

Annual Review 2019/20

Borg Panels Oberon

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

JULY 2020

Revision History



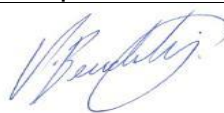
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				Name / Position	Signature
0	29/05/2020	Jacqueline Blomberg Environmental Manager	Draft for review	Victor Bendevski Environmental and Regulatory Compliance	
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Annual Review Title Block

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
<p><i>I, Victor Bendevski, certify that this audit report is a true and accurate record of the compliance status of Borg Panels Oberon for the period 1st May 2019 to 30th April 2020 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd</i></p> <p>Note.</p> <p>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></p> <p>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></p>	
Name of authorised reporting officer	Victor Bendevski
Title of authorised reporting officer	Environment and Regulatory Compliance
Signature of authorised reporting officer	
Date	30/07/2020

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 2019 to 30 April 2020. 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) manufacturing plant and a mouldings manufacturing plant. Construction of the particleboard manufacturing plant has been complete and was commissioned during this reporting period.

The 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 and O2.1, and SSD 7016 condition of approval C3 as listed in Table 1. These non-compliance items are discussed in Section 4.4 Surface Water, Section 6.1 Incidents and Section 4.6 Noise.

One environmental incident was reported to the EPA during this review period which relates to non-compliance of EPL 3035 condition O2.1 and is discussed in Section 6.1 of this Review.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
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 discharge limits	4.4 Surface Water
EPL 3035	Section 4 O2.1	Maintenance of plant and equipment	Non-compliant	Emission of wood fibre from Conti 1 reject cyclone discharging off-site	6.1 Incidents
SSD 7016	C3	Carry out construction activities in accordance with the CEMP (and by association CNMP)	Non-compliant	Quarter 3 construction noise monitoring event not undertaken during this Review period	4.6 Noise
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;
- Standard particleboard
- Decorative laminated MDF and particleboard; and
- Treated paper for the lamination of MDF and particleboard.

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.

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	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	Minister for Planning	Site layout changes Surrender of DA27/95
Development Consent SSD 7016 MOD 2	29 November 2019	Minister for Planning	Installation of an electricity generating gas turbine and ancillary equipment

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: <ul style="list-style-type: none"> 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

Development Consent SSD 7016 – Condition C11	Section of Annual Review
(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 Air Quality Management Plan – lodged 24 March 2020 via Major Projects portal;
- Operational Noise Management Plan - outstanding - to be submitted to DPIE; and
- Waste Management Plan - no submission to DPIE required, only minor change to WMP to include for updated EPL 3035 waste description.

The following Plans were developed:

- Spring Fed Dam Reclamation Plan – submitted to DPIE 3 June 2019. Approval received 12 July 2019.

1.9 Contacts

Table 5 outlines the contact details for site personnel responsible for operating the Borg Panels facility.

Table 5 Site Personnel

Name	Title	Contact Details
Tony Truscott	Facility Manager	+61 436 613292
Sharon Cutting	Work, Health, Safety and Environment Coordinator	+61 408 635258
Victor Bendeviski	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 2018/19 Annual Review for implementation during this 2019/20 reporting period.

Table 6 Proposed Activities in 2018/19 Reporting Period

Activities Proposed in 2018/19 Reporting Period	Results achieved in 2019/20 Reporting Period
Continue implementation of the 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.
Deliver Environmental Awareness Training packages for Air and Waste	Environmental Awareness Training packages for Air and Waste were delivered to Supervisors/Area Leaders during this reporting period. Supervisors/Area Leaders commenced roll out to their teams.
Complete commissioning of particleboard plant and related reporting	Commenced commissioning of particleboard line. Majority of the proposed construction activities were successfully completed. Residual items that form SSD 7016 MOD 1 are to be complete during the next reporting period. It is expected items under MOD 2 will also be complete during this next reporting period.
Commission cogeneration units	Cogen units commissioned September 2019. Post Commissioning Air Monitoring Report (SSD 7016 condition B9) submitted to EPA on 13/02/20. Response from EPA received 31/03/20 surmising the Report had not adequately demonstrated compliance and recommended Borg prepare a revised Report. Additional air emission sample event scheduled for 12/05/20. Revision 2 will be prepared and submitted to EPA for comment.
Complete landscaping works associated with the project	Complete along the northern, southern and western boundaries

Complete connection of new sedimentation dam (i.e. swale) to allow discharge to unnamed creek (EPA Pt 28)	Construction of first flush dam, emergency catchment and connection to stormwater swale system complete. Nil discharge from this dam (EPA Pt 28) during the 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	As reported in this Annual Review. All additional conditions pertaining to MOD 1 have been incorporated into Borg document OBERON Approvals and Licencing Compliance Register.
Continue discussion with air quality consultant Todoroski Air Sciences regarding the pollution reduction program	Borg have installed and utilised best available technologies including cyclones for the drying process, WESP/scrubber system for the dryer with exhaust gas circulation and best available press fume exhaust system. Borg continue to investigate potential installation of units/power generators which have the ability to reduce pollutants emitted from the facility.
Complete construction of building and associated infrastructure at the northern section of the site in accordance with SSD 7016 MOD 1	Approximately 90% complete.
Submit S4.55 Modification for installation and operation of gas turbine generator set and ancillary infrastructure to DPE (DPIE)	MOD 2 submitted to DPIE 8/09/19. Modification of Development Consent issued 29/11/19.

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 226,991m³ of MDF and 265,806m³ of particleboard.

2.2 Facility Improvements

The following improvements were made to existing site infrastructure, plant and/or equipment as a result of hazard identification or environmental incidents that occurred during the reporting period:

- installation of split SCADA/Citect display alarm system to Conti 1 reject cyclone providing two independent alarms for both cyclone blockage detectors;
- additional noise attenuation installed at the facilities southern boundary;
- permanent pump system installed at dryer waste water pit to control water level and manage potential overflow to stormwater drain;
- additional bunding installed to the WESP deluge chute as further control method to manage potential escape of waste water to enter stormwater drain;
- new waste water transfer pipe fitted at water treatment plant to avoid blockages resulting in overflow of waste water (to GPT);
- purchase of new street sweeper able to attend to public roadways to manage fibre/bark on roads;
- noise attenuation installed around particleboard air grader fans;
- noise attenuation to particleboard chipper roller doors/noise wall;
- dedicated wash bay for truck at particleboard complete with oil water separator;
- commenced wood recycling program; and
- stormwater harvesting commenced from new dams, reduce reliance on town water, prevent discharge from site.

2.3 Site Activities

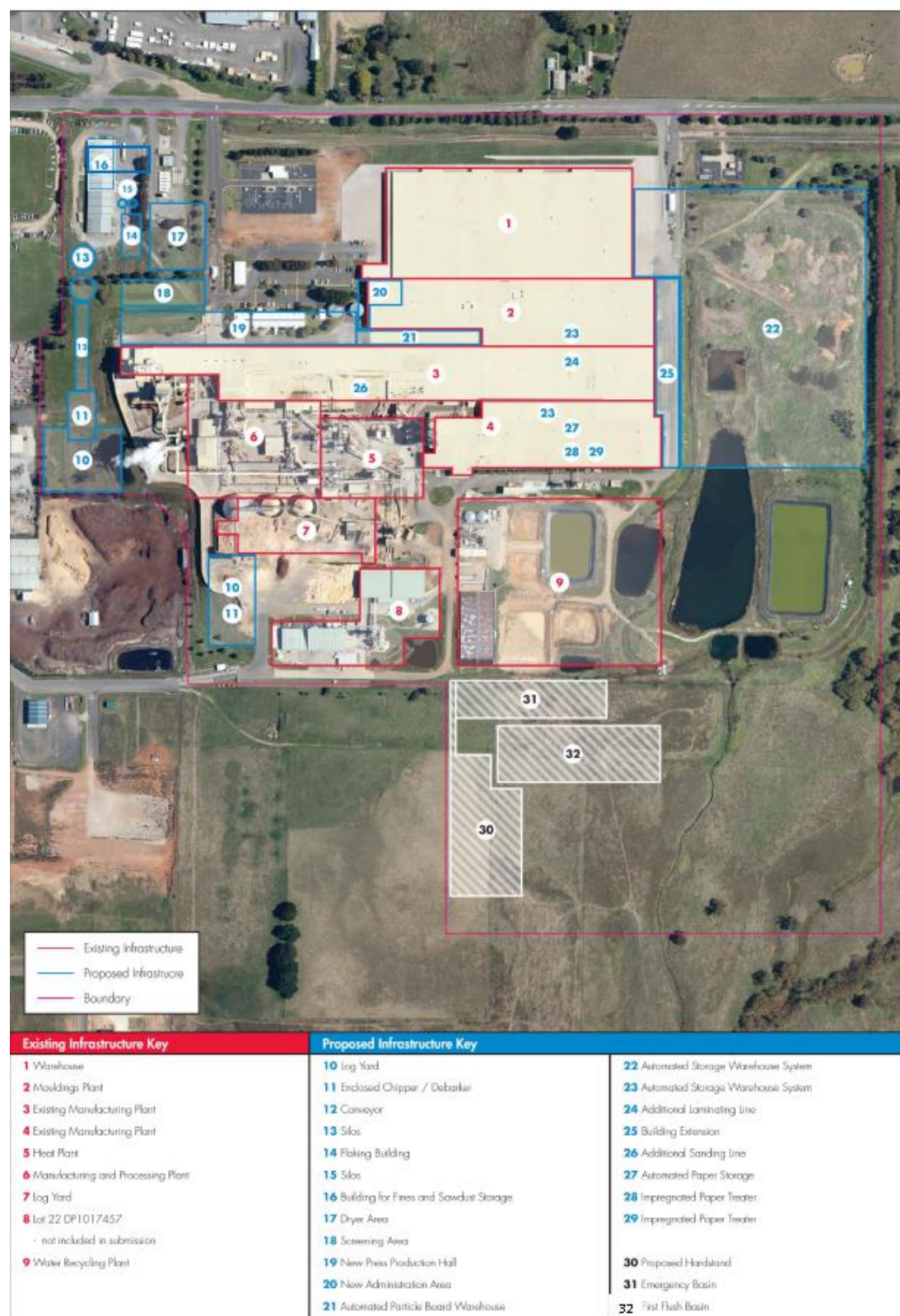
The following activities associated with the construction of the particleboard facility and modifications to existing operations occurred during the reporting period:

- construction of the new first flush basin, emergency catchment pond and connection to surface water swale system complete. Infrastructure points 31 & 32 in Figure 2;
- construction of new Gate House and associated ancillaries for Gate 4 complete;
- majority of earthworks at the northern boundary for construction of mouldings warehouse complete;
- construction of mouldings warehouse and building extension 90 percent complete. Infrastructure point 22 and 25 in Figure 2;
- proposed key infrastructure shown in Figure 2 as points 10 to 21, 23, 24 and 26 to 29 complete; and
- reclamation works at the Spring Dam (approved by DPIE 12/07/19) complete.

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;
- environmental awareness training packages developed for air, waste, water and noise and delivered to Site Supervisors/Area Leads who commenced roll out to their wider teams;
- attended and non-attended noise verification monitoring undertaken by Borg; and
- site wide communication of environmental requirements via EHSR Alerts.

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 2019/20

Month	Description				Destination
	Litres	m ³	Tonnes		
May 2019			10.74	Waste requiring burial	Bathurst Regional Council
	5800			Waste Oil	Nationwide Oil
		70		Ash	Oberon Council Waste Depot
		550		General	Oberon Council Waste Depot
June 2019		110		Ash	Oberon Council Waste Depot
	2100			Waste Oil	Nationwide Oil
		610		General	Oberon Council Waste Depot
July 2019		620		General	Oberon Council Waste Depot
	4500			Waste Oil	Nationwide Oil
August 2019			9.82	Waste requiring burial	Bathurst Regional Council
		520		General	Oberon Council Waste Depot
September 2019			18.46	Waste requiring burial	Bathurst Regional Council
	6200			Waste Oil	Nationwide Oil
		20		Building and demolition	Oberon Council Waste Depot
		720		General	Oberon Council Waste Depot
October 2019			11.44	Waste requiring burial	Bathurst Regional Council
	7100			Waste Oil	Nationwide Oil
			13.72	Building and demolition	Bathurst Regional Council
		40		Building and demolition	Oberon Council Waste Depot
		580		General	Oberon Council Waste Depot

Month	Description				Destination
	Litres	m ³	Tonnes		
November 2019		120		Building and demolition	Oberon Council Waste Depot
		600		General	Oberon Council Waste Depot
December 2019			11.48	Waste requiring burial	Bathurst Regional Council
	2700			Waste Oil	Nationwide Oil
		40		Building and demolition	Oberon Council Waste Depot
		610		General	Oberon Council Waste Depot
January 2020			11.56	Waste requiring burial	Bathurst Regional Council
		20		Building and demolition	Oberon Council Waste Depot
		450		General	Oberon Council Waste Depot
February 2020			17.56	Waste requiring burial	Bathurst Regional Council
	5600			Waste Oil	Nationwide Oil
		150		General	Oberon Council Waste Depot
March 2020			24.4	Waste requiring burial	Bathurst Regional Council
	3600			Waste Oil	Nationwide Oil
		960		General	Oberon Council Waste Depot
April 2020			33.76	Waste requiring burial	Bathurst Regional Council
	3100			Waste Oil	Nationwide Oil
		20		Building and demolition	Oberon Council Waste Depot
		650		General	Oberon Council Waste Depot
TOTAL		7020		General Waste	Oberon Council Waste Depot
		260		Building Demolition Waste	Oberon Council Waste Depot
		180		Ash	Oberon Council Waste Depot
		13.72		Building Demolition Waste	Bathurst Regional Council
		149.22		Waste requiring Burial	Bathurst Regional Council
	40700			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;
- Ash being the bottom ash removed from the furnaces;

- Waste requiring burial made up of urea formaldehyde spade-able resin and paraffin wax bladders;
- Building and demolition waste including bricks, concrete, paper, plastics, glass, 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 and MOD 2), 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

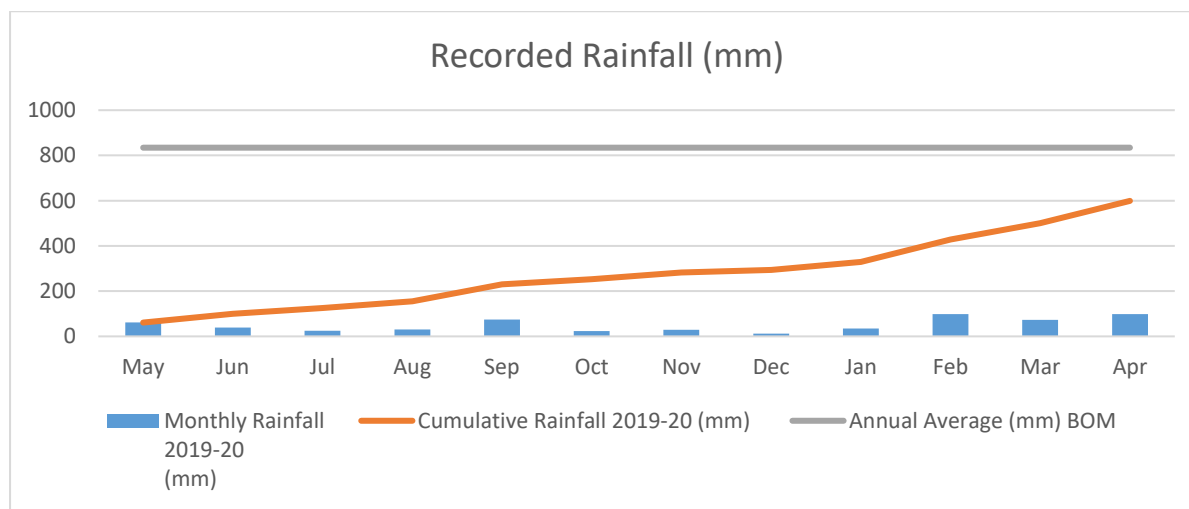
Borg Panels operate and maintain a meteorological monitoring station located east of the existing Spring Dam (EPA Point 26). The following section summarises the meteorological data for the 2019/20 reporting period.

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 599mm. This is 235.3mm below the annual mean rainfall (834.3mm) for the Oberon region (Bureau of Meteorology, Oberon Springbank Site No. 063063).

Table 8 Recorded Rainfall 2019/20

Total Monthly Rainfall (mm)												
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
61	39.2	25.4	29.8	74	23.6	29.6	11.4	34.8	98.8	73	98.4	599
Number of Rain Days (≥0.2mm)												
10	10	9	7	6	6	4	2	10	8	8	9	89

Figure 3 Recorded Rainfall at Borg Panels Meteorological Station (mm) 2019/20

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 2019/20

Minimum and Maximum Monthly Temperatures (°C)											
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
-2.8	-5.7	-4.4	-5.9	-4.2	-1.2	1.1	2	8.8	6.8	2.8	-0.8
19.2	15.9	14.4	17.2	21.3	26.7	33.7	36.7	34.8	37.1	29.4	21.2

4.2.3 Wind Speed and Direction

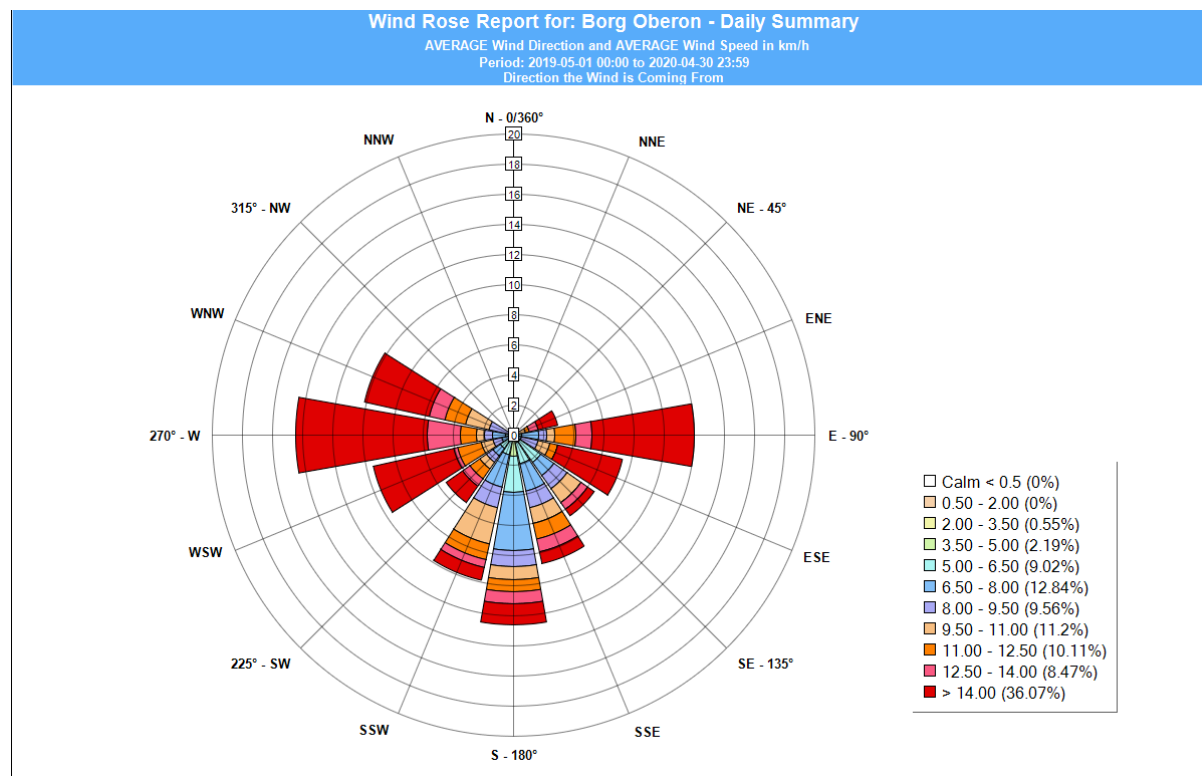
The site weather station recorded wind speed and direction data is summarised in Table 10. The annual wind rose for the reporting period is displayed in Figure 4.

Table 10 Monthly Daily Wind Data 2019/20

Month	Maximum Wind Speed (km/hr)	Mean Wind Speed (km/hr)	Dominant Wind Direction
May 2019	52.1	11.1	WNW
June 2019	41.5	11.2	SSW
July 2019	54.7	14.6	WSW
August 2019	51.1	13.7	W
September 2019	62.3	13.5	SW
October 2019	47.3	11.1	WNW
November 2019	54.8	13.8	WSW
December 2019	54.3	12.7	SSE
January 2020	55.7	13.7	SE
February 2020	123.2	14.3	ESE

March 2020	45.1	12.7	S
April 2020	53.6	12.3	SW

Figure 4 Daily Summary Average Wind Rose 2019/20



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

Borg Panels operated six dust depositional gauges within and around the facility up until March 2020 when DMG 4 was removed to allow for Construction to complete modifications to the surface water management system. The remaining five gauges continue to be operational. 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 swale
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 newly constructed materials handling building. The dust deposition criterion however does not apply to the on-site dust conditions, only off-site dust levels.

DMG 5 and DMG 6 are located at off-site receivers. DMG 5 and DMG 6 results were generally below the applicable dust deposition criteria (4g/m^2) with the exception of exceedances displayed and discussed in Table 13.

Table 13 Air Quality Exceedances

Dust Depositional Gauge	Date	Result mg/m ²	Comment
DMG 5	NOV 2019	4.1	Minor 0.1g/m ² exceedance, no comment.
	DEC 2019	5	Exceedance potentially due to very low rainfall/very dry period/westerly winds.
	FEB 2020	5.6	Unlikely site source due to average wind direction during monitoring period, ESE (see Table 11).
DMG 6	DEC 2019	4.6	Exceedance potentially due to very low rainfall/very dry period/westerly winds.
	JAN 2020	6.4	Strong north-westerly winds recorded for monitoring period. DWG 4 (on-site gauge northern boundary) recorded 8.6g/m ² demonstrating dust likely from an off-site source.
	FEB 2020	4.7	Minor 0.7g/m ² exceedance, no comment.

It is unlikely that these exceedances were resultant of Borg Panels operations or construction activities due to dominant wind direction as shown in Table 10, being south-westerly or south-easterly. The annual average recorded for DMG 5 and DMG 6 is well under the criteria of 4g/m² for this reporting period (see Table 14).

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 14 provides a summary of Borg Panels annual average results for insoluble solids during the reporting period and for 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 14 Dust Depositional Gauges Annual Average

No.	Location	Annual Average Insoluble Solids (g/m ² /month) 2017/18	Annual Average Insoluble Solids (g/m ² /month) 2018/19	Annual Average Insoluble Solids (g/m ² /month) 2019/20
DMG 1	Borg Panels eastern boundary with Woodchem	9.4	9.3	7.1
DMG 2	Materials handling building	3.9	5.2	4.6
DMG 3	Water treatment plant	1.2	2.7	2.8
DMG 4	Northern boundary swale	0.9	2.9	3.9
DMG 5	Highlands Motor Inn	1.7	1.9	2.3

DMG 6	Albion Street east of Borg Panels plant	0.9	1.7	2.4
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DMG 1 and DMG 2 returned results showing exceedances of the annual average criteria of 4g/m². As previously stated, DMG 1 is located adjacent an unsealed internal road and is exposed to regular traffic and day-to-day activities. As this is an on-site gauge the criteria noted in Table 11 does not apply. Table 15 does show for DMG 1 a reduction in average annual insoluble solids over time.

DMG 2 experienced a minor exceedance for the annual average by 0.6g/m². This area is now an operational zone and serves as a materials handling area. During the previous reporting period this area was under construction. All other monitoring points were below the annual average criteria.

4.3.2 Air Emissions Monitoring Points

In accordance with EPL 3035 Borg Panels monitor air emissions from the plant. The locations of air emission monitoring points are listed in Table 15 and are consistent with monitoring/discharge points noted in EPL 3035 licence version date 4 September 2019.

There are no air emission monitoring requirements under SSD 7016. Full laboratory results are attached to this document as Appendix B.

Table 15 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)

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 and 32 as described in Table 15.

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 16. 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 16 EPL 3035 Air Concentration Limits

Pollutant	Units of Measure	100 Percentile Concentration Limit
Total Solid Particulates	mg/m ³	200
Formaldehyde	mg/m ³	5

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 15 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 17-31.

Table 17 Air Emissions Monitoring Results EPA Identification Point 4

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	<2	3.3	<2
Formaldehyde	mg/m ³	Yearly	1.8	2.8	2.4

Table 18 Air Emissions Monitoring Results EPA Identification Point 5

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	2.2	3.1	<2
Formaldehyde	mg/m ³	Yearly	<0.02	1.5	1.1

Table 19 Air Emissions Monitoring Results EPA Identification Point 7

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	29	43	45
Formaldehyde	mg/m ³	Yearly	-	-	2
Nitrogen oxides	mg/m ³	Yearly	-	-	210
PM10	mg/m ³	Yearly	-	-	32
Smoke	Obscuration	Every 6 months	-	-	0

Table 20 Air Emissions Monitoring Results EPA Identification Point 8

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	26	43	26
Formaldehyde	mg/m ³	Yearly	-	-	2.8
Nitrogen Oxides	mg/m ³	Yearly	-	-	170
PM10	mg/m ³	Yearly	-	-	24
Smoke Emissions	Obscuration	Every 6 months	-	-	0

Table 21 Air Emissions Monitoring Results EPA Identification Point 9

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	36	21	71
Formaldehyde	mg/m ³	Yearly	5.8	4.8	1.5
Nitrogen Oxides	mg/m ³	Yearly	220	88	190
PM10	mg/m ³	Yearly	32	18	9.1
Smoke Emissions	Obscuration	6 Monthly	1	0	0
Volatile Organic Compounds	mg/m ³	Yearly	8.2	5.5	-

Table 22 Air Emissions Monitoring Results EPA Identification Point 10

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	42	28	110
Formaldehyde	mg/m ³	Yearly	6.5	4.9	2
Nitrogen Oxides	mg/m ³	Yearly	220	63	200
PM10	mg/m ³	Yearly	36	23	21
Smoke Emissions	Obscuration	6 Monthly	1	0	0
Volatile Organic Compounds	mg/m ³	Yearly	2.4	8.2	-

Table 21 and Table 22 show an increase in Total Solid Particles from the previous year's 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. Regardless, these results remain below the approved discharge concentration limits as shown in Table 16.

Table 23 Air Emissions Monitoring Results EPA Identification Point 11

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
* Total Solid Particles	mg/m ³	Yearly	140*	140*	-
Formaldehyde	mg/m ³	Yearly	1.9	0.34	-
Nitrogen Oxides	mg/m ³	Yearly	670	550	-
PM10	mg/m ³	Yearly	97	78*	-
Volatile Organic Compounds	mg/m ³	Yearly	0.26	0.4	-
Smoke Emissions	Obscuration	6 Monthly	0	0	-

Note: *Corrected to 6.5% CO₂ mg/m³**Table 24 Air Emissions Monitoring Results EPA Identification Point 12**

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Every 3 years	29	-	-
Formaldehyde	mg/m ³	Every 3 years	2.5	-	-
Nitrogen Oxides	mg/m ³	Every 3 years	<3	-	-
PM10	mg/m ³	Every 3 years	24	-	-
Volatile Organic Compounds	mg/m ³	Every 3 years	0.88	-	-

Note: next due for sampling 2021

Table 25 Air Emissions Monitoring Results EPA Identification Point 18

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
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 26 Air Emissions Monitoring Results EPA Identification Point 19

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
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 27 Air Emissions Monitoring Results EPA Identification Point 27

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	15	5.3	13
Formaldehyde	mg/m ³	Yearly	1.5	2.1	1.6
Nitrogen Oxides	mg/m ³	Yearly	<3	<20	<3
PM10	mg/m ³	Yearly	15	2.2	9.6

Table 28 Air Emissions Monitoring Results EPA Identification Point 29

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	15	5.3	<2
Formaldehyde	mg/m ³	Yearly	1.5	2.1	0.8
Nitrogen Oxides	mg/m ³	Yearly	<3	<20	<3
PM10	mg/m ³	Yearly	15	2.2	<2
Smoke Emissions	Obscuration	Yearly	0.27	0.66	0

Table 29 Air Emissions Monitoring Results EPA Identification Point 30

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	15	5.3	1.8
Formaldehyde	mg/m ³	Yearly	1.5	2.1	0.87
Nitrogen Oxides	mg/m ³	Yearly	<3	<20	<3
PM10	mg/m ³	Yearly	15	2.2	<3
Smoke Emissions	Obscuration	Yearly	0.27	0.66	0

Table 30 Air Emissions Monitoring Results EPA Identification Point 31

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	15	5.3	27
Formaldehyde	mg/m ³	Yearly	1.5	2.1	0.57
Nitrogen Oxides	mg/m ³	Yearly	<3	<20	<3
PM10	mg/m ³	Yearly	15	2.2	25
Smoke Emissions	Obscuration	Yearly	0.27	0.66	0

Table 31 Air Emissions Monitoring Results EPA Identification Point 32

Pollutant	Units	Frequency	2017/18	2018/19	2019/20
Total Solid Particles	mg/m ³	Yearly	15	5.3	3.6
Formaldehyde	mg/m ³	Yearly	1.5	2.1	0.63
Nitrogen Oxides	mg/m ³	Yearly	<3	<20	180
PM10	mg/m ³	Yearly	15	2.2	*
Smoke Emissions	Obscuration	Yearly	0.27	0.66	0

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

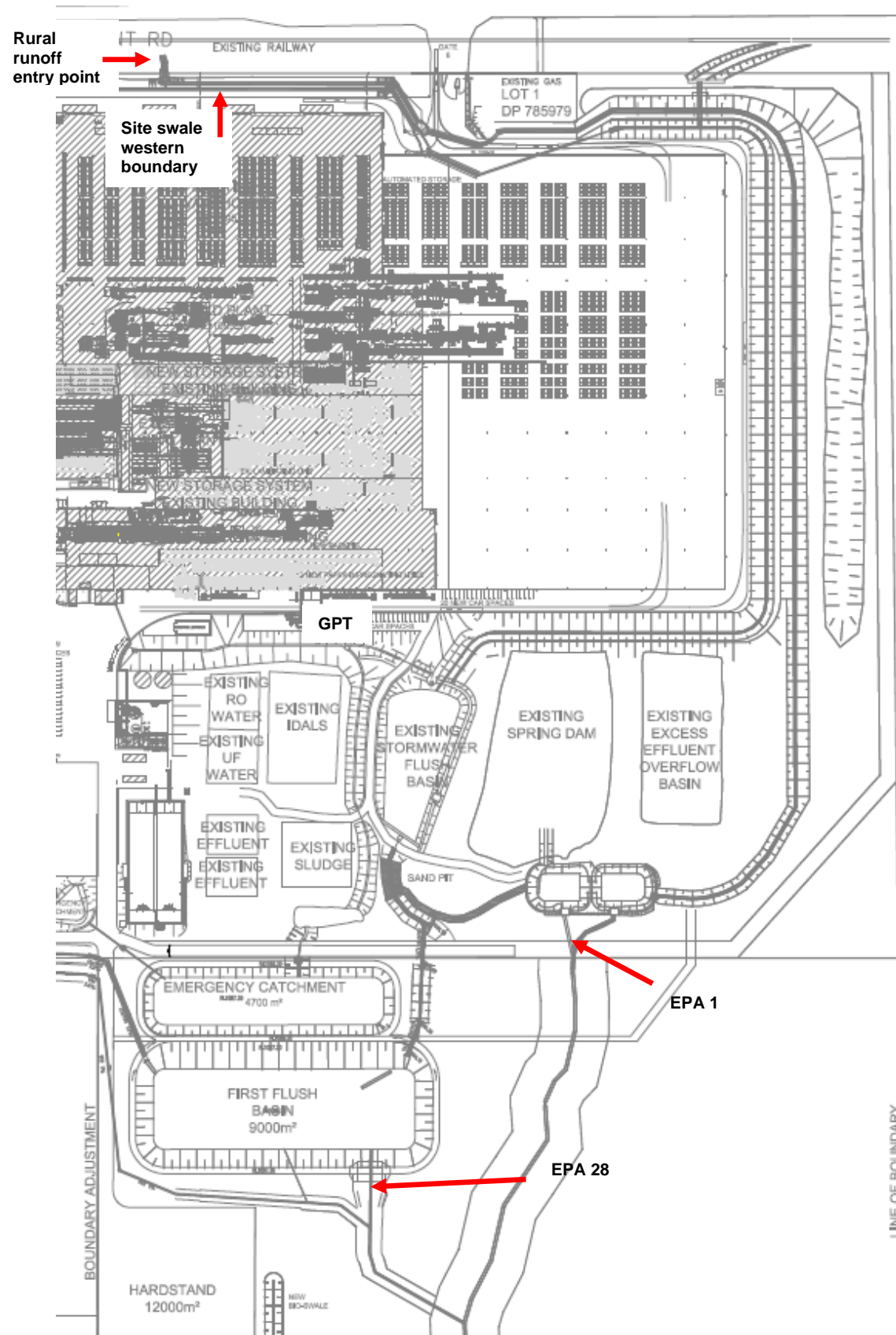
There were nil exceedances of air concentration limits during this reporting period.

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 particleboard flooring facility 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 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 existing stormwater first flush basin
- Any overflow from the existing stormwater first flush basin is directed into the new first flush basin
- Water captured in the existing and new basins is harvested by the site water treatment plant for reuse in the production system
- Stormwater harvesting averaged 60m³/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 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, Borg Panels undertakes water quality monitoring weekly during discharge to manage compliance requirements. During this reporting period water discharge was from EPA Point 1 (V-Notch). As stated in section 1.10 Actions Required from Previous Annual Review, works related to EPA Point 28 were complete during this period however there was nil discharge from this point and therefore nil monitoring conducted. The concentration limit of a pollutant discharged from EPA Point 1 & 28 in EPL 3035 is shown below in Table 32.

Table 32 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 2019/20 reporting period are provided in Appendix C Surface Water Monitoring Data. Table 33 provides a summary of Borg Panels annual average water monitoring results for discharge from EPA Point 1 during the reporting period and for the previous two years. This shows that for the 2019/20 reporting period, the annual average for all pollutants were below the concentration limit set in EPL 3035.

Table 33 Annual Average Water Quality Monitoring Results EPA Point 1

Pollutant	Units of Measure	2017/18	2018/19	2019/20
Aldrin	µg/L	0	0	0
Biochemical Oxygen Demand	mg/L	12.5	15.1	8.2
Colour	Hazen	77.5	120.1	39.2
Dieldrin	µg/L	0	0	0
Methylene Blue Active Substances	mg/L	0.1	0.3	0.1
Nitrogen (Total)	mg/L	5.4	6.3	3.7
Oil and Grease	mg/L	2.5	7.5	5.1
pH	pH	7.4	7.6	7.6
Phosphorus (Total)	mg/L	0.1	0.1	0.1
Total Suspended Solids	mg/L	30	31.3	28.9

Thirty samples (sample events) were collected and analysed during discharge in the 2019/20 reporting period. Five of these events returned results where water pollution limits noted in Table 33 were exceeded. The EPA and DPIE were notified of four of the five exceedances (see Appendix I Water Quality Exceedances Notification). The missing notification from sample event dated 11/02/20 was an oversight of Borg due to unforeseeable events. Appendix C displays the exceedance information for each event including sample date, pollutant and result.

Although the exceedances experienced during this period were predominantly very minor, investigations were undertaken in an attempt to determine potential site 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.

Those sample events that experienced higher exceedances of pollution concentration limits (i.e. 19/08/19 BOD 55mg/l, 11/02/20 TSS 88mg/l and 26/03/20 TSS 152mg/l) were preceded by relatively dry periods prior to the rain event (and subsequent sample event) and it is considered likely that vegetative matter and sediment mobilised within the site swale system, contributing to the sample result. It is likely that the result of TSS 152mg/l on 26/03/20 was in part due to construction activities in the northern section of the site. Though ERSED controls had been installed and inspected, the significant rain event (24.5mm) mobilised an amount of sediment from across this exposed section of site into the stormwater system.

4.5 Groundwater

In accordance with EPL 3035, Borg Panels monitor four groundwater bores on site. The locations of groundwater monitoring points are listed in Table 34.

Table 34 Location of Groundwater Monitoring Bores

EPA Identification No.	Location Description
14	North western boundary of site *Bore temporarily unavailable due to construction activities. To be reinstated.
15	East of stormwater treatment pond
16	East of Woodchem
24	North of western end of Spring dam

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 35-38 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 35 Groundwater Monitoring Results EPA Identification Point 14 (GW05)*

Pollutant	Unit of Measure	Frequency	2017/18	2018/19	2019/20
Aldrin	µg/L	Yearly	<0.5	<0.5	-
Ammonia as N	mg/L	Yearly	0.23	0.02	-
Chemical Oxygen Demand	mg/L	Yearly	<10	<10	-
Electrical Conductivity	µS/cm	Yearly	358	377	-
Dieldrin	µg/L	Yearly	<0.5	<0.5	-
Formaldehyde	mg/L	Yearly	0.2	<0.1	-
pH	pH Units	Yearly	7.66	6.8	-
Total Dissolved Solids	mg/L	Yearly	220	180	-
Total Organic Carbon	mg/L	Yearly	1	<1	-
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	-
Total Suspended Solids	mg/L	Yearly	31	13	-
Water Height	m	Yearly	7.3	6.7	-

Table 36 Groundwater Monitoring Results EPA Identification Point 15 (GW02)

Pollutant	Unit of Measure	Frequency	2017/18	2018/19	2019/20
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	<0.01	0.03	0.02
Chemical Oxygen Demand	mg/L	Yearly	18	15	<10
Electrical Conductivity	µS/cm	Yearly	1035	1032	918
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	0.1	<0.1	0.1
pH	pH Units	Yearly	7.20	6.2	6.6
Total Dissolved Solids	mg/L	Yearly	618	500	483
Total Organic Carbon	mg/L	Yearly	4	4	4
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	42	46	40
Water Height	m	Yearly	4.2	2.5	-

Table 37 Groundwater Monitoring Results EPA Identification Points 16 (GW01)

Pollutant	Unit of Measure	Frequency	2017/18	2018/19	2019/20
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.03	0.04	0.03
Chemical Oxygen Demand	mg/L	Yearly	14	<10	11
Electrical Conductivity	µS/cm	Yearly	199	189	228
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	6.6	6.2
Total Dissolved Solids	mg/L	Yearly	110	98	127
Total Organic Carbon	mg/L	Yearly	3	2	5
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50

Total Suspended Solids	mg/L	Yearly	415	73	52
Water Height	m	Yearly	1.0	0.9	0.74

Table 38 Groundwater Monitoring Results EPA Identification Points 24 (GW26)

Pollutant	Unit of Measure	Frequency	2017/18	2018/2019	2019/20
Aldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	0.01	0.03	<0.01
Chemical Oxygen Demand	mg/L	Yearly	12	<10	<10
Electrical Conductivity	µS/cm	Yearly	400	244	486
Dieldrin	µg/L	Yearly	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	<0.1	<0.1	<0.1
pH	pH Units	Yearly	7.1	6.2	6.8
Total Dissolved Solids	mg/L	Yearly	284	142	283
Total Organic Carbon	mg/L	Yearly	1	1	1
Total Petroleum Hydrocarbons	µg/L	Yearly	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	37	24	6
Water Height	m	Yearly	1.71	1.5	1.52

As noted in Table 35, Point 14 was unavailable for sampling during this reporting period due to construction activities, being works to the site stormwater/surface water system and the noise mound located along the northern boundary. It is expected that these works will be complete and GW05 reinstated for monitoring during the 2020/21 reporting period.

At EPA Point 15 (Table 36), a decrease in Electrical Conductivity and Total Dissolved Solids is evident from the previous review period with all other analytes similar to the 2018/19 period.

Results for EPA Point 16 (Table 37) show an increase in Electrical Conductivity and Total Dissolved Solids and decrease in Total Suspended Solids from the previous two review periods. All other analytes remained relatively constant with the 2018/19 records.

EPA Point 24 (Table 38) also shows a significant increase in Electrical Conductivity and Total Dissolved Solids when compared with the 2018/19 period though these are more similar to those levels recorded for the 2017/18 period. The 2019/20 results show a significant decrease in Total Suspended Solids when compared with the two previous review periods.

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 39. In accordance with Development Consent SSD 7016 all construction activities related to the development must also comply with the limits in Table 39.

Table 39 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 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 39. 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 2019/20 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 7 and was undertaken over 24/25th June 2019. Table 40 presents results of the attended annual noise monitoring event.

Figure 7 Borg Panels noise monitoring locations**Table 40 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	24/06/2019 20:42	7.4	D	50	No	40	NA
NM2	24/06/2019 20:20	5.9	D	50	No	42	NA
NM3	24/06/2019 21:31	6.4	D	50	No	IA	NA
NM4	24/06/2019 21:05	6.2	D	50	No	NM	NA
NM1	24/06/2019 22:55	4.8	E	45	No	38	NA
NM2	24/06/2019 23:16	4.5	E	45	No	43	NA
NM3	24/06/2019 22:00	5.5	D	45	No	IA	NA
NM4	24/06/2019 22:26	4.9	E	45	No	25	NA
NM1	25/06/2019 12:19	4.4	B	55	No	45	NA
NM2	25/06/2019 11:58	4.4	D	55	No	45	NA

NM3	25/06/2019 13:02	5.0	D	55	No	IA	NA
NM4	25/06/2019 12:39	5.2	D	55	No	IA	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 39. 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.

During this reporting period noise monitoring was not undertaken for Quarter 3, this was an unfortunate oversight by Borg. It is worth noting that there were nil exceedances recorded during all other attended noise monitoring events for this reporting period and further, historically Borg has demonstrated nil exceedance of those limits presented in Table 39 through quarterly and annual noise monitoring events.

As requested by DPIE in response to review of Revision 1 of this report (letter received 17 August 2020), construction activities that took place during Quarter 3 of this reporting period (July – September 2019) included the following:

- Continue construction of northern warehouse extension including fill activities and concrete works
- Reclamation works to the Spring Dam
- Extension of northern boundary noise wall
- Earthworks for stormwater system
- Installation of stormwater infrastructure

Majority of these construction activities were undertaken at the northern section of the site with some minor earthworks occurring in the eastern area, and stormwater associated work activities along the western boundary.

Attended monitoring locations are shown in Figure 7. 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 41, 42 and 43 show monitoring results for quarters 2, 4 and 1 respectively. All reference notes are included below Table 43.

Table 41 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	25/06/2019 12:19	4.4	B	55	No	45	NA
NM2	25/06/2019 11:58	4.4	D	55	No	45	NA
NM3	25/06/2019 13:02	5.0	D	55	No	IA	NA
NM4	25/06/2019 12:39	5.2	D	55	No	IA	NA

Table 42 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	20/11/2019 09:14	3.2	C	55	No	40	NA
NM2	20/11/2019 09:58	2.3	A	55	Yes	37	Nil
NM3	20/11/2019 08:50	2.8	C	55	Yes	35	Nil
NM4	20/11/2019 09:34	2.8	C	55	Yes	<35	Nil

Table 43 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	29/03/2020 16:21	3.2	A	55	No	45	NA
NM2	29/03/2020 16:45	3.1	C	55	No	44	NA
NM3	30/03/2020 10:50	4.0	D	55	No	41	NA
NM4	29/03/2020 17:07	3.3	C	55	No	42	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 Global Acoustics for each event are attached to this document as Appendix F.

5 Community Relations

5.1 Environmental Complaints

Nine community complaints were received during the 2019/20 reporting period from eight complainants. Site investigations were conducted by the WHSE Coordinator and included review of plant operation 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 complaint.

Five of these complaints were related to noise. Attended and unattended noise monitoring was undertaken by Borg Panels WHSE Coordinator as well as by a third-party noise consultant. Results of the investigations and review of noise monitoring data did not show any evidence of breach of EPL 3035 noise limits (see Table 39 for limits). For each complaint received, Borg provided a response to the complainant in a timely manner. Regardless of our demonstration of compliance, Borg Panels will continue to undertake ad hoc attended and unattended noise monitoring to ensure nil noise nuisance to local residents from site activities.

Two complaints received were related to dust and two to odour. No evidence of breach was found following investigations for the odour complaints. The dust complaints were received on the same day from residents who live east of the facility and were likely valid. Minor earthworks were being undertaken at the eastern section of site that day. The site weather station recorded maximum wind speed 41.5km/hr, maximum peak wind gust 53.3km/hr and average wind direction 264.7 degrees (westerly) for the day of these complaints. Upon receiving the complaints, WHSE Coordinator contacted the Construction Manager who ceased those earthwork activities immediately. Each complainant was contacted by the WHSE Coordinator who advised the controls that were in place, that is use of water cart to suppress dust, and that the activity has ceased and would not resume until weather conditions were favourable.

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.

During the reporting period one CCC meeting was held on 30 October 2019. A meeting was scheduled for 31 July 2019 however no invitees were in attendance, one apology was received from Highland Pine Products representative (part of the OTC). No other CCC meetings were held during the 2019/20 period due to the coronavirus pandemic and associated social distancing directives from NSW Department of Health.

A copy of the Meeting Minutes from 30 October 2019 CCC meeting are attached to this document as Appendix H. The major discussion points relating to Borg Panels in 2019/20 were:

- Updates on safety, environment and production performance
- Discussion regarding off-site fugitive fibre discharge incident (see section 6.1). Advised Committee of the systems that have been put in place to prevent a reoccurrence
- Status update on commissioning of particleboard line and construction activities
- Recycling/reuse strategies Borg are exploring to reduce waste to landfill

5.2.3 Opportunities for Information Exchange

Borg has in place 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 and items noted as not verified in the audit are discussed in Appendix J.

In accordance with SSD 7016 condition C15 the next Independent Audit is scheduled for May 2021.

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, one reportable environmental incident occurred at the Borg Panels facility:

Off-site fugitive fibre discharge from Conti 1 mat reject cyclone – 3 July 2019

- During night shift the Loader Operator noticed fugitive fibre deposited in the sites main carpark. The Operator immediately notified the Press Team Leader who activated the PIRMP and commenced an investigation.
- Team Leader identified source of fibre discharge and shutdown those items of plant responsible (mat reject cyclone).
- Plant Operator isolated the plant and unblocked the cyclone.
- Team Leader commenced coordination of clean-up to main carpark and at that time noticed an amount of fibre had discharged off-site though it was too dark to clearly see how much fibre had escaped site.
- Team Leader contacted WHSE Coordinator to notify the incident.
- WHSE Coordinator advised to enter incident into DataStation and to include in handover to dayshift Team Leader to continue with investigation and clean-up.
- No community complaints were received regarding this incident.

The incident was reported to the EPA via the Environment Line (Ref no. C09132-2019) on the morning of 4 July 2019 once normal business hours resumed and information pertaining to the discharge was better understood. Oberon Council and DPIE were subsequently informed via email.

At the request of EPA Officer, a written report of the incident was prepared in accordance with EPL 3035 condition R3.3 and is attached to this document at Appendix K. The DataStation incident log is attached at Appendix L.

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.

Regarding the incident described above in section 6.1, the EPA issued Borg Panels with a formal warning in relation to breach of EPL 3035, specifically condition O2.1 which states “*All plant and equipment installed at the premises or used in connection with the licensed activity: a) must be maintained in a proper and efficient condition; and b) must be operated in a proper and efficient manner*”.

In the incident report prepared by Borg, it was stated that an investigation into the practicality of installing additional warning devices at the item of plant involved in the incident would be undertaken. In their formal warning letter, EPA requested Borg Panels provide an update with regards to the status of the investigation and include any recommendations identified, and a timeframe for their implementation.

Borg Panels responded to the EPAs information request confirming that suitable actions had been complete which included the installation of a split display/alarm system on the reject cyclone which provides two separate and independent alarms for the blockage detectors, and

that MainPac (Borgs electronic maintenance schedule) was reviewed to confirm programmed maintenance to the reject cyclones and to ensure operational status of the blockage detectors.

There was no further requests from the EPA related to this non-conformance.

The EPA Formal Warning Letter is attached at Appendix M and Borg Panels response at Appendix N.

8 Activities Proposed for the next Annual Review Period

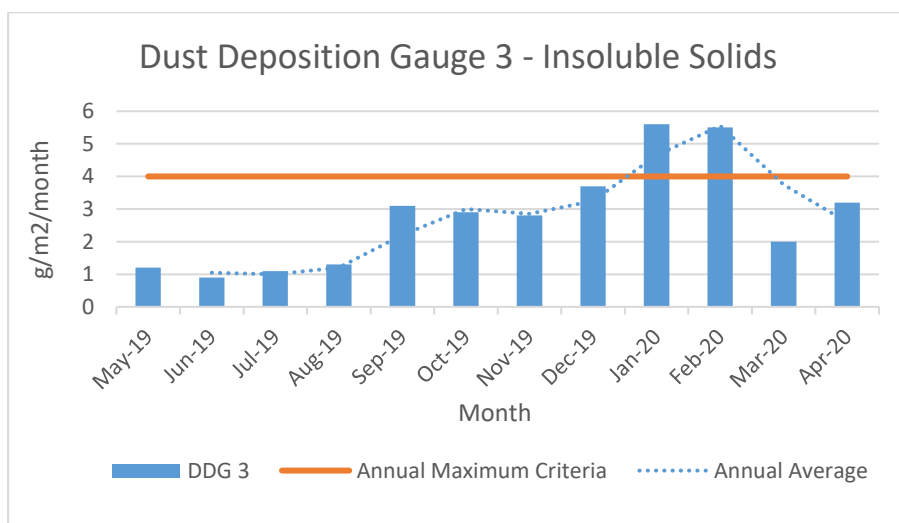
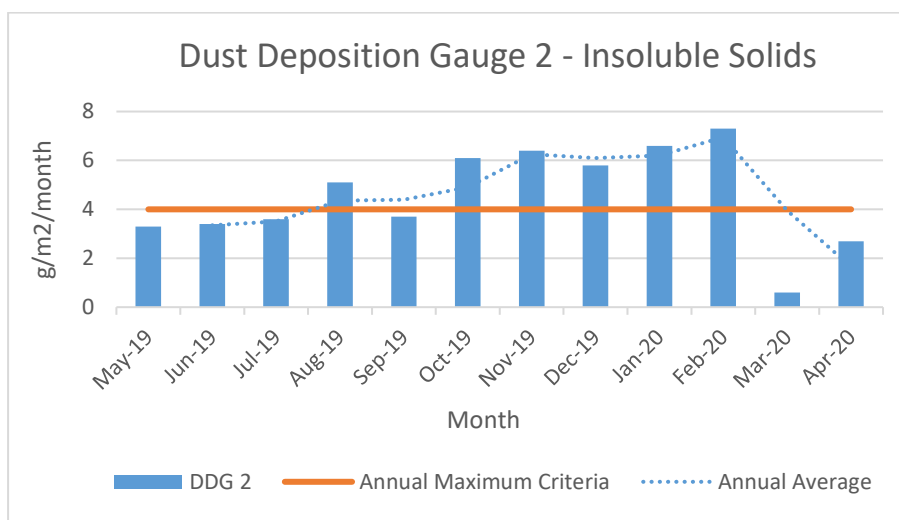
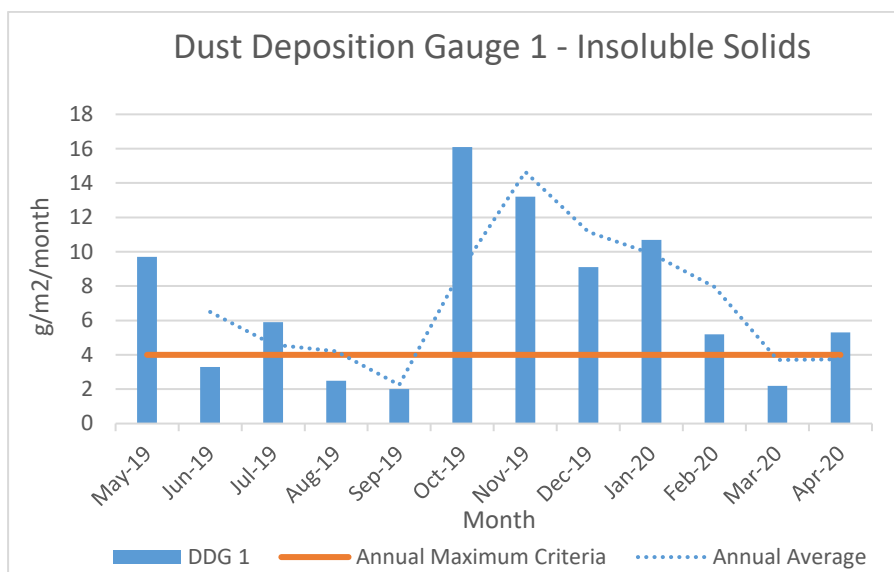
Borg Panels will endeavour to carry out the activities listed in Table 44 during the 2020/21 reporting period to assist with improving the environmental performance of the existing development and the project.

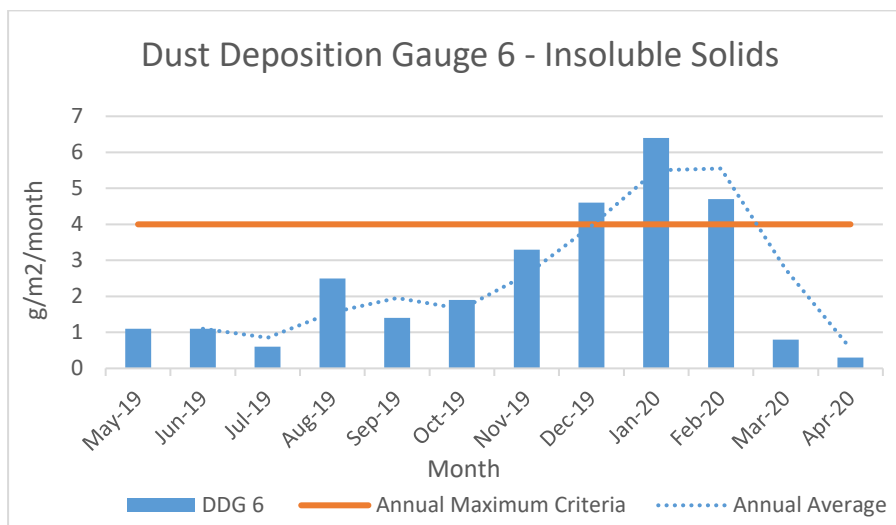
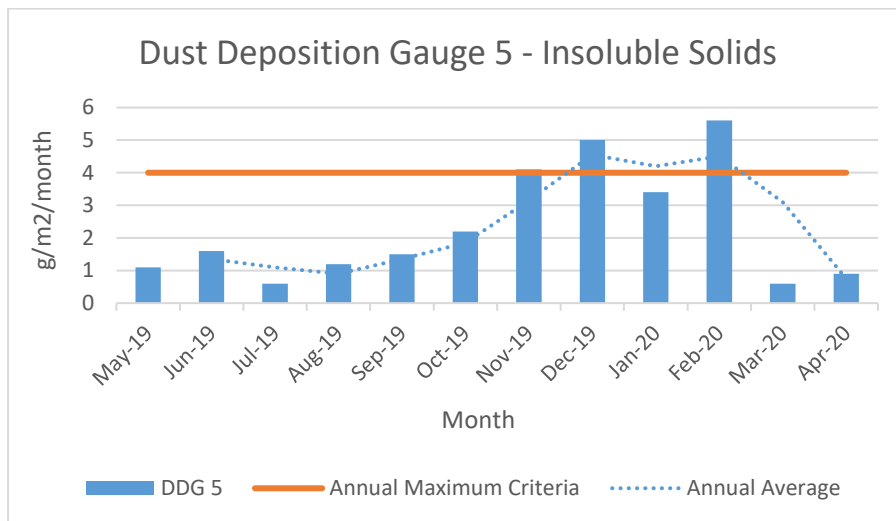
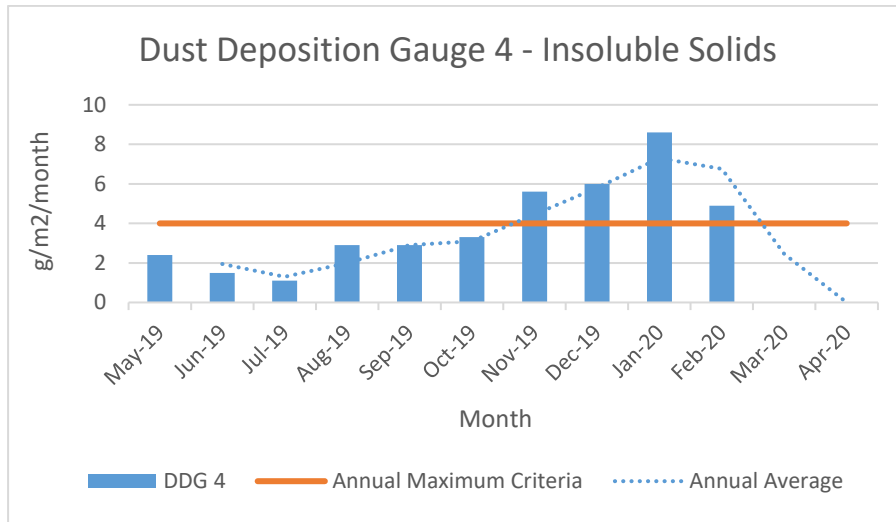
Table 44 Proposed Activities for 2020/21 Reporting Period

Activities Proposed in 2020/21 Reporting Period
Ongoing implementation of Environmental Management Plans for the existing development and the project.
Carry out comprehensive Hazard Audit (SSD 7016 condition B42)
Complete verification studies required for the particleboard plant
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 and MOD 2
Complete the installation of the gas turbine and construction of the associated ancillary infrastructure (MOD 2)
Install Cleaning tower for recycled wood
Undertake required environmental monitoring associated with the newly installed gas turbine
Continue research into plant/equipment with potential to further reduce pollutants emitted from the facility

APPENDICIES

Appendix A – Depositional Dust Monitoring Data





Appendix B – Air Quality Monitoring Report



REPORT NUMBER R009190

**Emission Testing Report
Borg Manufacturing, Oberon Plant**

Document Information

Template Version; 121219

Client Name: Borg Manufacturing
Report Number: R009190
Date of Issue: 23 June 2020
Attention: Jacqueline Blomberg
Address: Lowes Mount Rd
OBERON NSW 2787
Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Aaron Davis
Client Manager

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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The report shall not be reproduced except in full.

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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 Environmental Licence 3035.

1.2 Project Objectives

The objectives of the project were to conduct a monitoring programme to quantify emissions from 13 discharge points to determine compliance with Borg Manufacturing's Environmental Licence.

Monitoring was performed as follows;

Location	Test Date	Test Parameters*
EPA 4 – DC1 Baghouse	12 May 2020	Total solid particles, fine particulate matter (PM ₁₀)
EPA 5 – DC2 Baghouse	7 May 2020	Formaldehyde Smoke
EPA 7 – Conti 2 Stage 1 Dryer Cyclone 1 (West)	13 May 2020	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde
EPA 8 – Conti 2 Stage 1 Dryer Cyclone 2 (East)		
EPA 9 – Conti 1 Dryer Cyclone 1 (South)	7 May 2020	Smoke Nitrogen oxides, carbon dioxide, oxygen
EPA 10 – Conti 1 Dryer Cyclone 2 (North)		
EPA 27 – Combined Conti 2 Press Vent Stack	8 May 2020	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke Nitrogen oxides
EPA 29 – Forming Line Baghouse	5 May 2020	Total solid particles, fine particulate matter (PM ₁₀) Formaldehyde Smoke
EPA 30 – Form Station Baghouse		
EPA 31 – Particle Board Press Extraction System	6 May 2020	Nitrogen oxides, carbon dioxide, oxygen
EPA 32 – WESP		
Cogeneration Plant 1 Stack	12 May 2020	Total solid particles Volatile organic compounds (VOC's) Nitrogen oxides, carbon dioxide, oxygen Smoke
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 May-20
7	Conti 2 Stage 1 Dryer Cyclone 1 (West)	Total Solid Particles	mg/m ³	200	45
		Formaldehyde	mg/m ³	5	2
8	Conti 2 Stage 1 Dryer Cyclone 2 (East)	Total Solid Particles	mg/m ³	200	26
		Formaldehyde	mg/m ³	5	2.8
9	Conti 1 Dryer Cyclone 1 (South)	Total Solid Particles	mg/m ³	200	71
		Formaldehyde	mg/m ³	5	1.5
10	Conti 1 Dryer Cyclone 2 (North)	Total Solid Particles	mg/m ³	200	110
		Formaldehyde	mg/m ³	5	2

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 POEO Limits

Ektimo have provided a limit comparison for the Cogeneration units based on correspondence with NSW EPA (Reference SF20/16003; DOC20/163969-8). Ektimo has applied reference conditions of 3% and 5% Oxygen correction for all analytes tested.

Results from this stack emission monitoring program indicate that Borg Manufacturing **was not** compliant with the proposed emission limits based on the *Protection of Environment Operations (Clean Air) Regulation 2010* during the sampling period. All analytes highlighted in green are within the limit and all analytes highlighted in red are outside the limit based on the *Protection of Environment Operations (Clean Air) Regulation 2010*.

EPA No.	Location Description	Pollutant	Units	POEO Regulation standard (corrected to 3% O ₂)	Detected Values 12 May 2020	Detected Values 12 May 2020 3 % Oxygen correction	Detected Values 12 May 2020 5 % Oxygen correction
-	Cogeneration Plant 1 Stack	Solid particles	mg/m ³	50	<2	<3	<3
		Nitrogen oxides	mg/m ³	450	280	430	380
		Total VOCs (as n-propane)	mg/m ³	40	0.15	0.23	0.20
-	Cogeneration Plant 2 Stack	Solid particles	mg/m ³	50	<2	<2	<2
		Nitrogen oxides	mg/m ³	450	310	480	420
		Total VOCs (as n-propane)	mg/m ³	40	0.096	0.15	0.13

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 15 & 16 May 2019
4	DC1 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	2.4
5	DC2 Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	1.1
27	EPA 27 - Combined Stack (C2 Press Vents)	Solid particles	mg/m ³	13
		Formaldehyde	mg/m ³	1.6
		Nitrogen oxides	mg/m ³	<3
29	Forming Line Baghouse	Solid particles	mg/m ³	<2
		Formaldehyde	mg/m ³	0.8
		Nitrogen oxides	mg/m ³	<3
30	Form Station Baghouse	Solid particles	mg/m ³	1.8
		Formaldehyde	mg/m ³	0.87
		Nitrogen oxides	mg/m ³	<3
31	Particle Board Press Extraction System	Solid particles	mg/m ³	27
		Formaldehyde	mg/m ³	0.57
		Nitrogen oxides	mg/m ³	<3
32	WESP	Solid particles	mg/m ³	3.6
		Formaldehyde	mg/m ³	0.63
		Nitrogen oxides	mg/m ³	180

2 RESULTS

2.1 EPA 4 – DC1 Baghouse

Date	12/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 4 - DC1 Baghouse
Licence No.	3035	Location	Oberon
Ektime Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Please refer to client records.		

200505

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

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 Flow Parameters

Flow measurement time(s) (hhmm)	1050 & 1205
Temperature, °C	37
Temperature, K	310
Velocity at sampling plane, m/s	7.5
Volumetric flow rate, actual, m ³ /s	6.5
Volumetric flow rate (wet STP), m ³ /s	5.1
Volumetric flow rate (dry STP), m ³ /s	5
Mass flow rate (wet basis), kg/hour	24000
Velocity difference, %	3

Formaldehyde	Results
Sampling time	1055-1155
	Concentration Mass Rate
	mg/m ³ g/min
Formaldehyde	2.4 0.73

Isokinetic Results	Results
Sampling time	1055-1201 1055-1201 (PM10)
	Concentration Mass Rate
	mg/m ³ g/min
Solid Particles	<2 <0.6
Fine particulates (PM10)	<3 <0.9
D50 cut size, 10µm	9.6
Isokinetic Sampling Parameters	Isokinetic PM 10
Sampling time, min	64 64
Isokinetic rate, %	96 97

Smoke Obscuration	Result
Time of assessment	1102 - 1122
Smoke Obscuration	0

2.2 EPA 5 – DC2 Baghouse

Date	7/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 5 - DC2 Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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

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	3.5	
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)	1540 & 1700
Temperature, °C	28
Temperature, K	302
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	99000
Velocity difference, %	-2

Formaldehyde	Results
Sampling time	1550-1650
	Concentration mg/m ³
Formaldehyde	1.1
	Mass Rate g/min
	1.3

Isokinetic Results	Results
Sampling time	1545-1658 1545-1658 (PM10)
	Concentration mg/m ³
Solid Particles	<2
Fine particulates (PM10)	<3
D50 cut size, 10µm	9.8
	Mass Rate g/min
	9.8
Isokinetic Sampling Parameters	
Sampling time, min	70
Isokinetic rate, %	100
	PM 10
	102

Smoke Obscuration	Result
Time of assessment	1610 - 1630
Smoke Obscuration	0

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

Date	13/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektime Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Please refer to client records.		

200505

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	16	
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 Flow Parameters

Flow measurement time(s) (hhmm)	1339 & 1602
Temperature, °C	57
Temperature, K	330
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	59
Volumetric flow rate (wet STP), m ³ /s	43
Volumetric flow rate (dry STP), m ³ /s	36
Mass flow rate (wet basis), kg/hour	190000
Velocity difference, %	<1

Date	13/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 7 - Conti 2 Stage 1 Dryer Cyclone 1 (West)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Please refer to client records.		

200505

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	1355 - 1534		1355 - 1534		1355 - 1534	
		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	450	110	240	290	630
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		2.4		1.3		3.2	
Oxygen		18.4		17.5		19.7	

Formaldehyde	Sampling time	Results	
		1358-1458	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		2	4.5

Isokinetic Results	Sampling time	Results		
		1345-1551	1345-1551 (PM10)	
		Concentration mg/m³	Mass Rate g/min	
		Solid Particles	45	98
		Fine particulates (PM10)	32	70
		D50 cut size, 10µm	9.5	
		Isokinetic Sampling Parameters	Isokinetic	PM 10
		Sampling time, min	120	120
Isokinetic rate, %	99	95		

Smoke Obscuration	Time of assessment	Result 1355 - 1615
		0

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

Date	13/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektime Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Please refer to client records.		

200505

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	16	
Gas molecular weight, g/g mole	27.5 (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)	1120 & 1350
Temperature, °C	56
Temperature, K	329
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	57
Volumetric flow rate (wet STP), m ³ /s	42
Volumetric flow rate (dry STP), m ³ /s	36
Mass flow rate (wet basis), kg/hour	190000
Velocity difference, %	-7

Date	13/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 8 - Conti 2 Stage 1 Dryer Cyclone 2 (East)
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Please refer to client records.		

200505

Gas Analyser Results		Average		Minimum		Maximum	
	Sampling time	1133 - 1320		1133 - 1320		1133 - 1320	
		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)		170	370	130	270	200	430
		Concentration		Concentration		Concentration	
		%v/v		%v/v		%v/v	
Carbon dioxide		2		1.5		2.6	
Oxygen		18.7		18.1		19.2	

Formaldehyde	Sampling time	Results	
		1135-1235	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		2.8	6

Isokinetic Results	Sampling time	Results		
		1127-1332	1127-1332 (PM10)	
		Concentration mg/m³	Mass Rate g/min	
		Solid Particles	26	55
		Fine particulates (PM10)	24	52
		D50 cut size, 10µm	9.2	
		Isokinetic Sampling Parameters		
		Isokinetic	PM 10	
Sampling time, min	120	120		
Isokinetic rate, %	96	100		

Smoke Obscuration	Time of assessment	Result 1135 - 1155
		0

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

Date	7/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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 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	13	
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 Flow Parameters

Flow measurement time(s) (hhmm)	0920 & 1140
Temperature, °C	51
Temperature, K	324
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	30
Mass flow rate (wet basis), kg/hour	150000
Velocity difference, %	6

Date	7/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 9 - Conti 1 Dryer Cyclone 1 (South)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results		Average 0939 - 1100		Minimum 0939 - 1100		Maximum 0939 - 1100	
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)	190	340	170	300	220	390
		Concentration % v/v		Concentration % v/v		Concentration % v/v	
	Carbon dioxide	2.3		2		2.6	
	Oxygen	18.8		18.4		19	

Formaldehyde	Sampling time	Results	
		0945-1045	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		1.5	2.6

Isokinetic Results		Results	
Sampling time		0930-1135	0930-1135 (PM10)
		Concentration	Mass Rate
		mg/m³	g/min
	Solid Particles	71	120
	Fine particulates (PM10)	9.1	15
	D50 cut size, 10µm	9.6	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		120	120
Isokinetic rate, %		106	99

Smoke Obscuration	Time of assessment	Result 0950 - 1010
		0

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

Date	7/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektime Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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 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	27.7 (wet)	29.2 (dry)
Gas density at STP, kg/m ³	1.24 (wet)	1.30 (dry)

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1156 & 1410
Temperature, °C	52
Temperature, K	325
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	45
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
Velocity difference, %	4

Date	7/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 10 - Conti 1 Dryer Cyclone 2 (North)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results	Average 1203 - 1321	Minimum 1203 - 1321	Maximum 1203 - 1321
Sampling time			
	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)	200	180	240
	360	320	410
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	2.3	2	2.7
Oxygen	18.9	18.5	19.2

Formaldehyde	Results 1215-1345
Sampling time	
	Concentration mg/m ³
	Mass Rate g/min
Formaldehyde	2
	3.5

Isokinetic Results	Results 1200-1405 1200-1405 (PM10)
Sampling time	
	Concentration mg/m ³
	Mass Rate g/min
Solid Particles	110
Fine particulates (PM10)	21
D50 cut size, 10µm	9.6
Isokinetic Sampling Parameters	Isokinetic PM 10
Sampling time, min	120
Isokinetic rate, %	106
	99

Smoke Obscuration	Result 1300 - 1320
Time of assessment	
Smoke Obscuration	0

2.7 EPA 27 – Combined Conti 2 Press Vent Stack

Date	8/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 27 - Combined Stack (C2 Press Vents)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

2004/15

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

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	3.1	
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 Flow Parameters

Flow measurement time(s) (hhmm)	0834 & 1040
Temperature, °C	30
Temperature, K	303
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
Velocity difference, %	-9

Date	8/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 27 - Combined Stack (C2 Press Vents)
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results		Average 0904 - 1008		Minimum 0904 - 1008		Maximum 0904 - 1008	
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)	<3	<5	<3	<5	<3	<5

Formaldehyde	Sampling time	Results	
		0915-1015	
		Concentration mg/m³	Mass Rate g/min
Formaldehyde		1.6	2.6

Isokinetic Results	Sampling time	Results		
		0850-1033	0850-1033 (PM10)	
		Concentration mg/m³	Mass Rate g/min	
		Solid Particles	13	21
		Fine particulates (PM10)	9.6	16
		D50 cut size, 10µm	10.1	
		Isokinetic Sampling Parameters		
Sampling time, min		Isokinetic	PM 10	
		100	100	
Isokinetic rate, %		100	96	

Smoke Obscuration	Result
Time of assessment	0920 - 0940
Smoke Obscuration	0

2.8 EPA 29 – Forming Line Baghouse

Date	5/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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

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	3.5	
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)	1408 & 1538
Temperature, °C	26
Temperature, K	299
Velocity at sampling plane, m/s	41
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	110000
Velocity difference, %	<1

Date	5/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 29 - Forming Line Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1414 - 1514	1414 - 1514	1414 - 1514
	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)	<3	<3	3.3
	<5	<5	4.7
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	<0.3	<0.3	<0.3
Oxygen	20.9	20.9	20.9

Formaldehyde	Results
Sampling time	1430-1530
	Concentration mg/m ³
Formaldehyde	0.8
	Mass Rate g/min
	1.1

Isokinetic Results	Results
Sampling time	1412-1534 1412-1534 (PM10)
	Concentration mg/m ³
Solid Particles	<2
Fine particulates (PM10)	<2
D50 cut size, 10µm	9.8
	Mass Rate g/min
Isokinetic Sampling Parameters	Isokinetic
Sampling time, min	80
Isokinetic rate, %	100
	PM 10
	80
	63

Smoke Obscuration	Result
Time of assessment	1430 - 1450
Smoke Obscuration	0

* Due to high stack velocity the required isokinetic rate could not be achieved within approved method limits for fine particulate testing.

2.9 EPA 30 – Form Station Baghouse

Date	5/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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	2.2	
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)	1555 & 1710
Temperature, °C	23
Temperature, K	296
Velocity at sampling plane, m/s	26
Volumetric flow rate, actual, m ³ /s	6.1
Volumetric flow rate (wet STP), m ³ /s	4.9
Volumetric flow rate (dry STP), m ³ /s	4.8
Mass flow rate (wet basis), kg/hour	23000
Velocity difference, %	<1

Date	5/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 30 - Form Station Baghouse
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1604 - 1703	1604 - 1703	1604 - 1703
	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)	<3	<3	3.5
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	<0.3	<0.3	<0.3
Oxygen	20.9	20.9	20.9

Formaldehyde	Results
Sampling time	1600-1700
	Concentration mg/m ³
Formaldehyde	0.87
	Mass Rate g/min
	0.25

Isokinetic Results	Results
Sampling time	1559-1705 1559-1705 (PM10)
	Concentration mg/m ³
Solid Particles	1.8
Fine particulates (PM10)	<3
D50 cut size, 10µm	9.9
	Mass Rate g/min
Isokinetic Sampling Parameters	Isokinetic
Sampling time, min	64
Isokinetic rate, %	94

Smoke Obscuration	Result
Time of assessment	1610 - 1630
Smoke Obscuration	0

* Due to high stack velocity the required isokinetic rate could not be achieved within approved method limits for fine particulate testing.

2.10 EPA 31 – Particle Board Press Extraction System

Date	6/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektime Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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

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	4.5	
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)	1320 & 1515
Temperature, °C	31
Temperature, K	304
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	37
Volumetric flow rate (wet STP), m ³ /s	29
Volumetric flow rate (dry STP), m ³ /s	28
Mass flow rate (wet basis), kg/hour	130000
Velocity difference, %	-9

Date	6/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 31 - Particle Board Press Extraction System
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results		Average 1335 - 1449		Minimum 1335 - 1449		Maximum 1335 - 1449	
	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)		<3	<5	<3	<5	<3	<5
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		<0.3		<0.3		<0.3	
Oxygen		20.9		20.9		20.9	

Formaldehyde		Results	
	Sampling time	1330-1430	
		Concentration	Mass Rate
		mg/m³	g/min
Formaldehyde		0.57	0.96

Isokinetic Results	Sampling time	Results	
		1327-1512	1327-1512 (PM10)
		Concentration	Mass Rate
		mg/m³	g/min
Solid Particles		27	45
Fine particulates (PM10)		25	43
D50 cut size, 10µm		10.0	
Isokinetic Sampling Parameters		Isokinetic	PM 10
Sampling time, min		100	100
Isokinetic rate, %		98	113

Smoke Obscuration	Time of assessment	Result 1340 - 1400
Smoke Obscuration		0

2.11 EPA 32 – WESP

Date	6/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

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

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	23 (saturated)	
Gas molecular weight, g/g mole	26.7 (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)	0940 & 1215
Temperature, °C	62
Temperature, K	335
Velocity at sampling plane, m/s	12
Volumetric flow rate, actual, m ³ /s	60
Volumetric flow rate (wet STP), m ³ /s	44
Volumetric flow rate (dry STP), m ³ /s	34
Mass flow rate (wet basis), kg/hour	190000
Velocity difference, %	8

Date	6/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	EPA 32 - WESP
Licence No.	3035	Location	Oberon
Ektimo Staff	Aaron Davis / Zoe Parker	State	NSW
Process Conditions	Please refer to client records.		

200415

Gas Analyser Results		Average 0950 - 1107		Minimum 0950 - 1107		Maximum 0950 - 1107	
Sampling time		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)		180	360	150	310	200	400
		Concentration %v/v		Concentration %v/v		Concentration %v/v	
Carbon dioxide		3		2.8		3.2	
Oxygen		17.7		17.6		17.9	

Formaldehyde		Results 1000-1100	
Sampling time		Concentration mg/m ³	Mass Rate g/min
Formaldehyde		0.63	1.3

Isokinetic Results		Results 0945-1210	
Sampling time		Concentration mg/m ³	Mass Rate g/min
Solid Particles*		3.6	7.2
Isokinetic Sampling Parameters			
Sampling time, min		140	
Isokinetic rate, %		96	

Smoke Obscuration		Result
Time of assessment		1000 - 1020
Smoke Obscuration		0

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

2.12 Cogeneration Plant 1 Stack

Date	12/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	Cogeneration Plant 1 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Engine running at 700kW		

200505

Sampling Plane Details

Sampling plane dimensions	270 mm
Sampling plane area	0.0573 m ²
Sampling port size, number	4" Hole (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	5.1	
Gas molecular weight, g/g mole	28.9 (wet)	29.5 (dry)
Gas density at STP, kg/m ³	1.29 (wet)	1.32 (dry)
% Oxygen correction & Factor	3 %	1.52
% Oxygen correction & Factor	5 %	1.35

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1745 & 1855
Temperature, °C	417
Temperature, K	690
Velocity at sampling plane, m/s	48
Volumetric flow rate, actual, m ³ /s	2.7
Volumetric flow rate (wet STP), m ³ /s	0.96
Volumetric flow rate (dry STP), m ³ /s	0.91
Mass flow rate (wet basis), kg/hour	4400
Velocity difference, %	3

Gas Analyser Results	Sampling time	Average			Minimum			Maximum		
		1747 - 1848			1747 - 1848			1747 - 1848		
		Corrected to			Corrected to			Corrected to		
		Concentration	3% O ₂	Mass Rate	Concentration	3% O ₂	Mass Rate	Concentration	3% O ₂	Mass Rate
		mg/m ³	mg/m ³	g/min	mg/m ³	mg/m ³	g/min	mg/m ³	mg/m ³	g/min
Combustion Gases										
Nitrogen oxides (as NO ₂)		280	430	15	250	390	14	300	450	16
		Corrected to			Corrected to			Corrected to		
		5% O ₂			5% O ₂			5% O ₂		
		mg/m ³			mg/m ³			mg/m ³		
		380			340			400		
		Concentration			Concentration			Concentration		
		%v/v			%v/v			%v/v		
Carbon dioxide		6.2			6.2			6.3		
Oxygen		9.1			9			9.2		

Date	12/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	Cogeneration Plant 1 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Engine running at 700kW		

200805

Isokinetic Results	Sampling time	Results			
		1748-1848			
		Concentration mg/m ³	Corrected to 3% O ₂ mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Solid Particles		<2	<3	<3	<0.1
Isokinetic Sampling Parameters					
Sampling time, min		60			
Isokinetic rate, %		110			

Smoke Obscuration	Time of assessment	Result	
		1750 - 1810	
Smoke Obscuration		0	

Total VOCs (as n-Propane)	Lower Bound	Sampling time	Results			
			1748-1848			
			Concentration mg/m ³	Corrected to 3% O ₂ mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Total			0.15	0.23	0.20	0.0079

VOC (speciated)	Sampling time	Results			
		1748-1848			
		Concentration mg/m ³	Corrected to 3% O ₂ mg/m ³	Corrected to 5% O ₂ mg/m ³	Mass Rate g/min
Detection limit ⁽¹⁾		<0.07	<0.1	<0.1	<0.004
Benzene		0.26	0.39	0.35	0.014

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Ethanol, Isopropanol, 1,1-Dichloroethene, Dichloromethane, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, 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, α-Pinene, β-Pinene, Decane, 3-Carene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane

2.13 Cogeneration Plant 2 Stack

Date	12/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	Cogeneration Plant 2 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Engine running at 700kW		

200505

Sampling Plane Details

Sampling plane dimensions	270 mm
Sampling plane area	0.0573 m ²
Sampling port size, number	4" Hole (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	5.7	
Gas molecular weight, g/g mole	28.8 (wet)	29.4 (dry)
Gas density at STP, kg/m ³	1.28 (wet)	1.31 (dry)
% Oxygen correction & Factor	3 %	1.55
% Oxygen correction & Factor	5 %	1.38

Gas Flow Parameters

Flow measurement time(s) (hhmm)	1510 & 1610
Temperature, °C	417
Temperature, K	690
Velocity at sampling plane, m/s	44
Volumetric flow rate, actual, m ³ /s	2.5
Volumetric flow rate (wet STP), m ³ /s	0.88
Volumetric flow rate (dry STP), m ³ /s	0.83
Mass flow rate (wet basis), kg/hour	4100
Velocity difference, %	1

Gas Analyser Results	Sampling time	Average 1507 - 1607			Minimum 1507 - 1607			Maximum 1507 - 1607		
		Corrected to			Corrected to			Corrected to		
Combustion Gases		Concentration mg/m ³	3% O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	3% O ₂ mg/m ³	Mass Rate g/min	Concentration mg/m ³	3% O ₂ mg/m ³	Mass Rate g/min
Nitrogen oxides (as NO ₂)		310	480	15	290	450	14	330	510	16
		Corrected to 5% O ₂ mg/m ³			Corrected to 5% O ₂ mg/m ³			Corrected to 5% O ₂ mg/m ³		
		420			400			460		
		Concentration %v/v			Concentration %v/v			Concentration %v/v		
Carbon dioxide		5.9			5.7			6.1		
Oxygen		9.3			9.3			9.4		

Date	12/05/2020	Client	Borg Manufacturing Pty Ltd
Report	R009190	Stack ID	Cogeneration Plant 2 Stack
Licence No.	3035	Location	Oberon
Ektimo Staff	Steven Cooper & Hamish Proust	State	NSW
Process Conditions	Engine running at 700kW		

200805

Isokinetic Results	Sampling time	Results			
		Concentration	Corrected to	Corrected to	Mass Rate
		mg/m ³	3% O ₂	5% O ₂	g/min
			mg/m ³	mg/m ³	
Solid Particles		<2	<2	<2	<0.08
Isokinetic Sampling Parameters					
Sampling time, min		60			
Isokinetic rate, %		90			
Velocity difference, %		1			

Smoke Obscuration	Time of assessment	Result
		1515 - 1535
Smoke Obscuration		0

Total VOCs (as n-Propane) Lower Bound	Sampling time	Results			
		Concentration	Corrected to	Corrected to	Mass Rate
		mg/m ³	3% O ₂	5% O ₂	g/min
			mg/m ³	mg/m ³	
Total		0.096	0.15	0.13	0.0048

VOC (speciated)	Sampling time	Results			
		Concentration	Corrected to	Corrected to	Mass Rate
		mg/m ³	3% O ₂	5% O ₂	g/min
			mg/m ³	mg/m ³	
Detection limit ⁽¹⁾		<0.07	<0.1	<0.09	<0.003
Benzene		0.17	0.26	0.23	0.0084

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Ethanol, Isopropanol, 1,1-Dichloroethene, Dichloromethane, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, 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, α-Pinene, β-Pinene, 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	NA	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	✓
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%	✓	✓ [†]
Speciated volatile organic compounds (VOC's)	NSW TM-34 ^d	Ektimo 344	19%	✓	✓ [†]
Solid particles (total)	NSW TM-15	NSW TM-15 ^{††}	5%	✓	✓
Particulate matter (PM ₁₀)	NSW OM-5	NSW OM-5 ^{††}	6%	✓	✓
Smoke	NSW TM-16	NA	not specified	NA	✓

200424

* 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 14 and 28 May 2020 in report number LV-000285 and LV-000293. 5 June 2020 in report number R009190_SVOCs.

†† Gravimetric analysis conducted at the Ektimo Unanderra, NSW laboratory, NATA accreditation number 14601.

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



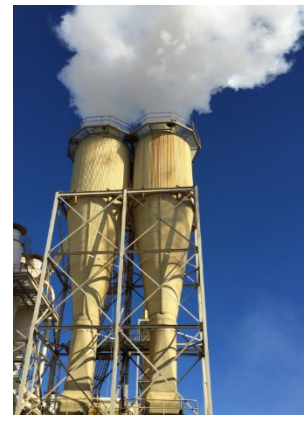
EPA 4 – DC1 Baghouse



EPA 5 – DC2 Baghouse



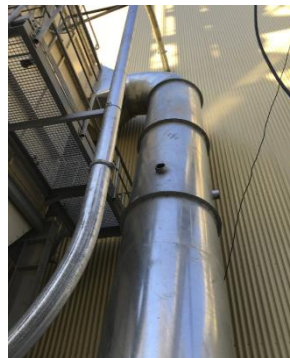
EPA 7 – Conti 2 Stage 1
Dryer Cyclone 1 (West) &
EPA 8 – Conti 2 Stage 1
Dryer Cyclone 2 (East)



EPA 9 – Conti 1 Dryer
Cyclone 1 (South) &
EPA 10 – Conti 1 Dryer
Cyclone 2 (North)



EPA 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

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ABN 86 600 381 413

Appendix C – Surface Water Monitoring Data

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
06-May-19	7.63	35	50	6.5	0.19	<5	14	<0.1	<0.010	<0.010
13-May-19	7.54	16	75	3	0.09	<5	<2	<0.1	<0.010	<0.010
22-May-19	8.38	6	18	3.1	0.02	<5	4	<0.1	<0.010	<0.010
28-May-19	8.04	7	20	1.7	0.02	<5	<2	<0.1	<0.010	<0.010
06-Jun-19	7.9	33	62	12.7	0.18	<5	24	<0.1	<0.010	<0.010
11-Jun-19	7.68	24	40	5.6	0.08	<5	10	<0.1	<0.010	<0.010
17-Jun-19	7.59	36	25	4.6	0.08	<5	<2	0.2	<0.010	<0.010
25-Jun-19	7.83	9	40	2.8	0.03	<5	<2	<0.1	<0.010	<0.010
02-Jul-19	7.76	18	50	2.8	0.07	8	2	<0.1	<0.010	<0.010
11-Jul-19	7.26	9	25	2.2	0.11	<5	2	<0.1	<0.010	<0.010
16-Jul-19	6.87	24	40	2.1	0.08	<5	2	<0.1	<0.010	<0.010
22-Jul-19	6.93	19	45	11.9	0.07	<5	21	<0.1	<0.010	<0.010
29-Jul-19	7.79	11	25	4.8	0.02	<5	13	<0.1	<0.010	<0.010
05-Aug-19	7.6	10	20	3	0.05	<5	<2	<0.1	<0.010	<0.010
15-Aug-19	7.7	41	40	0.12	0.12	<5	18	0.1	<0.010	<0.010
19-Aug-19	6.82	27	35	5.1	0.41	<5	55	<0.1	<0.010	<0.010
26-Aug-19	7.92	16	15	2.2	0.04	5	<2	0.2	<0.010	<0.010
02-Sep-19	7.63	22	20	1.7	0.04	<5	6	<0.1	<0.010	<0.010
11-Sep-19	7.35	31	40	7	0.06	<5	7	0.3	<0.010	<0.010
16-Sep-19	7.57	19	20	2.9	<0.01	<5	<0	<0.1	<0.010	<0.010
23-Sep-19	7.38	27	30	2.9	0.02	<5	5	<0.1	<0.010	<0.010
30-Sep-19	7.35	23	35	3.2	<0.01	<5	7	<0.1	<0.010	<0.010
11-Oct-19	7.7	<5	40	3.2	0.05	<5	<2	<0.1	<0.010	<0.010
18-Oct-19	7.87	18	45	2.5	0.05	<5	3	<0.1	<0.010	<0.010
28-Nov-19	8.05	40	30	1.7	0.05	<5	2	0.1	<0.010	<0.010
11-Feb-20	7.13	88	40	2.4	0.17	<5	3	0.1	<0.010	<0.010
19-Feb-20	7.62	12	50	2.4	0.14	<5	<2	0.2	<0.010	<0.010
09-Mar-20	7.35	42	100	2.2	0.11	<5	7	<0.1	<0.010	<0.010
26-Mar-20	7.39	152	50	2.7	0.3	<5	22	<0.1	<0.010	<0.010
07-Apr-20	7.06	24	50	1.4	0.07	<5	<2	<0.1	<0.010	<0.010

Exceedance of EPL 3035 discharge limit

Appendix D – Groundwater Monitoring Data

ENVIRONMENT PROTECTION LICENCE 3035

2019 Groundwater Quality Monitoring

POLLUTANT	UNIT OF MEASURE	FREQUENCY	NO. OF SAMPLES COLLECTED AND ANALYSED	*EPA POINT 14 (GW05)	EPA POINT 15 (GW02)	EPA POINT 16 (GW01)	EPA POINT 24 (GW26)
Aldrin	µg/L	Yearly	1	-	<0.5	<0.5	<0.5
Ammonia as N	mg/L	Yearly	1	-	0.02	0.03	<0.01
Chemical Oxygen Demand	mg/L	Yearly	1	-	<10	11	<10
Electrical Conductivity	µS/cm	Yearly	1	-	918	228	486
Dieldrin	µg/L	Yearly	1	-	<0.5	<0.5	<0.5
Formaldehyde	mg/L	Yearly	1	-	0.1	0.1	<0.1
pH	pH Units	Yearly	1	-	6.6	6.2	6.8
Total Dissolved Solids	mg/L	Yearly	1	-	483	127	283
Total Organic Carbon	mg/L	Yearly	1	-	4	5	1
Total Petroleum Hydrocarbons	µg/L	Yearly	1	-	<50	<50	<50
Total Suspended Solids	mg/L	Yearly	1	-	40	52	6

***Unable to be sampled as temporarily unavailable due to construction activities. Will be reinstated for next groundwater sample event.**

Appendix E – Annual Noise Monitoring Report

Borg Panels Facility

Annual Operational Noise Monitoring Reporting Year 2019 - 2020

*Prepared for
Borg Construction Pty Ltd*



Noise and Vibration Analysis and Solutions

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Borg Panels Facility

Reporting Year 2019 - 2020 Annual Operational Noise Monitoring

Reference: 19177_R01_RevA

Report date: 16 August 2019

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: Jason Cameron
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

EXECUTIVE SUMMARY

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to undertake attended noise monitoring at sites around the Borg panel manufacturing facility (Borg) at Oberon, NSW.

The survey purpose was to quantify and describe the acoustic environment around the site and compare results with limits specified in the Development Consent and Operational Noise Management Plan (ONMP).

Attended environmental noise monitoring described in this report was undertaken during the evening and night period on 24 June 2019 and the day period on 25 June 2019. There were 4 attended monitoring locations as listed in Table 1.1 and shown in Figure 1.

Attended monitoring was conducted in general accordance with Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirements.

Borg operations complied with the relevant noise limits during the annual survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

A low frequency noise assessment was carried out in accordance with the EPA's NPfI. Low frequency modifying factors, where applicable, did not result in any exceedances of Borg noise limits during the survey.

Global Acoustics Pty Ltd

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Borg Manufacturing Pty Ltd to undertake attended noise monitoring at sites around the Borg panel manufacturing facility (Borg) at Oberon, NSW.

The survey purpose was to quantify and describe the acoustic environment around the site and compare results with limits specified in the Development Consent and Operational Noise Management Plan (ONMP).

The 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 evening and night period on 24 June 2019 and the day period on 25 June 2019.

1.2 Monitoring Locations

There were 4 attended monitoring locations as listed in Table 1.1 and shown in Figure 1.

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

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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
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 CONSENT AND CRITERIA

All monitoring reported in this document has been carried out in general accordance with the Development Consent (the Consent) dated 29 May 2017 (SSD 7016) and the ONMP.

2.1 Development Consent and Project Specific Criteria

The sections of the Consent relating to noise are reproduced in Appendix A.

Table 2 in Schedule B of the Consent outlines the day, evening and night period impact assessment criteria, which 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

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.

2.2 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2018) was approved for use in NSW in October 2018, and supersedes the EPA's Industrial Noise Policy (INP, 2000). Assessment and reporting of modifying factors is to be carried out in accordance with Fact Sheet C of the NPfI.

NPfI modifying factors, as they are applicable to mining noise, are described in more detail below.

2.2.1 Tonality and Intermittent Noise

As defined in the NPfI:

Tonal noise contains a prominent frequency and is characterised by a definite pitch.

Intermittent noise is noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

There were no intermittent noise sources from site during the survey. In addition, there is no equipment on site that is likely to generate tonal noise as defined in the NPfI.

2.2.2 Low Frequency Noise

As defined in the NPfI:

Low frequency noise is noise with an unbalanced spectrum and containing major components within the low-frequency range (10 – 160 Hz) of the frequency spectrum.

The NPfI contains the current method of assessing low frequency noise, which is a 2 step process as detailed below:

Measure/assess source contribution C-weighted and A-weighted $L_{eq,T}$ levels over the same time period. The low frequency noise modifying factor correction is to be applied where the C-A level is 15 dB or more and:

- where any of the 1/3 octave noise levels in Table C2 are exceeded by **up to and including** 5 dB and cannot be mitigated, a 2 dBA positive adjustment to measured A weighted levels applies for the evening/night period; and*
- where any of the 1/3 octave noise levels in Table C2 are exceeded by **more than** 5 dB and cannot be mitigated, a 5 dBA positive adjustment to measured A weighted levels applies for the evening/night period and a 2 dBA positive adjustment applies for the daytime period.*

Table C2 and associated notes from the NPfI is reproduced below:

Table C2: One-third octave low-frequency noise thresholds.

Hz/dB(Z)	One-third octave $L_{Zeq,15min}$ threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for

wind speeds up to 5 metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.

- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

3 METHODOLOGY

3.1 Overview

All noise monitoring was conducted at locations representative of the nearest residences in accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise', the Consent, ONMP and relevant NSW EPA requirements.

Meteorological data was obtained from the Borg weather station in Oberon. This data allowed correlation of atmospheric parameters and measured noise levels. Atmospheric condition measurement at ground level was also undertaken during attended monitoring.

3.2 Attended Noise Monitoring

Attended 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, in this case Borg. The duration of each individual measurement was 15 minutes.

If the exact contribution of the source of interest 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 levels, for example, L_{A10} , L_{A50} or L_{A90} . 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 as per the NPfI (e.g. measure closer and back calculate) to determine a value for reporting.

Therefore, 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 or 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.

3.3 Modifying Factors

Years of monitoring have indicated that noise levels from the facility, particularly those measured at significant distances from the source are relatively continuous and broad spectrum. Given this, noise levels from Borg at the monitoring locations are unlikely to be intermittent or tonal.

Assessment of low-frequency modifying factors is necessary when application of the maximum correction could potentially result in an exceedance of the relevant site-only L_{Aeq} criterion. Low-frequency analysis is therefore undertaken for measurements in this report where:

- meteorological conditions resulted in criteria being applicable;
- contributions from Borg were audible and directly measurable, such that the site-only L_{Aeq} was not “NM” or less than a maximum cut off value (e.g. “<20 dB” or “<30dB”);
- contributions from Borg were within 5 dB of the relevant L_{Aeq} criterion, as 5 dB is the maximum penalty that can be applied by low-frequency modifying factors; and
- Borg was the dominant low-frequency noise source.

All measurements meeting these conditions were evaluated for possible low frequency penalty applicability in accordance with the NPfL.

3.4 Monitoring Equipment

The 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 analyser	30131882	05/02/2021
Pulsar 105 acoustic calibrator	78226	01/02/2021

4 RESULTS

4.1 Attended Noise Monitoring

Total noise levels measured at each location are provided in Table 4.1.

Table 4.1: MEASURED NOISE LEVELS – ANNUAL 2019 - 2020¹

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	24/06/2019 20:42	62	51	46	42	44	40	38
NM1	24/06/2019 22:55	52	49	44	41	42	38	36
NM1	25/06/2019 12:19	74	65	51	46	52	44	41
NM2	24/06/2019 20:20	53	49	47	44	45	43	40
NM2	24/06/2019 23:16	52	49	45	43	43	41	39
NM2	25/06/2019 11:58	66	58	51	46	49	44	41
NM3	24/06/2019 21:31	49	42	38	33	35	30	29
NM3	24/06/2019 22:00	63	49	35	31	38	28	27
NM3	25/06/2019 13:02	72	62	44	32	49	29	26
NM4	24/06/2019 21:05	73	51	42	37	46	34	31
NM4	24/06/2019 22:26	48	42	37	32	34	29	27
NM4	25/06/2019 12:39	74	63	49	41	50	37	33

Notes: 1. Levels in this table are not necessarily the result of activity at Borg.

Table 4.2 compares measured L_{Aeq,15minute} levels from Borg with the Consent and ONMP noise criteria.

Table 4.2: $L_{Aeq,15min}$ GENERATED BY BORG AGAINST CRITERIA – ANNUAL 2019 - 2020

Location	Start Date and Time	Wind Speed m/s ¹	Stability Class ¹	VTG °C per 100m ¹	Criterion dB	Criterion Applies? ^{2,3}	Borg $L_{Aeq,15min}$ dB ⁴	Exceedance ^{5,6}
NM1	24/06/2019 20:42	7.4	D	-1.0	50	No	40	NA
NM1	24/06/2019 22:55	4.8	E	0.5	45	No	38	NA
NM1	25/06/2019 12:19	4.4	B	-1.8	55	No	45	NA
NM2	24/06/2019 20:20	5.9	D	-1.0	50	No	42	NA
NM2	24/06/2019 23:16	4.5	E	0.5	45	No	43	NA
NM2	25/06/2019 11:58	4.4	D	-1.0	55	No	45	NA
NM3	24/06/2019 21:31	6.4	D	-1.0	50	No	IA	NA
NM3	24/06/2019 22:00	5.5	D	-1.0	45	No	IA	NA
NM3	25/06/2019 13:02	5.0	D	-1.0	55	No	IA	NA
NM4	24/06/2019 21:05	6.2	D	-1.0	50	No	NM	NA
NM4	24/06/2019 22:26	4.9	E	0.5	45	No	25	NA
NM4	25/06/2019 12:39	5.2	D	-1.0	55	No	IA	NA

Notes:

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 $L_{Aeq,15min}$ 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

4.2 Modifying Factors

Measured Borg only levels were assessed for the applicability of low frequency modification factors in accordance with the EPA's NPfL.

There were no intermittent or tonal noise sources, as defined in the NPfL, audible from site during the survey. None of the measurements satisfied the conditions outlined in Section 3.3 when assessing low frequency noise.

Therefore no further assessment of modifying factors was undertaken.

4.3 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 or hail.

Table 4.3: MEASURED ATMOSPHERIC CONDITIONS – ANNUAL 2019 - 2020^{1,2}

Location	Start Date and Time	Temperature (degrees)	Wind Speed (m/s)	Wind Direction	Cloud Cover (1/8s)
NM1	24/06/2019 20:42	6	1.2	120	5
NM1	24/06/2019 22:55	6	0.8	170	3
NM1	25/06/2019 12:19	9	1.1	100	8
NM2	24/06/2019 20:20	6	1.5	100	4
NM2	24/06/2019 23:16	6	0.9	70	6
NM2	25/06/2019 11:58	10	0.9	100	8
NM3	24/06/2019 21:31	6	1.0	120	6
NM3	24/06/2019 22:00	6	0.9	120	5
NM3	25/06/2019 13:02	9	0.7	40	8
NM4	24/06/2019 21:05	6	3.2	100	4
NM4	24/06/2019 22:26	6	0.9	70	3
NM4	25/06/2019 12:39	8	1.7	130	8

Notes:

1. Wind speed and direction measured at 1.8 metres; and
2. "-" indicates calm conditions at 1.8 metres.

5 SUMMARY

The following applies to attended noise monitoring conducted during the evening and night period on 24 June 2019 and the day period on 25 June 2019.

Borg operations complied with the relevant criteria during the annual survey at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

A low frequency noise assessment was carried out in accordance with the EPA's NPfl. Low frequency modifying factors, where applicable, did not result in any exceedances of Borg noise limits during the survey.

Global Acoustics Pty Ltd

APPENDIX

A *STATUTORY REQUIREMENTS*

A.1 BORG PANELS FACILITY DEVELOPMENT CONSENT

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.

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.

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.

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.

APPENDIX

B CALIBRATION CERTIFICATES



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Pennant Hills NSW AUSTRALIA 2120
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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 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	
31.5 Hz to 8kHz	±0.15dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.015kPa
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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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 - Environmental Conditions			
Specific Tests		Temperature	±0.2°C
Generated SPL	±0.11dB	Relative Humidity	±2.4%
Frequency	±0.01%	Barometric Pressure	±0.015kPa
Distortion	±0.45%		

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.

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Appendix F – Construction Noise Monitoring Reports

Borg Panels Facility

*Environmental Noise Monitoring
Quarter 1 2020*

*Prepared for
Borg Manufacturing Pty Ltd*



Noise and Vibration Analysis and Solutions

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Borg Panels Facility

Environmental Noise Monitoring Quarter 1 2020

Reference: 20030_R01

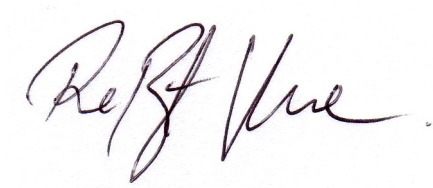
Report date: 15 April 2020

Prepared for

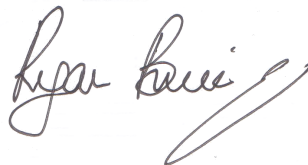
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Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation 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 29 and 30 March 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

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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 20 November 2018. 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 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, and supersedes the EPA's Industrial Noise Policy (INP, 2000). Assessment and reporting of modifying factors is to be carried out in accordance with Fact Sheet C of the NPfI.

NPfI modifying factors, as they are applicable to mining noise, are described in more detail below.

2.6.1 Tonality and Intermittent Noise

As defined in the NPfI:

Tonal noise contains a prominent frequency and is characterised by a definite pitch.

Intermittent noise is noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

2.6.2 Low-Frequency Noise

As defined in the NPfI:

Low frequency noise is noise with an unbalanced spectrum and containing major components within the low-frequency range (10 – 160 Hz) of the frequency spectrum.

The NPfI contains the current method of assessing low-frequency noise, which is a 2 step process as detailed below:

Measure/assess source contribution C-weighted and A-weighted $L_{eq,T}$ levels over the same time period. The low frequency noise modifying factor correction is to be applied where the C-A level is 15 dB or more and:

- where any of the 1/3 octave noise levels in Table C2 are exceeded by **up to and including** 5 dB and cannot be mitigated, a 2 dBA positive adjustment to measured A weighted levels applies for the evening/night period; and*
- where any of the 1/3 octave noise levels in Table C2 are exceeded by **more than** 5 dB and cannot be mitigated, a 5 dBA positive adjustment to measured A weighted levels applies for the evening/night period and a 2 dBA positive adjustment applies for the daytime period.*

Table C2 and associated notes from the NPfI is reproduced below:

Table C2: One-third octave low-frequency noise thresholds.

Hz/dB(Z)	One-third octave $L_{Zeq,15min}$ threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for

wind speeds up to 5 metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.

- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

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.

Attended monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows an accurate determination of the contribution, if any, to measured noise levels by the source of interest (in this case Borg).

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 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 analyser 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

Years of monitoring have indicated that noise levels from the facility, particularly those measured at significant distances from the source are relatively continuous and broad spectrum. Given this, noise levels from Borg at the monitoring locations are unlikely to be intermittent or tonal.

Assessment of low-frequency modifying factors is necessary when application of the maximum correction could potentially result in an exceedance of the relevant site-only $L_{A\text{eq}}$ criterion. Low-frequency analysis is therefore undertaken for measurements in this report where:

- meteorological conditions resulted in criteria being applicable;
- contributions from Borg were audible and directly measurable, 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");
- contributions from Borg were within 5 dB of the relevant $L_{A\text{eq}}$ criterion, as 5 dB is the maximum penalty that can be applied by low-frequency modifying factors; and
- Borg was the only low-frequency noise source.

All measurements meeting these conditions were evaluated for possible low-frequency penalty applicability in accordance with the NPfL.

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
Rion NC-74 acoustic calibrator	11248306	17/06/2021

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 1 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	29/3/20 16:21	58	51	47	46	45	44	42	61
NM1	29/3/20 19:39	65	55	48	47	46	45	44	62
NM1	29/3/20 23:18	56	49	47	46	46	45	43	61
NM2	29/3/20 16:45	64	51	46	44	44	42	40	59
NM2	29/3/20 20:00	54	50	48	47	46	45	43	60
NM2	29/3/20 22:56	52	50	47	46	45	44	43	60
NM3	29/3/20 20:54	50	46	33	34	31	30	29	49
NM3	29/3/20 22:03	62	54	38	41	30	28	27	54
NM3	30/3/20 10:50	63	57	47	46	42	40	36	60
NM4	29/3/20 17:07	70	55	45	46	42	41	39	58
NM4	29/3/20 19:17	58	52	46	45	45	43	41	57
NM4	29/3/20 23:44	48	47	45	44	44	43	40	56

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.

There were no intermittent or tonal noise sources, as defined in the NPfI, audible from site during the survey.

Five of the measurements in this survey satisfied the conditions outlined in Section 3.3 and were assessed for low-frequency modifying factors in Table 4.2.

Table 4.2: LOW-FREQUENCY MODIFYING FACTOR ASSESSMENT – QUARTER 1 2020

Location	Start Date and Time	Measured Borg Only L _{Aeq} dB	Measured Borg Only L _{Ceq} dB	Borg Only L _{Ceq} – L _{Aeq} dB ¹	Max exceedance of ref spectrum Result ²	Penalty dB ³
NM1	29/3/20 19:39	46	62	16	Nil	Nil
NM1	29/3/20 23:18	46	61	15	Nil	Nil
NM2	29/3/20 20:00	46	60	14	NA	NA
NM2	29/3/20 22:56	45	60	15	Nil	Nil
NM4	29/3/20 23:44	44	56	12	NA	NA

Notes:

1. As per NPfl, if $L_{Ceq} - L_{Aeq} \geq 15$ dB further assessment of low-frequency noise required as detailed in Sections 2.6.2 and 3.3 of this report;
2. As per NPfl, compare measured spectrum against reference spectrum to determine if the low-frequency modifying factor is triggered and application of penalty is required; and
3. Bold results indicate that NPfl low-frequency modifying factor has been triggered and application of correction is required.

4.3 Attended Noise Monitoring

Table 4.3 compares measured $L_{Aeq,15\text{minute}}$ levels from Borg with the project specific noise criteria. Further detail for the exceedance at NM1 is provided in Section 5.

Table 4.3: $L_{Aeq,15\text{minute}}$ GENERATED BY BORG AGAINST CRITERIA – QUARTER 1 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	29/3/20 16:21	3.2	A	55	No	45	NA
NM1	29/3/20 19:39	1.1	F	50	Yes	46	Nil
NM1	29/3/20 23:18	1.4	F	45	Yes	46	1
NM2	29/3/20 16:45	3.1	C	55	No	44	NA
NM2	29/3/20 20:00	1.4	F	50	Yes	46	Nil
NM2	29/3/20 22:56	1.2	F	45	Yes	45	Nil
NM3	29/3/20 20:54	1.7	F	50	Yes	<30	Nil
NM3	29/3/20 22:03	1.7	F	45	Yes	<30	Nil
NM3	30/3/20 10:50	4.0	D	55	No	41	NA
NM4	29/3/20 17:07	3.3	C	55	No	42	NA
NM4	29/3/20 19:17	1.3	F	50	Yes	44	Nil
NM4	29/3/20 23:44	1.2	F	45	Yes	44	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 4.4. 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 4.4: MEASURED ATMOSPHERIC CONDITIONS – QUARTER 1 2020

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	29/3/20 16:21	32	1.5	290	3
NM1	29/3/20 19:39	17	0.5	0	1
NM1	29/3/20 23:18	16	1.5	355	0
NM2	29/3/20 16:45	20	0.9	290	3
NM2	29/3/20 20:00	17	0.0	-	4
NM2	29/3/20 22:56	16	0.0	-	0
NM3	29/3/20 20:54	17	0.8	230	2
NM3	29/3/20 22:03	17	0.4	50	1
NM3	30/3/20 10:50	14	1.5	340	8
NM4	29/3/20 17:07	20	2.4	270	4
NM4	29/3/20 19:17	16	0.0	-	2
NM4	29/3/20 23:44	15	0.8	330	1

Notes:

1. “-” indicates calm conditions at monitoring location.

Meteorological data used for compliance assessment is sourced from the Borg AWS.

5 DISCUSSION

5.1 Noted Noise Sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are taken into account in each measurement via statistical descriptors. From these observations, summaries have been derived for each location and provided in this chapter. 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 2 where it can be seen that frogs and insects are generating noise at frequencies above 1000 Hz while industrial noise is at frequencies less than 1000 Hz, which is typical. Adding levels at frequencies that relate to mining only allows separate statistical results to be calculated. This analysis cannot always be performed if there are significant levels of other noise at the same frequencies as Borg, such as dogs, cows, or (most commonly) road traffic.

It should be noted that the method of summing statistical values up to a cut-off frequency can overstate the L_{A1} result by a small margin but is entirely accurate for L_{Aeq} .

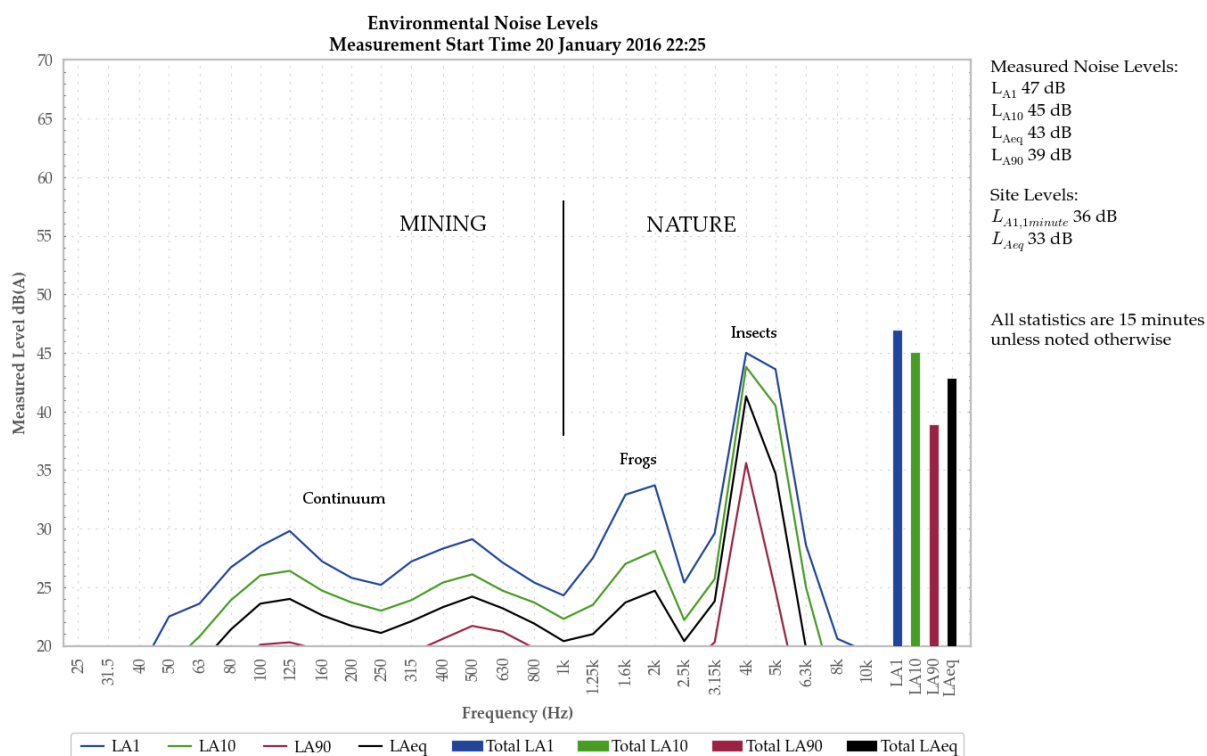


Figure 2: Sample graph (see Section 5.1 for explanatory note)

5.1.1 NM1 – Night

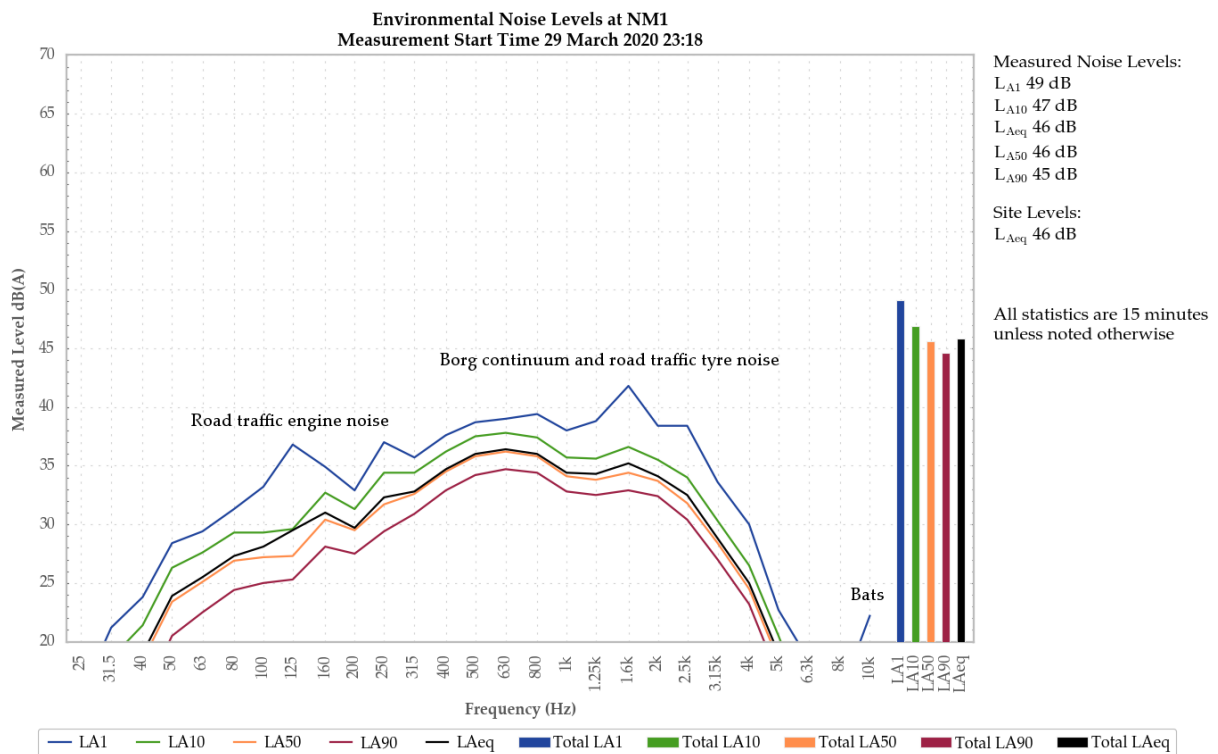


Figure 3: Environmental Noise Levels, NM1 – Oberon Caravan Park

A continuum from Borg was audible throughout the measurement, generating the site only L_{Aeq} of 46 dB.

Borg was responsible for the measured L_{A10} , L_{A50} , L_{Aeq} and L_{A90} . Borg and road traffic generated the measured L_{A1} .

Bats, insects and breeze were also noted.

6 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 29 and 30 March 2020 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 1 2020 survey at all monitoring locations, with the exception of NM1 during the night period. A continuum from Borg was audible throughout the measurement, generating the site only L_{Aeq} of 46 dB, exceeding the criterion by 1 dB. Follow-up monitoring for the exceedance at NM1 was completed by Borg.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

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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.

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.

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



**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
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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 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	
31.5 Hz to 8kHz	±0.13dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.015kPa
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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Sound Calibrator
IEC 60942-2017

Calibration Certificate

Calibration Number C19344

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Rion NC-73
Instrument Serial Number : 11248306

Atmospheric Conditions

Ambient Temperature : 24.6°C
Relative Humidity : 47.4%
Barometric Pressure : 100.85kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 17 Jun 2019

Secondary Check: Eloise Burrows
Report Issue Date : 17 Jun 2019

Approved Signatory :

Ken Williams

Characteristic Tested

Result

Generated Sound Pressure Level
Frequency Generated
Total Distortion

Pass
Pass
Pass

	Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
Measured Output	94.0	1000.0	94.3	989.75

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 Tests		Environmental Conditions	
Generated SPL	±0.11dB	Temperature	±0.3°C
Frequency	±0.01%	Relative Humidity	±2.3%
Distortion	±0.3%	Barometric Pressure	±0.017kPa

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 Australian/national standards.

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Borg Panels Facility

Construction Noise Monitoring
Quarter 2 2019

Prepared for
Borg Construction Pty Ltd



Noise and Vibration Analysis and Solutions

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Borg Panels Facility

Construction Noise Monitoring Quarter 2 2019

Reference: 19177_R02_RevB

Report date: 22 August 2019

Prepared for

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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: 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 Construction Pty Ltd to conduct a quarterly construction noise survey for 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 25 June 2019 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

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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
$L_{A1,1minute}$	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, 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
Stability class	Stability class (or category) is determined from measured wind speed and sigma-theta
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 NOISE CRITERIA AND REGULATOR REQUIREMENTS

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 November 2018. The sections of the consent relating to noise are reproduced in Appendix A.

2.2 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 June 2017. Relevant sections of the CNMP are reproduced in Appendix A.

2.3 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

Project specific 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 L _{Aeq,15minute} dB
NM1	75
NM2	75
NM3	75
NM4	75

2.4 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.

2.5 Modifying Factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017, and supersedes the EPA's Industrial Noise Policy (INP, 2000). Assessment and reporting of modifying factors is to be carried out in accordance with Fact Sheet C of the NPfI.

NPfI modifying factors, as they are applicable to mining noise, are described in more detail below.

2.5.1 Tonality and Intermittent Noise

As defined in the NPfI:

Tonal noise contains a prominent frequency and is characterised by a definite pitch.

Intermittent noise is noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

2.5.2 Low-Frequency Noise

As defined in the NPfI:

Low frequency noise is noise with an unbalanced spectrum and containing major components within the low-frequency range (10 – 160 Hz) of the frequency spectrum.

The NPfI contains the current method of assessing low-frequency noise, which is a 2 step process as detailed below:

Measure/assess source contribution C-weighted and A-weighted $L_{eq,T}$ levels over the same time period. The low frequency noise modifying factor correction is to be applied where the C-A level is 15 dB or more and:

- *where any of the 1/3 octave noise levels in Table C2 are exceeded by **up to and including** 5 dB and cannot be mitigated, a 2 dBA positive adjustment to measured A weighted levels applies for the evening/night period; and*
- *where any of the 1/3 octave noise levels in Table C2 are exceeded by **more than** 5 dB and cannot be mitigated, a 5 dBA positive adjustment to measured A weighted levels applies for the evening/night period and a 2 dBA positive adjustment applies for the daytime period.*

Table C2 and associated notes from the NPfI is reproduced below:

Table C2: One-third octave low-frequency noise thresholds.

Hz/dB(Z)	One-third octave $L_{Zeq,15min}$ threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for

wind speeds up to 5 metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.

- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

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, monthly 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.

Attended monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows an accurate determination of the contribution, if any, to measured noise levels by the source of interest (in this case Borg).

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 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).

3.3 Modifying Factors

Years of monitoring have indicated that noise levels from the facility, particularly those measured at significant distances from the source are relatively continuous and broad spectrum. Given this, noise levels from Borg at the monitoring locations are unlikely to be intermittent or tonal.

Assessment of low-frequency modifying factors is necessary when application of the maximum correction could potentially result in an exceedance of the relevant site-only L_{Aeq} criterion. Low-frequency analysis is therefore undertaken for measurements in this report where:

- meteorological conditions resulted in criteria being applicable;
- contributions from Borg were audible and directly measurable, such that the site-only L_{Aeq} was not "NM" or less than a maximum cut off value (e.g. "<20 dB" or "<30dB");
- contributions from Borg were within 5 dB of the relevant L_{Aeq} criterion, as 5 dB is the maximum penalty that can be applied by low-frequency modifying factors; and
- Borg was the only low-frequency noise source.

All measurements meeting these conditions were evaluated for possible low-frequency penalty applicability in accordance with the NPfL.

3.4 Monitoring Equipment

Table 2.3 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	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 2 2019¹

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	25/06/2019 12:19	74	65	51	46	52	44	41
NM2	25/06/2019 11:58	66	58	51	46	49	44	41
NM3	25/06/2019 13:02	72	62	44	32	49	29	26
NM4	25/06/2019 12:39	74	63	49	41	50	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.

There were no intermittent or tonal noise sources, as defined in the NPfI, audible from site during the survey. None of the measurements satisfied the conditions outlined in Section 3.3 when assessing low-frequency noise.

Therefore no further assessment of modifying factors was undertaken.

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 2019

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	25/06/2019 12:19	4.4	B	55	No	45	NA
NM2	25/06/2019 11:58	4.4	D	55	No	45	NA
NM3	25/06/2019 13:02	5.0	D	55	No	IA	NA
NM4	25/06/2019 12:39	5.2	D	55	No	IA	NA

Notes:

- 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.
- Site-only $L_{Aeq,15\text{minute}}$ attributed to Borg, including modifying factors if applicable;
- Bold results in red indicate exceedance of criteria (if applicable); and
- NA in exceedance column means atmospheric conditions outside conditions specified and criterion is 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 2019

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	25/06/2019 12:19	9	1.1	100	8
NM2	25/06/2019 11:58	10	0.9	100	8
NM3	25/06/2019 13:02	9	0.7	40	8
NM4	25/06/2019 12:39	8	1.7	130	8

Notes:

- "-" indicates calm conditions at 1.8 metres.

5 SUMMARY

Global Acoustics was engaged by Borg Construction Pty Ltd to conduct a quarterly construction noise survey for 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 25 June 2019 at four monitoring locations around Borg.

Borg complied with the relevant criteria during the Quarter 2 2019 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.

A.3 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) 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**.

7.3 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**

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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 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	
31.5 Hz to 8kHz	±0.15dB	Temperature	±0.2°C
12.5kHz	±0.2dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.015kPa
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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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 - Environmental Conditions			
Specific Tests		Temperature	±0.2°C
Generated SPL	±0.11dB	Relative Humidity	±2.4%
Frequency	±0.01%	Barometric Pressure	±0.015kPa
Distortion	±0.45%		

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.

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PAGE 1 OF 1

Borg Panels Facility

Construction Noise Monitoring
Quarter 4 2019

Prepared for
Borg Construction Pty Ltd



Noise and Vibration Analysis and Solutions

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Borg Panels Facility

Construction Noise Monitoring Quarter 4 2019

Reference: 19276_R01

Report date: 29 November 2019

Prepared for

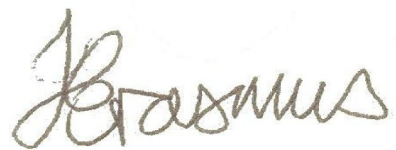
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Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation 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 Construction Pty Ltd to conduct a quarterly construction noise survey for 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 20 November 2019 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

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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 20 November 2018. 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 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 June 2017. 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 LAeq,15minute dB	Evening LAeq,15minute dB	Night LAeq,15minute dB
All sensitive receivers	55	50	45

Project specific 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 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, and supersedes the EPA's Industrial Noise Policy (INP, 2000). Assessment and reporting of modifying factors is to be carried out in accordance with Fact Sheet C of the NPfI.

NPfI modifying factors, as they are applicable to mining noise, are described in more detail below.

2.6.1 Tonality and Intermittent Noise

As defined in the NPfI:

Tonal noise contains a prominent frequency and is characterised by a definite pitch.

Intermittent noise is noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

2.6.2 Low-Frequency Noise

As defined in the NPfI:

Low frequency noise is noise with an unbalanced spectrum and containing major components within the low-frequency range (10 – 160 Hz) of the frequency spectrum.

The NPfI contains the current method of assessing low-frequency noise, which is a 2 step process as detailed below:

Measure/assess source contribution C-weighted and A-weighted $L_{eq,T}$ levels over the same time period. The low frequency noise modifying factor correction is to be applied where the C-A level is 15 dB or more and:

- *where any of the 1/3 octave noise levels in Table C2 are exceeded by **up to and including** 5 dB and cannot be mitigated, a 2 dBA positive adjustment to measured A weighted levels applies for the evening/night period; and*
- *where any of the 1/3 octave noise levels in Table C2 are exceeded by **more than** 5 dB and cannot be mitigated, a 5 dBA positive adjustment to measured A weighted levels applies for the evening/night period and a 2 dBA positive adjustment applies for the daytime period.*

Table C2 and associated notes from the NPfI is reproduced below:

Table C2: One-third octave low-frequency noise thresholds.

Hz/dB(Z)	One-third octave $L_{Zeq,15min}$ threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for

wind speeds up to 5 metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.

- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

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, quarterly 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.

Attended monitoring is preferred to the use of noise loggers when determining compliance with prescribed limits as it allows an accurate determination of the contribution, if any, to measured noise levels by the source of interest (in this case Borg).

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 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).

3.3 Modifying Factors

Years of monitoring have indicated that noise levels from the facility, particularly those measured at significant distances from the source are relatively continuous and broad spectrum. Given this, noise levels from Borg at the monitoring locations are unlikely to be intermittent or tonal.

Assessment of low-frequency modifying factors is necessary when application of the maximum correction could potentially result in an exceedance of the relevant site-only $L_{A\text{eq}}$ criterion. Low-frequency analysis is therefore undertaken for measurements in this report where:

- meteorological conditions resulted in criteria being applicable;
- contributions from Borg were audible and directly measurable, 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");
- contributions from Borg were within 5 dB of the relevant $L_{A\text{eq}}$ criterion, as 5 dB is the maximum penalty that can be applied by low-frequency modifying factors; and
- Borg was the only low-frequency noise source.

All measurements meeting these conditions were evaluated for possible low-frequency penalty applicability in accordance with the NPfI.

3.4 Monitoring Equipment

Table 2.3 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	1070590	25/06/2020
Pulsar 106 acoustic calibrator	79631	22/01/2021

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 4 2019¹

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	20/11/19 09:14	64	57	52	49	47	43	40	63
NM2	20/11/19 09:58	74	54	46	46	43	41	39	59
NM3	20/11/19 08:50	83	71	55	57	43	38	33	64
NM4	20/11/19 09:34	75	67	50	53	41	37	33	61

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.

There were no intermittent or tonal noise sources, as defined in the NPfI, audible from site during the survey. None of the measurements satisfied the conditions outlined in Section 3.3 when assessing low-frequency noise.

Therefore no further assessment of modifying factors was undertaken.

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 2019

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	20/11/19 09:14	3.2	C	55	No	40	NA
NM2	20/11/19 09:58	2.3	A	55	Yes	37	Nil
NM3	20/11/19 08:50	2.8	C	55	Yes	35	Nil
NM4	20/11/19 09:34	2.8	C	55	Yes	<35	Nil

Notes:

- 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.
- 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 4 2019

Location	Start Date and Time	Temperature ° C	Wind Speed m/s	Wind Direction ° Magnetic North ¹	Cloud Cover 1/8s
NM1	20/11/19 09:14	20	1.0	100	0
NM2	20/11/19 09:58	24	0.5	100	0
NM3	20/11/19 08:50	20	1.6	90	0
NM4	20/11/19 09:34	21	0.5	100	0

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 Construction Pty Ltd to conduct a quarterly construction noise survey for 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 20 November 2019 at four monitoring locations around Borg.

Borg operations complied with the relevant criteria during the Quarter 4 2019 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.

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 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 C18363

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	Post-Test Atmospheric Conditions
Ambient Temperature : 21.3°C	Ambient Temperature : 22.7°C
Relative Humidity : 41.7%	Relative Humidity : 39.2%
Barometric Pressure : 100.95kPa	Barometric Pressure : 100.89kPa
Calibration Technician : Lucky Jaiswal	Secondary Check: Lewis Boorman
Calibration Date : 25 Jun 2018	Report Issue Date : 25 Jun 2018
Approved Signatory :	Juan Agüero

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	
31.5 Hz to 8kHz	±0.12dB	Temperature	±0.05°C
12.5kHz	±0.18dB	Relative Humidity	±0.46%
16kHz	±0.31dB	Barometric Pressure	±0.017kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.12dB		

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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Sound Calibrator

IEC 60942-2017

Calibration Certificate

Calibration Number C19029

Client Details: Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 79631

Atmospheric Conditions

Ambient Temperature : 23.1°C
Relative Humidity : 58.2%
Barometric Pressure : 99.49kPa

Calibration Technician : Charlie Neil
Calibration Date : 22 Jan 2019

Secondary Check: Lewis Boorman
Report Issue Date : 24 Jan 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
Measured Output	94.0	1000.0	94.3	1000.38

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 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 Australian/national standards.

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Appendix G – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
91	Noise	05/05/2019	Hazeltown Road, Oberon	Resident advised noticeable noise seemingly coming from the facility.	Environmental Coordinator placed noise logger at complainant's property for a 48 hour period. Data analysed, nil exceedance of EPL limits. Facility daily reports reviewed from time of complaint did not identify any unusual activity. No evidence of breach of licence condition found.
93	Noise	14/08/2019	Clover Lane, Oberon	Unusual loud noise coming from facility after 7am	Environmental Coordinator investigated potential noise source. No unusual activity occurring on site. Followed up with resident.
95	Noise	03/10/2019	Clover Lane, Oberon	Loud noise seeming to come from site at 6:30am	Environmental Coordinator (EC) commenced investigation with Construction Manager (CM). CM confirmed early concrete pour. Noise monitoring has previously been undertaken for this activity to assess noise levels to allow for early start of concreting. No other activity identified as potential source of nuisance noise. EC advised resident of investigation outcome.
96	Noise Vibration Air/Odour	18/12/2019	Not provided	Nuisance noise seemingly from the facility. Recently noticing 'rumbling' (vibration). Recently noticing a 'chemical' like smell.	Environmental Coordinator (EC) commenced investigation into potential site source of noise, vibration and odour. EC discussed potential source of nuisance with resident who agreed to keep a log of approximate times and types of noise. EC reviewed log (taken over a two week period) and site activities (start-ups, shut downs, press running times). EC concluded that for the majority of the times logged by the resident, the facility was not operating. EC undertook attended noise monitoring early AM (7:15am) and early PM (1:25pm). Both events showed noise levels within approved limits. No site activity identified as source of vibration. No site activity identified as source of odour.

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
97	Dust	3/02/2020	Hazeltown Road, Oberon	Resident observed dust leaving Borg site and blowing toward her house	Environmental Coordinator responded to resident via email, providing details of current controls and addition that are being implemented to manage dust emissions.
98	Dust	3/02/2020	Hazeltown Road, Oberon	Resident complained about dust from site impacting his property	Environmental Coordinator responded to resident via email, providing details of current controls and addition that are being implemented to manage dust emissions.
99	Chemical odour	4/03/2020	Jenolan Street, Oberon	Resident phoned the complaint hotline to report chemical smell 'blowing across in the wind', claiming that this was coming from Borg Panels.	WHSE Coordinator met with resident to discuss complaint and informed resident of Borgs monitoring program to minimise and manage against impacts to the community. No evidence of breach found.
101	Noise	16/04/2020	Tarana Road, Oberon	Resident phoned WHS Coordinator complaining of loud banging seemingly coming from Panels site. Resident also believed operational noise had generally been louder.	WHS Coordinator inspected site and found source of banging noise, immediately spoke with Site Supervisor who rectified the issue. WHS Coordinator attended area near residents home though could not discern site noise due to high wind conditions. WHS Coordinator contacted resident to advise outcome of inspection and rectification works.

Note: numbers 92, 94 & 100 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:	30 October 2019
Time:	4.00pm
Present:	Julie Booth, Tony Truscott, Fran Charge, Tim Charge, Andrew McKibbin, David Knights, Ian Gordon, Trish Gordon
Apologies:	Kathy Sajowitz,

Meeting opened. 4pm

Apologies submitted

Previous minutes reviewed and accepted by Fran Charge.

Site Updates

HPP Report

Safety

- Significant reduction in safety incidents – intense program on safety focusing on complacency and fatigue to reduce incidents.
- One serious injury since June – back injury.
- Drug and Alcohol policy fully implemented, testing taking place.
- LTI (1) major reduction in serious incidents.
- Have looked heavily into forklift operation and interaction, very strict on forklifts.
- 70% incident reduction in line with introduction of drug and alcohol testing.
- Safety absolutes to control issues and outcomes.
- Training ongoing for employee engagement.

Environment

- Three year audit held in June, received an 80% rating.

Market

- Outlook is that the market will be soft for approximately 6 months, hopefully it will pick up in the New Year.
- Biggest challenge at the moment is managing inventory.
- Planning for a 1 week shut in July next year

- Planned 3 week shut over Christmas.
- 7 to 8 contractors now with Highland Pine
- Have spent 1 million in the past month on software to try to optimise full use of the log.
- State Forestry sale a distraction to HPP.

Borg Panels (Including Woodchem and Structaflor)

Safety

- Ongoing focus on engagement of employees and safety awareness.
- 2 LTI's last year with only 1 LTI to date this year.
- Near misses – still requires work on. Work Safe has been on site working with us to reduce the risks and hazards on our Woodchem Site.

Environment

- June – Fibre discharge, systems put in place to prevent a reoccurrence.

Particle Board Line

- Still fine tuning with Commissioning and stabilising of Particle Board, production double the output of the old Structaflor site. The goal is to get to 25,000 cubes per month
- With the line now stable we will look to increase sales.
- Physical changes to board are now tested with board in the market.
- The Structaflor Finishing Line has been moved over and shunting of board across the road has ceased.
- Recycling improvements of the site still ongoing.
- 50,000 square metres of warehouse space on the northern end of the site underway.
- New plant – low melamine presses to be installed.
- March to June before the shed is complete, then look to more Paper Treater lines.
- Christmas break will be short as we need to replenish our stocks.
- Fibre and demand will always be a concern.

General Business

- Borg gym now up and running
- Christmas party is 14th December 2019. Sharon Swannell to advise where to put the notice.
- Council question raised if the CCC is meeting the needs of the community and if there is anything that could be done to make it more efficient.
- Kangaroo cull to take place on Borg grounds to protect the young pines.

Next Meetings:

29 January 2020 at 4pm

29 April 2020 at 4pm

29 July 2020 at 4pm

Appendix I – Water Quality Exceedance Notifications

Jacqueline Blomberg

From: Jacqueline Blomberg
Sent: Monday, 6 April 2020 12:24 PM
To: EPA RSD Central West Mailbox
Cc: Environmental; Oberon_Site
Subject: EPL 3035 Water Quality Exceedance

This email is to advise you that Borg Panels Oberon had an exceedance of concentration limit for TSS and BOD for stormwater sample event undertaken on 26 March 2020.

Results reviewed from ALS Environmental on 6 April reports minor exceedance for BOD at 22mg/l (L2.5 concentration limit 20mg/l) and exceedance for TSS at 152mg/l (L2.5 concentration limit 50mg/l).

The week leading up to this sample event was a relatively dry period. A significant rain event the day before sampling occurred with the Site rain gauge recording 24.5mm.

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 the Annual Return.

Kind regards



Jacqueline Blomberg
Environmental Manager

m:0436 609 556
e:blombergj@borgs.com.au | w:www.borgs.com.au
a:2 Wella Way Somersby NSW 2250

Jacqueline Blomberg

From: Jacqueline Blomberg
Sent: Monday, 24 June 2019 10:43 AM
To: 'Andrew Helms'
Cc: Environmental; Tony Truscott; John Borg
Subject: EPL 3035 Water Quality Exceedance

Good Morning Andrew

This email is to advise you that Borg Panels Oberon had an exceedance of concentration limit for nitrogen and BOD for stormwater sample event undertaken on 6 June 2019.

Results received from ALS Environmental on 21 June reports minor exceedances for nitrogen at 12.7mg/l (L2.5 concentration limit 10mg/l) and BOD at 24mg/l (L2.5 concentration limit 20mg/l). No other exceedances were reported.

Site environmental inspections have been reviewed for the period leading up to and on the day of this sampling event with no site activities identified as having potential to contribute to these minor exceedances.

Rainfall data shows a relatively dry period leading up to the sample event with two minor rainfall events (7.2mm and 4.4mm) immediately prior to the sample event, possibly mobilising organic matter within the system which has contributed to these results.

Further water quality sampling undertaken on 11 June returned results for nitrogen 5.6mg/l and BOD 10mg/l which are below the approved concentration limits.

Please do not hesitate to contact me if you would like to discuss further.

Kind Regards
Jacqui



Jacqueline Blomberg
Environmental Manager

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a:2 Wella Way Somersby NSW 2250

Jacqueline Blomberg

From: Jacqueline Blomberg
Sent: Friday, 2 August 2019 4:03 PM
To: 'Georgia Dragicevic'; 'EPA RSD Central West Mailbox'
Cc: Environmental; Oberon_Site
Subject: Water Quality Exceedance

Good afternoon

This email is to advise you that Borg Panels Oberon had a minor exceedance of concentration limit for Total Nitrogen (Total N) and Biochemical Oxygen Demand (BOD) for stormwater sampling event undertaken on 22 July 2019.

Results received from NATA accredited laboratory ALS Environmental today report Total N at 11.9 milligrams per litre and BOD at 21 milligrams per litre. Environment Protection Licence 3035 100 percentile concentration limit for Total N is set at 10 milligrams per litre and BOD at 20 milligrams per litre.

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 the Annual Return.

Kind Regards



Jacqueline Blomberg
Environmental Manager

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Jacqueline Blomberg

From: Jacqueline Blomberg
Sent: Tuesday, 27 August 2019 12:40 PM
To: 'Georgia Dragicevic'; 'EPA RSD Central West Mailbox'
Cc: Environmental; Oberon_Site
Subject: Water Quality Exceedance

Good afternoon

This email is to advise you that Borg Panels Oberon had an exceedance of concentration limit for Total Phosphorus (Total P) and Biochemical Oxygen Demand (BOD) for stormwater sampling event undertaken on 19 August 2019.

Results received from NATA accredited laboratory ALS Environmental today report Total P at 0.41 mg/L and BOD at 55 mg/L.

Environment Protection Licence 3035 100 percentile concentration limit for Total P is set at 0.3 mg/L and BOD at 20 mg/L.

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 the Annual Return.

Kind Regards



Jacqueline Blomberg
Environmental Manager

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Appendix J – IEA 2017/18 Corrective Action Register

Corrective Action Register: 2017-2018 Independent Environmental Audit - Borg Panels SSD 7016

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
Schedule 2 Part A: Administrative Conditions TERMS OF CONSENT A2.	Verify the disturbance footprint for the proposed hardstand area and confirm if this is consistent with the EIS and development layout plans.	Non-compliant	Survey pick up of hardstand area.	Complete	Included update to area in Section 4.55 Modification Application MOD 1. MOD 1 approved by DPIE 20 November 2018.
	Confirm size of the disturbance footprint located near the second hardstand area, emergency basin and first flush basin.	Non-compliant	Survey pick up of hardstand, emergency basin and first flush basin.	Complete	
Schedule 2 Part A: Administrative Conditions DEMOLITION A14.	Ensure that all future demolition is undertaken in accordance with AS 2601:2001 and that this is documented in the SWMS or a demolition plan/report.	Not verified	Updated SWMS to include reference to 'works will be undertaken in accordance with AS 2601:2001 demolition of structures'.	Complete	
Schedule 2 Part A: Administrative Conditions MODIFICATION OF EXISTING DEVELOPMENT CONSENT A26.	Seek formal written response from DP(I)E regarding the required modifications to DA27/95 and seek clarity regarding the ongoing applicability of the conditions of DA27/95 to the Borg Panels site. It should be noted that if the s96 Modification is approved then the above recommendation will no longer be applicable.	Non-compliant	s96 Modification (MOD 1) submitted to DPIE 2 August 2018. MOD 1 approved 20 November 2018.	Complete	
Schedule 2 Part B: Environmental Performance and Management HOURS OF WORK B13.	It is recommended that Borg Panels review their existing log on / log off and / or timesheet system to ensure it records the start and finish time of construction activities for the remainder of the construction period in order to demonstrate compliance with this condition.	Not verified	Toolbox Talks to include approved construction hours. Evidence available from Toolbox records dated 17 and 24 September 2018 of Borg communication of approved construction hours to workforce. Environmental Standard Awareness Training – Noise delivered to site personnel includes approved construction hours.	Complete	Delivery of training is an ongoing requirement i.e. for new employees and/or those deemed necessary to re-train. Training records including Toolbox Talks maintained on DataStation.

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
<i>Schedule 2 Part B: Environmental Performance and Management</i> NOISE MITIGATION B17.	It is recommended that Borg Panels undertakes a condition assessment survey of all noise attenuation devices associated with the Existing Development and develops a maintenance schedule to ensure the devices are kept in good working order.	Not verified	Investigated procedural controls via the maintenance system, MainPac. Borg Maintenance Engineer manages work orders in this system which includes inspection of and maintenance to <i>devices</i> (plant).	Complete	Noise monitoring for the site demonstrates continual compliance with noise limits set in EPL 3035.
<i>Schedule 2 Part B: Environmental Performance and Management</i> ERSED CONTROL B29.	It is recommended that Borg Panels install sediment retention traps (such as sediment fences – refer to drawing SD 6-8 of the Blue Book) downslope of stockpiles and ensure stockpiles are stabilised to more 50% if they are going to be inactive (e.g. material not added or removed) for more than 20 days.	Non-compliant	Review of ERSED controls to ensure adequacy and compliance. Stockpiles surrounded by swales and sediment basins (i.e. protection controls on the downslope). Land surrounding the stockpiles was graded away from sensitive receptors i.e. water course.	Complete	Stockpiles were being held in that area as they were intended for reuse in the construction of the basins and fill for the northern building pad. Site inspection with Georgia Dragicevic (DPIE) 09/10/2018, inspected stockpile area with Georgia and she agreed that no further ERSED controls were necessary due to location of stockpiles relative to environmentally sensitive receptors. Stockpiles were compacted and removed for reuse within a suitable timeframe.
<i>Schedule 2 Part B: Environmental Performance and Management</i> DISCHARGE LIMITS B31.	It is recommended that a review of the water management system, monitoring requirements and procedures should be completed with key findings used to update the water management plan (where necessary) for the Departments approval.	Non-compliant	Reviewed Pollution Incident Response Management Plan. Updates to site plans including stormwater management system. Review associated procedures and training. Implementation of recently developed	Complete	RE: auditor recommendation <i>update the water management plan (where necessary) for the Departments approval</i> , nil procedural changes to SWMP therefore not necessary to submit to Department for approval.

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
			Operational Environment Management Plan and delivery of Environmental Awareness Training – Water delivered to site personnel includes for the site stormwater management system and EPL 3035 compliance requirements. Review of SWMP. No procedural changes identified. Inclusion of Training package.		Training records maintained on DataStation.
<i>Schedule 2 Part B: Environmental Performance and Management</i> DANGEROUS GOODS B44.	It is recommended that Borg Panels review the dangerous goods and limits listed in the SEPP 33 report to determine if these are still current and are consistent with what is currently stored on site. Borg Panels should introduce a mechanism to identify the quantity of dangerous goods stored on site to ensure and demonstrate compliance with this condition.	Not verified	A review and update of the Chemical Substances Register is currently being undertaken on site. Once completed this will be assessed against SEPP 33 to ensure compliance. Review of purchasing procedure to ensure quantities on site are compliant with SEPP 33.	Complete	There is a manifest for all goods held on site however there is no holding volumes as the quantities are limited. Quantities on site are managed via Borg Purchasing Officers ordering system.
<i>Schedule 2 Part B: Environmental Performance and Management</i> BUNDING B45.	It is recommended that a review of the fuel and chemical storage procedures should be completed with key findings used to update the CEMP and OEMP (where necessary) for the Departments approval. This should include updates to the CEMP Inspection Checklist and updates to the OEMP sub-plan checklists (where applicable) to specifically capture and inspect all hydrocarbon storage and management areas. In addition, refresher training should be rolled out to all Borg Panels employees who work with or near fuels and chemicals regarding the appropriate storage of these items and how to use and maintain spill kits.	Non-compliant	Conduct bunding audit. Conduct chemical audit. Review OEMP and CEMP. Nil significant procedural changes identified. Inclusion of Environmental Awareness Training packages. Review and update PIRMP. Review and update Inspection Checklist to include for fuel/chemical storage and spill kit checks. Review and deliver employee training packages for chemical and fuel handling/storage.	Complete	Chemical Management Safety Absolute reviewed by WHS Coordinator. This training is conducted regularly and on an as needs basis across site. Environmental Training Awareness – Water includes for responsibilities for chemical management. Training records maintained on DataStation. New bunding and additional spill kits purchased for site.

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
<i>Schedule 2 Part B: Environmental Performance and Management</i> WASTE MANAGEMENT B46.	It is recommended that a review of the WMP (including key commitments) should be completed with key findings used to update the CEMP and WMP for the Departments approval. In addition, once the WMP is updated refresher training should be rolled out to all Borg Panels employees regarding waste management requirements on the Borg Panels site.	Non-compliant	Review WMP and Environmental Standard Awareness training. Deliver refresher training to site personnel. Implement waste segregation strategies for different waste streams where required. Develop Site Environmental Plan (SEP) for waste & stockpiles.	Complete	WMP review did not identify any necessary updates (and therefore nil updates to the CEMP). Training records maintained on DataStation.
<i>Schedule 2 Part B: Environmental Performance and Management</i> WASTE MANAGEMENT B49.	Borg Panels were not offered a renewal on their Trade Waste Service Contract with Oberon Council for the 2017-2018 reporting period. Further it was confirmed that DPI-Water also did not provide concurrence due to the category of discharge. It is recommended that Borg Panels seek confirmation from the Department that the new arrangements to treat its liquid wastes and reuse onsite are acceptable and that this condition is there for not applicable/triggered.	Not verified	Whilst DPI has not provided concurrence, Borg endeavours to continue investigation into a Trade Waste Agreement with Council. Borg Panels treats its liquid trade waste on site in accordance existing requirements and does not discharge to the sewerage system. That waste which cannot be treated on site is disposed of to an appropriately licensed facility.	Open	
<i>Schedule 2 Part B: Environmental Performance and Management</i> CONSTRUCTION WASTE MANAGEMENT B50.	It is recommended that a review of Section 7.7 of the CEMP should be completed in order to address the issues identified during this audit. The review should outline the requirements for waste segregation across the site and identify designated waste storage areas. With regard to the existing waste stockpiles a plan of action should be developed that outlines what can be stored in these and confirm timing for proposed re-use on site or disposal offsite. In addition, refresher training should be rolled out to all Borg Panels employees regarding waste	Non-compliant	Review CEMP and Environmental Standard Awareness training. Implement waste segregation strategies for different waste streams where required. Develop SEP for waste & stockpiles. The location identified in the audit is where Borg stockpiled materials that are destined for reuse. Better segregation via a stockpile plan/map will be developed which will include the intended fate of material i.e. on-site reuse, off-site disposal to	Complete	CEMP review did not identify any necessary updates (and therefore nil updates to the CEMP). Training records maintained on DataStation.

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
	management requirements on the Borg Panels site during construction.		landfill/recycled and appropriate ERS&D controls.		
<p><i>Schedule 2 Part C: Environmental Management, Reporting and Auditing</i></p> <p>INCIDENT REPORTING</p> <p>C12.</p>	<p>It is recommended that Borg Panels reviews all environmental incidents that occurred during the 2017-2018 reporting period and assess the incidents against the Pollution Incident Response Management Plan to determine if DPE, the EPA or any other agencies should have been notified. The 2018 Annual Review once prepared should discuss environmental incidents as those that were notified to an agency and those that did not require notification. A review of the Pollution Incident Response Management Plan should be undertaken to determine its adequacy in identifying and managing an incident and updated where necessary.</p> <p>Further it is recommend that the process for completing internal environmental incident reports be revised to capture more detailed information for incidents that occur (including photos, details of people involved in the reporting/investigation process, clean up/actions taken, estimate of volumes or impacts etc.) so that these details can be included in the Internal Environmental Incident Register.</p>	Non-compliant	<p>Review PIRMP and Environmental Incident Report process to ensure details of incidents captured.</p> <p>2018 Annual Review to discusses environmental incidents.</p> <p>Discuss process/level of detail required for completing internal incident reports at monthly enviro meeting with site Supervisors/Team Leaders.</p>	Complete	<p>The incidents identified during the audit as having potential to cause off-site impacts were contained on site and did not cause any off-site impacts. The site stormwater discharge & monitoring record shows no discharge from site during or immediately after the recorded incidents, therefore notification to EPA or DPE was not required. These were also assessed against the PIRMP criteria to determine if notification was required. The PIRMP is adequate for the site.</p> <p>DataStation training rolled out to Supervisors/Team Leaders via WHS team.</p>

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
<i>Schedule 2 Part C: Environmental Management, Reporting and Auditing</i> INCIDENT REPORTING C13.	The two incidents regarding the exceedances of EPL limits for BOD and TSS during the audit period were not reported to DPE or other agencies as required. See above for C12.	Non-compliant	Review Borg Environmental Incident Reporting process to ensure adequacy in identifying when incident notification to EPA/DPE or other agencies is necessary. Include incident (external) notification process in PIRMP.	Complete	
<i>Appendix B: Applicant's Management and Mitigation Measures</i> WATER	It is recommended that Borg Panels install sediment retention traps (such as sediment fences – refer to drawing SD 6-8 of the Blue Book) downslope of stockpiles and ensure stockpiles are stabilised to more 50% if they are going to be inactive (e.g. material not added or removed) for more than 20 days.	Non-compliant	Review of ERSED controls to ensure adequacy and compliance. Stockpiles surrounded by swales and sediment basins (i.e. protection controls on the downslope). Land surrounding the stockpiles was graded away from sensitive receptors i.e. water course.	Complete	Stockpiles were being held in that area as they were intended for reuse in the construction of the basins and fill for the northern building pad. Site inspection with Georgia Dragicevic (DPIE) 09/10/2018, inspected stockpile area with Georgia and she agreed that no further ERSED controls were necessary due to location of stockpiles relative to environmentally sensitive receptors. Stockpiles were compacted and removed for reuse within a suitable timeframe.
<i>Appendix B: Applicant's Management and Mitigation Measures</i> FLORA AND FAUNA	It is recommended that Borg Panels install sediment retention traps (such as sediment fences – refer to drawing SD 6-8 of the Blue Book) downslope of stockpiles and ensure stockpiles are stabilised to more 50% if they are going to be inactive (e.g. material not added or removed) for more than 20 days.	Non-compliant	As above for WATER	Complete	As above for WATER

SSD 7016 Condition	Audit Action	Audit Finding	Action taken by Borg	Action Status	Comments
	The following items were noted in the audit:				
	Landscaping Plan (Issue B) identifies vegetation on the site to be retained.		Intended to be incorporated into the Operational Plans post construction.	Open	Site still in construction phase
	No reference to the management of noxious weeds in the OEMP or CEMP.		Presence of noxious weeds on site will be investigated and if identified Plans updated where necessary.	Open	Site mostly concrete, with willow trees (noxious plant) established in the northern boundary drain.
	Landscape Plan (Issue B) identifies areas for revegetation/landscaping. A list of species is not available in the Landscape Plan or the EIS.		Landscape Plan will be updated with species list closer to commencement of this activity.	Complete	
	The Vegetation Management Plan has not been developed. It was noted that this will be prepared and implemented following completion of construction activities.		Vegetation Management Plan to be developed.	Open	Site still in construction phase

Appendix K – Incident Notification



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NSW EPA
Central West Region
PO Box 1388
Bathurst NSW 2795

11 July 2019

Re: Borg Panels Oberon Environmental Incident – EPA Reference Number C09132-2019

Dear Ms Ledger

In accordance with condition R3 of Environment Protection License 3035 the following information provides details for items listed in condition R3.3 due to an environmental incident that occurred at Borg Panels Oberon site on Wednesday 3 July 2019 where a blocked reject cyclone at MDF Press Conti 1 resulted in off-site fibre discharge.

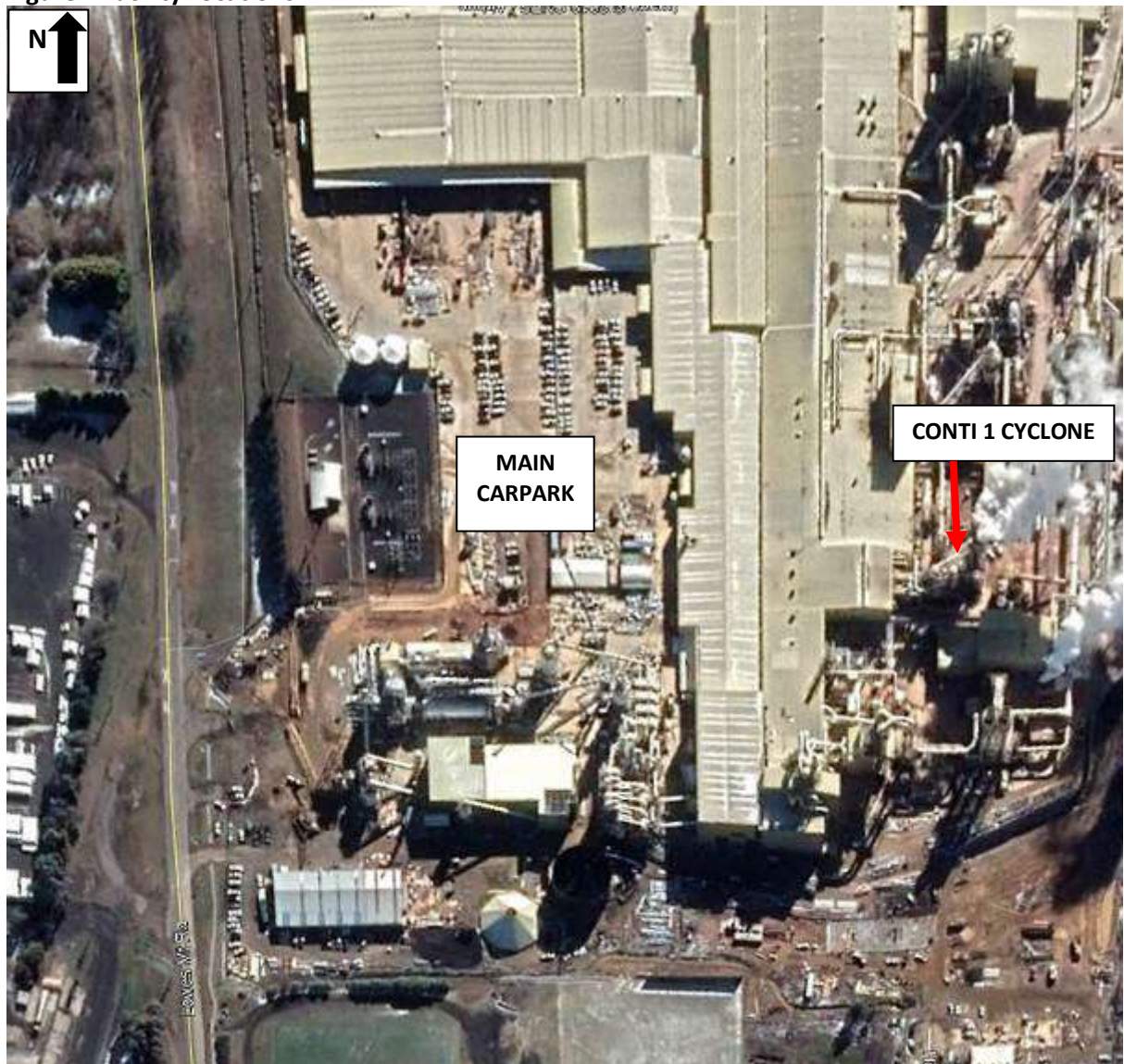
At approximately 8:00pm during Wednesday night, Loader Operator Barry Sullivan (BS) noticed fugitive fibre deposited in the main carpark located at the western side of the facility. BS immediately notified Press Team Leader Julio Castillo (JC) who activated the PIRMP and commenced a site investigation. JC attended to the fibre bin area and observed dry fibre blowing out of the Conti 1 (C1) cyclone and ordered the shutdown of the refiner, forming line and cyclone fans (see **Figure 1** for locations). JC noted the exact location of the discharge as the mat reject cyclone above the C1 fibre bin.

Once the source of emission was identified C1 Operator Harry Mujezinovic (HM) isolated the reject rotary feeder and unblocked the cyclone. JC and other shift workers attended to the carpark area identified by BS to assess the situation and commenced clean-up using the site sweeper trucks. As JC was coordinating clean-up along the western site boundary he did notice an amount of fibre on Lowes Mount Road and at adjacent business Highland Pine Products however JC stated that it was too dark to clearly see how much fibre had actually escaped site. JC contacted WHS Coordinator David Ward and Environmental Coordinator Sharon Cutting (SC) to advise them of the incident. SC instructed JC to enter an incident report in DataStation. JC advised SC that he would inform day shift of the incident and potential off-site discharge during handover. Based on witness accounts, the duration of the incident was between 8 to 10 minutes and quantity discharged approximately 10-12m³.

After site clean-up, JC continued his investigation into the cause of the incident. JC found that at the time of the incident, the C1 fibre bin was full and a blockage above the cyclone rotary valve whilst recirculating the fibre from the forming line had caused the fibre to eject out of the cyclone. JC reviewed the Citect Alarm Summary (electronic production trends and alarm system) and found at 7:31pm a blockage was detected at C1 reject cyclone however this was unblocked, a visual check at the hatch above the rotary feeder was performed by C1 Operator (HM) and the fibre bin was emptied. HM recommenced production believing that

the blockage was cleared, production trends and alarm systems did not indicate any further issue.

Figure 1 Facility Locations



Thursday 4 July SC continued to coordinate clean-up on site and along Lowes Mount Road. SC and Borg Panels Facility Manager Tony Truscott (TT) met with Highland Pine Products (HPP) representatives to assess and organise clean-up to the areas impacted by the incident. All clean-up actions both on-site and off-site were completed by Monday 8 July. Material gathered will be disposed of to Oberon Council Waste Depot.

No community complaints were received regarding this incident.



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Weather data obtained from the on-site weather station shows at the time of the incident (i.e. 8:00pm) average wind direction E (east), maximum wind speed 25.56km/h, average wind speed 21.6km/h, maximum peak wind gust 30.76km/h. See **Appendix 1** weather station 15 minute data for 24 hour period from 7:30pm Wednesday 3 July. This data demonstrates nil impact from the incident to the township of Oberon (south of the facility), or to those residents north and east of the facility.

Photographs have been included as **Appendix 2** showing on-site and off-site (HPP) impacts, before and after clean-up. Also included are photographs of Borg Panels surface water conveying swales to demonstrate negligible impact to waterways as a result of the discharge.

In accordance with R3.3 c), contact details of employees who witnessed the event are to be provided to the EPA. Business hours contact number for Barry Sullivan, Julio Castillo and Harry Mujezinovic is (02) 6339 6111.

To mitigate against a reoccurrence of an event such as this, Borg Panels will investigate the practicalities of installing additional warning devices independent of the rotary valve blockage detector.

Borg Panels Oberon Pollution Incident Response Management Plan (PIRMP) will be tested within one month of this pollution incident in accordance with the Protection of the Environment Operations (General) Regulation 2009, clauses 98C(1)(n) and (o) if applicable.

I trust this meets with the requirements of EPL 3035 condition R3. If you would like any further information please do not hesitate to contact the undersigned.

Yours sincerely

Victor Bendeviski
Borg Manufacturing
Environmental & Regulatory Compliance
M: 0410 327 635



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Date	Time	MAXIMUM Wind Speed km/h	AVERAGE Wind Speed km/h	STDEV Wind Speed km/h	AVERAGE Wind Direction Degs	AVERAGE Wind Direction DESCRIPTION	S THETA Wind Direction Degs	MAXIMUM Peak Wind Gust km/h	VWSP Inst Wind Speed km/h	VWDIR Inst Wind Direction Degs	VWDIR Inst Wind Direction DESCRIPTION
4/07/2019	4:00:00	25.02	21.27	2.29	102.64	ESE	8.75	28.4	21.04	102.78	ESE
4/07/2019	4:15:00	26.21	21.89	1.84	102.81	ESE	6.86	31.95	21.74	102.54	ESE
4/07/2019	4:30:00	24.79	20.52	2.41	105.74	ESE	6.53	28.4	20.39	105.37	ESE
4/07/2019	4:45:00	26.33	21.05	2.6	111.32	ESE	6.72	31.95	20.91	111.52	ESE
4/07/2019	5:00:00	28.28	23.47	1.99	114.85	ESE	5.55	31.95	23.37	114.9	ESE
4/07/2019	5:15:00	24.85	21.59	1.77	114.15	ESE	6.83	29.58	21.45	114.14	ESE
4/07/2019	5:30:00	23.9	21.25	1.66	109	ESE	7.18	30.76	21.09	108.8	ESE
4/07/2019	5:45:00	20.94	17.09	2.17	108.91	ESE	6.5	24.85	16.99	108.64	ESE
4/07/2019	6:00:00	20.94	18.34	1.88	108	ESE	7.19	27.21	18.21	107.73	ESE
4/07/2019	6:15:00	20.23	15.95	2.18	102.13	ESE	7.32	24.85	15.83	102.14	ESE
4/07/2019	6:30:00	24.55	19.38	2.56	100.82	E	7.9	28.4	19.21	100.94	E
4/07/2019	6:45:00	24.08	20.77	1.64	101.41	ESE	6.52	30.76	20.65	101.31	ESE
4/07/2019	7:00:00	26.21	20.08	2.31	103.49	ESE	7.81	30.76	19.9	102.96	ESE
4/07/2019	7:15:00	21.89	17.51	1.61	108.68	ESE	5.53	24.85	17.44	108.58	ESE
4/07/2019	7:30:00	26.21	21.88	2.89	113.77	ESE	5.53	30.76	21.8	113.9	ESE
4/07/2019	7:45:00	23.43	19.72	1.92	114.12	ESE	5.32	27.21	19.65	114.26	ESE
4/07/2019	8:00:00	21.42	19.99	1.32	114.99	ESE	5.98	26.03	19.9	114.95	ESE
4/07/2019	8:15:00	24.2	21.08	1.42	108.62	ESE	5.26	28.4	21.01	108.57	ESE



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Date	Time	MAXIMUM Wind Speed km/h	AVERAGE Wind Speed km/h	STDEV Wind Speed km/h	AVERAGE Wind Direction Degs	AVERAGE Wind Direction DESCRIPTION	S THETA Wind Direction Degs	MAXIMUM Peak Wind Gust km/h	VWSP Inst Wind Speed km/h	VWDIR Inst Wind Direction Degs	VWDIR Inst Wind Direction DESCRIPTION
3/07/2019	23:30:00	30.41	23.54	2.55	93.63	E	9.07	34.31	23.28	93.76	E
3/07/2019	23:45:00	24.26	19.73	2.27	104.03	ESE	6.53	28.4	19.61	103.78	ESE
4/07/2019	0:00:00	23.07	18.94	2.42	97.49	E	10.25	26.03	18.68	98.48	E
4/07/2019	0:15:00	27.1	21.59	3.25	95.29	E	9.57	34.31	21.32	96.27	E
4/07/2019	0:30:00	26.62	21.53	2.31	93.74	E	9.31	31.95	21.29	93.92	E
4/07/2019	0:45:00	24.37	19.64	2.39	98.93	E	9.38	30.76	19.4	98.56	E
4/07/2019	1:00:00	24.02	18.68	3.06	93.66	E	8.42	28.4	18.5	93.99	E
4/07/2019	1:15:00	23.31	18.84	1.92	93.34	E	8.03	28.4	18.68	93.28	E
4/07/2019	1:30:00	25.62	21.45	2.04	106.15	ESE	7.68	31.95	21.27	105.71	ESE
4/07/2019	1:45:00	26.44	23.16	2.01	107.89	ESE	6.15	31.95	23.04	107.83	ESE
4/07/2019	2:00:00	26.39	23.09	1.91	107.39	ESE	6.49	30.76	22.95	107.17	ESE
4/07/2019	2:15:00	26.09	23.25	2.23	106.52	ESE	6.45	31.95	23.12	106.37	ESE
4/07/2019	2:30:00	23.9	20.99	1.87	106.61	ESE	6.77	29.58	20.85	106.44	ESE
4/07/2019	2:45:00	24.08	20.16	3.04	103.35	ESE	8.12	28.4	19.97	103.34	ESE
4/07/2019	3:00:00	18.34	13.48	2.39	86.99	E	9.48	24.85	13.32	87.72	E
4/07/2019	3:15:00	21.3	16.86	2.16	94.67	E	8.09	24.85	16.71	94.74	E
4/07/2019	3:30:00	23.9	19.66	2.67	97.83	E	9.07	31.95	19.45	98.42	E
4/07/2019	3:45:00	26.09	21.83	2.38	96.02	E	8.14	31.95	21.63	95.88	E



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4/07/2019	9:00:00	24.79	17.77	2.38	91.52	E	8.37	28.4	17.61	91.77	E
4/07/2019	9:15:00	21.42	16.71	2.39	93.74	E	10.84	23.66	16.45	94.36	E
4/07/2019	9:30:00	21.53	17.59	2.08	96.93	E	12.65	30.76	17.18	97.03	E
4/07/2019	9:45:00	22.36	17.96	2.43	98.37	E	12.72	27.21	17.55	98.72	E
4/07/2019	10:00:00	19.64	17.55	1.72	101.95	ESE	10.78	24.85	17.26	101.73	ESE
4/07/2019	10:15:00	19.7	16.88	2.43	114.93	ESE	10.75	23.66	16.59	114.48	ESE
4/07/2019	10:30:00	23.72	21.11	1.65	114.49	ESE	7.77	27.21	20.93	114.48	ESE
4/07/2019	10:45:00	23.25	19.39	2.48	112.09	ESE	8.59	28.4	19.17	111.83	ESE
4/07/2019	11:00:00	24.2	20.49	2.54	113.46	ESE	9.26	28.4	20.24	113.4	ESE
4/07/2019	11:15:00	27.04	20.95	3.08	109.91	ESE	8.84	31.95	20.72	109.57	ESE
4/07/2019	11:30:00	30.11	24.97	2.86	112.49	ESE	7.82	34.31	24.76	112.55	ESE
4/07/2019	11:45:00	28.87	25.3	2.52	108.77	ESE	7.26	35.5	25.11	108.52	ESE
4/07/2019	12:00:00	26.8	23.36	1.33	109.11	ESE	7.9	30.76	23.15	108.96	ESE
4/07/2019	12:15:00	24.49	22.08	1.36	114.99	ESE	9.41	28.4	21.8	115.01	ESE
4/07/2019	12:30:00	26.92	22.57	2.47	108.59	ESE	12.04	33.13	22.07	108.56	ESE
4/07/2019	12:45:00	28.52	23.33	1.87	117.34	ESE	7.49	34.31	23.14	117.35	ESE



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4/07/2019	13:15:00	29.94	25.61	2.81	113.63	ESE	7.18	35.5	25.42	113.8	ESE
4/07/2019	13:30:00	29.4	25.98	2.58	111.71	ESE	8.25	34.31	25.74	111.91	ESE
4/07/2019	13:45:00	33.37	28.65	3.72	113.11	ESE	7.12	40.23	28.45	113.49	ESE
4/07/2019	14:00:00	29.99	27.24	2.48	113.13	ESE	8.56	35.5	26.96	113.31	ESE
4/07/2019	14:15:00	32.18	26.79	3.76	107.28	ESE	8.99	42.6	26.47	106.71	ESE
4/07/2019	14:30:00	34.02	28.14	4.63	105.55	ESE	8.07	40.23	27.87	105.13	ESE
4/07/2019	14:45:00	29.7	26.42	2.37	112.5	ESE	7.61	34.31	26.2	112.28	ESE
4/07/2019	15:00:00	28.69	25.09	2.73	110.81	ESE	7.33	37.86	24.91	110.71	ESE
4/07/2019	15:15:00	26.09	21.52	1.84	107.71	ESE	9.07	33.13	21.27	107.55	ESE
4/07/2019	15:30:00	31.06	22.85	4.62	111.77	ESE	7.2	36.68	22.68	111.64	ESE
4/07/2019	15:45:00	29.23	25.94	1.89	113.36	ESE	6.96	34.31	25.76	113.38	ESE
4/07/2019	16:00:00	31.47	27.05	2.55	105.55	ESE	6.7	39.05	26.89	105.33	ESE
4/07/2019	16:15:00	25.79	19.94	3.16	106.92	ESE	7.73	29.58	19.78	106.37	ESE
4/07/2019	16:30:00	24.2	18	3.11	107.36	ESE	6.5	29.58	17.9	107.18	ESE
4/07/2019	16:45:00	28.46	20.82	3.3	103.2	ESE	8.36	34.31	20.61	102.78	ESE
4/07/2019	17:00:00	25.2	21.88	2.21	101.4	ESE	9.32	31.95	21.62	100.99	E
4/07/2019	17:15:00	26.15	23.06	2.06	105.42	ESE	8.63	30.76	22.82	104.98	ESE



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4/07/2019	17:30:00	32.3	24.9	3.45	104.28	ESE	7.44	36.68	24.71	103.9	ESE
4/07/2019	17:45:00	27.1	24.94	1.8	110.15	ESE	7.04	33.13	24.77	110.2	ESE
4/07/2019	18:00:00	28.16	23.74	2.47	113.56	ESE	6.53	33.13	23.6	113.45	ESE
4/07/2019	18:15:00	27.69	23.74	2.23	107.27	ESE	6.51	30.76	23.6	107.26	ESE
4/07/2019	18:30:00	28.57	22.29	2.77	103.9	ESE	8.05	36.68	22.08	103.68	ESE
4/07/2019	18:45:00	27.1	23.39	2.49	105.08	ESE	7.46	30.76	23.2	104.87	ESE
4/07/2019	19:00:00	26.92	21.69	2.72	102.58	ESE	8.25	34.31	21.47	102.1	ESE
4/07/2019	19:15:00	26.21	21.15	2.7	105.08	ESE	8.02	30.76	20.96	104.76	ESE
4/07/2019	19:30:00	26.44	22.46	2.26	107.36	ESE	7.55	31.95	22.28	107.21	ESE



Borg Panels Pty Ltd
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Appendix 1 Weather Station Data

Date	Time	MAXIMUM Wind Speed km/h	AVERAGE Wind Speed km/h	STDEV Wind Speed km/h	AVERAGE Wind Direction Degs	AVERAGE Wind Direction DESCRIPTION	S THETA Wind Direction Degs	MAXIMUM Peak Wind Gust km/h	VWSP Inst Wind Speed km/h	VWDIR Inst Wind Direction Degs	VWDIR Inst Wind Direction DESCRIPTION
3/07/2019	19:30:00	27.27	23.38	2.36	96.58	E	8.22	34.31	23.17	96.75	E
3/07/2019	19:45:00	29.7	23.01	2.89	96.73	E	8.32	33.13	22.8	96.55	E
3/07/2019	20:00:00	25.56	21.6	2.31	96.02	E	9.91	30.76	21.3	96.6	E
3/07/2019	20:15:00	25.62	21.28	2.27	100.24	E	7.58	28.4	21.12	100.22	E
3/07/2019	20:30:00	25.32	21.62	1.83	102.67	ESE	7.16	29.58	21.47	102.46	ESE
3/07/2019	20:45:00	25.79	20.75	2.41	101.83	ESE	8.72	30.76	20.53	101.93	ESE
3/07/2019	21:00:00	27.69	23.77	2.31	104.78	ESE	7.85	33.13	23.57	104.65	ESE
3/07/2019	21:15:00	26.15	22	2	103.6	ESE	7.43	29.58	21.83	103.34	ESE
3/07/2019	21:30:00	24.73	21.76	1.92	107.63	ESE	7.6	30.76	21.58	107.45	ESE
3/07/2019	21:45:00	22.66	19.86	1.68	110.54	ESE	6.03	28.4	19.76	110.38	ESE
3/07/2019	22:00:00	21.06	18.59	1.46	107.12	ESE	6.35	26.03	18.48	107.21	ESE
3/07/2019	22:15:00	25.02	18.02	3.16	91.15	E	8.27	30.76	17.86	91.56	E
3/07/2019	22:30:00	30.29	22.57	3.27	94.84	E	10.18	34.31	22.26	95.29	E
3/07/2019	22:45:00	29.05	25.22	2.02	101.62	ESE	6.83	34.31	25.05	101.36	ESE
3/07/2019	23:00:00	31.53	25.63	2.78	103.57	ESE	7.62	37.86	25.42	103.47	ESE
3/07/2019	23:15:00	33.84	26.69	3.55	94.9	E	8.61	42.6	26.43	94.82	E

Appendix 2 Incident Photographs

Highland Pine Products (HPP) – before and after





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HPP cont.





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HPP cont.





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Borg Panels (BP)





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BP cont.





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BP cont.





BP cont.

Western boundary off-site swale



Western boundary on-site swale



On-site swale adjacent main carpark



Appendix L – DataStation Incident Log

Jacqueline Blomberg

From: support@datastation.co on behalf of Anthony Popple
Sent: Thursday, 4 July 2019 11:28 AM
Subject: DataStation New Incident Logged

Importance: High

=====
This email was generated by [DataStation](#) please do not reply to this email.
=====

Incident ID: 126914 **Created:** 04/07/2019 @ 11:27 **Status:** Open
Incident Type: [Environmental]

- Environmental

Where did the incident happen?

Location Type: Company Premises
Site: O:PRD
Address: O:PRD - Oberon: Production
On Site Location: Oberon - Conti 1 Press Line

Reported By

Reported Date/Time: 03/07/2019 @ 19:30
First Name: Anthony
Last Name: Popple
Email: popplea@borgs.com.au

Who is logging the incident?

Name: Anthony Popple
Email: popplea@borgs.com.au

Your Ref: 40933

When did the incident happen?

Incident Date/Time: 03/07/2019 @ 19:30

Detailed description of what happened.

ENV - Fibre discharge experienced from Conti 1 fibre bin reject cyclone

Immediate control measures put in place.

Relevant staff informed of incident, clean up of fibre commenced. Investigation ongoing.

Checklist

Were there any injured parties involved or diseases to report? No

Was the incident a near miss? No

Did the incident result in damage? No

Was this an environmental incident? Yes

Appendix M –EPA Formal Warning Letter

Formal Warning Letter

Licence - 3035



BORG PANELS PTY LIMITED

ABN 54 139 584 900

2 WELLA WAY

SOMERSBY NSW 2250

Attention: Ms Jacqueline Blomberg

Notice Number 1587084
File Number SF19/1957: DOC19/889926
Date 24-Oct-2019

FORMAL WARNING IN RELATION TO BREACHES OF ENVIRONMENT PROTECTION LICENCE No. 3035 - Borg Panels, Oberon

Borg Panels Pty Limited ("Borg") is the holder of Environment Protection Licence No. 3035 ("the licence") for the Borg Panels premises at 124 Lowes Mount Road Oberon facility ("the premises").

BACKGROUND

On the 3 July 2019 at approximately 8:00 pm approximately 10-12 cubic metres of wood fibre, sourced from the MDF Press Conti 1 reject cyclone, was released from the cyclone with a percentage of this material falling out beyond the western premises boundary on Lowes Mount Road and the adjacent Highland Pine Products premises .

Borg activated its Pollution Incident Response Management Plan (PIRMP) at the time and informed the Environment Protection Authority ("EPA"), via Environment Line, at 09:26 am on 4 July 2019. Following a request from the EPA, Borg submitted an incident report on 12 July 2019. Further information on the incident was provided by Borg to the EPA via e-mail on 1 August 2019.

BREACH OF LICENCE CONDITION

The EPA has reviewed the incident report and additional information and alleges that Borg has breached licence condition O2.1.

Licence condition O2.1 states that *"All plant and equipment installed at the premises or used in conjunction with the licensed activity: a) must be maintained in a proper and efficient condition; and b) must be operated in a proper and efficient manner"*.

Formal Warning Letter



Under section 64 of the *Protection of the Environment Operations Act 1997* it is an offence to contravene any licence condition. The maximum penalty for this offence is:

- in the case of a corporation - \$1,000,000 and, in the case of a continuing offence, a further penalty of \$120,000 for each day the offence continues, or
- in the case of an individual - \$250,000 and, in the case of a continuing offence, a further penalty of \$60,000 for each day the offence continues.

By this letter, the EPA issues Borg Panels Pty Limited with a Formal Warning in relation to this alleged breach of licence condition O2.1.

If similar non-compliances with licence condition O2.1 occur in the future the EPA may consider further enforcement action, for example, issuing an Official Caution, Penalty Infringement Notice or commencing a prosecution in accordance with the *EPA Prosecution Guidelines* and *EPA Compliance Policy*. Further information on the EPA's approach to compliance and enforcement can be found in the EPA's Compliance Policy at :-

<http://www.epa.nsw.gov.au/legislation/130251epacompl.htm>

FURTHER ACTION REQUIRED

The EPA is concerned that this emission of wood fibre from the Conti 1 reject cyclone occurred despite there being an earlier alarm at this same reject cyclone (7:31 pm on 3 July 2019) indicating a fibre blockage which was cleared at the time (and prior to the incident).

In the incident report Borg stated that an investigation would be made of the practicality of installing additional warning devices at the Conti 1 cyclone, that are independent of the existing rotary valve blockage detector, to avoid a recurrence of the incident. The EPA requests that Borg provides an update with regards to the status of these investigations including any recommendations identified and a time frame for their implementation. This information must be provided to the EPA no later than **8 November 2019** via e-mail at central.west@epa.nsw.gov.au.

If you have any queries or wish to discuss this matter, please contact Mr Andrew Helms at the Central West (Bathurst) Office of the EPA by telephoning (02) 6333 3805).

Yours sincerely

A handwritten signature in black ink, appearing to read 'SL' or 'Sheridan Ledger'.

SHERIDAN LEDGER
Unit Head Central West Region
Environment Protection Authority

Appendix N - Borg Panels Response EPA Formal Warning



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NSW EPA
Central West Region
PO Box 1388
Bathurst NSW 2795

25 October 2019

**Re: Response to Formal Warning in relation to breaches of Environment Protection Licence
No. 3035 – Borg Panels, Oberon – EPA Notice Number 1587084**

Dear Ms Ledger

With regard to the recent Formal Warning issued under Environment Protection Licence 3035 to Borg Panels Oberon, specifically breach of licence condition O2.1 and the request by the EPA for Borg to provide further information on investigation and recommendations, we offer the following response.

As advised in our incident report submitted to the EPA on 12 July 2019, Borg committed to undertaking an investigation into the practicalities of installing additional warning devices independent of the rotary valve blockage detector which was identified as the precursor to cause of emission.

I am able to confirm that the following actions have been completed on site to avoid a reoccurrence of the incident:

1. MainPac (electronic maintenance/cleaning/servicing schedule) has been reviewed to confirm programmed maintenance and ensure operational status of blockage detectors; and
2. Split SCADA/Citect display alarm system installed to the Conti 1 reject cyclone providing two separate, independent alarms for both blockage detectors. One alarm for the detector above the rotary valve and another in the bottom of the cyclone.

I can also advise that Borg Panels Oberon Pollution Incident Response Management Plan (PIRMP) was tested and updated on 30 July 2019 in accordance with the Protection of the Environment Operations (General) Regulation 2009, clauses 98C(1)(n) and (o).

I trust this has addressed the further actions required as identified in Notice Number 1587084. If you would like any further information please do not hesitate to contact the undersigned.

Yours sincerely
Jacqueline Blomberg
Borg Manufacturing
Environmental Manager