	mg/m ³	Every 3 years	Dormant	Dormant	Dormant
Velocity	mg/sec	Every 3 years	Dormant	Dormant	Dormant

Table 28 Air Emissions Monitoring Results EPA Identification Point 19

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	Dormant	Dormant	Dormant
Nitrogen Oxides	mg/m ³	Yearly	Dormant	Dormant	Dormant
Volatile Organic Compounds	mg/m ³	Yearly	Dormant	Dormant	Dormant
Velocity	mg/sec	Yearly	Dormant	Dormant	Dormant

Table 29 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	5.3	13	7.6
Formaldehyde	mg/m ³	Yearly	2.1	1.6	1.9
Nitrogen Oxides	mg/m ³	Yearly	<20	<3	<4
PM10	mg/m ³	Yearly	2.2	9.6	5.2

Table 30 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	5.3	<2	<2
Formaldehyde	mg/m ³	Yearly	2.1	0.8	1.7
Nitrogen Oxides	mg/m ³	Yearly	<20	<3	<4
PM10	mg/m ³	Yearly	2.2	<2	<2
Smoke Emissions	Obscuration	Yearly	0.66	0	0

Table 31 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	5.3	1.8	<2
Formaldehyde	mg/m ³	Yearly	2.1	0.87	1.5
Nitrogen Oxides	mg/m ³	Yearly	<20	<3	<4
PM10	mg/m ³	Yearly	2.2	<3	<4
Smoke Emissions	Obscuration	Yearly	0.66	0	0

Table 32 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	5.3	27	46
Formaldehyde	mg/m ³	Yearly	2.1	0.57	4.6
Nitrogen Oxides	mg/m ³	Yearly	<20	<3	<4

PM10	mg/m ³	Yearly	2.2	25	40
Smoke Emissions	Obscuration	Yearly	0.66	0	0

Table 33 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2018/19	2019/20	2020/21
Total Solid Particles	mg/m ³	Yearly	5.3	3.6	30
Formaldehyde	mg/m ³	Yearly	2.1	0.63	0.21
Nitrogen Oxides	mg/m ³	Yearly	<20	180	210
PM10	mg/m ³	Yearly	2.2	*	*
Smoke Emissions	Obscuration	Yearly	0.66	0	0

*Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

Table 34 Air Emissions Monitoring Results EPA Identification Point 33

Pollutant	Units	Frequency	2020/21		
Nitrogen Oxides	mg/m ³	Yearly	320		
VOC	mg/m ³	Yearly	0.8		

Table 35 Air Emissions Monitoring Results EPA Identification Point 34

Pollutant	Units	Frequency	2020/21		
Nitrogen Oxides	mg/m ³	Yearly	390		
VOC	mg/m ³	Yearly	0.16		

There were nil exceedances of air concentration limits during this reporting period.

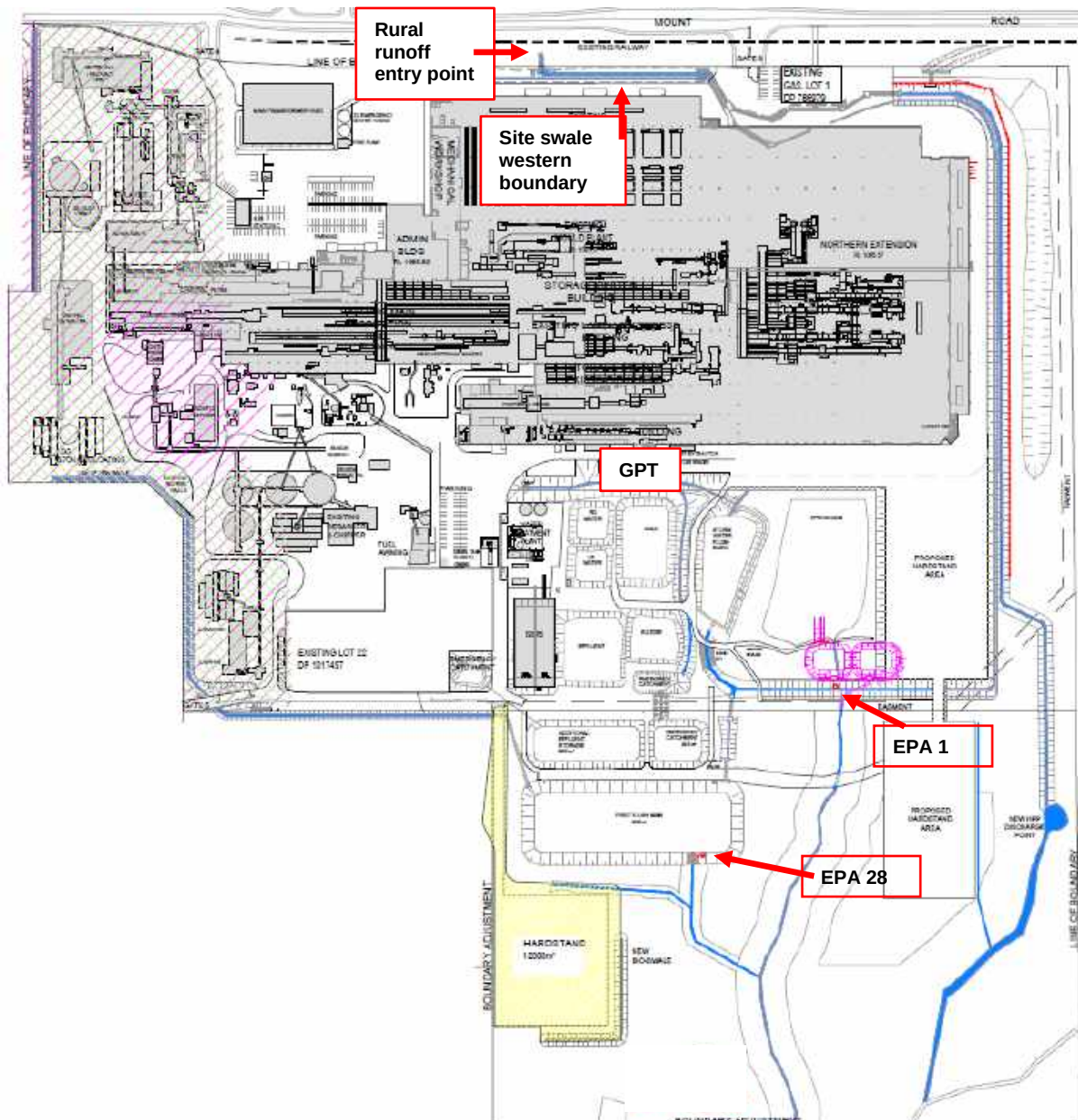
4.4 Surface Water

The existing surface water management system includes runoff from Borg Panels site and adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from Structaflor and Highland Pine Products Sawmill 2 flows across Lowes Mount Road and directed onto the site via the swale on the western boundary
- Runoff from rural parcels of land on Lowes Mount Road is also directed into the site from the western boundary, conveyed via a 'clean' water swale, which runs alongside the site swale following the northern boundary before discharging to a tributary of Kings Stockyard Creek
- Borg Panels roof and surface runoff from the western side of the facility is directed into the boundary swale and transferred into the existing stormwater flush basin
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap (GPT) and then into the existing stormwater flush basin
- Any overflow from the existing stormwater flush basin is directed into the first flush basin

- Water captured in the basins is harvested by the site water treatment plant for reuse in the production system
- Stormwater harvesting averaged 222m³/day over the reporting period
- Runoff from construction areas is managed in accordance with Erosion Sediment Control Plans as part of the CEMP for SSD7016. Surface water from these zones is directed into the site swale then on to the stormwater basin
- Water discharges from EPL discharge Points 1 and 28 to a tributary of Kings Stockyard Creek (shown on Figure 6)

Figure 6 Surface water management system - SSD 7016



In accordance with EPL 3035, Borg Panels undertakes water quality monitoring weekly during discharge to manage compliance requirements. During this reporting period water discharge was from EPA Point 1 and Point 28. The concentration limit of a pollutant discharged from EPA Point 1 & 28 in EPL 3035 is shown below in Table 36.

Table 36 EPA Identification Point 1- Water pollution limits

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3
Biochemical Oxygen Demand (BOD)	mg/L		20
Colour	Hazen	80	160
Dieldrin	µg/L		0.3
Methylene Blue Active Substances (MBAS)	mg/L		0.5
Nitrogen (Total)	mg/L		10
Oil and Grease	mg/L		10
pH	pH		6.5-8.5
Phosphorus (Total)	mg/L		0.3
Total Suspended Solids	mg/L		50

Stormwater samples are collected by trained Borg personnel and are analysed by NATA certified laboratories. Full results for the 2020/21 reporting period are provided in Appendix C Surface Water Monitoring Data. Table 37 provides a summary of Borg Panels annual average water monitoring results for discharge from EPA Point 1 and Table 38 for EPA Point 28 during the reporting period and for the previous two years (Point 1 only, no data for Point 28). This shows that for the 2020/21 reporting period, the annual average for all pollutants were below the concentration limit set in EPL 3035.

Table 37 Annual Average Water Quality Monitoring Results EPA Point 1

Pollutant	Units of Measure	2018/19	2019/20	2020/21
Aldrin	µg/L	0	0	0
Biochemical Oxygen Demand	mg/L	15.1	8.2	3.37
Colour	Hazen	120.1	39.2	42.65
Dieldrin	µg/L	0	0	0
Methylene Blue Active Substances	mg/L	0.3	0.1	0.10
Nitrogen (Total)	mg/L	6.3	3.7	1.3
Oil and Grease	mg/L	7.5	5.1	5.23
pH	pH	7.6	7.6	7.62
Phosphorus (Total)	mg/L	0.1	0.1	0.06
Total Suspended Solids	mg/L	31.3	28.9	35.91

Table 38 Annual Average Water Quality Monitoring Results EPA Point 28

Pollutant	Units of Measure	2020/21		
Aldrin	µg/L	0		
Biochemical Oxygen Demand	mg/L	7.7		
Colour	Hazen	68.5		
Dieldrin	µg/L	0		
Methylene Blue Active Substances	mg/L	0.11		
Nitrogen (Total)	mg/L	8.42		
Oil and Grease	mg/L	5.8		
pH	pH	7.72		
Phosphorus (Total)	mg/L	0.09		
Total Suspended Solids	mg/L	23.5		

Forty-three samples (sample events) were collected and analysed at Point 1 and ten samples collected and analysed at Point 28 during discharge in the 2020/21 reporting period.

Six events at Point 1 and five events at Point 28 returned results where water pollution limits noted in Table 36 were exceeded. The EPA and DPIE were notified of all exceedances (see Appendix I Water Quality Exceedances Notification). Appendix C displays the exceedance information for each event including sample date, pollutant and result.

The exceedances experienced during this period were investigated in an attempt to determine potential pollutant sources that may have contributed to the exceedance. This included upstream inspections (Structaflor and Highland Pine Products stormwater infrastructure), assessment of site activities and ERSO controls, and review of rainfall data from the site weather station.

As discussed above in section 4.2.1 Rainfall Data, the site meteorological station recorded 1008mm of rainfall for the reporting period which was 172.3mm above the annual mean rainfall of 835.7mm for the Oberon region. This excess rainfall combined with the significant construction activities that occurred during this reporting period likely contributed to a number of the water quality discharge exceedances discussed below.

4.4.1 EPL 3035 Identification Point 1

Water quality discharge limit for Total Suspended Solids (TSS) was exceeded on 15th June 2020 with result being 78mg/l. The two weeks preceding this the sample event were relatively dry. A significant rain event (13.4mm) occurred the day before sampling which likely mobilised sediments in the swale system. Sample event undertaken one week later on 25th June did not show exceedance for TSS.

Water quality discharge limit for Biological Oxygen Demand (BOD) was exceeded for sample event undertaken on 23rd September 2020 where results showed BOD at 32mg/l. There were no unusual site conditions recorded during this sample event. All other pollutant levels were within the concentration limits set in EPL 3035.

Water quality discharge limit for pH was exceeded for sample event undertaken on 21st October 2020. Results showed pH at 8.86. No other exceedances were reported for this event. No unusual site conditions were recorded for this event.

On 20th January 2021 water quality discharge limit for pH was exceeded with result showing pH at 8.63. All other pollutants were well below discharge concentration limits. No unusual site conditions were identified.

Results for stormwater sample event undertaken on 24th February 2021 show TSS at 656mg/l. A site investigation commenced with the Environmental Manager coordinating with the site WHSE Coordinator and Construction Coordinator to determine causal factors. Construction were undertaking minor earthwork activities at the northern swale for the stormwater system when an unexpected rain event occurred. This was a significant rain event in that it was greater than 10mm. A sizeable area was required to be exposed for this portion of work, staging was not an option however this increased the potential for sediment laden runoff. Rock check dams and sediment fence had been installed to manage the work area. The Construction Coordinator advised that he checks the weather forecast daily which assists in determining the days/weeks scope of works though as stated, this was an unexpected event. An attempt was made by the WHSE Coordinator to inspect downstream of the site discharge point (i.e. Kings Stockyard Creek off Hazelgrove Road) however the vegetation was too thick to access to visually inspect the Creek. Works to this section of site were escalated by the Construction Coordinator to 'close up' this area in addition to the scheduling of spray grass application to the western and northern swales. In this reporting period, there have been no other TSS exceedances at this EPL Point 1.

On 16th March 2021 water quality discharge limit for Oil & Grease (O&G) was exceeded with result showing O&G at 15mg/l. During the two days preceding the sample event, the site weather station recorded two significant rain events totalling 45.2mm which likely contributed to this exceedance given the volume of runoff into the site swales from both on-site and off-site surfaces. For the remainder of this reporting period, there were no other exceedances of O&G at this monitoring location.

4.4.2 EPL 3035 Identification Point 28

At EPL discharge point 28 there were three occurrences where water quality discharge limit for Total Nitrogen (TN) was exceeded. These occurred on 10th, 17th and 24th February 2021 with results being 11.9mg/l, 15.8mg/l and 15.5mg/l respectively. For the minor exceedance on 10th February, no unusual site conditions were identified which could have contributed to this exceedance. When results for the 17th February again showed an exceedance for this same pollutant, the WHSE Coordinator conducted an inspection of the whole of site and identified an amount of wood material which had escaped the debarker/chipper building and surrounds. This organic matter could have contributed to this exceedance. Supporting this assumption is the result for True Colour being 70PCU. While not an exceedance of EPL 3035 50 or 100 percentile limit, it may show a correlation between organic matter and the TN result. Upon receiving results for sample event undertaken on 24th February, a site investigation commenced in an attempt to determine if site contributors other than organic material potentially contributed to the exceedance. It was identified that at the UWR stockpile area adjacent the materials handling building, an amount of particleboard chip was stockpiled on the pad outside of the building and possibly leaching resin during rain events which could be the cause of the TN results. Upon this identification a site instruction was given that all particleboard chip be stored inside the building. Other than organic matter, no other possible contributors were identified. Since that time there have been no further exceedances of TN in stormwater sample results.

On 16th March 2021 a minor exceedance for Oil & Grease was reported (11mg/l). No unusual site conditions were recorded for this sample event. No other exceedances were reported for this event. There was a minor exceedance for Total Suspended Solids (54mg/l) from water sample event undertaken on 24th March 2021. No unusual site conditions were recorded for this sample event. No other exceedances were reported for this event.

4.5 Groundwater

In accordance with EPL 3035, Borg Panels monitor four groundwater bores on site. The locations of groundwater monitoring bores are listed in Table 39 and shown on Figure 7.

Table 39 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site
15	East of stormwater treatment pond
16	East of Woodchem
24	Adjacent northern swale

Figure 7 Groundwater Monitoring Locations



Samples were collected by an appropriately qualified third-party specialist and analysed by NATA certified laboratories. This work is carried out in accordance with statutory requirements and relevant standards. Monitoring equipment is maintained in accordance with the manufacturer's specifications by qualified specialists.

Tables 40-43 present results for EPA Identification Points 14, 15, 16 and 24 during the reporting period and compares them with the previous two years data. There are no concentration limits for groundwater set in EPL 3035. Laboratory analysis report provided by ALS Environmental is attached as Appendix D.

Table 40 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2018/19	2019/20	2020/21
Aldrin	µg/L	Yearly	<0.5	-	<0.5
Ammonia as N	mg/L	Yearly	0.02	-	0.02
Chemical Oxygen Demand	mg/L	Yearly	<10	-	25
Electrical Conductivity	µS/cm	Yearly	377	-	220
Dieldrin	µg/L	Yearly	<0.5	-	<0.5
Formaldehyde	mg/L	Yearly	<0.1	-	0.2
pH	pH Units	Yearly	6.8	-	6.8
Total Dissolved Solids	mg/L	Yearly	180	-	210
Total Organic Carbon	mg/L	Yearly	<1	-	3
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	-	<50
Total Suspended Solids	mg/L	Yearly	13	-	606
Water Height	m	Yearly	6.7	-	1.09

Table 41 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2018/19	2019/20	2020/21
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.03	0.02	<0.01
Chemical Oxygen Demand	mg/L	Yearly	15	<10	26
Electrical Conductivity	µS/cm	Yearly	1032	918	1040
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	0.1	0.1
pH	pH Units	Yearly	6.2	6.6	7.1
Total Dissolved Solids	mg/L	Yearly	500	483	690
Total Organic Carbon	mg/L	Yearly	4	4	3
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	46	40	45
Water Height	m	Yearly	2.5	-	0.98

At EPA Point 14 (Table 40), an increase in Chemical Oxygen Demand and Total Suspended Solids is evident from the 2018/19 review period. As this monitoring well had only been recently reinstated/developed prior to the sample event, there may have been excess sediment deposited in the well during development works. The data from the 2021/22

monitoring event will be reviewed to determine if the level of TSS has returned to usual low levels. All other analytes are similar to the 2018/19 period.

Results for EPA Point 15 (Table 41) show an increase notably in Chemical Oxygen Demand, Electrical Conductivity and Total Dissolved Solids between the 2019/20 and 2020/21 periods though the 2020/21 and 2018/19 results appear more similar. All other analytes remained relatively constant with the 2019/20 records.

Table 42 Groundwater Monitoring Results EPA Identification Points 16 (GW01)

Pollutant	Unit of Measure	Frequency	2018/19	2019/20	2020/21
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.04	0.03	0
Chemical Oxygen Demand	mg/L	Yearly	<10	11	26
Electrical Conductivity	µS/cm	Yearly	189	228	257
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	0.1	0.3
pH	pH Units	Yearly	6.6	6.2	6.3
Total Dissolved Solids	mg/L	Yearly	98	127	200
Total Organic Carbon	mg/L	Yearly	2	5	6
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	73	52	173
Water Height	m	Yearly	0.9	0.74	0.86

Table 43 Groundwater Monitoring Results EPA Identification Points 24 (GW26)

Pollutant	Unit of Measure	Frequency	2018/19	2019/20	2020/21
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.03	<0.01	<0.01
Chemical Oxygen Demand	mg/L	Yearly	<10	<10	182
Electrical Conductivity	µS/cm	Yearly	244	486	421
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	<0.1	0.1
pH	pH Units	Yearly	6.2	6.8	7.3
Total Dissolved Solids	mg/L	Yearly	142	283	264
Total Organic Carbon	mg/L	Yearly	1	1	148
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	24	6	142
Water Height	m	Yearly	1.5	1.52	5.89

EPA Point 16 (Table 42) also shows an increase in Chemical Oxygen Demand, Electrical Conductivity, Total Dissolved Solids and Total Suspended Solids when compared with the previous two periods. There is a decrease in Ammonia when compared with the previous two periods and the remaining analytes appear similar to the previous reporting period.

At EPA Point 24 (Table 43) there is a significant increase in Chemical Oxygen Demand, Total Organic Carbon and Total Suspended Solids. A correlation between these three analytes can

be made and it can be assumed these are organic in nature and probably caused by insufficient purging of this bore.

4.6 Noise

In accordance with EPL 3035 and site management plans, Borg Panels monitor noise emissions from the facility. Noise from the premises must not exceed the limits noted in Table 44. In accordance with Development Consent SSD 7016 all construction activities related to the development must also comply with the limits in Table 44.

Table 44 Noise Limits dB(A)

Location	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)
All sensitive receivers	55	50	45
Note: <u>Day</u> – The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays <u>Evening</u> – The period from 6:00pm to 10:00pm <u>Night</u> – The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays L _{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.			

These noise limits apply under all meteorological conditions except for the following:

- Wind speeds greater than 3 meters/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.

Data recorded by the site meteorological station identified as EPA Identification Point 26 is used to determine meteorological conditions. Temperature inversion conditions (stability category) are to be determined by the sigma-thetas method referred to in Fact Sheet D in the *Noise policy for Industry* EPA 2017.

4.6.1 Operational Noise

EPL 3035 stipulates that noise monitoring to determine compliance must be carried out at least once annually during the day, evening and night time hours specified in Table 44. Noise monitoring must be undertaken in accordance with *Australian Standard AS 2659.1 (1998): Guide to use of sound measuring equipment – portable sound level meters*, and the compliance monitoring guidance provided in the *NSW Noise Policy for Industry* (EPA 2017).

During the 2020/21 reporting period, Global Acoustics were engaged to conduct attended noise monitoring and provide an *Annual Noise Monitoring Report* for operational noise generated by Borg Panels facility. The noise monitoring event was conducted at four sensitive receiver locations as shown in Figure 8 and was undertaken on 24th June 2020. Table 45 presents results of the attended annual noise monitoring event.

Figure 8 Borg Panels noise monitoring locations

Table 45 Attended Noise Monitoring L_{Aeq} (15 minute)

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion on dB	Criterion Applies ^{2,3}	Borg L_{Aeq} 15 min dB ⁴	Exceedance ^{5,6}
NM1	24/06/2020 15:02	3.6	D	55	No	46	NA
NM2	24/06/2020 15:27	3.0	D	55	Yes	46	Nil
NM3	24/06/2020 16:14	2.7	D	55	No	42	NA
NM4	24/06/2020 14:38	3.0	C	55	Yes	38	Nil
NM1	24/06/2020 20:28	2.2	E	50	Yes	42	Nil
NM2	24/06/2020 20:49	2.2	E	50	Yes	38	Nil
NM3	24/06/2020 19:45	2.7	D	50	Yes	37	Nil
NM4	24/06/2020 20:07	2.7	D	50	Yes	31	Nil
NM1	24/06/2020 22:49	2.9	D	45	Yes	43	Nil
NM2	24/06/2020 23:14	2.9	D	45	Yes	<30	Nil

NM3	24/06/2020 22:01	3.2	D	45	No	39	NA
NM4	24/06/2020 22:25	2.8	E	45	Yes	32	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible means there was no noise from the source of interest audible at the monitoring location.

1. Atmospheric data is sourced from Borg weather station in Oberon;

2. In accordance with EPL and PA, the noise criteria are to apply under all meteorological conditions except the following:

- Wind speeds greater than 3 m/s at 10 metres above ground level; or

- Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or

- Stability class G temperature inversion conditions.

3. Criterion may or may not apply due to rounding of meteorological data values;

4. Estimated or measured LAeq, 15 minute attributed to the Borg;

5. Bold results in red indicate exceedance of criteria (if applicable); and

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable

The attended noise monitoring conducted by Global Acoustics recorded no exceedance of limits identified in Table 44. All measurements were undertaken as per the *Noise policy for Industry EPA 2017*. The report prepared by Global Acoustics for the annual noise monitoring event is attached to this document as Appendix E.

4.6.2 Construction Noise

Borg Panels Construction Noise Management Plan (CNMP) includes for an attended monitoring regime of one event per quarter. Quarterly noise monitoring is not a compliance requirement under EPL 3035 however it is included as a commitment in Borg Panels Construction Noise Management Plan and therefore, a requirement of SSD 7016 condition C3.

Attended monitoring locations are shown in Figure 8. If any exceedances are identified, additional mitigation measures are implemented, and follow-up monitoring undertaken within one week of the exceedance to determine the effectiveness of the additional controls. Global Acoustics conducted the construction noise monitoring for this review period. Tables 46 to 49 show monitoring results for quarterly noise monitoring events. All reference notes are included below Table 49.

Table 46 Construction Noise Quarter 2

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{3, 4}
NM1	24/06/2020 15:02	3.6	D	55	No	46	NA
NM2	24/06/2020 15:27	3.0	D	55	Yes	46	Nil
NM3	24/06/2020 16:14	2.7	D	55	No	42	NA
NM4	24/06/2020 14:38	3.0	C	55	Yes	38	Nil

Table 47 Construction Noise Quarter 3

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{3,4}
NM1	28/09/2020 09:57	1.4	A	55	Yes	44	Nil
NM2	28/09/2020 10:39	1.8	A	55	Yes	NM	Nil
NM3	28/09/2020 09:08	1.1	A	55	Yes	31	Nil
NM4	28/09/2020 09:32	1.1	A	55	Yes	35	Nil

Table 48 Construction Noise Quarter 4

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{3,4}
NM1	13/01/2021 14:56	3.7	A	55	No	46	NA
NM2	13/01/2021 15:19	3.5	B	55	No	NM	NA
NM3	13/01/2021 14:07	3.2	A	55	No	<25	NA
NM4	13/01/2021 14:33	4.0	B	55	No	36	NA

Table 49 Construction Noise Quarter 1

Location	Start Date and time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies ¹	Borg LAeq(15 min) ²	Exceedance ^{3,4}
NM1	03/03/2021 14:28	2.1	A	55	Yes	43	Nil
NM2	03/03/2021 14:48	2.3	A	55	Yes	IA	Nil
NM3	03/03/2021 13:45	1.6	A	55	Yes	33	Nil
NM4	03/03/2021 14:09	1.6	A	55	Yes	36	Nil

NA = Not Applicable means atmospheric conditions outside conditions specified in Development Consent and so criterion is not applicable.

NM = Not Measurable means some noise from the source of interest was audible at low levels but could not be quantified.

IA = Inaudible, there was no noise from the source of interest audible at the monitoring location.

1. Noise criteria are to apply under all meteorological conditions except the following:

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

2. Site-only LAeq, 15minute attributed to Borg, including modifying factors if applicable;

3. Bold results in red indicate exceedance of criteria (if applicable); and

4. NA in exceedance column means atmospheric conditions outside conditions specified and criterion is not applicable.

No exceedances of EPL 3035 noise limits were recorded during these monitoring events. Reports provided by Global Acoustics for each event are attached to this document as Appendix F.

5 Community Relations

5.1 Environmental Complaints

Eight community complaints were received during the 2020/21 reporting period. Site investigations were conducted by the WHSE Coordinator which included review of plant operational data. Discussions were had with Area Managers/Supervisors regarding site activities to determine if the facility was operating within approved conditions as specified in SSD 7016 and EPL 3035 at the time of the complaints.

An anonymous complaint was received by the EPA alleging continuous emission of smoke from the site over a period of one week. The EPA sought opinion from a third party within Oberon and they stated that there seemed to be some issue on 9th June 2020. An investigation revealed that one of the sites furnaces stopped for a short period of time on 9th June for maintenance works. Upon start up, some smoke is generated and is reasonable for this activity. This response was provided to the EPA who advised that they would close this complaint in their system. No further action was required.

A complaint was received from a resident regarding the condition of the cycle path that runs parallel to the site at Lowes Mount Road. It was necessary to deviate this path near Gate 6 to allow for construction activities to occur. Gravel was temporarily placed in lieu of bitumen for a period of approximately 1 week. The WHSE Coordinator contacted the resident advising that the path would be reinstated by the following week. No further correspondence was received from the resident.

Three complaints were related to noise. Two of these were related to construction activities where reversing alarm beepers could be heard by the resident. Site investigation undertaken by the Construction Manager and WHS Coordinator found items of plant that had not had the reversing alarm beepers changed out for the non-tonal squawkers. In both instances, this was rectified immediately with those items of plant removed from service, taken to the site workshop where the beepers were replaced with the squawkers. The remaining complaint was investigated and found valid as a section of the roof of the chipper building had been removed and was awaiting replacement which occurred the next day. This was communicated to the complainant. No further action was required, no further complaint was made.

The EPA received a 'mixed' complaint' from a resident regarding noise, odour and smoke emission from the facility stacks. The Environmental Manager followed up with the Facility Manager and Production Manager and was able to determine that there was no evidence of any breach of operating conditions to support this complaint. The EPA did not request any action to be taken by Borg.

One traffic complaint was received where a member of the public informed Borg that a company truck had pulled out in front of their car. The truck was able to be identified and the Logistics Manager counselled the driver.

One complainant phoned the WHSE Coordinator to complain about soot deposits on their car. The WHSE Coordinator and Log Yard Manager attended to the complainant's house to inspect the car and found black marks which more resembled tar stains. The WHSE Coordinator explained to the complainant that if the deposits had come from Borg facility it would more likely be a dusty, wood deposit which would be removed easily, and the resident agreed. No further action was required.

For each complaint received, Borg provided a response to the complainant in a timely manner. With respect to noise complaints, regardless of our demonstration of compliance with noise

limits via compliance noise monitoring events, Borg Panels will continue to undertake ad hoc attended and unattended noise monitoring where necessary to ensure nil noise nuisance to local residents from site activities.

A summary of complaints received during the reporting period is provided in Appendix G.

5.2 Community Liaison

5.2.1 Community Consultative Committee (CCC)

Borg Panels has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the facility, and the greater Oberon Timber Complex (OTC). The CCC meetings provide a forum to discuss and address general construction and operational impacts, and mitigation measures for the Borg Panels facility. The CCC meetings also allow for feedback from the local community to Borg Panels and the OTC in relation to environmental performance.

A CCC meeting was held on 24th June 2020 though no community members were in attendance. No minutes were taken. Meetings were planned between September 2020 and January 2021 however were cancelled due to the coronavirus pandemic. A meeting was scheduled for 31st March 2021 though was delayed to 14th April 2021. See Appendix H for meeting minutes.

The next meeting is planned for 29th June 2021 and will be reported in the next Annual Review.

5.2.3 Opportunities for Information Exchange

Borg established the following avenues to record inquiries and complaints related to construction and operational activities:

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

The telephone number, postal and email address are displayed on a sign at the entrance to Borg Panels in a position that is clearly visible to the public. This information is also distributed to the local community and is included in public information communications which may include Borg Panels website, local area advertisements, letterbox notifications and project fact sheets.

6 Independent Audit

Development Consent SSD 7016 condition C15 sets out requirements for independent environmental audits of the Development. Borg Panels commissioned Umwelt (Australia) Pty Limited to conduct an independent audit of the Borg Panels site for operations and construction for audit period 29 May 2017 to 30 June 2018.

Umwelt concluded that the Development was undertaken generally in accordance with SSD 7016, the EIS and RTS, development layout plans and drawings, management and mitigation measures, and documents and drawings of the Existing Development.

Eleven non-compliances were identified in this audit. These non-compliances have been closed out and were included in the previous reporting period Annual Review and therefore not repeated in this Review.

In accordance with SSD 7016 condition C15 the next independent audit is scheduled for 2021. Environmental consultants Molino Stewart have been engaged by Borg to undertake this audit and were endorsed by DPIE on 14th April 2021. The findings of this audit will be included in the 2021/22 Annual Review.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through the Borg Panels Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, Borg's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

- (a) Harm to the environment is material if:
 - i. It involves actual or potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
 - ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations),
 and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there were no reportable environmental pollution incidents at the Borg Panels facility.

7.2 Non-conformances

Environmental non-conformances related to surface water have been discussed in Section 4.4 of this Review and therefore have not been repeated in this section.

There were no other non-conformances during this review period.

8 Activities Proposed for the next Annual Review Period

Borg Panels will endeavour to carry out the activities listed in Table 50 during the 2021/22 reporting period to assist with improving the environmental performance of the existing development and the project.

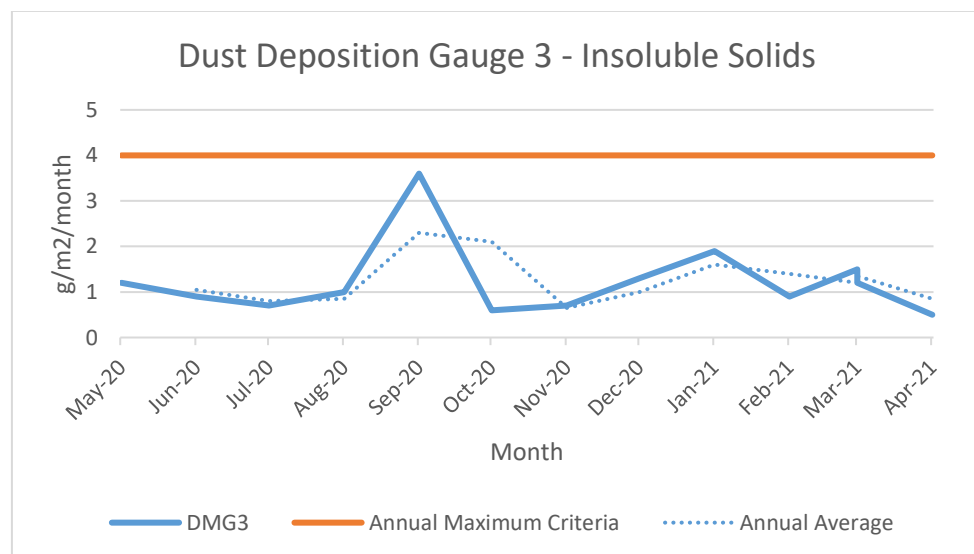
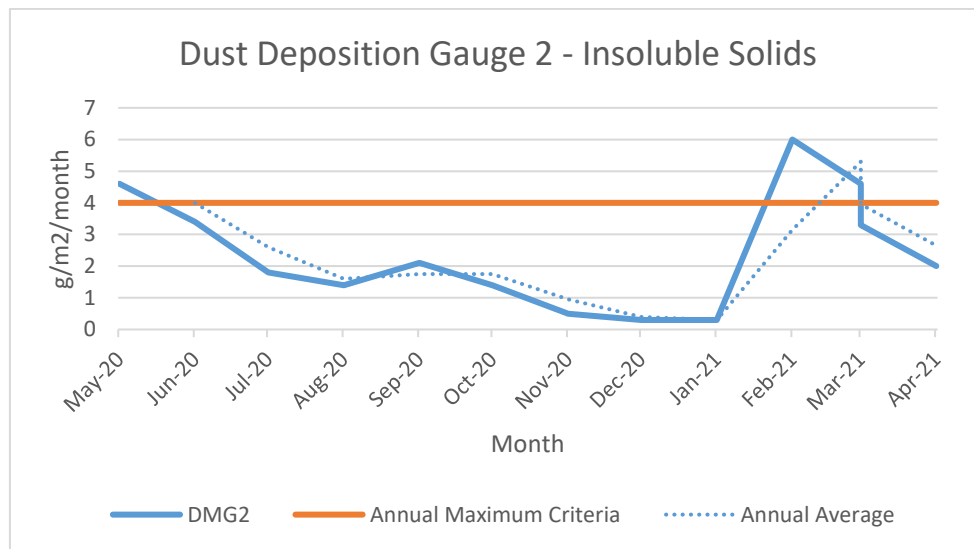
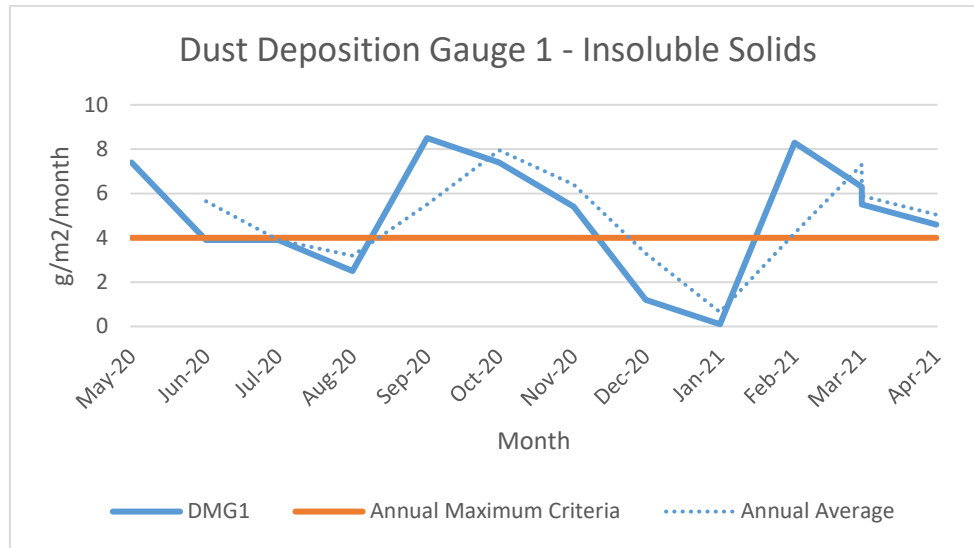
Table 50 Proposed Activities for 2021/22 Reporting Period

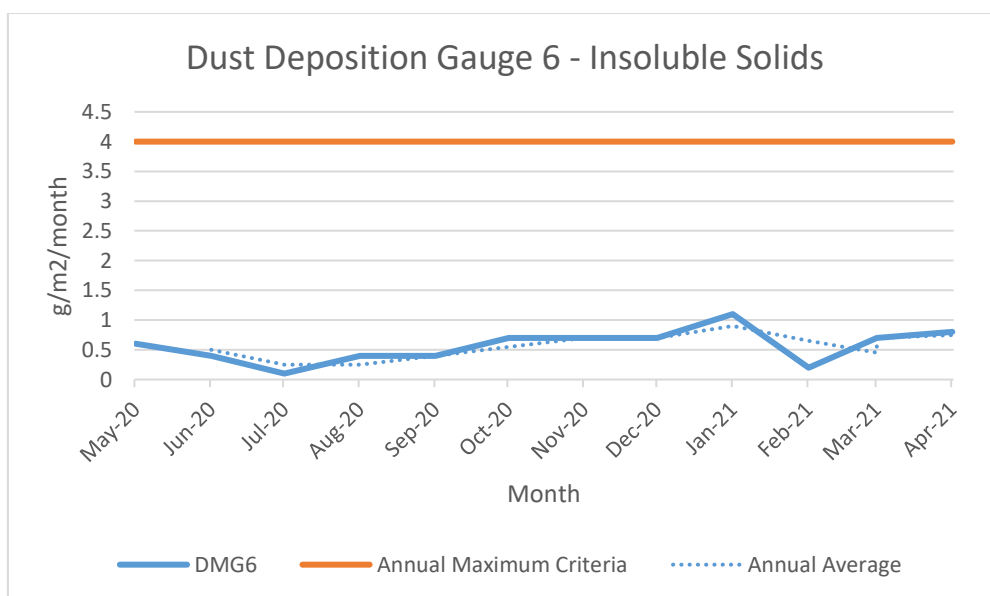
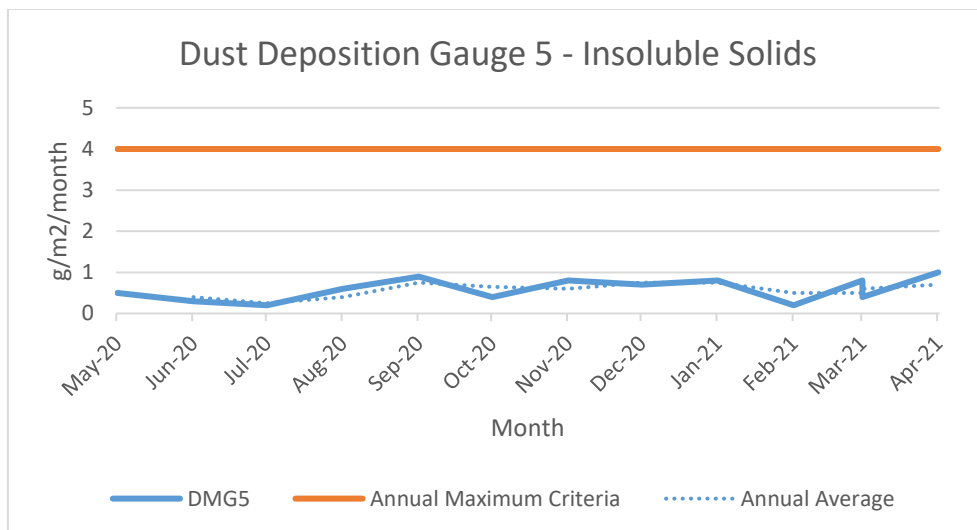
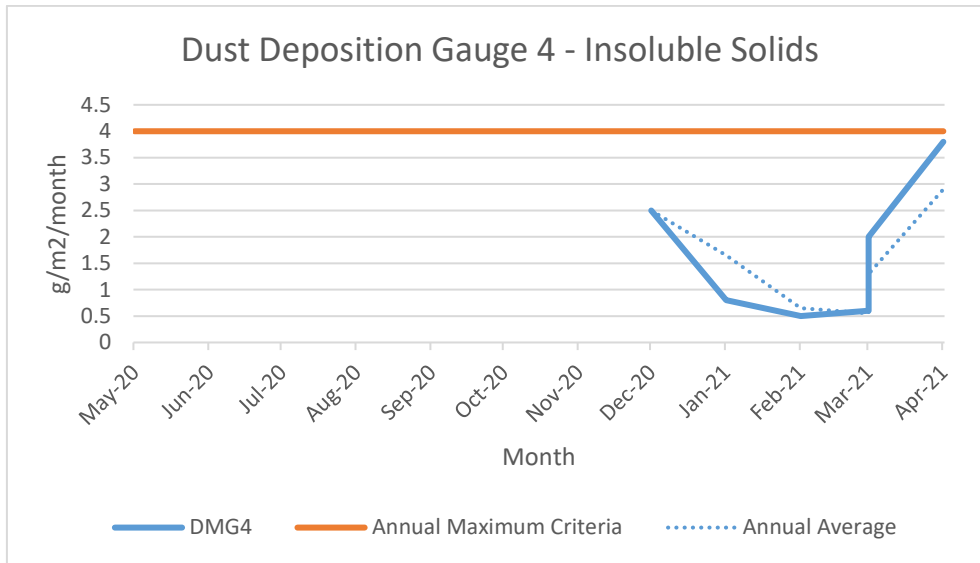
Activities Proposed in 2020/21 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.
Carry out independent environmental audit as per condition C15
Complete verification studies required for SSD 7016 including modifications

Complete reporting requirements related to the commissioning of particleboard plant
Continue with implementation of various management and mitigation measures as detailed in the development consent, including additional items provided in SSD 7016 MOD 1, MOD 2 and MOD 3
Complete commissioning of the gas turbine (MOD 2)
Complete construction of sorting tower for recycled wood (MOD 3)
Undertake required environmental monitoring associated with the newly installed gas turbine
Undertake rehabilitation works to areas disturbed by construction activities

APPENDICIES

Appendix A – Depositional Dust Monitoring Data





Appendix B – Air Quality Monitoring Report



Ektimo

REPORT NUMBER R010598

**Emission Testing Report
Borg Manufacturing, Oberon Plant**

Document Information

Template Version; 240920

Client Name: Borg Manufacturing
Report Number: R010598
Date of Issue: 23 April 2021
Attention: Jacqueline Blomberg
Address: Lowes Mount Rd
OBERON NSW 2787
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Aaron Davis
Ektimo Signatory

NATA Accredited Laboratory
No. 14601

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

This document is confidential and is prepared for the exclusive use of Borg Manufacturing and those granted permission by Borg Manufacturing.

The report shall not be reproduced except in full.

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo's terms of NATA accreditation. This does not include comments, conclusions or recommendations based upon the results. Refer to 'Test Methods' for full details of testing covered by NATA accreditation.

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1 EXECUTIVE SUMMARY

1.1 Background

Ektimo was engaged by Borg Manufacturing to perform emission testing at their Oberon plant. Testing was carried out in accordance with Environment Protection Licence 3035.

1.2 Project Objectives

The objectives of the project were to conduct a monitoring programme to quantify emissions from 14 discharge points to determine compliance with Borg Manufacturing's Environment Protection Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 - DC1 Baghouse	26 February 2021	Total solid particles Formaldehyde
EPA 5 - DC2 Baghouse		
EPA 7 - Conti 2 Dryer Cyclone 1 (West)	24 February 2021	Metals (type 1 & 2 substances) Hydrogen chloride, chlorine, total fluoride Formaldehyde Volatile organic compounds (VOC's) Nitrogen oxides, oxygen, carbon dioxide Smoke
	25 February 2021	Total solid particles, fine particulate matter (PM ₁₀) Sulfuric acid mist & sulfur trioxide, sulfur dioxide
EPA 8 - Conti 2 Dryer Cyclone 2 (East)	23 February 2021	Total solid particles, fine particulate matter (PM ₁₀) Sulfuric acid mist & sulfur trioxide, sulfur dioxide Metals (type 1 & 2 substances) Hydrogen chloride, chlorine, total fluoride Formaldehyde Volatile organic compounds (VOC's) Nitrogen oxides, oxygen, carbon dioxide Smoke
EPA 9 - Conti 1 Dryer Cyclone 1 (South)	3 March 2021	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
EPA 10 - Conti 1 Dryer Cyclone 2 (North)		
EPA 12 – Conti 1 Press Vents (1, 2, 3 & 4)	5 March 2021	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Nitrogen oxides, oxygen, carbon dioxide

Location	Test Date	Test Parameters*
EPA 27 – Combined Conti 2 Press Vent Stack	3 March 2021	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Nitrogen oxides, oxygen, carbon dioxide
EPA 29 - Forming Line Baghouse	2 March 2021	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
EPA 30 - Form Station Baghouse		
EPA 31 – Particle Board Press Extraction System		
EPA 32 - WESP	2 March 2021	Total solid particles Formaldehyde Smoke Nitrogen oxides, oxygen, carbon dioxide
EPA 33 Cogeneration Plant 1 Stack	4 March 2021	Volatile organic compounds (VOC's) Nitrogen oxides, oxygen, carbon dioxide
EPA 34 Cogeneration Plant 2 Stack		

* Flow rate, velocity, temperature and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence limit set by the NSW EPA as per licence 3035 (last amended on 4 September 2019).

EPA No.	Location Description	Pollutant	Units	Licence limit	Detected values Feb-Mar 2021
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Total Solid Particles	mg/m ³	200	79
		Formaldehyde	mg/m ³	5	1.6
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Total Solid Particles	mg/m ³	200	68
		Formaldehyde	mg/m ³	5	3
9	Conti 1 Dryer Cyclone 1 (South)	Total Solid Particles	mg/m ³	200	38
		Formaldehyde	mg/m ³	5	4.8
10	Conti 1 Dryer Cyclone 2 (North)	Total Solid Particles	mg/m ³	200	41
		Formaldehyde	mg/m ³	5	4.7

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

1.4 Proposed Licence Amendment

As indicated by Borg, licence amendments have been proposed which indicate that EPA 33 and 34 may be subject to the concentration limits set out in the table below.

Results from this stack emission monitoring program indicate that Borg Manufacturing **was** compliant with the proposed emission limits.

EPA No.	Location Description	Pollutant	Units	Proposed Emission Limit	Detected Values 4 March 2021	Detected Values 4 March 2021 5 % Oxygen correction
33	Cogeneration Plant 1 Stack	Nitrogen oxides	mg/m ³	450	230	320
		Total VOCs (as n-propane)	mg/m ³	20	0.57	0.8
34	Cogeneration Plant 2 Stack	Nitrogen oxides	mg/m ³	450	270	390
		Total VOCs (as n-propane)	mg/m ³	20	0.11	0.16

1.5 Results Summary

The following summary table details results of all analytes tested for locations with no limits stated in NSW EPA licence 3035.

EPA No.	Location Description	Pollutant	Units	Detected Values February-March 2021
4	DC1 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	1.5
5	DC2 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	2.5
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Sulfur dioxide	mg/m ³	0.21
		Sulfur trioxide and/or sulfuric acid (as SO ₃)	mg/m ³	0.19
		Total VOCs (as n-propane)	mg/m ³	3.9
		Nitrogen oxides	mg/m ³	140
		Chloride (as HCl)	mg/m ³	<0.02
		Chlorine	mg/m ³	0.0089
		Total Fluoride (as HF)	mg/m ³	<0.02
		Type 1 & 2 Substances (Aggregate)	mg/m ³	≤0.068
		Sulfur dioxide	mg/m ³	<0.02
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Sulfur trioxide and/or sulfuric acid (as SO ₃)	mg/m ³	0.074
		Total VOCs (as n-propane)	mg/m ³	9.7
		Nitrogen oxides	mg/m ³	210
		Chloride (as HCl)	mg/m ³	<0.02
		Chlorine	mg/m ³	0.01
		Total Fluoride (as HF)	mg/m ³	<0.03
		Type 1 & 2 Substances (Aggregate)	mg/m ³	≤0.12
		Sulfur dioxide	mg/m ³	<0.02
9	Conti 1 Dryer Cyclone 1 (South)	Nitrogen oxides	mg/m ³	260
10	Conti 1 Dryer Cyclone 2 (North)	Nitrogen oxides	mg/m ³	73
12	Conti 1 Press Vent 1	Solid particles	mg/m ³	3.3
		Formaldehyde	mg/m ³	5.4
		Nitrogen oxides	mg/m ³	<4
	Conti 1 Press Vent 2	Solid particles	mg/m ³	7.2
		Formaldehyde	mg/m ³	6.5
		Nitrogen oxides	mg/m ³	<4
	Conti 1 Press Vent 3	Solid particles	mg/m ³	19
		Formaldehyde	mg/m ³	3.8
		Nitrogen oxides	mg/m ³	<4
	Conti 1 Press Vent 4	Solid particles	mg/m ³	28
		Formaldehyde	mg/m ³	1.2
		Nitrogen oxides	mg/m ³	<4
27	Combined Stack (C2 Press Vents)	Solid particles	mg/m ³	7.6
		Formaldehyde	mg/m ³	1.9
		Nitrogen oxides	mg/m ³	<4
29	Forming Line Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	1.7
		Nitrogen oxides	mg/m ³	<4
30	Form Station Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	1.5
		Nitrogen oxides	mg/m ³	<4
31	Particle Board Press Extraction System	Solid particles	mg/m ³	46
		Formaldehyde	mg/m ³	4.6
		Nitrogen oxides	mg/m ³	<4
32	WESP	Solid particles	mg/m ³	30
		Formaldehyde	mg/m ³	0.21
		Nitrogen oxides	mg/m ³	210

2 RESULTS

2.1 EPA 4 – DC1 Baghouse

Date	26/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 4 - DC1 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper	State	NSW
Process Conditions	Plant operating normally		

211219

Sampling Plane Details

Sampling plane dimensions	1280 x 680 mm
Sampling plane area	0.87 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	5.1	
Gas molecular weight, g/g mole	28.5 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.27 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0909 & 1028
Temperature, °C	38
Temperature, K	311
Velocity at sampling plane, m/s	9.2
Volumetric flow rate, actual, m ³ /s	8
Volumetric flow rate (wet STP), m ³ /s	6.2
Volumetric flow rate (dry STP), m ³ /s	5.9
Mass flow rate (wet basis), kg/hour	28000

Formaldehyde	Sampling time	Results
		0921-1021
		Concentration mg/m ³
		Mass Rate g/min
Formaldehyde		1.5
		0.54

Isokinetic Results	Sampling time	Results
		0915-1021
		Concentration mg/m ³
		Mass Rate g/min
Solid Particles		<2
		<0.6
Isokinetic Sampling Parameters		
Sampling time, min		64
Isokinetic rate, %		105
Velocity difference, %		<1

2.2 EPA 5 – DC2 Baghouse

Date	26/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 5 - DC2 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper	State	NSW
Process Conditions	Plant operating normally		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2800 x 680 mm
Sampling plane area	1.9 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Vertical Rectangular
Downstream disturbance	Exit 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	2 14
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	1.9	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1050 & 1220
Temperature, °C	33
Temperature, K	306
Velocity at sampling plane, m/s	13
Volumetric flow rate, actual, m ³ /s	25
Volumetric flow rate (wet STP), m ³ /s	20
Volumetric flow rate (dry STP), m ³ /s	20
Mass flow rate (wet basis), kg/hour	92000

Formaldehyde	Sampling time	Results 1101-1201	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		2.5	2.9

Isokinetic Results	Sampling time	Results 1058-1212	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<2	<2
Isokinetic Sampling Parameters			
Sampling time, min		70	
Isokinetic rate, %		100	
Velocity difference, %		-3	

2.3 EPA 7 – Conti 2 Stage 1 Dryer Cyclone 1 (West)

Date	24/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-compliant due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°
 The highest to lowest differential pressure ratio exceeds 9:1
 The highest to lowest gas velocity ratio exceeds 1.6:1
 The upstream disturbance is <2D from the sampling plane
 The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	16	
Gas molecular weight, g/g mole	27.4 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1101 & 1430
Temperature, °C	57
Temperature, K	330
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	57
Volumetric flow rate (wet STP), m ³ /s	41
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	180000

Gas Analyser Results

Sampling time	Average 1242 - 1345		Minimum 1242 - 1345		Maximum 1242 - 1345	
	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min	Concentration mg/m ³	Mass Rate g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	140	290	110	230	160	340
	Concentration % v/v		Concentration % v/v		Concentration % v/v	
Carbon dioxide	1.9		1.3		2.5	
Oxygen	18.5		18.1		18.7	

Date	24/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Formaldehyde	Sampling time	Results 1312-1412	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.6	3.4

Isokinetic Results	Sampling time	Results 1122-1425	
		Concentration mg/m ³	Mass Rate g/min
Chloride (as HCl)		<0.02	<0.04
Chlorine		0.0089	0.018
Total fluoride (as HF)		<0.02	<0.05
Isokinetic Sampling Parameters			
Sampling time, min		120	
Isokinetic rate, %		102	
Velocity difference, %		9	

Date	24/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-compliant due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°
 The highest to lowest differential pressure ratio exceeds 9:1
 The highest to lowest gas velocity ratio exceeds 1.6:1
 The upstream disturbance is <2D from the sampling plane
 The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	16	
Gas molecular weight, g/g mole	27.4 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1101 & 1430
Temperature, °C	57
Temperature, K	330
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	57
Volumetric flow rate (wet STP), m ³ /s	41
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	180000

Date	24/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Isokinetic Results		Results	
	Sampling time	1122-1425	
		Concentration mg/m ³	Mass Rate g/min
Antimony		<0.003	<0.005
Arsenic		0.0015	0.0031
Beryllium		<0.0003	<0.0007
Cadmium		<0.0003	<0.0005
Chromium		0.00069	0.0014
Cobalt		<0.0004	<0.0008
Lead		0.004	0.0081
Manganese		0.051	0.11
Mercury		<0.0003	<0.0007
Nickel		0.0014	0.0028
Selenium		<0.003	<0.006
Tin		0.0015	0.0031
Vanadium		<0.0007	<0.001
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances		≤0.0087	≤0.018
Total Type 2 Substances		≤0.059	≤0.12
Total Type 1 & 2 Substances		≤0.068	≤0.14
Isokinetic Sampling Parameters			
Sampling time, min		120	
Isokinetic rate, %		101	
Velocity difference, %		9	

Date	24/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Smoke Obscuration	Time of assessment	Result
Smoke Obscuration		1325 - 1345 0

Total VOCs (as n-Propane)	Sampling time	Results
		1317-1417
		Concentration mg/m ³ Mass Rate g/min
Total		3.9 8.1

VOC (speciated)	Sampling time	Results
		1317-1417
		Concentration mg/m ³ Mass Rate g/min
Detection limit ⁽¹⁾		<0.2 <0.3
α-Pinene		6 13
β-Pinene		5 10
D-Limonene		0.99 2.1

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Dichloromethane, Ethanol, Isopropanol, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Benzene, Carbon tetrachloride, Butanol, 1-Methoxy-2-propanol, Trichloroethylene, Toluene, 1,1,2-Trichloroethane, Tetrachloroethene, Chlorobenzene, Ethylbenzene, m + p-Xylene, Styrene, o-Xylene, 2-Butoxyethanol, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, Propylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, 1,2,3-Trimethylbenzene, Acetone, Pentane, Acrylonitrile, Methyl ethyl ketone, n-Hexane, Ethyl acetate, Cyclohexane, 2-Methylhexane, Isopropyl acetate, 2,3-Dimethylpentane, 3-Methylhexane, Heptane, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, 2-Hexanone, Octane, Butyl acetate, 1-Methoxy-2-propyl acetate, Butyl acrylate, Nonane, Cellosolve acetate, Decane, 3-Carene, Undecane, Dodecane, Tridecane, Tetradecane

Date	25/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

2 112 19

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-compliant due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°
The highest to lowest differential pressure ratio exceeds 9:1
The highest to lowest gas velocity ratio exceeds 1.6:1
The gas temperature of the sampling plane is below the dew point
The upstream disturbance is <2D from the sampling plane
The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	8.6	
Gas molecular weight, g/g mole	28.2 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.26 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1145 & 1415
Temperature, °C	45
Temperature, K	318
Velocity at sampling plane, m/s	13
Volumetric flow rate, actual, m ³ /s	61
Volumetric flow rate (wet STP), m ³ /s	46
Volumetric flow rate (dry STP), m ³ /s	42
Mass flow rate (wet basis), kg/hour	210000

Isokinetic Results

Sampling time	Results	
	1201-1406	1201-1406 (PM10)
	Concentration mg/m ³	Mass Rate g/min
Solid Particles	79	190
Fine particulates (PM10)	8.9	21
D50 cut size, 10µm	10.0	
Sulfur dioxide	0.21	0.49
Sulfur trioxide and/or Sulfuric acid (as SO3)	0.19	0.46
Isokinetic Sampling Parameters	Iso kinetic	PM 10
Sampling time, min	120	120
Isokinetic rate, %	94	90
Velocity difference, %	1	1

2.4 EPA 8 – Conti 2 Stage 1 Dryer Cyclone 2 (East)

Date	23/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	17	
Gas molecular weight, g/g mole	27.4 (wet)	29.3 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.31 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1002 & 1348
Temperature, °C	57
Temperature, K	330
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	58
Volumetric flow rate (wet STP), m ³ /s	42
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	190000

Date Report	23/02/2021 R010598	Client Stack ID	Borg Manufacturing Pty Ltd EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

2 112 19

Isokinetic Results	Sampling time	Results	
		1108-1312	1108-1312 (PM10)
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		68	130
Fine particulates (PM10)		28	54
D50 cut size, 10µm		10.0	
Sulfur dioxide		<0.02	<0.03
Sulfur trioxide and/or Sulfuric acid (as SO ₃)		0.074	0.14
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		120	120
Isokinetic rate, %		102	98
Velocity difference, %		6	6

Total VOCs (as n-Propane)	Sampling time	Results	
		1208-1309	
		Concentration mg/m ³	Mass Rate g/min
Total		9.7	20

VOC (speciated)	Sampling time	Results	
		1208-1309	
		Concentration mg/m ³	Mass Rate g/min
Detection limit ⁽¹⁾		<0.2	<0.3
α-Pinene		15	31
β-Pinene		13	28
D-Limonene		1.8	3.8

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Dichloromethane, Ethanol, Isopropanol, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Benzene, Carbon tetrachloride, Butanol, 1-Methoxy-2-propanol, Trichloroethylene, Toluene, 1,1,2-Trichloroethane, Tetrachloroethene, Chlorobenzene, Ethylbenzene, m + p-Xylene, Styrene, o-Xylene, 2-Butoxyethanol, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, Propylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, 1,2,3-Trimethylbenzene, Acetone, Pentane, Acrylonitrile, Methyl ethyl ketone, n-Hexane, Ethyl acetate, Cyclohexane, 2-Methylhexane, Isopropyl acetate, 2,3-Dimethylpentane, 3-Methylhexane, Heptane, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl isobutyl Ketone, 2-Hexanone, Octane, Butyl acetate, 1-Methoxy-2-propyl acetate, Butyl acrylate, Nonane, Cellosolve acetate, Decane, 3-Carene, Undecane, Dodecane, Tridecane, Tetradecane

Date Report	23/02/2021 R010598	Client Stack ID	Borg Manufacturing Pty Ltd EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	17	
Gas molecular weight, g/g mole	27.4 (wet)	29.3 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.31 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1348 & 1835
Temperature, °C	56
Temperature, K	329
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	58
Volumetric flow rate (wet STP), m ³ /s	43
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	190000

Date Report	23/02/2021 R010598	Client Stack ID	Borg Manufacturing Pty Ltd EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Gas Analyser Results		Average 1426 - 1612		Minimum 1426 - 1612		Maximum 1426 - 1612	
Combustion Gases	Sampling time						
		Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
	Nitrogen oxides (as NO₂)	210	440	180	380	230	490
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
	Carbon dioxide	2.8		2.4		3.2	
	Oxygen	17.9		17.6		18.3	

Formaldehyde	Sampling time	Results	
		1316-1416	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		3	6.4

Isokinetic Results	Results	
	1423-1625	
	Concentration	Mass Rate
	mg/m³	g/min
	Chloride (as HCl)	<0.02
	Chlorine	<0.05
	0.01	0.021
	Total fluoride (as HF)	0.03
	<0.06	
Isokinetic Sampling Parameters		
Sampling time, min	120	
Isokinetic rate, %	103	
Velocity difference, %	8	

Date	23/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Sampling Plane Details

Sampling plane dimensions	2480 mm
Sampling plane area	4.83 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 35 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1.5 D
Upstream disturbance	Junction 0.5 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas profile has a cyclonic component which exceeds 15°

The upstream disturbance is <2D from the sampling plane

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D

Stack Parameters

Moisture content, %v/v	17	
Gas molecular weight, g/g mole	27.4 (wet)	29.3 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.31 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1348 & 1835
Temperature, °C	56
Temperature, K	329
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	58
Volumetric flow rate (wet STP), m ³ /s	43
Volumetric flow rate (dry STP), m ³ /s	35
Mass flow rate (wet basis), kg/hour	190000

Date	23/02/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Ed Camilleri	State	NSW
Process Conditions	Please refer to client records.		

211219

Isokinetic Results		Results	
	Sampling time	1544-1748	
		Concentration mg/m ³	Mass Rate g/min
Antimony		<0.004	<0.008
Arsenic		0.0049	0.01
Beryllium		<0.0005	<0.001
Cadmium		<0.0004	<0.0008
Chromium		0.013	0.027
Cobalt		<0.0006	<0.001
Lead		0.013	0.027
Manganese		0.07	0.15
Mercury		<0.0005	<0.001
Nickel		0.0087	0.018
Selenium		<0.004	<0.009
Tin		0.0042	0.0088
Vanadium		<0.001	<0.002
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances		≤0.023	≤0.047
Total Type 2 Substances		≤0.1	≤0.21
Total Type 1 & 2 Substances		≤0.12	≤0.26
Isokinetic Sampling Parameters			
Sampling time, min		120	
Isokinetic rate, %		109	
Velocity difference, %		8	

Smoke Obscuration		Result
	Time of assessment	1541 - 1601
Smoke Obscuration		0

2.5 EPA 9 – Conti 1 Dryer Cyclone 1 (South)

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

- The gas profile has a cyclonic component which exceeds 15°
- The highest to lowest differential pressure ratio exceeds 9:1
- The gas temperature of the sampling plane is below the dew point
- The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
- The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	12	
Gas molecular weight, g/g mole	27.8 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1401 & 1635
Temperature, °C	53
Temperature, K	326
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	47
Volumetric flow rate (wet STP), m ³ /s	35
Volumetric flow rate (dry STP), m ³ /s	31
Mass flow rate (wet basis), kg/hour	160000

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

211219

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	1412 - 1526		1412 - 1526		1412 - 1526	
Combustion Gases		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
	Nitrogen oxides (as NO₂)	260	470	94	170	310	570
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		1.3		1.1		1.4	
Oxygen		19.8		19.6		20	

Formaldehyde	Sampling time	Results	
		1430-1530	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		4.8	8.8

Isokinetic Results		Results	
Sampling time	1428-1632		1428-1632 (PM10)
	Concentration	Mass Rate	
	mg/m³	g/min	
	Solid Particles	38	67
	Fine particulates (PM10)	26	46
D50 cut size, 10µm	9.8		
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min	120	120	
Isokinetic rate, %	97	94	
Velocity difference, %	-4	-4	

Smoke Obscuration	Time of assessment	Result 1430-1445
Smoke Obscuration		0

2.6 EPA 10 – Conti 1 Dryer Cyclone 2 (North)

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2230 mm
Sampling plane area	3.91 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Fixed ladder 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 1 D
Upstream disturbance	Junction 2 D
No. traverses & points sampled	2 24
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

Please note that in response to the cyclonic flow, Borg Manufacturing has a NSW EPA approved method deviation to AS4323.2 to conduct particulate matter sampling at this location.

The sampling plane is deemed to be non-ideal due to the following reasons:

- The gas profile has a cyclonic component which exceeds 15°
- The highest to lowest differential pressure ratio exceeds 9:1
- The gas temperature of the sampling plane is below the dew point
- The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
- The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	15	
Gas molecular weight, g/g mole	27.4 (wet)	29.1 (dry)
Gas density at STP, kg/m ³	1.22 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1155 & 1422
Temperature, °C	58
Temperature, K	331
Velocity at sampling plane, m/s	13
Volumetric flow rate, actual, m ³ /s	53
Volumetric flow rate (wet STP), m ³ /s	38
Volumetric flow rate (dry STP), m ³ /s	32
Mass flow rate (wet basis), kg/hour	170000

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2 112 19

Gas Analyser Results		Average		Minimum		Maximum	
	Samplingtime	1218 - 1335		1218 - 1335		1218 - 1335	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
Combustion Gases		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
Nitrogen oxides (as NO ₂)		73	140	53	100	110	200
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		0.8		0.7		1	
Oxygen		20.1		19.9		20.3	

Formaldehyde		Results	
	Sampling time	1224-1324	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		4.7	9

Isokinetic Results	Sampling time	Results		
		1215-1418	1215-1418 (PM10)	
		Concentration mg/m³	Mass Rate g/min	
		Solid Particles	41	79
		Fine particulates (PM10)	27	52
D50 cut size, 10µm		10.0		
Isokinetic Sampling Parameters		Isokinetic	PM 10	
Sampling time, min		120	119	
Isokinetic rate, %		100	90	
Velocity difference, %		-9	-9	

Smoke Obscuration	Time of assessment	Result 1220 - 1240
Smoke Obscuration		0

2.7 EPA 12 – Conti 1 Press Vent 1

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 1
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	600 mm
Sampling plane area	0.283 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Stairs 20 m
Duct orientation & shape	Horizontal Circular
Downstream disturbance	Exit 5 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Ideal

Stack Parameters

Moisture content, %v/v	1	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1158 & 1308
Temperature, °C	66
Temperature, K	339
Velocity at sampling plane, m/s	5.1
Volumetric flow rate, actual, m ³ /s	1.4
Volumetric flow rate (wet STP), m ³ /s	1
Volumetric flow rate (dry STP), m ³ /s	1
Mass flow rate (wet basis), kg/hour	4700

Gas Analyser Results	Average		Minimum		Maximum	
	1205 - 1304		1205 - 1304		1205 - 1304	
	Sampling time					
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³
Combustion Gases						
Nitrogen oxides (as NO ₂)		<4	<0.2	<4	<0.2	<4
		Concentration		Concentration		Concentration
		%v/v		%v/v		%v/v
Carbon dioxide		<0.4		<0.4		<0.4
Oxygen		20.9		20.9		20.9

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 1
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Formaldehyde	Sampling time	Results	
		1200-1300	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		5.4	0.33

Isokinetic Results	Sampling time	Results	
		1200-1306 1200-1306 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		3.3	0.2
Fine particulates (PM10)		<3	<0.2
D50 cut size, 10µm		10.8	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		64	65
Isokinetic rate, %		99	98
Velocity difference, %		2	2

2.8 EPA 12 – Conti 1 Press Vent 2

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 2
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	600 mm
Sampling plane area	0.283 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Stairs 20 m
Duct orientation & shape	Horizontal Circular
Downstream disturbance	Exit 5 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas velocity at some or all sampling points is less than 3 m/s

Stack Parameters

Moisture content, %v/v	1.2	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1040 & 1148
Temperature, °C	40
Temperature, K	313
Velocity at sampling plane, m/s	2.8
Volumetric flow rate, actual, m ³ /s	0.8
Volumetric flow rate (wet STP), m ³ /s	0.61
Volumetric flow rate (dry STP), m ³ /s	0.6
Mass flow rate (wet basis), kg/hour	2800

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		1025 - 1124		1025 - 1124		1025 - 1124	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases							
Nitrogen oxides (as NO ₂)		<4	<0.1	<4	<0.1	<4	<0.1
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.9		20.9	

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 2
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Formaldehyde	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		6.5	0.24

Isokinetic Results	Sampling time	Results	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		7.2	0.26
Fine particulates (PM10)		4.8	0.17
D50 cut size, 10µm			10.7
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		64	64
Isokinetic rate, %		98	161
Velocity difference, %		<1	<1

2.9 EPA 12 – Conti 1 Press Vent 3

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 3
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	600 mm
Sampling plane area	0.283 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Stairs 20 m
Duct orientation & shape	Horizontal Circular
Downstream disturbance	Exit 5 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas velocity at some or all sampling points is less than 3 m/s

Stack Parameters

Moisture content, %v/v	1.7	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0921 & 1030
Temperature, °C	39
Temperature, K	312
Velocity at sampling plane, m/s	2.8
Volumetric flow rate, actual, m ³ /s	0.8
Volumetric flow rate (wet STP), m ³ /s	0.61
Volumetric flow rate (dry STP), m ³ /s	0.6
Mass flow rate (wet basis), kg/hour	2800

Gas Analyser Results		Average 0925 - 1024		Minimum 0925 - 1024		Maximum 0925 - 1024	
	Samplingtime						
Combustion Gases		Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
	Nitrogen oxides (as NO₂)	<4	<0.1	<4	<0.1	<4	<0.1
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
	Carbon dioxide	<0.4		<0.4		<0.4	
	Oxygen	20.9		20.9		20.9	

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 3
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Formaldehyde	Sampling time	Results 0923-1023	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		3.8	0.14

Isokinetic Results	Sampling time	Results 0923-1029 0923-1029 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		19	0.68
Fine particulates (PM10)		13	0.45
D50 cut size, 10µm		10.7	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		64	64
Isokinetic rate, %		98	159
Velocity difference, %		-1	-1

2.10 EPA 12 – Conti 1 Press Vent 4

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 4
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	600 mm
Sampling plane area	0.283 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Stairs 20 m
Duct orientation & shape	Horizontal Circular
Downstream disturbance	Exit 5 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas velocity at some or all sampling points is less than 3 m/s

Stack Parameters

Moisture content, %v/v	3.2	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0800 & 0911
Temperature, °C	39
Temperature, K	312
Velocity at sampling plane, m/s	1.9
Volumetric flow rate, actual, m ³ /s	0.55
Volumetric flow rate (wet STP), m ³ /s	0.42
Volumetric flow rate (dry STP), m ³ /s	0.41
Mass flow rate (wet basis), kg/hour	1900

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		0805 - 0904		0805 - 0904		0805 - 0904	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases							
Nitrogen oxides (as NO ₂)		<4	<0.1	<4	<0.1	<4	<0.1
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.9		20.9	

Date	5/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 12 - Conti 1 Press Vent 4
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		211219

Formaldehyde	Sampling time	Results 0805-0905	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.2	0.029

Isokinetic Results	Sampling time	Results 0805-0910 0805-0910 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		28	0.68
Fine particulates (PM10)		20	0.5
D50 cut size, 10µm		10.9	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		64	64
Isokinetic rate, %		100	226
Velocity difference, %		<1	<1

2.11 EPA 27 - Combined Conti 2 Press Vent Stack

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 27 - Combined Stack (C2 Press Vents)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 25 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2.5 D
Upstream disturbance	Junction 4 D
No. traverses & points sampled	2 20
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	2	
Gas molecular weight, g/g mole	28.8 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0858 & 1055
Temperature, °C	30
Temperature, K	303
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	33
Volumetric flow rate (wet STP), m ³ /s	26
Volumetric flow rate (dry STP), m ³ /s	25
Mass flow rate (wet basis), kg/hour	120000

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		0917 - 1020		0917 - 1020		0917 - 1020	
Combustion Gases		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Nitrogen oxides (as NO ₂)		<4	<6	<4	<6	<4	<6
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.7		20.5		20.8	

Date	3/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 27 - Combined Stack (C2 Press Vents)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

211219

Formaldehyde	Sampling time	Results 0914-1014	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.9	2.8

Isokinetic Results	Sampling time	Results 0908-1052 0908-1052 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		7.6	11
Fine particulates (PM10)		5.2	7.9
D50 cut size, 10µm		10.5	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		100	100
Isokinetic rate, %		99	84
Velocity difference, %		8	8

2.12 EPA 29 – Forming Line Baghouse

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	1000 mm
Sampling plane area	0.785 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Inclined Circular
Downstream disturbance	Bend 3 D
Upstream disturbance	Bend 3.5 D
No. traverses & points sampled	2 16
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	0.68	
Gas molecular weight, g/g mole	28.9 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1508 & 1640
Temperature, °C	41
Temperature, K	314
Velocity at sampling plane, m/s	38
Volumetric flow rate, actual, m ³ /s	30
Volumetric flow rate (wet STP), m ³ /s	22
Volumetric flow rate (dry STP), m ³ /s	22
Mass flow rate (wet basis), kg/hour	100000

Gas Analyser Results	Sampling time	Average		Minimum		Maximum	
		1515 - 1614		1515 - 1614		1515 - 1614	
Combustion Gases		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
		mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Nitrogen oxides (as NO ₂)		<4	<5	<4	<5	<4	<5
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.9		20.9	

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Formaldehyde	Sampling time	Results 1535-1635	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.7	2.2

Isokinetic Results	Sampling time	Results 1512-1635 1512-1635 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<2	<3
Fine particulates (PM10)		<2	<3
D50 cut size, 10µm		9.7	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		55	79
Isokinetic rate, %		142	84
Velocity difference, %		<1	<1

Smoke Obscuration	Time of assessment	Result
Smoke Obscuration		1530-1545 0

2.13 EPA 30 – Form Station Baghouse

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	545 mm
Sampling plane area	0.233 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 10 m
Duct orientation & shape	Inclined Circular
Downstream disturbance	Bend 8 D
Upstream disturbance	Bend 8 D
No. traverses & points sampled	2 8
Sample plane compliance to AS4323.1	Ideal

Stack Parameters

Moisture content, %v/v	<0.4	
Gas molecular weight, g/g mole	29.0 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1700 & 1815
Temperature, °C	39
Temperature, K	312
Velocity at sampling plane, m/s	28
Volumetric flow rate, actual, m ³ /s	6.4
Volumetric flow rate (wet STP), m ³ /s	4.8
Volumetric flow rate (dry STP), m ³ /s	4.8
Mass flow rate (wet basis), kg/hour	22000

Gas Analyser Results	Average		Minimum		Maximum	
	1705 - 1804		1705 - 1804		1705 - 1804	
	Sampling time					
	Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
	mg/m ³	g/min	mg/m ³	g/min	mg/m ³	g/min
Combustion Gases						
Nitrogen oxides (as NO ₂)	<4	<1	<4	<1	<4	<1
	Concentration		Concentration		Concentration	
	%v/v		%v/v		%v/v	
Carbon dioxide	<0.4		<0.4		<0.4	
Oxygen	20.9		20.9		20.9	

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Formaldehyde	Sampling time	Results 1702-1802	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		1.5	0.42

Isokinetic Results	Sampling time	Results 1702-1810 1702-1810 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		<2	<0.5
Fine particulates (PM10)		<4	<1
D50 cut size, 10µm		10.0	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		64	64
Isokinetic rate, %		99	91
Velocity difference, %		2	2

Smoke Obscuration	Time of assessment	Result 1730 - 1745
Smoke Obscuration		0

2.14 EPA 31 – Particle Board Press Extraction System

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2000 mm
Sampling plane area	3.14 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Elevated work platform 30 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Junction 3 D
No. traverses & points sampled	2 20
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	3.4	
Gas molecular weight, g/g mole	28.6 (wet)	29.0 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.29 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1245 & 1455
Temperature, °C	35
Temperature, K	308
Velocity at sampling plane, m/s	10
Volumetric flow rate, actual, m ³ /s	32
Volumetric flow rate (wet STP), m ³ /s	25
Volumetric flow rate (dry STP), m ³ /s	24
Mass flow rate (wet basis), kg/hour	120000

Gas Analyser Results		Average 1305 - 1431		Minimum 1305 - 1431		Maximum 1305 - 1431	
	Sampling time						
		Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
Combustion Gases							
Nitrogen oxides (as NO₂)		<4	<6	<4	<6	6.8	9.9
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		<0.4		<0.4		<0.4	
Oxygen		20.9		20.9		20.9	

Date Report	2/03/2021 R010598	Client Stack ID	Borg Manufacturing Pty Ltd EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

211219

Formaldehyde	Sampling time	Results 1315-1415	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		4.6	6.8

Isokinetic Results	Sampling time	Results 1305-1450 1305-1450 (PM10)	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		46	66
Fine particulates (PM10)		40	58
D50 cut size, 10µm		10.2	
Isokinetic Sampling Parameters		Isokinetic	PM10
Sampling time, min		100	100
Isokinetic rate, %		92	86
Velocity difference, %		5	5

Smoke Obscuration	Time of assessment	Result 1334 - 1354
Smoke Obscuration		0

2.15 EPA 32 – WESP

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

2.112.19

Sampling Plane Details

Sampling plane dimensions	2520 mm
Sampling plane area	4.99 m ²
Sampling port size, number	4" BSP (x2)
Access & height of ports	Crane 40 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Change in diameter 4 D
No. traverses & points sampled	2 28
Sample plane compliance to AS4323.1	Compliant but non-ideal

Comments

The sampling plane is deemed to be non-ideal due to the following reasons:

The gas temperature of the sampling plane is below the dew point

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters

Moisture content, %v/v	24	
Gas molecular weight, g/g mole	26.6 (wet)	29.3 (dry)
Gas density at STP, kg/m ³	1.19 (wet)	1.31 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	0835 & 1115
Temperature, °C	62
Temperature, K	335
Velocity at sampling plane, m/s	15
Volumetric flow rate, actual, m ³ /s	73
Volumetric flow rate (wet STP), m ³ /s	52
Volumetric flow rate (dry STP), m ³ /s	40
Mass flow rate (wet basis), kg/hour	220000

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	0852 - 1030		0852 - 1030		0852 - 1030	
		Concentration	Mass Rate	Concentration	Mass Rate	Concentration	Mass Rate
Combustion Gases		mg/m³	g/min	mg/m³	g/min	mg/m³	g/min
Nitrogen oxides (as NO₂)		210	510	140	320	320	760
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		3.2		2.5		4	
Oxygen		17.3		17		18	

Date	2/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Please refer to client records.		

211219

Formaldehyde	Sampling time	Results 0900-1001	
		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		0.21	0.5

Isokinetic Results	Sampling time	Results 0850-1112	
		Concentration mg/m ³	Mass Rate g/min
Solid Particles		30	73
Isokinetic Sampling Parameters			
Sampling time, min		140	
Isokinetic rate, %		99	
Velocity difference, %		-9	

Smoke Obscuration	Time of assessment	Result 0944 - 1004
Smoke Obscuration		0

* Fine particulate testing could not be undertaken at this location due to excessively saturated gas stream

2.16 EPA 33 – Cogeneration Plant 1 Stack

Date	4/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	Cogeneration Plant 1 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Engine running between 700-750kW		

211219

Sampling Plane Details

Sampling plane dimensions	270 mm
Sampling plane area	0.0573 m ²
Sampling port size, number	4" BSP (x1)
Access & height of ports	Stairs & fixed ladder 8 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit >6 D
Upstream disturbance	Junction 6 D
No. traverses & points sampled	1 2
Sample plane compliance to AS4323.1	Ideal

Comments

Note approval of single port testing (NSW EPA Our reference: SF20/16003; DOC20/163969-8 "Non-compliant sampling plane")

Stack Parameters

Moisture content, %v/v	8.8	
Gas molecular weight, g/g mole	28.6 (wet)	29.7 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.32 (dry)
% Oxygen correction & Factor	5 %	1.41

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1440 & 1548
Temperature, °C	405
Temperature, K	678
Velocity at sampling plane, m/s	35
Volumetric flow rate, actual, m ³ /s	2
Volumetric flow rate (wet STP), m ³ /s	0.71
Volumetric flow rate (dry STP), m ³ /s	0.65
Mass flow rate (wet basis), kg/hour	3300
Velocity difference, %	4

Gas Analyser Results

Sampling time	Average 1443 - 1544			Minimum 1443 - 1544			Maximum 1443 - 1544		
	Corrected to 5%			Corrected to 5%			Corrected to 5%		
Combustion Gases	Concentration mg/m ³	O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	O ₂ mg/m ³	Mass Rate g/min
Nitrogen oxides (as NO ₂)	230	320	8.9	220	300	8.4	300	430	12
	Concentration			Concentration			Concentration		
	% v/v			% v/v			% v/v		
Carbon dioxide	7.3			7.2			7.3		
Oxygen	9.6			9.5			9.7		

Total VOCs (as n-Propane)

Sampling time	Results 1444-1544		
	Corrected to 5%		
	Concentration mg/m ³	O ₂ mg/m ³	Mass Rate g/min
Total	0.57	0.8	0.022

VOC (speciated)

Sampling time	Results 1444-1544		
	Corrected to 5%		
	Concentration mg/m ³	O ₂ mg/m ³	Mass Rate g/min
Detection limit ⁽¹⁾	<0.1	<0.2	<0.005
Isopropanol	0.68	0.96	0.027
α-Pinene	0.093	0.13	0.0036
β-Pinene	0.12	0.17	0.0048

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Dichloromethane, Ethanol, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Benzene, Carbon tetrachloride, Butanol, 1-Methoxy-2-propanol, Trichloroethylene, Toluene, 1,1,2-Trichloroethane, Tetrachloroethene, Chlorobenzene, Ethylbenzene, m + p-Xylene, Styrene, o-Xylene, 2-Butoxyethanol, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, Propylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, 1,2,3-Trimethylbenzene, Acetone, Pentane, Acrylonitrile, Methyl ethyl ketone, n-Hexane, Ethyl acetate, Cyclohexane, 2-Methylhexane, Isopropyl acetate, 2,3-Dimethylpentane, 3-Methylhexane, Heptane, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, 2-Hexanone, Octane, Butyl acetate, 1-Methoxy-2-propyl acetate, Butyl acrylate, Nonane, Cellosolve acetate, Decane, 3-Carene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane

2.17 EPA 34 – Cogeneration Plant 2 Stack

Date	4/03/2021	Client	Borg Manufacturing Pty Ltd
Report	R010598	Stack ID	Cogeneration Plant 2 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Aaron Davis	State	NSW
Process Conditions	Engine running between 700-750kW		

2.112.19

Sampling Plane Details

Sampling plane dimensions	270 mm mm
Sampling plane area	0.0573 m ²
Sampling port size, number	4" BSP (x1)
Access & height of ports	Stairs & fixed ladder 8 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit >6 D
Upstream disturbance	Junction 6 D
No. traverses & points sampled	1 2
Sample plane compliance to AS4323.1	Ideal

Comments

Note approval of single port testing (NSW EPA Our reference: SF20/16003; DOC20/163969-8 "Non-compliant sampling plane")

Stack Parameters

Moisture content, %v/v	9.7	
Gas molecular weight, g/g mole	28.5 (wet)	29.7 (dry)
Gas density at STP, kg/m ³	1.27 (wet)	1.32 (dry)
% Oxygen correction & Factor	5 %	1.42

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1305 & 1435
Temperature, °C	400
Temperature, K	673
Velocity at sampling plane, m/s	35
Volumetric flow rate, actual, m ³ /s	2
Volumetric flow rate (wet STP), m ³ /s	0.72
Volumetric flow rate (dry STP), m ³ /s	0.65
Mass flow rate (wet basis), kg/hour	3300
Velocity difference, %	-2

Gas Analyser Results	Sampling time	Average 1331 - 1432			Minimum 1331 - 1432			Maximum 1331 - 1432		
		Concentration mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Combustion Gases										
Nitrogen oxides (as NO ₂)		270	390	11	260	370	10	280	400	11
		Concentration %v/v			Concentration %v/v			Concentration %v/v		
Carbon dioxide		7.2			7.2			7.2		
Oxygen		9.7			9.7			9.8		

Total VOCs (as n-Propane)	Sampling time	Results 1332-1432		
		Concentration mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Total		0.11	0.16	0.0045

VOC (specified)	Sampling time	Results 1332-1432		
		Concentration mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Detection limit ⁽¹⁾		<0.1	<0.2	<0.005
α-Pinene		0.16	0.23	0.0064
β-Pinene		0.19	0.27	0.0074

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Dichloromethane, Ethanol, Isopropanol, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Benzene, Carbon tetrachloride, Butanol, 1-Methoxy-2-propanol, Trichloroethylene, Toluene, 1,1,2-Trichloroethane, Tetrachloroethene, Chlorobenzene, Ethylbenzene, m + p-Xylene, Styrene, o-Xylene, 2-Butoxyethanol, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, Propylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, 1,2,3-Trimethylbenzene, Acetone, Pentane, Acrylonitrile, Methyl ethyl ketone, n-Hexane, Ethyl acetate, Cyclohexane, 2-Methylhexane, Isopropyl acetate, 2,3-Dimethylpentane, 3-Methylhexane, Heptane, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl isobutyl Ketone, 2-Hexanone, Octane, Butyl acetate, 1-Methoxy-2-propyl acetate, Butyl acrylate, Nonane, Cellosolve acetate, Decane, 3-Carene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane

3 PLANT OPERATING CONDITIONS

Borg Manufacturing have collated plant operating condition and will provide them to NSW EPA as required.

See Borg Manufacturing's records for complete process conditions.

4 TEST METHODS

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sample plane criteria	NSW TM-1	NA	NA	✓	NA
Flow rate, temperature and velocity	NSW TM-2	NSW TM-2	8%, 2%, 7%	NA	✓
Moisture content	NSW TM-22	NSW TM-22	8%	✓	✓
Molecular weight	NA	NSW TM-23	not specified	NA	✓
Dry gas density	NA	NSW TM-23	not specified	NA	✓
Carbon dioxide	NSW TM-24	NSW TM-24	13%	✓	✓
Nitrogen oxides	NSW TM-11	NSW TM-11	12%	✓	✓
Oxygen	NSW TM-25	NSW TM-25	13%	✓	✓
Aldehydes and ketones	NSW TM-34	Ektimo 332	16%	✓	✓ [†]
Sulfur dioxide	NSW TM-3	Ektimo 235	16%	✓	✓ [†]
Speciated volatile organic compounds (VOC's)	NSW TM-34 ^d	Ektimo 344	19%	✓	✓ [†]
Chlorine	NSW TM-7	Ektimo 235	14%	✓	✓ [†]
Fluorine	NSW TM-9	ALS Method QWI-EN/EA144C & Ektimo 240	25%	✓	✓ ^{#,†}
Hydrogen chloride	NSW TM-8	Ektimo 235	14%	✓	✓ [†]
Solid particles (total)	NSW TM-15	NSW TM-15 ^{††}	3%	✓	✓
Sulfuric acid mist and/or sulfur trioxide	NSW TM-3	Ektimo 235	16%	✓	✓ [†]
Total (gaseous and particulate) metals and metallic compounds	NSW TM-12, NSW TM-13, NSW TM-14	EnviroLab inhouse Metals-006, Metals-022, Metals-021	15%	✓	✓ [‡]
Type 1 substances (Sb, As, Cd, Pb, Hg)	NSW TM-12	EnviroLab inhouse Metals-006, Metals-022, Metals-021	15%	✓	✓ [‡]
Type 2 substances (Be, Cr, Co, Mn, Ni, Se, Sn, V)	NSW TM-13	EnviroLab inhouse Metals-006, Metals-022	15%	✓	✓ [‡]
Smoke	NSW TM-16	NA	not specified	NA	✓

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* Uncertainty values cited in this table are calculated at the 95% confidence level (coverage factor = 2)

[†] Analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601. Results were reported on
5 March 2021 in report number LV-001163.
16 March 2021 in report number LV-001201.
16 March 2021 in report number LV-001190.
18 March 2021 in report number LV-001211.
18 March 2021 in report number R010598-ISE F.

^{††} Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

[‡] Analysis performed by EnviroLab, NATA accreditation number 2901. Results were reported to Ektimo on 2 March 2021 in report number 263156.

[#] Analysis (solid fluoride only) performed by Australian Laboratory Services Pty Ltd, NATA accreditation number 825. Results were reported to Ektimo on 15 March 2021 in report number EN2101736.

^d Excludes recovery study as specified in section 8.4.3 of USEPA Test Method 18.

5 QUALITY ASSURANCE/QUALITY CONTROL INFORMATION

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APLAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised worldwide.

6 DEFINITIONS

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American public health association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
BSP	British standard pipe
CARB	Californian Air Resources Board
CEM	Continuous Emission Monitoring
CEMS	Continuous Emission Monitoring System
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D ₅₀	'Cut size' of a cyclone defined as the particle diameter at which the cyclone achieves a 50% collection efficiency ie. half of the particles are retained by the cyclone and half are not and pass through it to the next stage. The D ₅₀ method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D ₅₀ of that cyclone and less than the D ₅₀ of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier Transform Infra-red
ISC	Intersociety committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
Lower Bound	Defines values reported below detection as equal to zero.
Medium Bound	Defines values reported below detection are equal to half the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	The number of odour units per unit of volume. The numerical value of the odour concentration is equal to the number of dilutions to arrive at the odour threshold (50% panel response).
PM ₁₀	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm).
PM _{2.5}	Atmospheric suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 2.5 microns (µm).
PSA	Particle size analysis
RATA	Relative Accuracy Test Audit
Semi-quantified VOCs	Unknown VOCs (those not matching a standard compound), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration will be determined by matching the integrated area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TM	Test Method
TOC	The sum of all compounds of carbon which contain at least one carbon to carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity Difference	The percentage difference between the average of initial flows and afterflows.
Vic EPA	Victorian Environment Protection Authority
VOC	Any chemical compound based on carbon with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the particular conditions of use. These compounds may contain oxygen, nitrogen and other elements, but specifically excluded are carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
XRD	X-ray Diffractometry
Upper Bound	Defines values reported below detection are equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

7 APPENDIX 1: SITE LOCATIONS



EPA 4 – DC1 Baghouse



EPA 5 – DC2 Baghouse



**EPA 7 – Conti 2 Stage 1
Dryer Cyclone 1 (West) &
EPA 8 – Conti 2 Stage 1
Dryer Cyclone 2 (East)**



**EPA 9 – Conti 1 Dryer
Cyclone 1 (South) &
EPA 10 – Conti 1 Dryer
Cyclone 2 (North)**



**EPA 12 – Conti 1 Press Vents
(1, 2, 3, 4)**



**EPA 27 – Combined Conti 2
Press Vent Stack**



**EPA 29 – Forming Line
Baghouse**



**EPA 30 – Foam Station
Baghouse**



**EPA 31 – Particle Board
Press Extraction System**



EPA 32 – WESP



**Cogeneration Plant 1 Stack &
Cogeneration Plant 2 Stack**



Address (Head Office)
7 Redland Drive
Mitcham VIC 3132

Postal Address
52 Cooper Road
Cockburn Central WA 6164

Office Locations
VIC NSW WA QLD

Freecall: 1300 364 005
www.ektimo.com.au
ABN 86 600 381 413

Appendix C – Surface Water Monitoring Data

SURFACE WATER MONITORING EPL POINT 1

SAMPLE DATE	pH	TSS mg/l	True Colour hazen	Total N mg/l	Total P mg/l	Oil & Grease mg/l	BOD mg/l	MBAS mg/l	Aldrin µg/l	Dieldrin µg/l
04-May-20	7.36	17	30	1.4	0.06	5	4	0.1	0.01	0.01
03-June-20	8.11	11	20	1.1	0.05	5	2	0.1	0.01	0.01
15-Jun-20	7.36	78	24	1.2	0.09	5	3	0.1	0.01	0.01
25-Jun-20	8.03	24	15	1.3	0.07	5	2	0.1	0.01	0.01
01-Jul-20	7.83	10	20	1	0.1	5	2	0.1	0.01	0.01
08-Jul-20	7.68	14	20	1.1	0.02	5	2	0.1	0.01	0.01
15-Jul-20	7.67	7	20	1.2	0.06	5	2	0.2	0.01	0.01
20-Jul-20	7.97	5	15	1.2	0.01	5	2	0.1	0.01	0.01
29-Jul-20	7.65	50	50	1.4	0.11	5	5	0.1	0.01	0.01
6-Aug-20	7.98	13	20	1.1	0.04	5	2	0.1	0.01	0.01
11-Aug-20	7.5	28	20	1.4	0.08	5	6	0.1	0.01	0.01
19-Aug-20	7.46	15	25	1.3	0.06	5	3	0.1	0.01	0.01
26-Aug-20	7.44	8	80	1.9	0.08	5	4	0.1	0.01	0.01
1-Sep-20	7.73	7	45	1.8	0.04	5	2	0.1	0.01	0.01
9-Sep-20	7.72	5	35	1.8	0.03	5	3	0.1	0.01	0.01
16-Sep-20	7.88	8	45	1.5	0.03	5	2	0.1	0.01	0.01
23-Sep-20	6.89	22	100	2.1	0.08	5	32	0.1	0.01	0.01
30-Sep-20	7.3	6	50	1.3	0.03	5	2	0.1	0.01	0.01
8-Oct-20	8.01	9	30	1	0.01	5	2	0.1	0.01	0.01
14-Oct-20	7.02	6	30	0.9	0.03	5	3	0.1	0.01	0.01
21-Oct-20	8.86	10	45	0.9	0.01	5	2	0.1	0.01	0.01
28-Oct-20	7.92	14	100	1.6	0.06	5	4	0.1	0.01	0.01
19-Nov-20	6.82	33	45	1.1	0.06	5	2	0.1	0.01	0.01
25-Nov-20	6.86	41	50	1.2	0.07	5	5	0.1	0.01	0.01
2-Dec-20	7.95	31	30	1.7	0.08	5	3	0.1	0.01	0.01
9-Dec-20	7.78	10	50	1	0.03	5	2	0.1	0.01	0.01
16-Dec-20	7.23	13	1	1.9	0.04	5	3	0.1	0.01	0.01

21-Dec-20	7.08	47	25	1.2	0.08	5	4	0.1	0.01	0.01
4-Jan-21	7.42	18	50	1.6	0.02	5	2	0.1	0.01	0.01
12-Jan-21	6.58	14	50	1	0.06	5	2	0.1	0.01	0.01
20-Jan-21	8.63	6	40	0.9	0.03	5	3	0.1	0.01	0.01
1-Feb-21	7.68	27	40	1.5	0.05	5	5	0.1	0.01	0.01
10-Feb-21	7.44	40	30	1.1	0.06	5	3	0.1	0.01	0.01
17-Feb-21	7.45	48	50	0.9	0.07	5	2	0.1	0.01	0.01
24-Feb-21	7.55	656	30	2.3	0.24	5	2	0.1	0.01	0.01
4-Mar-21	7.95	36	30	1	0.05	5	2	0.1	0.01	0.01
9-Mar-21	7.81	43	25	0.8	0.06	5	2	0.1	0.01	0.01
16-Mar-21	7.95	23	125	0.9	0.05	15	2	0.1	0.01	0.01
24-Mar-21	7.6	22	150	1.6	0.007	5	2	0.1	0.01	0.01
31-Mar-21	7.98	12	100	1.8	0.09	5	2	0.1	0.01	0.01
14-Apr-21	8.14	20	40	1	0.04	5	2	0.1	0.01	0.01
20-Apr-21	6.59	15	20	1	0.02	5	2	0.1	0.01	0.01
28-Apr-21	7.9	22	14	1.1	0.02	5	2	0.1	0.01	0.01

SURFACE WATER MONITORING EPL POINT 28

DATE	pH	TSS	True Colour	Total N	Total P	Oil & Grease	BOD	MBAS	Aldrin	Dieldrin
28-Oct-20	7.96	27	70	6.2	0.07	5	8	0.1	0.01	0.01
4-Nov-20	7.51	8	110	6.3	0.03	5	18	0.2	0.01	0.01
4-Jan-21	7.71	23	55	3.8	0.04	5	2	0.1	0.01	0.01
2-Feb-21	7.53	22	30	4.8	0.06	5	16	0.1	0.01	0.01
10-Feb-21	7.9	12	60	11.9	0.08	5	6	0.1	0.01	0.01
17-Feb-21	7.4	34	70	15.8	0.13	7	4	0.1	0.01	0.01
24-Feb-21	7.93	12	70	15.5	0.07	5	2	0.1	0.01	0.01
16-Mar-21	7.79	34	70	8.3	0.14	11	5	0.1	0.01	0.01
24-Mar-21	7.54	54	75	5.2	0.14	5	9	0.1	0.01	0.01
31-Mar-21	7.89	9	75	6.4	0.14	5	4	0.1	0.01	0.01

Exceedance of EPL 3035 discharge limit

Appendix D – Groundwater Monitoring Data



**ALS WATER
ANALYSIS AND TESTING REPORT**

REPORT TO: Victor Bendevski

REPORT ON: Borg Panels, Oberon
Bore Monitoring Results

REPORT NO: 24006973-09

SAMPLED BY: L. Pyne & E. Felton

REPORTED BY: T.MacPhee

Stephanie Thompson
Environmental Sampling Supervisor



Accreditation # 15784
Site # 11436

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ACIRL Pty Ltd
ABN 41 000 513 888
Part of the ALS Laboratory Group
Unit 3, 16 Donald Street
LITHGOW NSW 2790
Phone +61 2 6350 7400 Fax +61 2 6352 3583 www.alsglobal.com
A Campbell Brothers Limited Company

ALS WATER ANALYSIS AND TESTING REPORT



BORG PANELS

	Units					
ALS Sydney Report No.		ES2032433				
Date of Sample		11/09/2020	11/09/2020	11/09/2020	11/09/2020	11/09/2020
Site Name #1		GW01	GW02	GW05	GW26	GW26
Site Name #2		Woodchem	Pond	Hill	Paddock - River	Paddock - Fence
General Comments/ Observations		Cloudy	Clear	Cloudy	Dry	Cloudy
Temperature	°C	13.4	13.7	25.0		14.0
pH	pH Units	6.3	7.1	6.8		7.3
Electrical Conductivity	µS/cm	257	1040	220		421
Total Suspended Solids	mg/L	173	45	606		142
Total Dissolved Solids	mg/L	200	690	210		264
Water Height	m	0.86	0.98	1.09		5.89
Ammonia as N by Discrete Analyser						
Ammonia as N	mg/L	0.02	<0.01	0.02		<0.01
Total Organic Carbon (TOC)						
Total Organic Carbon	mg/L	6	3	3		148
Formaldehyde						
Formaldehyde	mg/L	0.3	0.1	0.2		0.1
Chemical Oxygen Demand (Spectrophotometric)						
Chemical Oxygen Demand	mg/L	26	<10	25		182
Organochlorine Pesticides (OC)						
alpha-BHC	µg/L	<0.5	<0.5	<0.5		<0.5
Hexachlorobenzene (HCB)	µg/L	<0.5	<0.5	<0.5		<0.5
beta-BHC	µg/L	<0.5	<0.5	<0.5		<0.5
gamma-BHC	µg/L	<0.5	<0.5	<0.5		<0.5
delta-BHC	µg/L	<0.5	<0.5	<0.5		<0.5
Heptachlor	µg/L	<0.5	<0.5	<0.5		<0.5
Aldrin	µg/L	<0.5	<0.5	<0.5		<0.5
Heptachlor epoxide	µg/L	<0.5	<0.5	<0.5		<0.5
trans-Chlordane	µg/L	<0.5	<0.5	<0.5		<0.5
alpha-Endosulfan	µg/L	<0.5	<0.5	<0.5		<0.5
cis-Chlordane	µg/L	<0.5	<0.5	<0.5		<0.5
Dieldrin	µg/L	<0.5	<0.5	<0.5		<0.5
4,4'-DDE	µg/L	<0.5	<0.5	<0.5		<0.5
Endrin	µg/L	<0.5	<0.5	<0.5		<0.5
beta-Endosulfan	µg/L	<0.5	<0.5	<0.5		<0.5
4,4'-DDD	µg/L	<0.5	<0.5	<0.5		<0.5
Endrin aldehyde	µg/L	<0.5	<0.5	<0.5		<0.5
Endosulfan sulfate	µg/L	<0.5	<0.5	<0.5		<0.5
4,4'-DDT	µg/L	<2.0	<2.0	<2.0		<2.0
Endrin ketone	µg/L	<0.5	<0.5	<0.5		<0.5
Methoxychlor	µg/L	<2.0	<2.0	<2.0		<2.0
Total Chlordane (sum)	µg/L	<0.5	<0.5	<0.5		<0.5
Sum of DDD + DDE + DDT	µg/L	<0.5	<0.5	<0.5		<0.5
Sum of Aldrin + Dieldrin	µg/L	<0.5	<0.5	<0.5		<0.5

ALS WATER ANALYSIS AND TESTING REPORT



BORG PANELS

	Units					
ALS Sydney Report No.		ES2032433				
Date of Sample		11/09/2020	11/09/2020	11/09/2020	11/09/2020	11/09/2020
Site Name #1		GW01	GW02	GW05	GW26	GW26
Site Name #2		Woodchem	Pond	Hill	Paddock - River	Paddock - Fence
Organochlorine Pesticide Surrogate						
Dibromo-DDE	%	78.0	85.6	91.2		85.4
Organophosphorus Pesticide Surrogate						
DEF	%	73.2	80.3	80.3		77.8
Total Petroleum Hydrocarbons						
C6 - C9 Fraction	µg/L	<20	<20	<20		2680
C10 - C14 Fraction	µg/L	<50	<50	<50		<50
C15 - C28 Fraction	µg/L	<100	<100	<100		<100
C29 - C36 Fraction	µg/L	<50	<50	<50		<50
C10 - C36 Fraction (sum)	µg/L	<50	<50	<50		<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
C6 - C10 Fraction	µg/L	<20	<20	<20		2610
C6 - C10 Fraction minus BTEX (F1)	µg/L	<20	<20	<20		2600
>C10 - C16 Fraction	µg/L	<100	<100	<100		<100
>C16 - C34 Fraction	µg/L	<100	<100	<100		<100
>C34 - C40 Fraction	µg/L	<100	<100	<100		<100
>C10 - C40 Fraction (sum)	µg/L	<100	<100	<100		<100
>C10 - C16 Fraction minus Naphthalene	µg/L	<100	<100	<100		<100
BTEXN						
Benzene	µg/L	<1	<1	<1		<1
Toluene	µg/L	<2	<2	<2		6
Ethylbenzene	µg/L	<2	<2	<2		<2
meta- & para-Xylene	µg/L	<2	<2	<2		<2
ortho-Xylene	µg/L	<2	<2	<2		<2
Total Xylenes	µg/L	<2	<2	<2		<2
Sum of BTEX	µg/L	<1	<1	<1		6
Naphthalene	µg/L	<5	<5	<5		<5
TPH(V)/BTEX Surrogates						
1,2-Dichloroethane-D4	%	94.7	96.2	96.8		96.4
Toluene-D8	%	113	109	109		112
4-Bromofluorobenzene	%	109	109	105		114



METHODS OF WATER ANALYSIS

NATA accreditation covers the following test

TEST	METHOD	Measure of Uncertainty
Electrical Conductivity uS/cm	APHA 2510 B	2.0%
pH value	APHA 4500 H	0.10 pH Units
Total Suspended Solids (mg/l)	APHA 2540 D	± 5.0%
Total Dissolved Solids (mg/l)	APHA 2540 C	± 8.8%

* NATA Accreditation does not cover the performance of this test.

TEST
* Temperature Field

The remaining analysis performed at ALS Environmental, 277-289 Woodpark Rd, Smithfield, NSW 2164.

In accordance with "Standard Methods for the Examination of Water & Wastewater"
APHA, AWWA, WEF and Water & Wastewater
Examination Manual (V. Dean Adams)

ALS Report No:

ES2032433

Preservation procedures in accordance with AS/NZS 5667/1 when sampled by
ACIRL staff unless otherwise stated.

Appendix E – Annual Noise Monitoring Report

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 2 and Annual 2020*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 2 and Annual 2020

Reference: 20153_R01

Report date: 19 August 2020

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Tambalyn Durney
 Consultant



QA Review: Robert Kirwan
 Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day, evening, and night periods of 24 June 2020 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

Global Acoustics Pty Ltd | PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333 | Email global@globalacoustics.com.au

ABN 94 094 985 734

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 29 November 2019 (MOD 2). The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in December 2017. The most recent version of the CNMP was approved in June 2017. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB	Evening L _{Aeq,15minute} dB	Night L _{Aeq,15minute} dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day, evening and night period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfL. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level analyser	30131882	05/02/2021
Pulsar 105 acoustic calibrator	78226	11/03/2022

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 2 AND ANNUAL 2020¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB	L _{Ceq} dB
NM1	24/06/2020 15:02	79	61	52	52	47	45	42	65
NM1	24/06/2020 20:28	57	48	44	43	42	41	40	59
NM1	24/06/2020 22:49	57	47	45	44	43	42	39	59
NM2	24/06/2020 15:27	66	60	51	49	46	43	39	62
NM2	24/06/2020 20:49	54	47	41	39	38	36	33	59
NM2	24/06/2020 23:14	50	43	41	39	38	37	34	58
NM3	24/06/2020 16:14	72	61	48	49	43	41	38	61
NM3	24/06/2020 19:45	53	42	40	38	38	36	34	53
NM3	24/06/2020 22:01	55	49	45	42	41	38	36	55
NM4	24/06/2020 14:38	68	58	45	46	40	38	36	58
NM4	24/06/2020 20:07	48	43	36	34	32	30	28	51
NM4	24/06/2020 22:25	48	41	36	34	32	31	29	52

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Modifying factors, as defined in the NPfI, were not applicable during the time of monitoring.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 2 AND ANNUAL 2020

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	24/06/2020 15:02	3.6	D	55	No	46	NA
NM1	24/06/2020 20:28	2.2	E	50	Yes	42	Nil
NM1	24/06/2020 22:49	2.9	D	45	Yes	43	Nil
NM2	24/06/2020 15:27	3.0	D	55	Yes	46	Nil
NM2	24/06/2020 20:49	2.2	E	50	Yes	38	Nil
NM2	24/06/2020 23:14	2.6	D	45	Yes	<30	Nil
NM3	24/06/2020 16:14	5.1	D	55	No	42	NA
NM3	24/06/2020 19:45	2.7	D	50	Yes	37	Nil
NM3	24/06/2020 22:01	3.2	D	45	No	39	NA
NM4	24/06/2020 14:38	3.0	C	55	Yes	38	Nil
NM4	24/06/2020 20:07	2.7	D	50	Yes	31	Nil
NM4	24/06/2020 22:25	2.8	E	45	Yes	32	Nil

Notes:

- Noise criteria apply under all meteorological conditions except the following:
 - Wind speeds greater than 3 m/s at 10 metres above ground level; or
 - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
 - Stability class G temperature inversion conditions.
- Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
- Bold results in red indicate exceedance of criterion (if applicable); and
- NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 2 AND ANNUAL 2020

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	24/06/2020 15:02	7	0.7	220	8
NM1	24/06/2020 20:28	5	0.9	180	8
NM1	24/06/2020 22:49	5	0.0	-	8
NM2	24/06/2020 15:27	7	0.7	170	8
NM2	24/06/2020 20:49	5	1.4	190	8
NM2	24/06/2020 23:14	5	1.0	260	8
NM3	24/06/2020 16:14	5	2.1	190	8
NM3	24/06/2020 19:45	5	0.7	190	8
NM3	24/06/2020 22:01	5	0.6	245	8
NM4	24/06/2020 14:38	7	0.7	190	8
NM4	24/06/2020 20:07	5	0.4	280	0
NM4	24/06/2020 22:25	6	0.0	-	8

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day, evening, and night periods of 24 June 2020 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 2 and Annual 2020 survey at all monitoring locations.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day	Evening	Night
	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:

- (a) be prepared by a suitably qualified and experienced noise expert;
- (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
- (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
- (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.

B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:

- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
- (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
- (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.

Noise Verification

B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
- (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:

- (a) be undertaken by a suitably qualified expert; and
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Borg will implement reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the project.

Borg will carry out the proposed works in accordance with the EIS, RTS and the approval conditions.

Noise

Attenuation, as detailed in the NIA, will be implemented as follows:

- Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required.
- Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required.
- Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required.

In short, the approach taken by Borg to mitigate noise is based on a number of factors:

1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions.
2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above.
3. Provision of sound attenuation structures and enclosures to other equipment where appropriate.

Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L3 Noise limits

L3.1 Noise from the premises must not exceed:

- a) 55 dB(A) LAeq(15 minute) during the day (7am to 6pm); and
- b) 50 dB(A) LAeq(15 minute) during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) LAeq (15 minute), except as expressly provided by this licence.

Where LAeq means the equivalent continuous noise level - the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L3.2 To determine compliance with condition L3.1, noise must be measured at or computed for "Oorong" or any other noise sensitive location (such as a residence/school) along Herbourne or West Cunynghame Street, Oberon. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy" (January 2000).

L3.3 The noise emission limits identified in this licence apply under all meteorological conditions except:

- a) during rain and wind speeds (at 10m height) greater than 3m/s; and
- b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		LAeq (15 min)	LAeq (15 min)	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.

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 within one week of the exceedance.

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

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.

7.3.2 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.

APPENDIX

B ***CALIBRATION CERTIFICATES***



Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate

Calibration Number C19073

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : NA-28
Instrument Serial Number : 30131882
Microphone Serial Number : 04739
Pre-amplifier Serial Number : 11942

Pre-Test Atmospheric Conditions
Ambient Temperature : 24.5°C
Relative Humidity : 54.5%
Barometric Pressure : 99.39kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.6°C
Relative Humidity : 51%
Barometric Pressure : 99.36kPa

Calibration Technician : Charlie Neil
Calibration Date : 5 Feb 2019

Secondary Check: Lewis Boorman
Report Issue Date : 6 Feb 2019

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-3:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-3:2013.

Lean Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
31.5 Hz to 8kHz	±0.13dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.013kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.11dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Page 1 of 1



**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator
IEC 60942-2017

Calibration Certificate

Calibration Number C20155

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Dr
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.4°C
Relative Humidity : 53.8%
Barometric Pressure : 101.2kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 11 Mar 2020
Secondary Check: Alannah Squires
Report Issue Date : 12 Mar 2020

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.13	1000.37

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	±0.14dB	Temperature	±0.2°C
Frequency	±0.09%	Relative Humidity	±2.4%
Distortion	±0.09%	Barometric Pressure	±0.015kPa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Appendix F – Construction Noise Monitoring Reports

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 2 and Annual 2020*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 2 and Annual 2020

Reference: 20153_R01

Report date: 19 August 2020

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Tambalyn Durney
 Consultant



QA Review: Robert Kirwan
 Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day, evening, and night periods of 24 June 2020 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

Global Acoustics Pty Ltd | PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333 | Email global@globalacoustics.com.au

ABN 94 094 985 734

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 29 November 2019 (MOD 2). The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in December 2017. The most recent version of the CNMP was approved in June 2017. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB	Evening L _{Aeq,15minute} dB	Night L _{Aeq,15minute} dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day L _{Aeq,15minute} dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day, evening and night period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfL. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases

may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB").

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level analyser	30131882	05/02/2021
Pulsar 105 acoustic calibrator	78226	11/03/2022

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 2 AND ANNUAL 2020¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB	L _{Ceq} dB
NM1	24/06/2020 15:02	79	61	52	52	47	45	42	65
NM1	24/06/2020 20:28	57	48	44	43	42	41	40	59
NM1	24/06/2020 22:49	57	47	45	44	43	42	39	59
NM2	24/06/2020 15:27	66	60	51	49	46	43	39	62
NM2	24/06/2020 20:49	54	47	41	39	38	36	33	59
NM2	24/06/2020 23:14	50	43	41	39	38	37	34	58
NM3	24/06/2020 16:14	72	61	48	49	43	41	38	61
NM3	24/06/2020 19:45	53	42	40	38	38	36	34	53
NM3	24/06/2020 22:01	55	49	45	42	41	38	36	55
NM4	24/06/2020 14:38	68	58	45	46	40	38	36	58
NM4	24/06/2020 20:07	48	43	36	34	32	30	28	51
NM4	24/06/2020 22:25	48	41	36	34	32	31	29	52

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Modifying factors, as defined in the NPfI, were not applicable during the time of monitoring.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 2 AND ANNUAL 2020

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	24/06/2020 15:02	3.6	D	55	No	46	NA
NM1	24/06/2020 20:28	2.2	E	50	Yes	42	Nil
NM1	24/06/2020 22:49	2.9	D	45	Yes	43	Nil
NM2	24/06/2020 15:27	3.0	D	55	Yes	46	Nil
NM2	24/06/2020 20:49	2.2	E	50	Yes	38	Nil
NM2	24/06/2020 23:14	2.6	D	45	Yes	<30	Nil
NM3	24/06/2020 16:14	5.1	D	55	No	42	NA
NM3	24/06/2020 19:45	2.7	D	50	Yes	37	Nil
NM3	24/06/2020 22:01	3.2	D	45	No	39	NA
NM4	24/06/2020 14:38	3.0	C	55	Yes	38	Nil
NM4	24/06/2020 20:07	2.7	D	50	Yes	31	Nil
NM4	24/06/2020 22:25	2.8	E	45	Yes	32	Nil

Notes:

- Noise criteria apply under all meteorological conditions except the following:
 - Wind speeds greater than 3 m/s at 10 metres above ground level; or
 - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
 - Stability class G temperature inversion conditions.
- Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
- Bold results in red indicate exceedance of criterion (if applicable); and
- NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 2 AND ANNUAL 2020

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	24/06/2020 15:02	7	0.7	220	8
NM1	24/06/2020 20:28	5	0.9	180	8
NM1	24/06/2020 22:49	5	0.0	-	8
NM2	24/06/2020 15:27	7	0.7	170	8
NM2	24/06/2020 20:49	5	1.4	190	8
NM2	24/06/2020 23:14	5	1.0	260	8
NM3	24/06/2020 16:14	5	2.1	190	8
NM3	24/06/2020 19:45	5	0.7	190	8
NM3	24/06/2020 22:01	5	0.6	245	8
NM4	24/06/2020 14:38	7	0.7	190	8
NM4	24/06/2020 20:07	5	0.4	280	0
NM4	24/06/2020 22:25	6	0.0	-	8

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day, evening, and night periods of 24 June 2020 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 2 and Annual 2020 survey at all monitoring locations.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day	Evening	Night
	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:

- (a) be prepared by a suitably qualified and experienced noise expert;
- (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
- (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
- (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.

B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:

- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
- (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
- (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.

Noise Verification

B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
- (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:

- (a) be undertaken by a suitably qualified expert; and
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Borg will implement reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the project.

Borg will carry out the proposed works in accordance with the EIS, RTS and the approval conditions.

Noise

Attenuation, as detailed in the NIA, will be implemented as follows:

- Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required.
- Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required.
- Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required.

In short, the approach taken by Borg to mitigate noise is based on a number of factors:

1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions.
2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above.
3. Provision of sound attenuation structures and enclosures to other equipment where appropriate.

Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L3 Noise limits

L3.1 Noise from the premises must not exceed:

- a) 55 dB(A) LAeq(15 minute) during the day (7am to 6pm); and
- b) 50 dB(A) LAeq(15 minute) during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) LAeq (15 minute), except as expressly provided by this licence.

Where LAeq means the equivalent continuous noise level - the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L3.2 To determine compliance with condition L3.1, noise must be measured at or computed for "Oorong" or any other noise sensitive location (such as a residence/school) along Herbourne or West Cunynghame Street, Oberon. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy" (January 2000).

L3.3 The noise emission limits identified in this licence apply under all meteorological conditions except:

- a) during rain and wind speeds (at 10m height) greater than 3m/s; and
- b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		LAeq (15 min)	LAeq (15 min)	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.

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 within one week of the exceedance.

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

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.

7.3.2 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.

APPENDIX

B CALIBRATION CERTIFICATES



Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter

IEC 61672-3:2013

Calibration Certificate

Calibration Number C19073

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : NA-28
Instrument Serial Number : 30131882
Microphone Serial Number : 04739
Pre-amplifier Serial Number : 11942

Pre-Test Atmospheric Conditions
Ambient Temperature : 24.5°C
Relative Humidity : 54.5%
Barometric Pressure : 99.39kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.6°C
Relative Humidity : 51%
Barometric Pressure : 99.36kPa

Calibration Technician : Charlie Neil
Calibration Date : 5 Feb 2019

Secondary Check: Lewis Boorman
Report Issue Date : 6 Feb 2019

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-3:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-3:2013.

Lean Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
31.5 Hz to 8kHz	±0.13dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.013kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.11dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator
IEC 60942-2017

Calibration Certificate

Calibration Number C20155

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Dr
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.4°C
Relative Humidity : 53.8%
Barometric Pressure : 101.2kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 11 Mar 2020

Secondary Check: Alannah Squires
Report Issue Date : 12 Mar 2020

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.13	1000.37

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	$\pm 0.14\text{dB}$	Temperature	$\pm 0.2^\circ\text{C}$
Frequency	$\pm 0.09\%$	Relative Humidity	$\pm 2.4\%$
Distortion	$\pm 0.09\%$	Barometric Pressure	$\pm 0.015\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1

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Borg Panels Facility

*Environmental Noise Monitoring
Quarter 3 2020*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 3 2020

Reference: 20238_R01

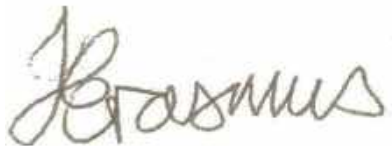
Report date: 27 October 2020

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Jonathan Erasmus
Consultant



QA Review: Jesse Tribby
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day periods of 28 September 2020 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in December 2017. The most recent version of the CNMP was approved in June 2017. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not “NM” or less than a maximum cut off value (e.g. “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	30131882	05/02/2021
Pulsar 105 acoustic calibrator	78226	01/02/2021

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 3 2020¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	28/09/2020 09:57	61	54	49	47	45	44	41
NM2	28/09/2020 10:39	67	55	47	46	43	40	37
NM3	28/09/2020 09:08	69	52	43	42	37	33	31
NM4	28/09/2020 09:32	65	56	45	44	36	34	31

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 3 2020

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	28/09/2020 09:57	1.4	A	55	Yes	44	Nil
NM2	28/09/2020 10:39	1.8	A	55	Yes	NM	Nil
NM3	28/09/2020 09:08	1.1	A	55	Yes	31	Nil
NM4	28/09/2020 09:32	1.1	A	55	Yes	35	Nil

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 3 2020

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	28/09/2020 09:57	10	2.0	320	1
NM2	28/09/2020 10:39	9	1.1	350	1
NM3	28/09/2020 09:08	12	-	-	1
NM4	28/09/2020 09:32	14	-	-	1

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 28 September 2020 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 3 2020 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday	7 am to 7 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:

- (a) be undertaken by a suitably qualified expert;
- (b) include an analysis of compliance with noise limits specified in Condition B16;
- (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
- (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: • Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. • Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. • Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: 1. Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. 2. Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. 3. Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		LAeq (15 min)	LAeq (15 min)	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.

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 within one week of the exceedance.

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

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.

7.3.2 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.

APPENDIX

B CALIBRATION CERTIFICATES



Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter

IEC 61672-3:2013

Calibration Certificate

Calibration Number C19073

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : NA-28
Instrument Serial Number : 30131882
Microphone Serial Number : 04739
Pre-amplifier Serial Number : 11942

Pre-Test Atmospheric Conditions
Ambient Temperature : 24.5°C
Relative Humidity : 54.5%
Barometric Pressure : 99.30kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.6°C
Relative Humidity : 51%
Barometric Pressure : 99.36kPa

Calibration Technician : Charlie Neil
Calibration Date : 5 Feb 2019

Secondary Check: Lewis Boorman
Report Issue Date : 6 Feb 2019

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-3:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-3:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-3:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
31.5 Hz to 8 kHz	±0.15 dB	Temperature	±0.2°C
12.5 kHz	±0.2 dB	Relative Humidity	±2.4%
16 kHz	±0.29 dB	Barometric Pressure	±0.015 kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.11 dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number C19074

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.8°C
Relative Humidity : 53.7%
Barometric Pressure : 100.09kPa

Calibration Technician : Charlie Neil
Calibration Date : 1 Feb 2019

Secondary Check: Lewis Boorman
Report Issue Date : 6 Feb 2019

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

	Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
Pre Adjustment	94.0	1000.0	94.4	1000.38
Post Adjustment	94.0	1000.0	94.1	1000.39

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -

Specific Tests	Environmental Conditions
Generated SPL	Temperature
Frequency	Relative Humidity
Distortion	Barometric Pressure

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
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Borg Panels Facility

*Environmental Noise Monitoring
Quarter 4 2020*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 4 2020

Reference: 20289_R01_RevA

Report date: 1 February 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Tambalyn Durney
 Consultant



QA Review: Robert Kirwan
 Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period at four monitoring locations around Borg. Due to unscheduled shut downs and sustained periods of inclement weather including elevated winds and rainfall, Q4 monitoring scheduled for Q4 2020 was delayed until 13 January 2021.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA) most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in June 2017. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{A\text{eq},15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only $L_{A\text{eq}}$ was not “NM” or less than a maximum cut off value (e.g. “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site-only $L_{A\text{eq}}$ noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only $L_{A\text{eq}}$ levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	3013882	05/02/2021
Pulsar 105 acoustic calibrator	78226	11/03/2022

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 4 2020¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	13/01/2021 14:56	73	61	54	51	49	45	43
NM2	13/01/2021 15:19	66	62	58	53	49	44	41
NM3	13/01/2021 14:07	68	56	41	43	36	32	29
NM4	13/01/2021 14:33	67	51	44	44	40	37	35

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 4 2020

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	13/01/2021 14:56	3.7	A	55	No	46	NA
NM2	13/01/2021 15:19	3.5	B	55	No	NM	NA
NM3	13/01/2021 14:07	3.2	A	55	No	<25	NA
NM4	13/01/2021 14:33	4.0	B	55	No	36	NA

Notes:

1. Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
2. Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
3. Bold results in red indicate exceedance of criterion (if applicable); and
4. NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 4 2020

Location	Start Date and Time	Temperature °C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	13/01/2021 14:56	29	1.7	85	1
NM2	13/01/2021 15:19	30	0.5	30	3
NM3	13/01/2021 14:07	27	1.0	60	3
NM4	13/01/2021 14:33	27	3.8	20	2

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 13 January 2021 at four monitoring locations around Borg. Due to unscheduled shut downs and sustained periods of inclement weather including elevated winds and rainfall, Q4 monitoring scheduled for Q4 2020 was delayed until 13 January 2021.

Borg operations complied with the relevant criteria during the Quarter 4 2020 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

- B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:
- be undertaken by a suitably qualified expert;
 - include an analysis of compliance with noise limits specified in Condition B16;
 - include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.
- B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.
- B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.
- Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.
- B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: - Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. - Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. - Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: - Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. - Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. - Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		LAeq (15 min)	LAeq (15 min)	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.

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 within one week of the exceedance.

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

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.

7.3.2 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.

APPENDIX

B CALIBRATION CERTIFICATES



**Acoustic
Research
Labs Pty Ltd**

Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C19073

Client Details		Global Acoustics Pty Ltd 12/16 Huntingdale Drive Thornton NSW 2322	
Equipment Tested/ Model Number :		NA-28	
Instrument Serial Number :		30131882	
Microphone Serial Number :		04739	
Pre-amplifier Serial Number :		11942	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 24.5°C		Ambient Temperature : 23.6°C	
Relative Humidity : 54.5%		Relative Humidity : 51%	
Barometric Pressure : 99.39kPa		Barometric Pressure : 99.36kPa	
Calibration Technician : Charlie Neil		Secondary Check: Lewis Boorman	
Calibration Date : 5 Feb 2019		Report Issue Date : 6 Feb 2019	
Approved Signatory :		Ken Williams	

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-3:2013.

Lean Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
11.3 Hz to 8kHz	±0.13dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
15kHz	±0.26dB	Barometric Pressure	±0.015kPa
Electrical Tests			
31.3 Hz to 20 kHz	±0.11dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C20155

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Dr
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.4°C
Relative Humidity : 53.8%
Barometric Pressure : 101.2kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 11 Mar 2020

Secondary Check: Alannah Squires
Report Issue Date : 12 Mar 2020

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.13	1000.37

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement - Environmental Conditions			
Specific Tests			
Generated SPL	$\pm 0.14 \text{ dB}$	Temperature	$\pm 0.2^\circ \text{C}$
Frequency	$\pm 0.09\%$	Relative Humidity	$\pm 2.4\%$
Distortion	$\pm 0.09\%$	Barometric Pressure	$\pm 0.013 \text{ kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Borg Panels Facility

*Environmental Noise Monitoring
Quarter 1 2021*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

Global Acoustics Pty Ltd

PO Box 3115 | Thornton NSW 2322

Telephone +61 2 4966 4333

Email global@globalacoustics.com.au

ABN 94 094 985 734

Borg Panels Facility

Environmental Noise Monitoring Quarter 1 2021

Reference: 21013_R01

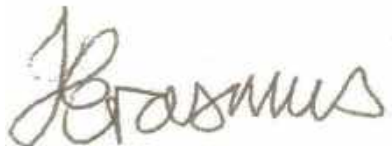
Report date: 31 March 2021

Prepared for

Borg Manufacturing Pty Ltd
124 Lowes Mount Road
Oberon 2787 NSW

Prepared by

Global Acoustics Pty Ltd
PO Box 3115
Thornton NSW 2322



Prepared: Jonathan Erasmus
Consultant



QA Review: Jesse Tribby
Consultant

Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 3 March 2021 at four monitoring locations around Borg.

1.2 Monitoring Locations

Monitoring locations are detailed in Table 1.1 and shown in Figure 1. It should be noted that Figure 1 shows the actual monitoring position, not the location of residences.

Table 1.1: ATTENDED MONITORING LOCATIONS

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



Figure 1: Attended Noise Monitoring Locations

1.3 Terminology & Abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
L _{Amax}	The maximum A-weighted noise level over a time period.
L _{A1}	The noise level which is exceeded for 1 per cent of the time.
L _{A1,1minute}	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L _{A10}	The noise level which is exceeded for 10 percent of the time.
L _{Aeq}	The average noise A-weighted energy during a measurement period.
L _{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L _{A90}	The level exceeded for 90 percent of the time. The L _{A90} level is often referred to as the “background” noise level and is commonly used to determine noise criteria for assessment purposes.
L _{Amin}	The minimum A-weighted noise level over a time period.
L _{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
SC	Stability class (or category) is determined from measured wind speed and either sigma-theta or VTG.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	This is the period 7:00am to 6:00pm.
Evening	This is the period 6:00pm to 10:00pm.
Night	This is the period 10:00pm to 7:00am.

2 REGULATOR REQUIREMENTS AND NOISE CRITERIA

2.1 Development Consent

The most current development consent associated with activities at Borg is Development Consent SSD 7016 (the consent), most recently modified 22 May 2020. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 Environment Protection Licence

Borg holds Environment Protection Licence (EPL) No. 3035 issued by the Environment Protection Authority (EPA), most recently on 4 September 2019. Relevant sections of the EPL are reproduced in Appendix A.

2.3 Operational Noise Management Plan

Noise monitoring requirements are detailed in the Borg Operational Noise Management Plan (ONMP) and Construction Noise Management Plan (CNMP). The most recent version of the ONMP was approved in October 2020. The most recent version of the CNMP was approved in June 2017. Relevant sections of the ONMP and CNMP are reproduced in Appendix A.

2.4 Noise Criteria

Noise limits are consistent between the consent and EPL and have been reproduced in Table 2.1 below.

Table 2.1: IMPACT ASSESSMENT CRITERIA

Location	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Construction noise criteria for each monitoring location are detailed in Table 2.2 and Table 2.3.

Table 2.2: GENERAL CONSTRUCTION NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
NM1	55	50	45
NM2	55	50	45
NM3	55	50	45
NM4	55	50	45

Table 2.3: ROCK/CONCRETE BREAKING NOISE LIMITS

Report Descriptor	Day LAeq,15minute dB
NM1	75
NM2	75
NM3	75
NM4	75

2.5 Meteorological Conditions

As described in the consent, noise generated by Borg is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (INP), as follows:

- during rain and 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.

2.6 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

3 METHODOLOGY

3.1 Overview

Attended environmental noise monitoring was conducted in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', relevant NSW EPA requirements, and the Borg ONMP and CNMP. Meteorological data was obtained from the Borg automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended Noise Monitoring

During this survey, attended monitoring was undertaken during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric condition measurement was also undertaken at each monitoring location.

This survey presents noise levels gathered during attended monitoring that are the result of many sounds reaching the sound level meter microphone during monitoring. Received levels from various noise sources were noted during attended monitoring and particular attention was paid to the extent of Borg's contribution, if any, to measured levels. At each receptor location, Borg's $L_{Aeq,15\text{minute}}$ and $L_{A1,1\text{minute}}$ (in the absence of any other noise) was measured directly, where possible, or, determined by frequency analysis.

If the exact contribution of the source of interest (in this case Borg) cannot be established, due to masking by other noise sources in a similar frequency range, but site noise levels are observed to be well below (more than 5 dB lower than) any relevant criterion, a maximum estimate of the potential contribution of the site might be made based on other measured site-only noise descriptors in accordance with Section 7.1 of the NPfI. This is generally expressed as a 'less than' quantity, such as <20 dB or <30 dB.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may also be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means some noise was audible but could not be quantified. If site noise was NM due to masking but estimated to be significant in relation to a relevant criterion, we would employ methods (e.g. measure closer and back calculate) to determine a value for reporting.

All sites noted as NM in this report are due to one or more of the following reasons:

- Site noise levels were extremely low and unlikely, in many cases, to be even noticed;
- Site noise levels were masked by another relatively loud noise source that is characteristic of the environment (e.g. breeze in foliage or continuous road traffic noise) that cannot be eliminated by moving closer; and/or
- It was not feasible, nor reasonable to employ methods such as move closer and back calculate. Cases may include, but are not limited to, rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

A measurement of $L_{A1,1\text{minute}}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level, or $L_{A\text{max}}$, received from the site during the entire measurement period (i.e. the highest level of the worst minute during the 15 minute measurement).

Often extraneous noise events (for example, road traffic pass-bys and dogs) interfere with the measurement of site noise levels in the frequency range of interest. Where required, the sound level meter is paused during these occurrences to aid in quantification of the site only $L_{Aeq,15\text{minute}}$ level.

3.3 Modifying Factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable, such that the site-only L_{Aeq} was not “NM” or less than a maximum cut off value (e.g. “<20 dB” or “<30dB”).

If applicable, modifying factors have been reported and added to measured site-only L_{Aeq} noise levels when meteorological conditions satisfied requirements for site noise criteria to be applicable. Low-frequency modifying factors have only been applied to site-only L_{Aeq} levels if Borg was the only contributing low-frequency noise source.

3.4 Monitoring Equipment

Table 3.1 lists the equipment used to measure environmental noise levels. Calibration certificates are provided in Appendix B.

Table 3.1: ATTENDED NOISE MONITORING EQUIPMENT

Model	Serial Number	Calibration Due Date
Rion NA-28 sound level meter	30131882	08/02/2023
Pulsar 105 acoustic calibrator	78226	08/02/2023

4 RESULTS

4.1 Total Measured Noise Levels

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – QUARTER 1 2021¹

Location	Start Date and Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
NM1	03/03/2021 14:28	65	56	50	48	46	43	40
NM2	03/03/2021 14:48	68	55	48	46	45	43	40
NM3	03/03/2021 13:45	56	45	41	40	40	38	35
NM4	03/03/2021 14:09	56	49	46	44	44	42	40

Notes:

1. Levels in this table are not necessarily the result of activity at Borg.

4.2 Modifying Factors

Measured site-only levels were assessed for the applicability of modifying factors in accordance with the NPfI and methodology described in Section 3.3.

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3 Attended Noise Monitoring

Table 4.2 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria.

Table 4.2: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 1 2021

Location	Start Date and Time	Wind Speed m/s	Stability Class	Criterion dB	Criterion Applies? ¹	Borg $L_{Aeq,15\text{min}}$ dB ²	Exceedance ^{3,4}
NM1	03/03/2021 14:28	2.1	A	55	Yes	43	Nil
NM2	03/03/2021 14:48	2.3	A	55	Yes	1A	Nil
NM3	03/03/2021 13:45	1.6	A	55	Yes	33	Nil
NM4	03/03/2021 14:09	1.6	A	55	Yes	36	Nil

Notes:

- Noise criteria apply under all meteorological conditions except those detailed in Section 2.5;
- Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
- Bold results in red indicate exceedance of criterion (if applicable); and
- NA in exceedance column means atmospheric conditions outside conditions specified, therefore criterion was not applicable.

4.4 Atmospheric Conditions

Atmospheric condition data measured by the operator during each measurement using a Kestrel hand-held weather meter is shown in Table 4.3. The wind speed, direction and temperature were measured at approximately 1.8 metres. Attended noise monitoring is not undertaken during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 1 2021

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	03/03/2021 14:28	22	1.2	360	4
NM2	03/03/2021 14:48	23	0.7	300	5
NM3	03/03/2021 13:45	22	0.0	-	4
NM4	03/03/2021 14:09	21	1.3	270	4

Notes:

- "-" indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to conduct a noise survey of operations and construction at the Borg panel manufacturing facility (Borg) near Oberon, NSW. The purpose of the survey was to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day period of 3 March 2021 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 1 2021 survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

APPENDIX

A *REGULATOR DOCUMENTS*

A.1 DEVELOPMENT CONSENT SSD 7016

NOISE

Hours of Work

- B13. The Applicant must comply with the hours detailed in **Table 1**, unless otherwise agreed in writing by the Secretary.

Table 1: Hours of Work

Activity	Day	Time
Earthworks and Construction	Monday – Friday Saturday	7 am to 7 pm 8 am to 1 pm
Operation	Monday – Sunday	24 hours

- B14. 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.

Construction Noise Management Plan

- B15. 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:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) be approved by the Secretary prior to the commencement of construction of the Project;
 - (c) describe procedures for achieving the noise limits in **Table 2**;
 - (d) describe the measures to be implemented to manage noisy works such as rock/concrete breaking activities, in close proximity to sensitive receivers;
 - (e) include strategies that have been developed with the community for managing noisy works;
 - (f) describe the community consultation undertaken to develop the strategies in e) above; and
 - (g) include a complaints management system that would be implemented for the duration of the Project.

Operational Noise Limits

- B16. 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)

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)
All sensitive receivers	55	50	45

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.

Noise Mitigation

- B17. The Applicant must ensure all noise attenuation measures already installed for the Existing Development are maintained in good working order for the life of the Development.

Operational Noise Management Plan

- B18. Within 6 months of the date of this consent, the Applicant must prepare an Operational Noise Management Plan (ONMP) for the Existing Development, to manage operational noise to the satisfaction of the Secretary. The ONMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The ONMP must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe the measures that will be implemented to minimise noise from the Existing Development including:
 - (i) all reasonable and feasible measures being employed on site;
 - (ii) maintain equipment to ensure it is in good order;
 - (iii) traffic noise is effectively managed;
 - (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply;
 - (v) compliance with the relevant conditions of this consent;
 - (c) includes a noise monitoring program that:
 - (i) must be carried out until otherwise agreed to in writing by the Secretary;
 - (ii) is capable of evaluating the performance of the Existing Development; and
 - (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and
 - (d) include a procedure for implementing noise mitigation measures, should the Applicant be directed by the EPA or the Secretary, or should non-compliances be detected.
- B19. Prior to the commencement of operation of the Project, the Applicant must update the ONMP required under Condition B18, to incorporate the Project and its management, to the satisfaction of the Secretary. The updated plan must be prepared in accordance with the requirements of Condition B18, and must incorporate the following:
- (a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL; and
 - (b) description of any additional measures that would be implemented for the Development to ensure compliance with the noise limits in Condition B16 and the EPL.
 - (c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area.
 - (d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.

Noise Verification

- B20. Within 3 months of commencement of operation of the Project, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert;
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) demonstrate achievement of the sound power levels in Table 12 of the *Borg Panels Timber Panel Processing Facility Noise and Vibration Impact Assessment*, dated May 2016 and prepared by Global Acoustics;
 - (d) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (e) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.

- B20A. Within three months of the commissioning of the gas turbines and ancillary equipment, the Applicant must undertake a noise verification study for the Development to the satisfaction of the Secretary. The study must:
- (a) be undertaken by a suitably qualified expert; and
 - (b) include an analysis of compliance with noise limits specified in Condition B16;
 - (c) include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - (d) describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.

- B20B Within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod-3, the Applicant must undertake a Noise Verification Study for the Development to the satisfaction of the Secretary. The Study must:
- be undertaken by a suitably qualified expert;
 - include an analysis of compliance with noise limits specified in Condition B16;
 - include an outline of management actions to be taken to address any exceedances of the limits specified in Condition B16; and
 - describe the contingency measures in the event management actions are not effective in reducing noise levels to an acceptable level.
- B21. Should the noise verification study indicate the Development has not complied with the noise limits in Condition B16 and applicable EPL requirements, or where the verification indicates that greater impacts than predicted in the EIS may arise, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.
- B26. Within 3 months of commissioning the two cogeneration units, the Applicant, in consultation with the EPA, must undertake post-commissioning noise monitoring of the cogeneration units to demonstrate the operation of the cogeneration units do not exceed the noise criteria at sensitive receivers as described in Section 7.0 of *Gas Fire Co-generators Noise Impact Assessment* prepared by Vipac Engineers and Scientists, dated 2 July 2015.
- Within 1 month of completing the study, the Applicant must submit a report outlining the findings of the study to the Secretary and the EPA.
- B27. Should the post-commissioning emissions verification study indicate the two cogeneration units have not demonstrated compliance with the NIA, a detailed investigation and an outline of any management measures necessary to prevent exceedances must be submitted to the Secretary and the EPA, as part of the study.

Noise
Attenuation, as detailed in the NIA, will be implemented as follows: - Conti 1 Dryer Fan air intake redesigned and the fan speed reduced to minimise noise generated. A sound power reduction from LAeq 121 dB to 114 dB or better is required. - Booster fan will receive additional insulation and a reduction in fan speed. A sound power reduction from LAeq 116 dB to 109 dB or better is required. - Main fibre transport fan will have a concrete enclosure constructed around it. A sound power reduction from LAeq 110 dB to 104 dB or better is required. In short, the approach taken by Borg to mitigate noise is based on a number of factors: - Continuation of the use of mobile chippers (that is, not to enclose the mobile chippers). However, these are backup items (only to be used when enclosed, electric chippers are not operational), and will not be used in enhancing met conditions. - Implementation of additional noise mitigation measures to minimise noise generated by equipment, as detailed above. - Provision of sound attenuation structures and enclosures to other equipment where appropriate. Irrespective of the above, Borg undertakes to meet the existing plant sound power reductions specified in the NIA. If the proposed attenuation measures to the existing plant are found to be insufficient in achieving these reductions, additional works will be undertaken.

A.2 ENVIRONMENT PROTECTION LICENCE

L4 Noise limits

L4.1 Noise from the premises must not exceed:

- a) 55 dB(A) $L_{Aeq}(15 \text{ minute})$ during the day (7am to 6pm); and
- b) 50 dB(A) $L_{Aeq}(15 \text{ minute})$ during the evening (6pm to 10pm); and
- c) at all other times 45 dB(A) $L_{Aeq}(15 \text{ minute})$, 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.

M7 Other monitoring and recording conditions

M7.1 Noise monitoring to determine compliance with condition L4 must be carried out at least once annually during the day, evening, and night time hours specified by L4.1 at the location(s) specified under condition L4.2 or at the nearest residence, and be undertaken in accordance with Australian Standard AS 2659.1 (1998) Guide to use of sound measuring equipment - portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

A.3 OPERATIONAL NOISE MANAGEMENT PLAN

7.3 Attended Noise Monitoring

Attended noise monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows the most accurate determination of the contribution, if any, to measured noise levels by the source of interest.

Operational noise impacts are potentially greatest at night when background levels are typically low and the allowable levels are correspondingly low, and, this is the period when noise propagation enhancement is most likely.

7.3.1 Compliance Monitoring

It is proposed to conduct compliance monitoring for the Existing Development at each location once per year during the day, evening and night periods (pending weather and operational constraints) with results compared to noise criteria in **Table 3**. Compliance monitoring should be conducted during the winter period as this season represents the likely worst-case season due to temperature inversions.

Any exceedance of a noise criterion recorded during regular attended noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Officer as soon as practicable to advise of the recorded results. If exceedance of limits is demonstrated follow-up monitoring is to be undertaken within one week of the exceedance. The regular monitoring frequency will be resumed if no further exceedances are measured.

Attended compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the Existing Development in isolation (in the absence of all extraneous noise sources). These techniques could include, but are not limited to:

- Pausing the sound level meter during extraneous noise events, for example, when a dog is barking or road traffic noise is clearly audible and affecting the measurements;
- Using frequency filtering techniques where certain frequencies of noise are excluded from the measurements; or
- Using other noise descriptors such as L_{A90} or L_{A50} to filter extraneous noise events.

The Existing Development should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in **Section 9**.

7.4 Monitoring Locations

Four representative locations have been chosen for monitoring as summarised in **Table 6**. Refer to **Figure 2** for these locations.

Table 6 – 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 3**. Where these are exceeded from operational noise sources, the exceedance should be investigated (as discussed in **Section 9**) to determine the cause and any necessary mitigation.

7.5 Meteorological 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.

Meteorological data is obtained from the Borg Panels weather station (EPA Identification Point 26). This data allows correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level is also undertaken during attended monitoring.

10 ONMP Review

In accordance with Development Consent SSD 7016 Condition C10, this ONMP 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 ONMP will be submitted to the Secretary DP&E for approval.

A.4 CONSTRUCTION NOISE MANAGEMENT PLAN

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)	Evening (6pm-10pm)	Night (10pm-7am)
		LAeq (15 min)	LAeq (15 min)	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.

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 within one week of the exceedance.

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

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.

7.3.2 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.

APPENDIX

B CALIBRATION CERTIFICATES



Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter IEC 61672-3:2013 Calibration Certificate

Calibration Number C21058

Client Details		Global Acoustics Pty Ltd 12/16 Huntingdale Drive Thornton NSW 2322	
Equipment Tested/ Model Number :		Rion NA-28	
Instrument Serial Number :		30131882	
Microphone Serial Number :		04739	
Pre-amplifier Serial Number :		11942	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 23.5°C		Ambient Temperature : 23.3°C	
Relative Humidity : 46.7%		Relative Humidity : 47.7%	
Barometric Pressure : 100.28kPa		Barometric Pressure : 100.25kPa	
Calibration Technician : Jeff Yu		Secondary Check: Max Moore	
Calibration Date : 8 Feb 2021		Report Issue Date : 9 Feb 2021	
Approved Signatory : 		Ken Williams	
Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.12dB	Temperature	±0.2°C
1kHz	±0.11dB	Relative Humidity	±2.4%
8kHz	±0.13dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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**Acoustic
Research
Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C21059

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 78226

Atmospheric Conditions

Ambient Temperature : 23.3°C
Relative Humidity : 47.7%
Barometric Pressure : 100.27kPa

Calibration Technician : Jeff Yu
Calibration Date : 08 Feb 2021

Secondary Check: Max Moore
Report Issue Date : 9 Feb 2021

Approved Signatory :

Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.02	1000.40

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	$\pm 0.14\text{dB}$	Temperature	$\pm 0.2^\circ\text{C}$
Frequency	$\pm 0.09\%$	Relative Humidity	$\pm 2.4\%$
Distortion	$\pm 0.09\%$	Barometric Pressure	$\pm 0.015\text{kPa}$

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

* The tests <1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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Appendix G – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
102	Smoke	11/06/2020	Not provided	EPA anonymous complaint alleging continuous smoke emissions from site	Investigation with Site Managers found a furnace stopped for maintenance and when started up some smoke was generated which is normal for this activity. Provided EPA with response. EPA advised they would close this out in their system. No further action required.
103	Pathway beside Borg plant	20/06/2020	Fox Lane, Oberon	Complainant had bicycle incident due to the deviation of the cycle path, wanted to know when path would be reinstated.	WHSE Coordinator contacted resident to apologise and inform him that the temporary gravel path would be reinstated with bitumen within one week. No further correspondence received from complainant.
105	Noise	4/07/2020	Clover Lane, Oberon	Loud beeping noise heard from site	WHS Coordinator investigated and found that some EWPs had reversing alarm beepers fitted. WHS Coordinator advised Fleet who replaced beepers with non-tonal squawkers. WHS Coordinator advised resident of issue identified and action taken.
106	Noise	25/08/2020	Clover Lane, Oberon	Neighbouring resident contacted Construction Manager to complain about beeping noise	Construction Manager investigated and found an EWP with its horn enabled. Immediately took this out of service and Fleet disabled horn and fitted non-tonal squawker.
107	Noise, odour, smoke	1/09/2020	Herborn Street, Oberon	EPA received complaint for smoke emissions pouring out of a stack, pungent odour and loud noise after 8.30pm.	Discussion with Site Managers found no evidence to support the complainant's issues. Environmental Manager discussed complaint with EPA Officer who advised that no actions were required at this time.
108	Traffic	1/12/2020	Not provided	Borg truck pulled out in front of car	Environmental Manager advised Logistics Manager who counselled the truck driver.
110	Soot deposit on car	23/02/2020	Cunningham Street, Oberon	Resident complained that there were black soot spots on her car	WHSE Coordinator and Log Yard Manager met with resident to discuss complaint and informed resident that it would be more likely to have wood dust deposit on her car if this had come from Borg Panels. The resident agreed with this. No further action required. No evidence of breach found.

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
111	Noise	2/03/2021	Clover Lane, Oberon	Loud noise during the night Loud banging what sounded like bins being emptied	WHSE Coordinator contacted Log Yard Manager who advised that a section of the MDF chipper roof required replacement and had been removed. The Log Yard Manager contacted the resident to apologise and advise that the roof was being replaced that day. WHSE Coordinator inspected site area adjacent the resident and found no bins in that area that require emptying during the evening/night period.

Note: numbers 104 & 109 have been deleted due to duplicate in reporting

Appendix H – Community Consultation Minutes

Oberon Timber Complex



Community Consultative Committee

Minutes

Meeting: Community Consultative Committee Meeting
Venue: Borg Panels Conference Room – Chaired by Tony Truscott
Date: 14 April 2021
Time: 4.00pm
Present: Julie Booth, Tony Truscott, Mike Bitzer, Ian Gordon, Trish Gordon,
Apologies: Fran Charge, Tim Charge, Kathy Sajowitz,

Meeting opened. 4pm

Apologies submitted

Previous minutes reviewed and accepted.

Complaints

Panels Melamine complaint and noise complaint at Clover Lane from Construction.

HPP No recorded complaints from HPP.

Site Updates

HPP Report

Mike Bitzer

Safety Update

- One safety incident – employee was pinched between packs. An ambulance and Safe Work called.
- Drug and Alcohol policy fully implemented and testing now taking place, as well as incident testing.
- Update: Upset conditions – we update gate for any complaints.
- T.I. – Safety perspective – 2 injuries
- LTI – employee with broken figure on rail of loader

Environment

- Site 1: Plan in place to clean up the site in 2022.

- HPP Website up and running.

Market

- 4 year deal with employees for the EA – enables us to move on.
- Hauling logs from Wagga to keep the mill up to high volume – Forestry Commission wood.
- Bushfires caused low volumes in some areas.
- Aggressive Capital expenditure mostly focusing on noise and modernisation.
- AKD exited warehouse on road – less traffic.
- Sweep around the mill every 2 weeks to clean up.
- Market insane with the highest sales month in May.
- If immigration stays negative, then nervousness is caused.
- Tumut and Tumbarumba timber in short supply for mills.

Borg Panels

(Including Woodchem and Structaflor)

Environment

- 2 as per earlier – melamine and noise complaint.
- Trying to keep chip and dirt off roads and streets.

General Business

- Difficult 12-15 months with market volatility. Highs and lows effected different areas of the business and at different times.
- Covid 19 has made Imports, like parts etc, difficult to get in.
- Market is strong and has been busy.
- Long term, John Borg hasn't stopped investing and growing the business for sustainability, with a New LPM line with 12 new employees, a Thin Board line and a major warehouse extension.
- 6 new apprentices employed this year as well as contractors from overseas.
- Overall, 28 new employees.
- Council raised the question if we need more Community representation or feedback.

No issues from the Community.

Meeting Closed: 5.05

Next Meeting:

29 July 2021 at 4pm

Appendix I – Water Quality Exceedance Notifications



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

23 June 2020

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for TSS and stormwater sample event undertaken on 15 June 2020. Results reviewed from ALS Environmental on 23 June reports exceedance for TSS at 78mg/l (L2.5 concentration limit 50mg/l).

The two weeks preceding the sample event was a relatively dry period. A significant rain event the day before sampling occurred with the Site rain gauge recording 13.4mm.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Oberon Borg Timber Complex - SSD-7016-PA-9

Name of Document

EPL 3035 Water Quality Exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

notification of exceedance of water quality concentration discharge limit for TSS as set in EPL 3035

Applicable Conditions

Schedule	Condition
Schedule 2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

2 October 2020

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for BOD for stormwater sample event undertaken on 23 September 2020. Results reviewed from ALS Environmental on 2 October reports exceedance for BOD at 32mg/l (L2.5 concentration limit 20mg/l).

No unusual conditions were recorded during this sample event.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Oberon Borg Timber Complex - SSD-7016-PA-13

Name of Document

Water Quality Exceedance Notification

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

notification of exceedance of water quality concentration discharge limit for BOD as set in EPL 3035

Applicable Conditions

Schedule	Condition
Schedule 2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

29 October 2020

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for pH for stormwater sample event undertaken on 21 October 2020. Results reviewed from ALS Environmental on 29 October reports exceedance for pH at 8.86 (L2.5 concentration limit between 6.5 and 8.5).

No unusual conditions were recorded during this sample event.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", written over a horizontal line.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Oberon Borg Timber Complex - SSD-7016-PA-16

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
water quality exceedance notification

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?
No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

1 February 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for pH for stormwater sample event undertaken on 20 January 2021. Results received from ALS Environmental on 29 January 2021 reports exceedance for pH at 8.63pH. L2.5 concentration limit is between 6.5 and 8.5pH.

No unusual conditions were recorded during this sample event.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Oberon Borg Timber Complex - SSD-7016-PA-24

Name of Document

Water Quality Exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

water quality discharge exceedance notification

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

19 February 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Nitrogen for stormwater sample event undertaken on 10 February 2021. Results reviewed from ALS Environmental on 19 February reports exceedance for Total N at 11.9mg/l (L2.5 concentration limit 10mg/l).

No unusual conditions were recorded during this sample event.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Oberon Borg Timber Complex - SSD-7016-PA-28

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
Water quality discharge limit exceedance for Total N

Applicable Conditions

Schedule	Condition

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

1 March 2021

EPL 3035 Water Quality Exceedance

This notification is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Nitrogen for stormwater sample event undertaken on 17 February 2021. Results received from ALS Environmental reports exceedance for Total N at 15.8mg/l. EPL 3035 condition L2.5 concentration limit is 10mg/l.

No other exceedances were reported.

There was a significant rain event (i.e. >10mm) prior to this monitoring event. It is plausible that this exceedance is due to the mobilisation of wood material from site during the rain event.

Supporting this assumption is the result for Colour at 70 PCU. Though this is not an exceedance of EPL 3035 discharge limit, it may show that the Total N result is due to organic matter in the sample.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", written over a horizontal line.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Oberon Borg Timber Complex - SSD-7016-PA-29

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
Notification of water quality discharge limit exceedance

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?
No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

8 March 2021

EPL 3035 Water Quality Exceedance

This notification is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids (TSS) for stormwater sample event undertaken on 24 February 2021 at sample point identified as EPA 1 V-notch weir.

Results received from ALS Environmental reports exceedance for TSS at 656mg/l. EPL 3035 condition L2.5 concentration discharge limit is 50mg/l.

Construction were undertaking activities to the northern swale for the stormwater system component of works when an unexpected rain event occurred. This was a significant rain event that was greater than 10mm. Construction had installed sufficient erosion and sediment controls to this area as shown in Attachment 1 consisting of sediment fence and ballast in an attempt to manage their work area. A fairly large area of earth is required to be exposed for this portion of works, staging was not an option, this increased the potential for sediment laden runoff. The Construction Coordinator has advised that he checks the weather forecast daily which assists in determining the days/weeks scope of works though as stated, this event was unexpected.

An attempt was made by the site WHSE Coordinator to inspect downstream of the Borg discharge point (i.e. Kings Stockyard Creek off Hazelgrove Road) however the vegetation was too thick to get through to visually inspect the Creek.

No other exceedances were reported for this sample location.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing

ATTACHMENT 1 – PHOTO LOG

ERSED Controls to the Northern Swale





Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Oberon Borg Timber Complex - SSD-7016-PA-30

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
Notification of water quality discharge limit exceedance

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?
No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

5 March 2021

EPL 3035 Water Quality Exceedance

This notification is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Nitrogen for stormwater sample event undertaken on 24 February 2021.

Results received from ALS Environmental reports exceedance for Total N at 15.5mg/l. EPL 3035 condition L2.5 concentration limit is 10mg/l.

No other exceedances were reported.

There was a significant rain event (i.e. >10mm) prior to this monitoring event.

A site investigation has commenced in an attempt to determine if site contributors other than organic material potentially contributed to this exceedance.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", with a stylized flourish at the end.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Oberon Borg Timber Complex - SSD-7016-PA-31

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
Notification of water quality discharge limit exceedance

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

30 March 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for oil and grease for stormwater sample events undertaken on 16 March 2021 at EPA Point 1 and Point 28. Results reviewed from ALS Environmental reports exceedance for oil and grease at Point 1 at 15mg/l and at Point 2, 11mg/l (L2.5 concentration limit 10mg/l).

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for these sampling events.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", written over a faint circular stamp.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:
Borg Timber Complex Oberon - SSD-7016-PA-33

Name of Document
Water Quality Exceedance

Related matter
Incident or non-compliance Report

Type of Document Lodgement
New Document

Description of the document and reason for submission / Overview of changes made to existing documents
water quality discharge limit exceedances

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document



Borg Panels Pty Ltd
ABN: 54 139 584 900

2 Wella Way
Somersby NSW 2250
Australia

Ph: 02 4340 9800
Fax: 02 4340 5841

9 April 2021

EPL 3035 Water Quality Exceedance

This is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Suspended Solids (TSS) for stormwater sample event undertaken on 24 March 2021. Results reviewed from ALS Environmental on 9 April reports exceedance for TSS at 54mg/l (L2.5 concentration limit 50mg/l).

No unusual conditions were recorded during this sample event.

No other exceedances of pollutants listed in condition L2.5 of EPL 3035 were reported for this sampling event.

This information will be included in EPL 3035 Annual Return and SSD 7016 Annual Review.

Regards

A handwritten signature in black ink, appearing to read "J Blomberg", written over a horizontal line.

Jacqueline Blomberg
Environmental Manager
Borg Manufacturing



Post Approval

Proponent Details

Personal Details

Title	Mrs
First Name	Jacqueline
Last name	Blomberg
Email	blombergj@borgs.com.au
Phone	0436609556
Role/Position	Environmental Manager
Address	2 WELLA WAY SOMERSBY New South Wales 2250 AUS

Company Details

Applying as a company/business?

Yes

Company Name	BORG MANUFACTURING PTY LIMITED
ABN	31003246357
Branch Name	

Primary Contact

Title	Mr
First Name	Victor
Last Name	Bendevski
Email	bendevskiv@borgs.com.au
Phone	0410327635
Role/Position	Administrator

Post Approval Details

Project:

Borg Timber Complex Oberon - SSD-7016-PA-34

Name of Document

Water Quality Exceedance

Related matter

Incident or non-compliance Report

Type of Document Lodgement

New Document

Description of the document and reason for submission / Overview of changes made to existing documents

notification of exceedance of water quality discharge limit

Applicable Conditions

Schedule	Condition
2	B31

Consultation through the Major Projects portal

Consultation required as part of the preparation of the document?

No

Attachment of Post Approval application

File Name	Category
Notification - EPL 3035 Water Quality Exceedance.pdf	Post Approval Document