EMS0001

Operational Environmental Management Plan

Borg Panels

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

26 October 2021

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
0	08/11//17	Carly McCormack Planning and Environmental Officer	Final	Victor Bendevski Environmental and Regulatory Compliance	
1	30/11/17	Carly McCormack Planning and Environmental Officer	Final Incorporating DP&E Comments	Victor Bendevski Environmental and Regulatory Compliance	
2	4/02/2021	J Blomberg Environmental Manager	Review and update as per SSD 7016 condition of consent C6	Victor Bendevski Environmental and Regulatory Compliance	
3	26/10/2021	J Blomberg Environmental Manager	Review and update as per SSD 7016 condition C10 (d)	Andrew Brady Environmental Manager	

Table of Contents

1 Introduction

1.1 Background

Borg Panels operates an existing reconstituted wood-based manufacturing facility in Oberon, NSW. This facility manufactures a range of Customwood, MDF and particleboard products including:

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

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

Conditions contained within the Consent require Borg to provide for the ongoing environmental management of the Development. Though initially developed to satisfy condition C4, this Operational Environmental Management Plan (OEMP) has been reviewed and updated where necessary as per condition C6 and C10.

1.2 Purpose of the OEMP

The purpose of this OEMP is to:

- Implement and maintain effective environmental management systems;
- Ensure adequate management, monitoring and mitigation regimes are in place to protect the surrounding environment;
- Ensure compliance with relevant legislation, regulatory requirements and any other undertakings given by Borg Panels;
- Establish procedures for reviewing progress and implementing corrective actions; and
- Provide a framework for review and continual improvement.

1.3 Structure of the OEMP

This OEMP has been developed to provide a strategic framework for environmental management at Borg Panels and to satisfy the requirements set out in Condition C4 of Development Consent SSD 7016, and includes information on the following:

- **Section 2** – Legislative and Regulatory Compliance
- **Section 3** – Existing Development
- **Section 4** – Roles and Responsibilities
- **Section 5** – Identification and Management of Environmental Aspects
- **Section 6** – Community
- **Section 7** – Incident Response
- **Section 8** – Monitoring, Review and Improvement
- **Section 9** – Review and Continual Improvement

This OEMP outlines the environmental management strategies implemented by Borg Panels including organisational responsibilities, planning activities, procedures, processes, implementation and review. It is an integral component of the overall environmental management system for the Borg Panels facility.

The environmental management sub-plans have been developed in consultation with relevant government agencies and departments as required and are updated as needed. Copies of these required management plans are included as Appendices to this OEMP as follows:

- **Appendix B** – Operational Air Quality Management Plan;
- **Appendix C** – Operational Noise Management Plan;
- **Appendix D** – Mobile Wood Chipper Operation Management Plan;
- **Appendix E** – Surface Water Management Plan; and
- **Appendix F** – Waste Management Plan.

1.4 Approval of the OEMP

Borg Panels Operational Environmental Management Plan (OEMP) revision1 was submitted to the Secretary of the Department of Planning, Industry and Environment (DPIE) for approval on 30 November 2017 to satisfy condition of consent C4. DPIE provided approval on 21 December 2017.

2 Legislative and Regulatory Compliance

2.1 Relevant Legislation

Key environmental legislation relating to operation of the facility includes:

- *Environmental Planning and Assessment Act 1979*;
- *Protection of the Environment Operations Act 1997*; and
- Protection of the Environment Operations (General) Regulation 2009.

Key legislation relating to the management of air quality, noise, surface water and waste are identified in the relevant environmental management sub-plans.

2.2 Conditions of Consent

Borg Panels operations are subject to the conditions contained in Development Consent SSD 7016 dated 29 May 2017 and the following modifications:

- MOD 1 – extension of mouldings warehouse, reorientation of materials handling building, layout changes to particleboard chipper/debarker building, extension of

northern noise bund, reconfiguration of elements of the surface water management system, reclamation of the Spring Dam (approved 20 November 2018);

- MOD 2 – installation of an electricity generation gas turbine and ancillary equipment (approved 29 November 2019); and
- MOD 3 – additional materials handling equipment, extension to northern warehouse, changes to the site surface water system and construction of further hardstand (approved 22 May 2020).

The specific requirements for the OEMP (Schedule 2, Condition C4 and C6) are detailed in **Table 1**.

Table 1 – Development Consent Conditions

No.	Requirement	Document Reference
	OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN	
C4.	Within 6 months of the date of this consent, the Applicant must prepare an Operational Environmental Management Plan (OEMP) for the Existing Development to the satisfaction of the Secretary. The OEMP must:	This Plan
	a) be submitted to the Secretary for approval;	**Section 1.4**
	b) be prepared by a suitably qualified and experienced expert;	**Revision History**
	c) provide the strategic framework for environmental management of the Existing Development;	**Section 1.2**
	d) identify the statutory approvals that apply to the Existing Development;	**Section 2**
	e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the Existing Development;	**Section 4**
	f) describe the procedures that would be implemented to:	
	(i) keep the local community and relevant agencies informed about the operation and environmental performance of the Existing Development;	**Section 6.1**
	(ii) receive, handle, respond to, and record complaints;	**Section 6.2**
	(iii) resolve any disputes that may arise;	**Section 6.3**
	(iv) respond to any non-compliance;	**Section 8.3**
	(v) respond to emergencies; and	**Section 7.5**

No.	Requirement	Document Reference
	g) include the following environmental management plans addressing:	
	(i) Air Quality (Condition B5);	**Appendix A**
	(ii) Noise (Condition B18);	**Appendix B**
	(iii) Mobile Wood Chipper Operation (Condition B24);	**Appendix C**
	(iv) Surface Water (Condition B32); and	**Appendix D**
	(v) Waste (Condition B51).	**Appendix E**
C6	Prior to commencement of operation of the Project, the Applicant must update the OEMP required under Condition C4 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 C4, and must incorporate the following:	**This Plan**
	a) procedures, roles and responsibilities of key personnel involved in the environmental management of the Development;	**Section 4**
	b) community consultation requirements for the Development; and	**Section 6**
	c) updates to the environmental management sub-plans listed under Condition C4(g)	**Appendices A through E**

2.3 Development Consent SSD 7016 Mitigation Measures

Schedule 2 Part C Environmental Management, Reporting and Auditing of SSD 7016 condition C4 and C6 sets out the requirement for Borg Panels to develop and maintain an Operational Environmental Management Plan (OEMP) as described in Table 1.

Appendix B Applicant's Management and Mitigation Measures of Development Consent SSD 7016 details the reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the Project. There were no mitigation measures specific to the OEMP that related to the 'Existing Development' as unmodified.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL 3035) authorises the carrying out of the scheduled activities chemical production and wood or timber milling or processing at the Borg Panels facility in accordance with the requirements of the licence.

3 Process Overview

The Borg Panels facility is shown in **Figure 1**. The facility consists of a log yard, debarkers and chippers, an MDF manufacturing plant, particleboard manufacturing plant, mouldings plant, paper treatment process, and MDF and particleboard decorative finishing presses.

3.1 MDF Plant

Development Consent SSD 7016 allows for the production of up to 380,000m^3 of MDF per calendar year. The MDF plant has two production press lines. Conti 1 press line was commissioned in May 1988 and Conti 2 press line was commissioned in September 1997.

Sorted logs are transferred to a debarking plant either directly from incoming trucks or from the log yard. Oversized logs are rejected and diverted to storage. Bark from this process falls to a lower deck and is collected by a scraper, which feeds the bark to a conveyor and stockpile. Bark and other wood refuse is then used as fuel for the heat plant or on-sold for landscaping purposes. De-barked logs are fed into a chipper, which converts the full log into a standard size chip suitable for further processing. The created chip is then fed by conveyor onto the chip piles.

MDF is produced using chip that is pre heated with steam, refined in the refiners and then blown into the blow line once resin and wax is added into the fibre. After resin is added to the fibre it is then dried in the dryers, formed into a fibre mat by the mat formers, and put through the hot presses.

Both press lines are equipped with Sunds chip washes. Conti 1 uses an L46 Sunds Refiner, single stage dryer, pneumatic mat forming and a 19.6m Siempelkamp continuous press. Conti 2 uses an M60 Sunds Refiner, two stage dryer, mechanical mat forming and a 33.4m Siempelkamp continuous press. Conti 1 can produce MDF thicknesses in the range of 4.75 – 32mm, Conti 2 can produce MDF thicknesses in the range of 2.5 – 49.8mm. After the panels are pressed, they are cooled in star coolers and stored in the high bay system to cure.

Both press lines use steam in the refining process and hot oil to heat the presses. This energy is supplied from two energy plants; an Easteel Energy Plant for Conti 1 and Sunds Energy Plant for Conti 2.

When the panel has cooled it is transported from the high bay storage system to the sander. The sander is an 8 head Steinemann Sander, which can sand up to 65 metres per minute. The sanded panel is then stored in the high bay system.

Sanded packs are transported from the high bay system to the saws. The panel is then cut into finished sizes using a Schwabedissen Saw. The panels are packed and stored for transport to external customers or processed through the Value Add Mouldings line or Value Add Painted Door line.

Unsanded packs are also transported to the laminating process area where a Steinmann inline sander is used prior to decorative pressing. This sander sands up to 2500mm in working width can sand at up to 60 metres per minute.

3.2 Value Add

3.2.1 Mouldings

Value Add Mouldings produce Ultra Prime Moulding from the raw MDF panels produced in the MDF plant. The mouldings line comprises of a Paul Saw, moulder, sander, painting, drying ovens, de-nibber, packing and storage system.

The Value Add Cut to Size Line produces door jamb sets from Ultra Prime Mouldings. The cut to size line comprises of a strapper, beam saw and packaging system.

The Value Add Painted Door Line produces painted doors from the raw thin panels produced at the plant. The painted door line comprises of a roller coater, UV oven, curtain coater, IR oven, and packing and storage system.

3.3 Laminating

3.3.1 Paper Treatment

This process produces the protective decorative papers which are applied to the surface of the raw MDF to make a decorative sheet.

Liquid resins made at the Woodchem facility are soaked into rolls of paper in a continuous process using a Vits paper treatment machine. The paper treater uses heated air to suspend and dry a horizontal web of paper 2500mm wide and almost 100m long. The drying process is very sensitive as uncontrolled contact with any physical parts will result in process malfunction. Once dried to a pre-determined point, the continuous ribbon is cut to length and/or made into continuous rolls of treated paper for further processing.

3.3.2 Decorative Pressing

A Hymmen Isochoric continuous double belt press takes MDF master panels and rolls of treated paper produced on site and combines them using heat and pressure. This thermally fuses the decorative paper to the surface of the MDF board imparting a decorative finish, water resistance and some surface hardness.

The basis of this continuous process is the pioneering application of the isochoric press principle by means of air-filled pressure pads operating in dynamic machine conditions. This results in a process that is usually batch driven becoming continuous.

3.4 MDF Press

The building and facilities purchased from Jeldwen in 2012 consist of an integrated fibre preparation plant, press and ancillary process support equipment.

Chip is sourced from the MDF site and prepared using the chip steaming process and Sunds refiner. The fibre is then resinated via a blow line blending process and sent to the fibre tower at the southern end of the building.

A mat former and fibre mat pre-press prepares the continuous ribbon of fibre for an MDF press. Post pressing there is cooling racks, stacking and off-loading systems to handle panels once manufactured.

There is a segregated paint manufacturing plant consisting of an Onslow high speed dispersion mixer and various storage/blending tanks for raw materials and finished paint products. All liquids are stored within the appropriately designed tanks in bunded areas.

3.5 Particleboard

Borg Panels has approval under SSD 7016 to product up to 500,000m^3 of particleboard per calendar year.

Plantation timber logs are bought to site and processed through the timber yard. This includes processing the timber through an enclosed debarker and chipper to reduce the timber to a consistent particle size. This chip is then stored in one of two chip silos. From there the chip is screened on a conveyor to remove any foreign ferrous contaminants using magnets before being further reduced in size using knife ring flakers within the flaker building. These knife ring flakers are designed to produce the optimum macro sized particles for the processing methods. These particles are stored in additional silos prior to being fed into the drier. Recycled boards and reclaimed timber from pre-approved off-site sources

under the Urban Wood Residue scheme which have been chipped to size as well as timber fines are introduced at this point.

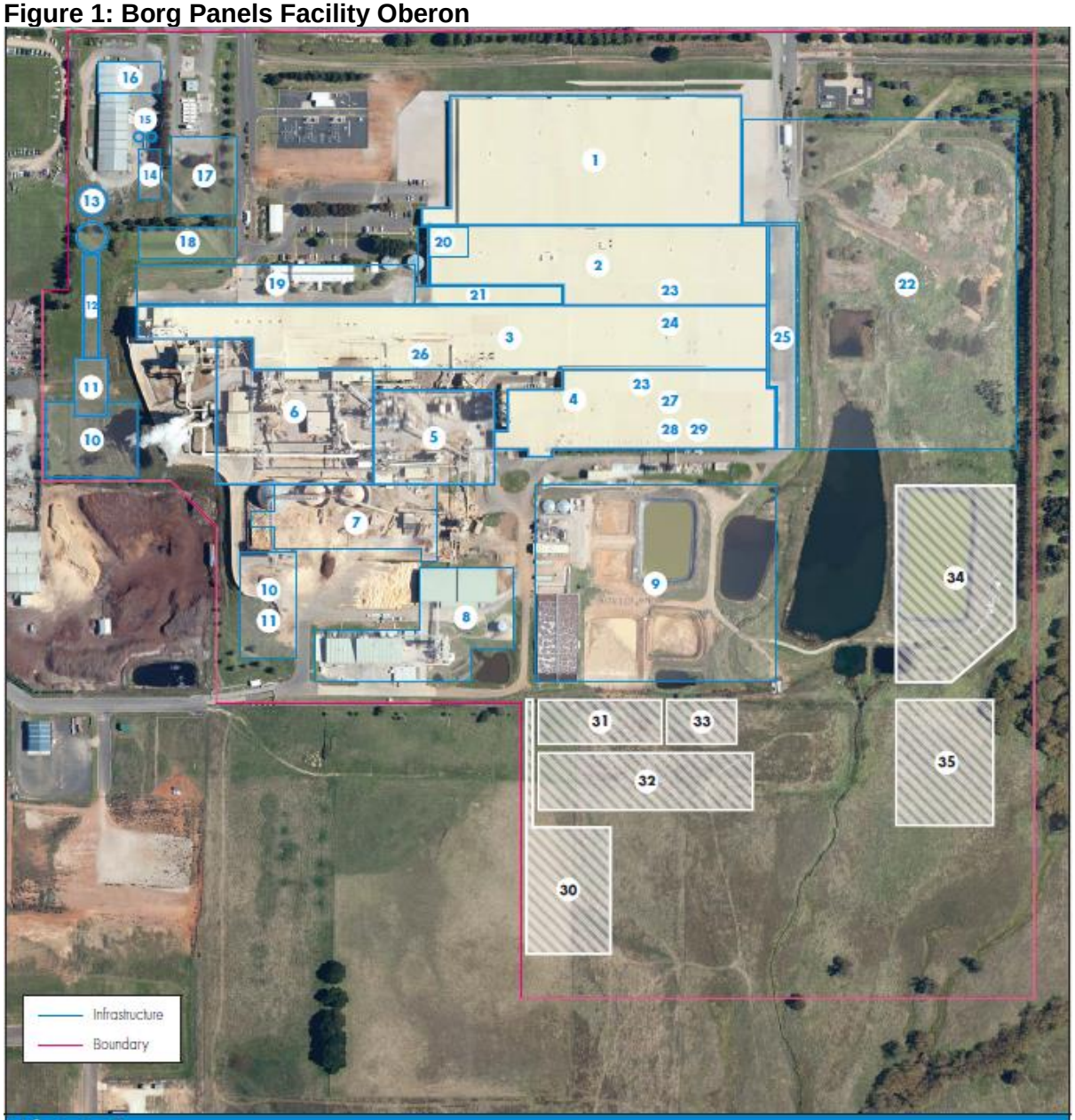
The saw dust and wood particles are then dried in a rotating drum drier. Any small particles generated during the drying process which are smaller than required are removed using cyclone extractors. Any surplus air generated which is not required for the drying process is cleaned using a Wet Electrostatic Precipitator (WESP) prior to being released to the atmosphere as clean air. Once dry and processed in this manner, the particles are screened for quality with appropriately sized particles and dust continuing on the manufacturing process whilst any oversize particles are sent to the grinding mill to reduce them to an appropriate size.

The particles are then blended with glue and additives (a blend of urea formaldehyde with a paraffin wax emulsion and a catalyst to accelerate the reaction) in a specifically designed ribbon blender. After blending, the resinated particles are sent to the appropriate mat forming stations. The forming stations are designed to ensure that there is an even distribution of particles across both the width and the thickness of the board. The mat is then weighed and adjusted electronically to ensure that the finished product has a consistent density.

The forming line then transports the layered mat in a continuous format to the press, while simultaneously measuring moisture and removing any remaining ferrous material. The forming line is able to reject and recycle the mat before pressing if the specified product parameters are not of a suitable standard. Any rejected material is reused on site. The press then applies the specified heat and pressure required to cure and consolidate the board in order to meet or exceed the relevant Australian Standards. This process is remotely controlled from the press control room.

Once processed, the pressed board is then cut square, checked to ensure it meets the required standards, cooled and stored in an automated storage system. Once cooled and cured, the boards are removed from storage and processed through the sander to ensure they meet final surface quality and thickness standards.

Figure 1: Borg Panels Facility Oberon



Infrastructure Key

1 Warehouse	12 Conveyor	24 Additional Laminating Line
2 Mouldings Plant	13 Silos	25 Building Extension
3 Existing Manufacturing Plant	14 Flaking Building	26 Additional Sanding Line
4 Existing Manufacturing Plant	15 Silos	27 Automated Paper Storage
5 Heat Plant	16 Building for Fines and Sawdust Storage	28 Impregnated Paper Treater
6 Manufacturing and Processing Plant	17 Dryer Area	29 Impregnated Paper Treater
7 Log Yard	18 Screening Area	30 Proposed Hardstand
8 Lot 22 DP1017457	19 New Press Production Hall	31 Effluent Storage
- not included in submission	20 New Administration Area	32 First Flush Basin
9 Water Recycling Plant	21 Automated Particle Board Warehouse	33 Emergencyy Catchment
10 Log Yard	22 Automated Storage Warehouse System	34 Hardstand Include Western Area
11 Enclosed Chipper / Debarker	23 Automated Storage Warehouse System	35 Hardstand Include Eastern Area

4 Roles and Responsibilities

4.1 OEMP Implementation

The role, responsibility, authority and accountability of all key personnel involved in the environmental management of the facility is detailed in **Table 2**.

Table 2 – Roles and Responsibilities

Role	Responsibility	Authority and Accountability
Borg Group Managing Director	Establish environmental policy that forms part of the organisations culture, values, performance standards and corporate citizenship	Communicate environmental responsibility throughout the organisation
Borg Panels Operations Manager	Overall environmental performance of Borg Panels facility	Ensure adequate resources are available to implement the OEMP
Borg Panels Environmental Manager	Oversee the environmental performance of the operation and compliance with legislative and regulatory requirements	Reports to Operations Manager and Environment and Regulatory Compliance Manager Implementation of OEMP and sub-Plans, including environmental reporting, monitoring, auditing, incident investigation and complaints handling Review and update environmental management plans Liaise with Regulator
Borg Environment and Regulatory Compliance Manager	Provide support and guidance to the Environment Manager	In consultation with the Operations Manager, ensure the Environmental Manager has the resources available to implement the OEMP and fulfil Borg Panels environmental commitments Liaise with Regulator
Borg Panels Staff and Employees	Manage operations in an environmentally responsible manner and report any incidents or take actions to minimise impacts from site operations	Report all environmental incidents to the Environment Manager. Undertake environmental awareness training through the site induction process.
Borg Panels Contractors	Manage operations in an environmentally responsible manner and report any incidents or take actions to minimise impacts from site operations	Report all environmental incidents to the Environment Manager. Undertake environmental awareness training through the site induction process.

4.2 Environmental Awareness Training

The OEMP requires all employees receive an appropriate level of environmental awareness training. This training is designed to suit the various needs and levels. Training covers environmental legislation, due diligence, performance criteria, reporting requirements and emergency response procedures. All employees are made aware of the Company's Environmental Policy and the need to meet its obligations.

Environmental awareness training is undertaken as part of staff, employees and contractor's induction training.

Training and Assessment Manuals will be reviewed as necessary and where site conditions change to ensure they accurately reflect site operations and training requirements.

5 Identification & Management of Environmental Aspects

Operation of the facility has the potential to cause environmental impacts as outlined below. Management of each environmental aspect is documented in the corresponding Management Plan (refer **Appendices A - E**).

5.1 Air Quality

Operation of the facility has the potential to effect the general health and amenity of the community and the surrounding environment if not managed. Emissions from the plant with potential to cause environmental impacts include particulate matter, nitrogen dioxide, formaldehyde and volatile organic compounds.

The Operational Air Quality Management Plan (OAQMP) defines the strategies and procedures to be implemented to ensure operation of the facility does not result in any unacceptable off site impacts resulting from air emissions.

The OAQMP is included as **Appendix A** to this OEMP.

5.2 Noise

Noise from operation of the facility has the potential to affect sensitive receivers if not managed. The Operational Noise Management Plan (ONMP) addresses potential noise impacts on sensitive receivers by identifying measures that will be implemented to minimise noise. Additionally, all noise attenuation measures installed for the facility are to be maintained in good working order.

Furthermore, operation of the mobile wood chippers has been identified as the highest noise emitters on site by a significant margin. Operation of mobile chippers does not form part of 'normal' operations. They are typically only used during breakdown of electric plant.

The Mobile Wood Chipper Operation Management Plan (MWCOMP) documents mitigation and management measures to assist Borg in meeting noise limits. Exceedances can be avoided through monitoring weather conditions and restricting use of mobile chipping plant during periods of meteorological enhancement.

The ONMP is included as **Appendix B** and the MWCOMP is included as **Appendix C** to this OEMP.

5.3 Surface Water

Surface water management at the Borg Panels facility can be broken down into both process water management and stormwater management.

Process water is sourced from the town water supply, recycled water from the water treatment plant, Spring Dam water and harvested stormwater. Once used through the process the water is then sent to the water treatment plant, which utilises filtration and biological degradation to remove contaminants from the water for re-use, capturing over 400kL per day from the site for reusing in the manufacturing process. The water treatment plant produces brine, a waste product from the Reverse Osmosis (RO) system, which is high in dissolved solids. Brine solids are currently recycled within the water treatment plant and reused by way of dilution in the MDF and particleboard manufacturing process.

Stormwater management on site aims to convey and treat stormwater from both the Borg Panels facility and upstream sites. Stormwater is managed in two distinct collection systems separating clean and 'dirty' water. 'Dirty' stormwater is either harvested for reuse in the manufacturing process or treated via a series of swales and ponds prior to discharge from site. Clean stormwater is conveyed around the perimeter of the site and discharged to Kings Stockyard Creek.

The Surface Water Management Plan (SWMP) defines the strategies and procedures implemented to ensure the facility does not result in unacceptable off-site impacts on surface water systems or downstream users.

The SWMP is included as **Appendix D** to this OEMP.

5.4 Waste

Waste products are generated during operation of the facility. A Waste Management Plan has been prepared to document the requirements for management of waste, identify potential sources of waste and risks related to waste management, and describe the environmental controls to be implemented to meet regulatory requirements.

The Waste Management Plan is included as **Appendix E** to this OEMP.

6 Community

6.1 Community Involvement

Condition B58 of Schedule 2 in Development Consent SSD 7016 requires:

"B58. The Applicant must consult with the community as required under Conditions C1 and C4 for the Development, including consultation with the nearby sensitive receivers, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders."

Close community liaison is maintained to ensure local residents are kept up to date on operation of the facility, and to provide an avenue for communication with the site. Consultation with the community may include:

- Community Consultative Committee (**Section 6.1.1**);
- Presentations to the Oberon Business and Tourism Association Meetings;

- Consultation with the Oberon High School Principal regarding any rock or concrete breaking activities that may occur at the facility (refer Construction Environmental Management Plan); and
- Particle Board Project updates including information on the Borg website, local area advertisements, letterbox notifications and/or Project information sheets.

6.1.1 Community Consultative Committee

Borg Panels has an established joint Community Consultative Committee (CCC) that meets nominally quarterly to discuss environmental and operational aspects of the Borg Panels site. The CCC meeting also provides a forum for feedback to Borg in relation to the environmental management of the facility.

6.1.2 Opportunities for Information Exchange

Borg Panels has in place the following avenues to register inquiries and complaints related to 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 included on public information, which may include the website, local area advertisements and letterbox notifications.

6.2 Complaint Protocol

The Environment Manager is to be notified of any received complaints. The Environment Manager is to follow the Borg complaints handling procedure (**Section 6.2.1**) and notify the Operations Manager as soon as practicable. The Operations Manager will notify the Borg Group Managing Director, as appropriate.

6.2.1 Inquiry and Complaints Handling Process

Borg's community and stakeholder management system includes procedures for recording, investigating, tracking and handling of all inquiries and complaints. Once Borg has received verbal or written inquiries and/or complaints via telephone, email or post, the Environment Manager or their nominated delegate will:

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

- Description;
- Caller details;
- Action;
- Status;
- Follow-up;
- Complaint validity; and
- Attachments.

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

It should be noted that if the inquiry and/or complaint is classified as an incident (refer **Section 7**) the Environment Manager must follow the incident reporting process and ensure appropriate resolution and sign-off.

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

6.3 Dispute Resolution

If following investigation of a community complaint the complainant remains dissatisfied with the findings of the investigation and a dispute ensues, the following procedure is to be implemented:

- The Environment Manager and/or Operations Manager are to meet with the complainant to further define the issue;
- The Environment Manager will then further assess the facilities compliance with all relevant approvals, licences and monitoring criteria. Assessment may include further environmental monitoring if appropriate; and/or engagement of specialist third party consultants/advisors;
- If the facility is compliant with all relevant approvals, licences and monitoring criteria, provide the findings and/or results to the complainant. No further action is required.
- If the facility is non-compliant with relevant approvals, licences and monitoring criteria provide the findings and/or results to the complainant. Further investigation, remediation/rectification works (if required), and monitoring is to be undertaken until it can be satisfactorily demonstrated that compliance has been achieved. Advise the complainant of the achieved compliance and no further action is required.

7 Incident Response

7.1 Pollution Incident Response Management Plan

Borg Panels Pollution Incident Response Management Plan (PIRMP) is to be immediately implemented in the event that a pollution incident occurs at the Borg Panels facility such that material harm to the environment is caused or threatened.

7.2 Pollution Incident Definition

A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.

According to the POEO Act definition:

> *pollution incident* means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

Pollution incidents causing or threatening material harm to the environment trigger the **incident response measures** below (including notification) and detailed in the Pollution Incident Response Management Plan.

Harm to the environment is material if:

1. *it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
2. *it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000. 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.*

'Material harm' includes on-site harm, as well as harm to the environment beyond the premises where the pollution incident occurred.

Examples of environmental pollution incidents threatening material harm to the environment include – hydrocarbons, untreated process water, chemical substances, or hazardous materials which have, or threaten to enter either clean water systems on site or possibly be released from site.

Examples of environmental incidents which may not threaten material harm to the environment include: spills which are contained, minor hydrocarbon or other substance spills to land, sediment basin discharge where greater than design rainfall has been received and no other material pollutants are in the surface runoff.

7.3 Incidents Causing or Threatening Material Harm to the Environment

Part 5.7 of the *Protection of the Environment Operations Act 1997* (POEO Act) specifies requirements relating to the notification of pollution incidents.

Under Part 5.7, the occupier of premises, the employer or any person carrying on the activity which causes a pollution incident must **immediately notify** each relevant authority when material harm to the environment is caused or threatened.

7.3.1 Internal Notification Protocol

All employees and contractors are legally required to assist Borg Panels to meet EPA's notification requirement. Under the internal notification protocol, it is intended that the

Environment Manager or Operations Manager undertake external notification. The internal notification protocol allows external notification by other parties in the case that the Environment Manager or Operations Manager cannot be immediately contacted.

In the event that a potential material harm pollution incident is identified, the person that discovered the potential material harm pollution incident must:

1. Immediately notify your Borg Panels Supervisor. The Supervisor should then **immediately notify**:
    a. Environment Manager; or
    b. Operations Manager.

    Note: This can be any time 24 hours per day.
2. In the event that the Supervisor cannot be immediately contacted, contact the Environment Manage or Operations Manager **immediately**.
3. In the event that the Environment Manager or Operations Manager cannot be immediately contacted, the EPA require that the Supervisor/employee/contractor must notify the EPA **immediately**.

    Note: In this instance, the Environment Manager and/or Operations Manager should be contacted as soon as possible after notifying the EPA.

7.3.2 External Notification Protocol

After the internal notification protocol has been followed, the person undertaking external notification must immediately follow the below protocol:

1. Firstly, call **000** if the incident presents an **immediate threat** to **human health** or **property**. (Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents).
2. If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order. The 24-hour hotline for each authority is given where available:
    a) the EPA Environment Line **131 555** (the appropriate regulatory authority (ARA) for the activity under the POEO Act)
    b) the Ministry of Health via the local Public Health Officer – phone 6336 **7200**
    c) Fire and Rescue NSW – phone **6336 0331** (Note: If the situation warranted calling 000 as a first point of notification, there is no need to ring Fire and Rescue NSW again)
    d) SafeWork NSW – phone **131 050**
    e) Oberon Council - phone **6329 8100**

The Secretary, Department of Planning, Industry and Environment shall also be notified as soon as practicable, by calling Senior Planning Officer – Industry Assessments on **02 9274 6386**.

7.3.3 Relevant Information

The relevant information about a pollution incident required under section 150 of the POEO Act consists of the following:

- the time, date, nature, duration and location of the incident;
- the location of the place where pollution is occurring or is likely to occur;
- the nature, the estimated quantity or volume and the concentration of any pollutants involved, **if known**;
- the circumstances in which the incident occurred (including the cause of the incident, **if known**); and
- the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, **if known**.

Importantly, with the notification required to be made immediately, information on the three last points may not be known at the time of reporting. Information only that is known at the time of notification will be provided.

7.3.4 Notification to Surrounding Property Owners

In the event there is an incident which poses a potential threat to surrounding property owners and occupiers, Borg Panels will notify those likely to be affected as soon as practicable. Depending on the nature of the incident, this may be in conjunction with or undertaken by emergency services. See the PIRMP for a contacts list of surrounding property owners and occupiers.

7.3.5 Borg Panels Incident Report

The Borg Panels Incident Reporting procedure will be undertaken for all environmental incidents, including those in this section.

Environmental incidents are recorded in DataStation, Borgs incident management system. Each incident report will detail the issue, the corrective and preventative actions proposed, and the responsibilities and timing for completion of the actions. The report will include any comments and the completion date of corrective actions.

The Environmental Manager shall review the Environmental Incidents Register monthly to ensure actions are completed and that controls are performing effectively. The Environment Manager shall also review the OEMP to determine if any incidents identify opportunities for improvement in mitigations or work practices.

7.3.6 Written Report to EPA & DPIE

Borg Panels must provide written details regarding the incident to relevant government departments including DPIE and the EPA within 7 days of the date on which the incident occurred. The Environment Manager is responsible for completing the written report in accordance with Development Consent SSD 7016 and EPL 3035.

7.4 Incidents *Not* Causing or Threatening Material Harm to the Environment

Environmental incidents which are identified as *not* causing or threatening material harm to the environment should be contained if safe to do so, then the Borg Panels Incident Reporting procedure undertaken.

7.5 Emergency Response

In the event of an emergency the *Borg Panels – Oberon Emergency Response Plan* is to be executed. The Emergency Response Plan includes the Pollution Incident Response Management Plan (PIRMP).

8 Monitoring, Review and Improvement

8.1 Monitoring

Environmental monitoring is used to check the performance of the operation against legislative and regulatory requirements. Records of all environmental monitoring and results are kept on site and made readily available.

In accordance with Section 66(6) of the POEO Act and Condition C18 of Development Consent SSD 7016 the results from Borg Panels various monitoring programs are published on the Borg website: https://www.borgs.com.au/locations/oberon-nsw/

Regular environmental monitoring is integral to the successful implementation of the OEMP. The measurement and evaluation of criteria 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.

Environmental monitoring requirements for the Borg Panels site are documented in the environmental management plans in **Appendices A – E**.

8.2 Analysis and Reporting Procedures

The Environment Manager (or delegate) will review all environmental monitoring results on a regular basis to ensure compliance with all statutory, legislative and approval requirements, and to identify where results or trends indicate a risk of future non-compliance to the development consent criteria or EPL conditions.

The results of the environmental monitoring compared to approval requirements will be included in the Annual Review which is prepared in accordance with Schedule 2, condition C11 of SSD 7016. The Annual Review will also identify any trends and non-conformances over the year as well as describing any actions currently implemented or planned to ensure compliance with the appropriate criteria. The Annual Review will be provided to the relevant authorities including DPIE, EPA and Oberon Council. It will also be available on the Borg website (link above) along with a summary of environmental monitoring results.

The EPA will be provided with an Annual Return including statement of compliance, monitoring data and summary of complaints.

Borg Panels compliance with the development consent and licence conditions is assessed by a three (3) yearly independent environmental audit, as required by Condition C15 of Development Consent SSD 7016. The first independent environmental audit (IEA) for the period 29 May 2017 to 30 June 2018 was completed in September 2018 by Umwelt Australia Pty Ltd. The audit report was submitted to DPIE on 21 September 2018. The second IEA for the period 1 July 2018 to 29 May 2021 was conducted by Molino Stewart Pty Ltd. This audit report was submitted to DPIE on the 18th of October 2021.

8.3 Procedure for Exceedance of Criteria or Threshold

Development Consent SSD 7016 defines an incident as:

A set of circumstances causing or threatening material harm to the environment, ***and/or an exceedance of the limits or performance criteria in this consent.***

Condition 12 of Development Consent SSD 7016 requires notification of the Secretary DPIE and any other relevant agencies of any incident or potential incident with actual or potential significant off-site impacts on people or the biophysical environment associated with the development immediately after the Proponent becomes aware of the incident. Furthermore, within seven days of the date of the incident, the Proponent must provide the Secretary and any relevant agencies with a detailed report on the incident.

Should environmental monitoring show that the relevant criteria or threshold has been exceeded, Borg Panels will conduct an investigation into the potential sources and/or causes. The investigation will consider any plant operation or other factors that may have resulted in the exceedance. If Borg Panels is responsible for the exceedance further actions will be taken to address the matter as follows:

a) If the exceedance is deemed to have actual or potential significant off-site impacts on people or the biophysical environment follow the procedures in **Section 7.3 Incidents Causing or Threatening Material Harm to the Environment**.

b) If the exceedance does not have actual or potential significant off-site impacts follow the procedures in **Section 7.4 Incidents Not Causing or Threatening Material Harm to the Environment**. For these exceedances, the exceedance and results of the investigation will be reported in the Annual Review.

c) DPIE and EPA are to be notified of any exceedance of discharge limits set out in EPL 3035.

8.4 Implementing Corrective Actions

Corrective and preventative actions will be implemented as identified. The implementation of the corrective and preventative actions will be reviewed internally and procedures developed for addressing non-conformances with the OEMP or subordinate plans.

9 Review and Continual Improvement

Operational activities will be subject to regular review to ensure conformance with the commitments made in the OEMP and subordinate plans.

In accordance with Schedule 2, Condition C10 of Development Consent SSD 7016, the OEMP and subordinate plans will be reviewed, and if necessary revised, within three (3) months of:

a) Approval of a modification;

b) Submission of an incident report under Condition C13;

c) Approval of an Annual Review under Condition C11; or

d) Completion of an audit under Condition 15.

New activities or changes to the operation that may result in environmental impacts will be assessed to determine if changes are required to manage the impacts, and if any revision to a subordinate plan is required.

The review process will include independent audits, or consultation with relevant specialists where required. Borg Panels compliance with the development consent and EPL is assessed by a three yearly independent environmental audit.

Revisions of the OEMP will be undertaken to the satisfaction of the Secretary DPIE where appropriate.

Appendix A – Operational Air Quality Management Plan

EMS0004

Operational Air Quality Management Plan

Borg Panels

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

21 October 2021

This document should be read in conjunction with EMS0001 Operational Environment Management Plan

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
0	10/11/17	Carly McCormack Planning and Environmental Officer	Draft	Victor Bendevski Environmental and Regulatory Compliance	
1	27/11/17	Carly McCormack Planning and Environmental Officer	Final Draft	Victor Bendevski Environmental and Regulatory Compliance	
2	28/11/17	Carly McCormack Planning and Environmental Officer	Final	Aleks Todoroski Todoroski Air Sciences	
3	02/11/18	Jacqui Blomberg Environmental Manager	Review as per SSD7016 C10(d)	Victor Bendevski Environmental and Regulatory Compliance	
4	11/04/19	Jacqui Blomberg Environmental Manager	Review as per SSD7016 C10(a)	Victor Bendevski Environmental and Regulatory Compliance	
5	23/03/20	J Blomberg Environmental Manager	Update as per SSD7016 B6	V Bendevski Environmental and Regulatory Compliance	
6	10/02/21	J Blomberg Environmental Manager	Review as per SSD7016 C10(a) Update to sections 1.1, 2.2, 2.4, 3.5, 6.1, 7.2.1, 7.3.1	V Bendevski Environmental and Regulatory Compliance	
7	21/10/2021	A Brady Environmental Manager	Review as per SSD7016 C10 (b) & (d). No updates necessary.	V Bendevski Environmental and Regulatory Compliance	

Table of Contents

1 Introduction

1.1 Background

Borg Panels operates a medium density fibreboard (MDF) and particleboard facility in Oberon NSW manufacturing a range of Customwood MDF and particleboard products including:

- Standard MDF;
- Moisture resistant MDF;
- E0 (low formaldehyde emitting) MDF;
- Ultraprime MDF mouldings;
- Standard particleboard;
- Moisture resistance particleboard;
- Decorative laminated MDF and particleboard; and
- Treated paper for the lamination of MDF and particleboard

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

Conditions contained within the Consent require Borg to provide for the ongoing environmental management of the Development. Though initially developed to satisfy conditions B5, C4 and C9, and updated to satisfy condition B6, this Operational Air Quality Management Plan has been updated as per condition C10(a) which states that the Plan is to be reviewed and if necessary revised due to the approval of a modification to SSD 7016.

1.2 Local Setting

As described in the *Air Quality Impact Assessment* (Todoroski Air Sciences, February 2017), the facility is situated in an industrial precinct directly north of the township of Oberon, located approximately 39km southeast of Bathurst and approximately 36km southwest of Lithgow. The surrounding land use in the wider area is characterised as predominantly agricultural land, with residential areas of Oberon to the south of the industrial precinct.

Figure 1 presents the location of Borg Panels in relation to the potentially most affected sensitive receptors identified in the *Assessment.* Also shown are the other facilities in the industrial precinct that are similar in nature to Borg Panels and include Woodchem, Structaflor and Highland Pine Products.

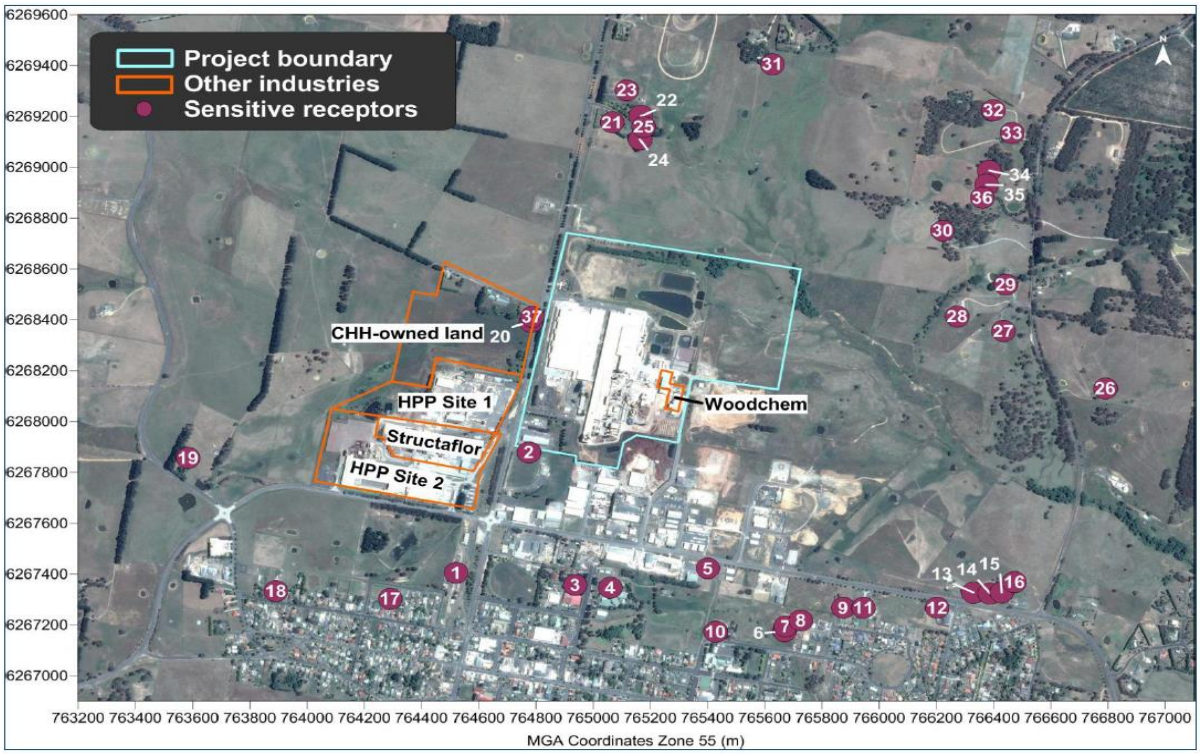


Figure 1 – Facility Location (Source: Todoroski Air Sciences, February 2017)

Figure 2 presents a pseudo three-dimensional (3D) visualisation of the topography in the area. The facility is located at a high altitude with dipping complex terrain sloping down to the nearby creeks and up to some receptor locations. The terrain features of the surrounding area would have an effect on the local wind distribution patterns and flows (Todoroski Air Sciences, February 2017).

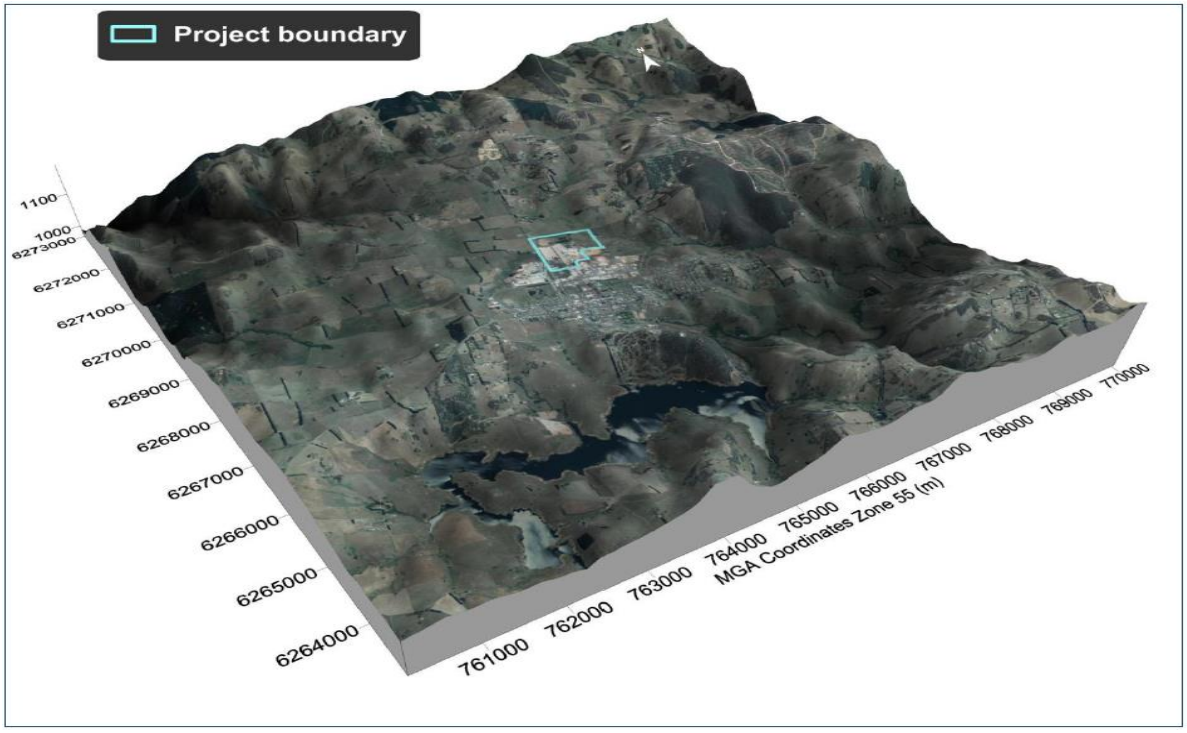


Figure 2 – Representative View of the Surrounding Topography (Source: Todoroski Air Sciences, February 2017)

1.4 Structure of this Management Plan

This Operational Air Quality Management Plan (OAQMP) has been developed to manage air emissions at the Oberon facility and to satisfy the requirements set out in Conditions B5, B6 and C9 of Development Consent SSD 7016, and includes information on the following:

- Section 2 – Legislative and Regulatory Compliance
- Section 3 – Air Quality Criteria
- Section 4 – Emissions
- Section 5 – Baseline Air Quality Data
- Section 6 – Management Measures
- Section 7 – Air Quality Monitoring
- Section 8 – Contingency Plan for Unpredicted Impacts
- Section 9 – Reporting
- Section 10 – OAQMP Review
- Section 11 – References

1.5 Consultation

In accordance with condition C4, the OAQMP (dated 28 November 2017) was provided to the EPA for review and consultation and submitted to the Secretary of the Department of Planning and Environment (DP&E) for approval on 29 November 2017. DP&E were satisfied that the OAQMP met with the terms of the relevant conditions of consent and issued approval on 21 December 2017.

As required under condition B6, the OAQMP was re-submitted to the EPA and the Secretary on 23 March 2020. As per SSD 7016 Condition C10, subsequent revised versions of the OAQMP will be submitted to the Secretary for approval as is necessary.

1.6 Training

Training and Assessment Manual *EMS0019 Environmental Standard Awareness Air* has been developed and will be delivered to all Supervisors and Operators on site. The Standard outlines Borg employee's responsibilities to assist with managing potential pollution to air across the site, how to maintain regulatory compliance and mitigate against any nuisance to the local community. Training records are maintained in DataStation, Borg's information management system.

2 Legislative and Regulatory Compliance

This OAQMP has been developed to ensure compliance with the requirements of the *Protection of the Environment Operations Act 1997* (POEO Act) and other relevant legislation as listed below.

2.1 Relevant Legislation

Key environmental legislation relating to air quality management for the operation of the facility includes:

- *Protection of the Environment Operations Act 1997;*
- Protection of the Environment Operations (Clean Air) Regulation 2010;
- *National Environment Protection Council (NEPC) Act 1994;* and
- *Environmental Planning and Assessment Amendment Act 2017*

2.2 Conditions of Consent

Borg Panels operations are subject to the conditions contained in Development Consent SSD 7016 dated 29 May 2017, and the following modifications:

- SSD 7016 MOD 1 – site layout changes (approved 20 November 2018)
- SSD 7016 MOD 2 – installation of an electricity generation gas turbine and ancillary equipment (approved 29 November 2019)
- SSD 7016 MOD 3 - additional materials handling equipment, extension to northern warehouse, changes to the site surface water system and construction of further hardstand (approved 22 May 2020)

No additional conditions specific to air quality were included in MOD 1, MOD 2, or MOD 3.

The specific requirements for an OAQMP (Schedule 2, Condition B5 and B6) and general requirements for environmental management plans (Schedule 2, Condition C9) are detailed in **Table 1**.

Table 1 – Development Consent Conditions

No.	Requirement	Document Ref.
	AIR QUALITY	
	Operational Air Quality Management Plan	
B5.	Within 6 months of the date of this consent, the Applicant must prepare an Operational Air Quality Management Plan (OAQMP) for the Existing Development to manage air quality to the satisfaction of the Secretary. The OAQMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The OAQMP must:	This Plan
	a) be prepared by a suitably qualified expert and be prepared in consultation with the EPA;	Revision History Section 1.5
	b) detail and rank all emissions from all sources of the Existing Development, including particulate and formaldehyde emissions;	Section 3 Section 4
	c) describe a program that is capable of evaluating the performance of the Existing Development and determining compliance with key performance indicators;	Section 7
	d) identify the control measures that will be implemented for each emission source;	Section 6
	e) outline options/strategies for reducing formaldehyde emissions;	Section 6.2
	f) nominate the following for each of the proposed controls: (i) key performance indicator; (ii) monitoring method; (iii) location, frequency and duration of monitoring; (iv) record keeping; (v) complaints register; (vi) response procedures; and (vii) compliance monitoring.	 Section 3 Section 7 Section 7 Section 9 Section 9 Section 8 Section 7

No.	Requirement	Document Ref.
B6	Prior to commencement of operation of the Project, the Applicant must update the OAQMP as required by Condition B5 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 B5 and must incorporate the following:	This Plan
	(a) details of emissions from all sources of the Development;	Section 3 Section 4
	(b) description of the air quality monitoring to measure the performance of the Development against this consent and the EPL; and	Section 7
	(c) description of any additional measures that would be implemented to ensure the Development complies with this consent and the EPL.	Section 6
	MANAGEMENT PLAN REQUIREMENTS	
C9	The Applicant must ensure that the environmental management plans required under Condition C4 of this consent are prepared by a suitably qualified person or persons in accordance with best practice and include:	
	a) detailed baseline data;	Section 5
	b) a description of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures/criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;	Section 2 Section 3 Section 6
	c) a description of the management measures that would be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria;	Section 6
	d) a program to monitor and report on the: (i) impacts and environmental performance of the Development; and (ii) effectiveness of any management measures (see (c) above);	Section 9
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 8
	f) a program to investigate and implement ways to improve the environmental performance of the Development over time;	Section 6
	g) a protocol for managing and reporting any: (i) incidents; (ii) complaints; (iii) non-compliances with statutory requirements; and (iv) exceedances of the impact assessment criteria and/or performance criteria; and	Section 9
	h) a protocol for periodic review of the plan.	Section 10

No.	Requirement	Document Ref.
	Note: *These requirements also apply to the preparation or updates of management plans for the Existing Development and the Project.*	

2.3 Development Consent SSD 7016 Mitigation Measures

Appendix B Applicant's Management and Mitigation Measures to Development Consent SSD 7016 details the reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the Project. There are no mitigation measures relating to the Existing Development as unmodified.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL 3035) specifies air emission discharge points, air concentration limits and monitoring requirements for operation of the Existing Development and the Project.

Variation to EPL 3035 (licence variation date 4 September 2019) includes for the following variations relating to air quality and the Project:

- The addition of new licence discharge and monitoring points 29, 30, 31 and 32
- The renaming of licence point 27 to better reflect its configuration
- The removal of redundant licence point 13 and associated monitoring requirements
- The removal of monitoring requirements for points 11 and 17 (and removal of volatile organic compound monitoring from points 7, 8, 9 and 10
- The removal of monitoring requirements for dormant licence discharge points 18 and 19
- The addition of monitoring conditions for licence points 29, 30, 31 and 32
- The addition of a Special Condition E1.1 relating to the trial of the receipt, storage and processing of Urban Wood Residue in the particleboard factory at the premises

Post EPA review of SSD 7016 Cogen Plant Post Commissioning Report v.2 (condition B8 of consent) the EPA require Borg Panels to undertake annual emission monitoring at the two cogeneration units to demonstrate ongoing compliance with air quality standards. Therefore, two additional monitoring/discharge points (EPA ID. 33 and 34) were added to EPL 3035.

3 Air Quality Criteria

Air quality criteria are benchmarks set to protect the general health and amenity of the community in relation to air quality.

3.1 Approved Methods for the Modelling and Assessment of Air Pollutants in NSW

Air quality goals relevant to the operation of the facility as outlined in the NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2016) are shown in **Table 1**.

Table 1 – NSW EPA Air Quality Impact Assessment Criteria

Pollutant	Averaging Period	Impact	Criteria
TSP	Annual	Total	90 µg/m^3
PM_{10}	Annual	Total	30 µg/m^3

	24 hour	Total	25 µg/m^3
Deposited Dust	Annual	Incremental	2 g/m^2/month
		Total	4 g/m^2/month
NO_2	1-hour		246
	Annual		62
Formaldehyde	1-hour		21.8 (20*)

Source: EPA 2016

* The applicable criterion for formaldehyde is presented as 20 µg/m^3 at 25°C in the Approved Methods (EPA 2016). To be consistent with the other pollutant criteria (and hence the modelling results), the table above presents the criterion at 0°C which is 21.8 µg/m^3.

With the exception of formaldehyde, all other air pollutants are assessed against their applicable criteria using the maximum predicted concentrations at the sensitive receptors. For formaldehyde, the 99.9th percentile predicted concentrations are assessed against the criteria at or beyond the site boundary. The criteria outlined in **Table 1** are used for assessment against air dispersion modelling results for the site, which assesses potential air quality impacts in the air shed surrounding the site and estimates potential air emissions associated with the development.

3.2 National Environment Protection (Ambient Air Quality) Measure

The *National Environment Protection Council (NEPC) Act 1994* and subsequent amendments define the National Environment Protection Measures (NEPMs) as instruments for setting environmental objectives in Australia.

The Ambient Air Quality NEPM specifies national ambient air quality standards and goals for air pollutants including PM_{10} and $PM_{2.5}$. The standard for PM_{10} and $PM_{2.5}$ is outlined in **Table 2**. The Ambient Air Quality NEPM allows for exceedance above the 24-hour average criterion in exceptional events such as bush fires and regional dust storms. As with each of the NEPM goals, these apply to the average, or general exposure of a population, rather than to "hot spot" locations or to individual industry projects. The criteria in **Table 2** are used for assessment against air dispersion modelling results for the site.

Table 2 – Standard for PM_{10} and $PM_{2.5}$ Concentrations

Pollutant	Averaging Period	Maximum Concentration (µg/m^3)
PM_{10}	24 hour	50
	Annual	25
$PM_{2.5}$	24 hour	25
	Annual	8

Source: NEPC, 2016

3.3 World Health Organisation Guidelines

Table 3 presents the formaldehyde guideline recommended by the World Health Organisation (WHO) to prevent sensory irritation in the general public. The WHO Guideline is based on current knowledge of health impacts and is generally less stringent than the NSW EPA Criterion. The criteria outlined in **Table 3** are used for assessment against air dispersion modelling results for the site.

Table 3 – Applicable Air Quality Guideline for Formaldehyde

Pollutant	Averaging Period	Guideline (µg/m^3)
Formaldehyde	30-minute	100

Source: WHO, 2010

3.4 Protection of the Environment Operations (Clean Air) Regulation 2010

The Protection of the Environment Operations (Clean Air) Regulation 2010 (POEO, 2010) outlines standards of concentrations for air emissions emitted from various plant. The emission limits applicable to the facility are summarised in **Table 4**. Emissions to air monitoring results are assessed against the criteria in **Table 4** for the existing plant to determine compliance with concentration limits.

Table 4 – Standards of Concentration for Scheduled Premises

Pollutant	Group 4 Standard of Concentration (mg/m^3)
	Existing Sources
TSP	250
NO_x as NO_2 equivalent	2,500

Source: POEO, 2010

3.5 NSW EPA Licence Limits

Environment Protection Licence 3035 contains air concentration limits for several of the existing emission points at the facility. The emission limits are summarised in **Table 5** and **Table 6**. Emissions to air monitoring results are assessed against the criteria in **Table 4** for the existing plant to determine compliance with concentration limits.

Table 5 – EPL 3035 Air Concentration Limits Point 7, 8, 9, 10

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

Table 6 – EPL 3035 Air Concentration Limits Points 33, 34

Pollutant	Units of Measure	100 Percentile Concentration Limit	Reference Conditions	Oxygen Correction	Averaging Period
Nitrogen Oxides	mg/m^3	450	Dry, 273K, 101.3kPa	5%	1 hour
Volatile Organic Compounds (as n-propane equivalents)	mg/m^3	20	Dry, 273K, 101.3kPa	5%	1 hour

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* if pollutant limits are not specified in the table above.

4 Emissions

The emissions considered in this Plan are those identified in the *Air Quality Impact Assessment* (Todoroski Air Sciences, February 2017) that have potential to affect the general health and amenity of the community and the surrounding environment.

4.1 Particulate Matter

Particulate matter consists of dust particles of varying size and composition. Air quality goals refer to measures of the total mass of all particles suspended in air defined as the Total Suspended Particulate matter (TSP). The upper size range for TSP is nominally taken to be 30 micrometres (µm) as in practice particles larger than 30 to 50µm will settle out of the atmosphere too quickly to be regarded as air pollutants.

Two sub-classes of TSP are also included in the air quality goals, namely PM_{10}, particulate matter with equivalent aerodynamic diameters of 10µm or less, and $PM_{2.5}$, particulate matter with equivalent aerodynamic diameters of 2.5µm or less.

Particulate matter, typically in the upper size range, that settles from the atmosphere and deposits on surfaces is characterised as deposited dust. The deposition of dust on surfaces is considered a nuisance and can adversely affect the amenity of an area by soiling property in the vicinity.

The greatest source of PM_{10} emissions are from the Conti 2 Stage 1 Dryer Cyclones and Jeldwen Press Exhaust Vents (dormant). The next highest emitters of PM_{10} emissions are the Conti 1 Dryer Cyclones and Conti 2 Heat Plant. The Conti 1 Heat Plant, press vents, baghouses and the WESP emit the least PM_{10} emissions.

Fugitive particulate matter emissions are also generated through the disturbance of soils and wood dust, and the chipping of raw wood and fuels for the heat plants.

4.2 Nitrogen Dioxide

Nitrogen Dioxide (NO_2) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides. NO_2 is a by-product from the burning of fuel (United States Environment Protection Agency, September 2017).

NO_2 goals relevant to the operation of the facility as outlined in the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2016) are outlined in **Section 3.1**.

NO_2 along with other NO_x compounds react with other chemicals in the air to form both particulate matter and ozone. The environmental effects of NO_2 and other NO_x include the formation of acid rain, reduced visibility and haze, and nutrient pollution in waterways (United States Environment Protection Agency, September 2017).

From an analysis of historical stack emissions monitoring data, the primary sources of NO_x emissions from the Borg Panels facility are from the Jeldwen press exhaust vents, heat plants and Conti 1 Dryer Cyclone. The Jeldwen plant is dormant and has not been operated since its purchase by Borg in 2012.

The press vents, baghouses and WESP are minor emitters of NO_x.

4.3 Formaldehyde

Formaldehyde is a colourless, flammable gas at room temperature and has a strong odour. Exposure to formaldehyde may cause adverse health effects, which can include irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers (United States Environment Protection Agency, September 2017). Formaldehyde is not a persistent pollutant and is readily broken down in air by sunlight, with a half-life of approximately 30-50 minutes.

Formaldehyde is emitted from the press vents and dryer cyclones, and originates from the setting by heat of the adhesive resins used in the manufacture of MDF and particleboard on-site.

From an analysis of historical stack emissions monitoring data, the primary sources of formaldehyde emissions from the Borg Panels facility are from the Conti 2 Stage 1 Dryer Cyclones, Conti 1 Dryer Cyclones and Conti 1 & 2 Press Vents.

The baghouses, WESP and Conti 1 & 2 Heat Plants are smaller emitters of formaldehyde.

4.4 Volatile Organic Compounds

Volatile organic compounds (VOCs) are a large group of organic chemicals that include any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate). VOCs participate in atmospheric photochemical reactions that contribute to ozone formation, they play a role in formation of secondary organic aerosols, which are found in airborne particulate matter, and are known to be harmful to human health (United States Environment Protection Agency, September 2017).

Sources of VOC emissions at the Borg Panels facility are from the Conti 1 and Conti 2 Heat Plants, press exhaust vents, the WESP, the two Cogen units and the paper oven duct.

5 Baseline Air Quality Data

Baseline environmental air quality data collected from emissions monitoring and depositional dust monitoring for the period between 2008 to 2017 is summarised in the sections below. Also included is a summary of typical wind patterns for Oberon taken from data for period June 2016 to May 2017. **Section 7** of this Plan details the requirements for air quality monitoring at the Borg Panels facility.

5.1 Emissions Monitoring Data

Figures 3 – 7 provide stack emission monitoring results for EPA monitoring points for the period 2008 to 2017. Tables of the monitoring results from 2008 to 2017 are included in **Appendix A**.

5.1.1 Total Suspended Particulate Matter and PM_{10}

Conti 1 Heat Plant exceeded the Group 4 Standard of Concentration for TSP of 250 mg/m^3 in the 2013 and 2015 reporting years due to a fire in the multi-cyclones affecting their performance, as such, the data are considered spurious, and not representative of normal operation and hence are not plotted. The plant has since been repaired and recorded TSP emissions of 190 mg/m^3 in the 2015-16 reporting period, as shown.

In the 2016-17 reporting period the plant was modified to divert exhaust gas from Conti 1 Heat Plant back in to the Conti 1 production system.

EPA Identification Points 9 Conti 1Dryer Cyclone #1 (south), 10 Conti 1Dryer Cyclone #2 (north), 11 Conti 2 Heat Plant and 17 Conti 1 Heat Plant have an EPL air concentration limit for TSP of 200 mg/m^3. With the exception of the exceedance described above, all monitoring points complied with the EPL limits.

There are no operational limits in either the *POEO (Clean Air) Regulation 2010* or EPL 3035 for PM_{10} emissions for the facility.

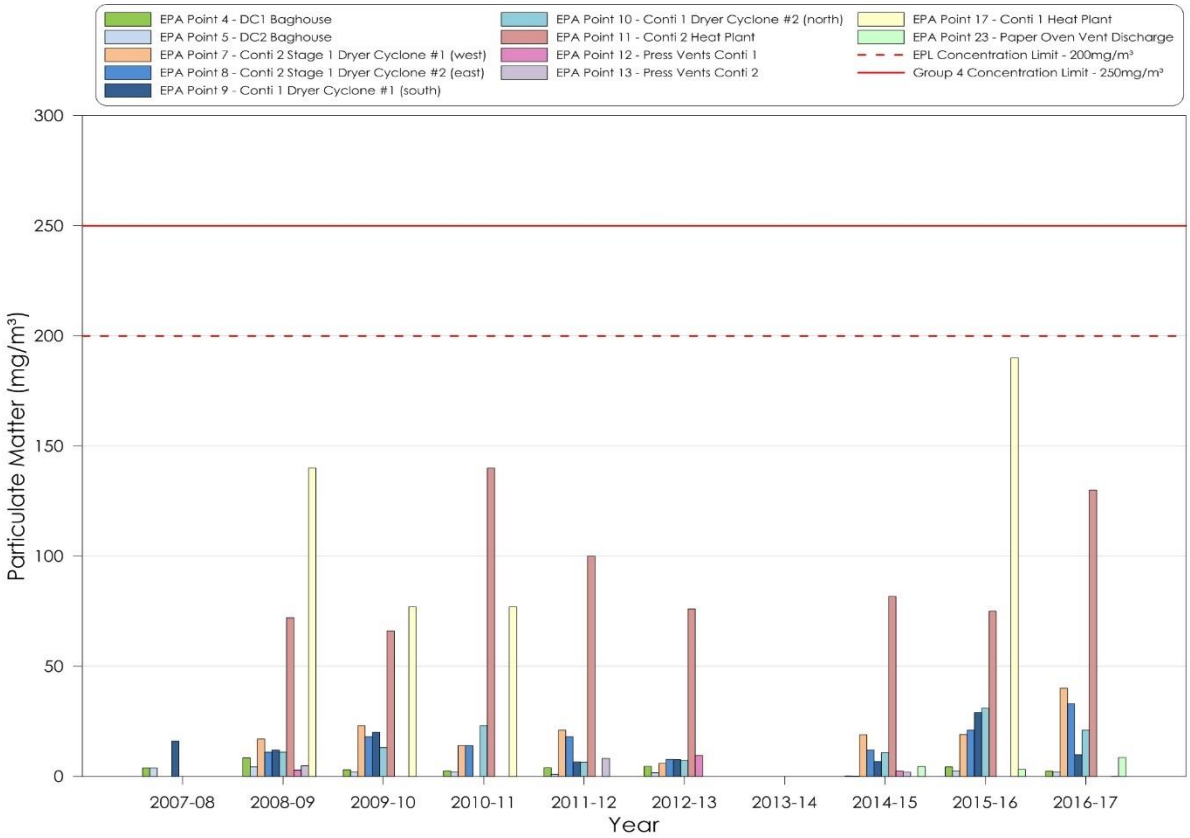


Figure 3 – Total Suspended Particulate Matter (TSP) Monitoring Results

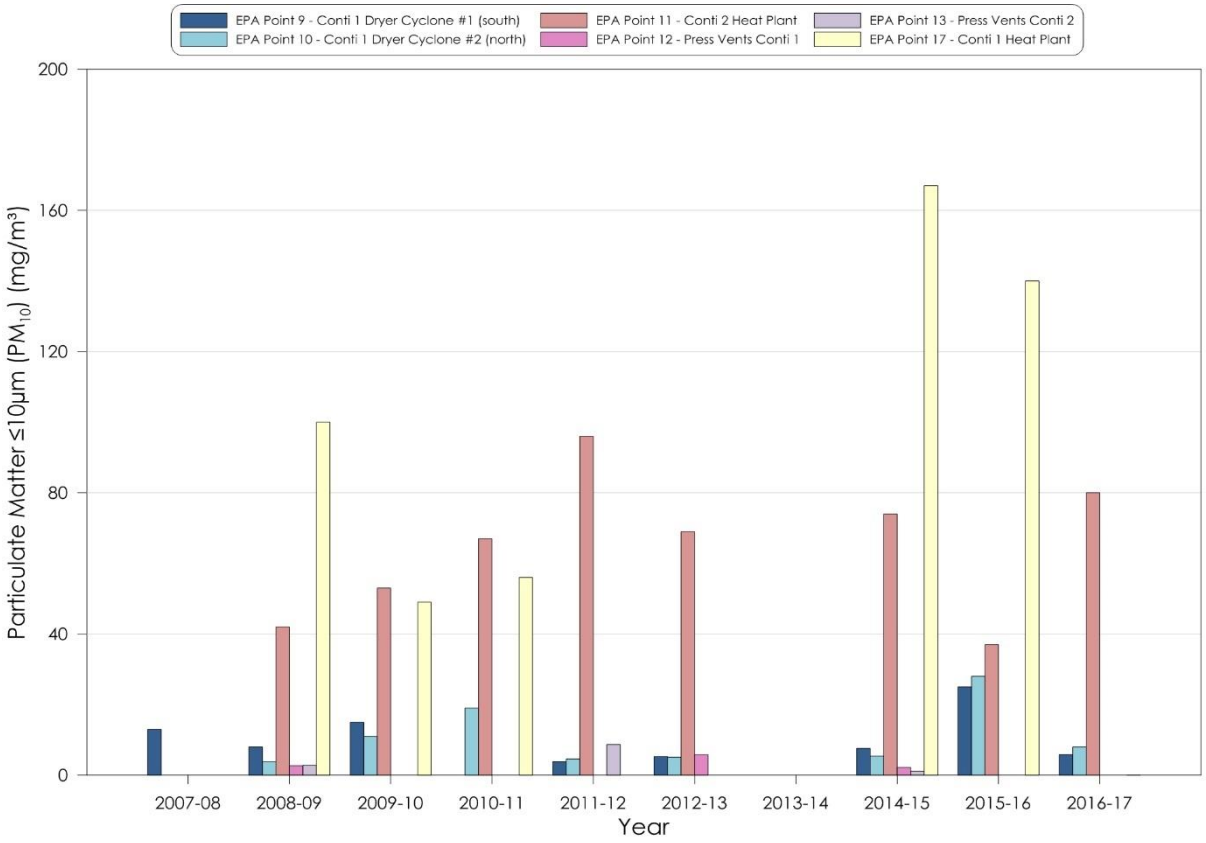


Figure 4 – PM_{10} Monitoring Results

5.1.2 Nitrogen Oxides

The *POEO (Clean Air) Regulation 2010* concentration limits for NO_x as NO_2 equivalent is 2,500 mg/m^3 for Group 4 plant. All monitoring points complied with the specified limits.

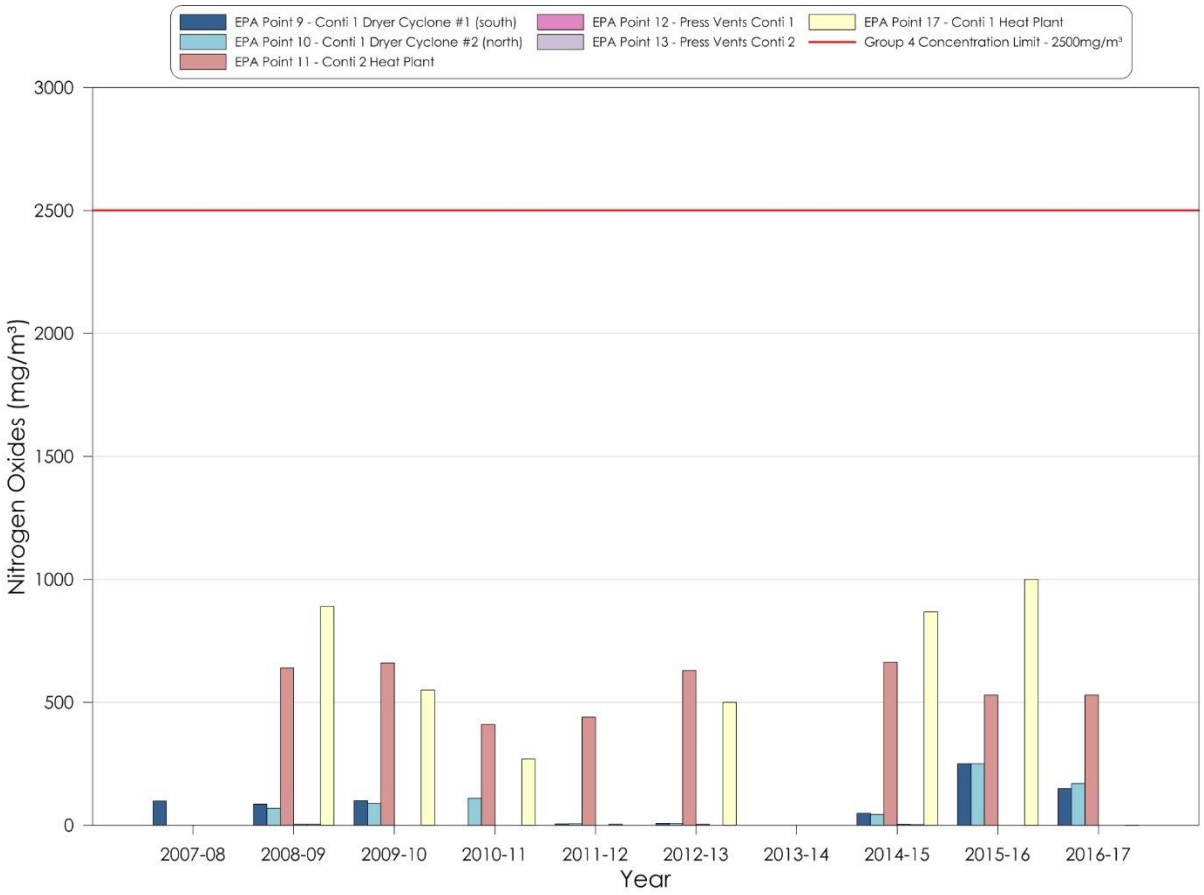


Figure 5 – NO_x Monitoring Results

5.1.3 Formaldehyde

EPA Identification Points 11 Conti 2 Heat Plant and 17 Conti 1 Heat Plant have an EPL air concentration limit for formaldehyde of 5 mg/m^3. In the 2011-12 reporting period Point 11 Conti 2 Heat Plant exceeded this limit with a result of 7.4 mg/m^3 for formaldehyde. This result is considered to be anomalous, and likely to be a measurement error. All other monitoring results for both heat plants complied with the EPL limits.

EPA Identification Point 23 Paper Oven Vent Discharge no longer requires monitoring as the flow has been redirected to the Conti 2 Heat Plant. Point 23 has been removed from EPL 3035.

While formaldehyde emissions are monitored at additional EPA Identification Points as presented in in **Figure 6**, no emission concentration limits are applicable to these additional monitoring locations.

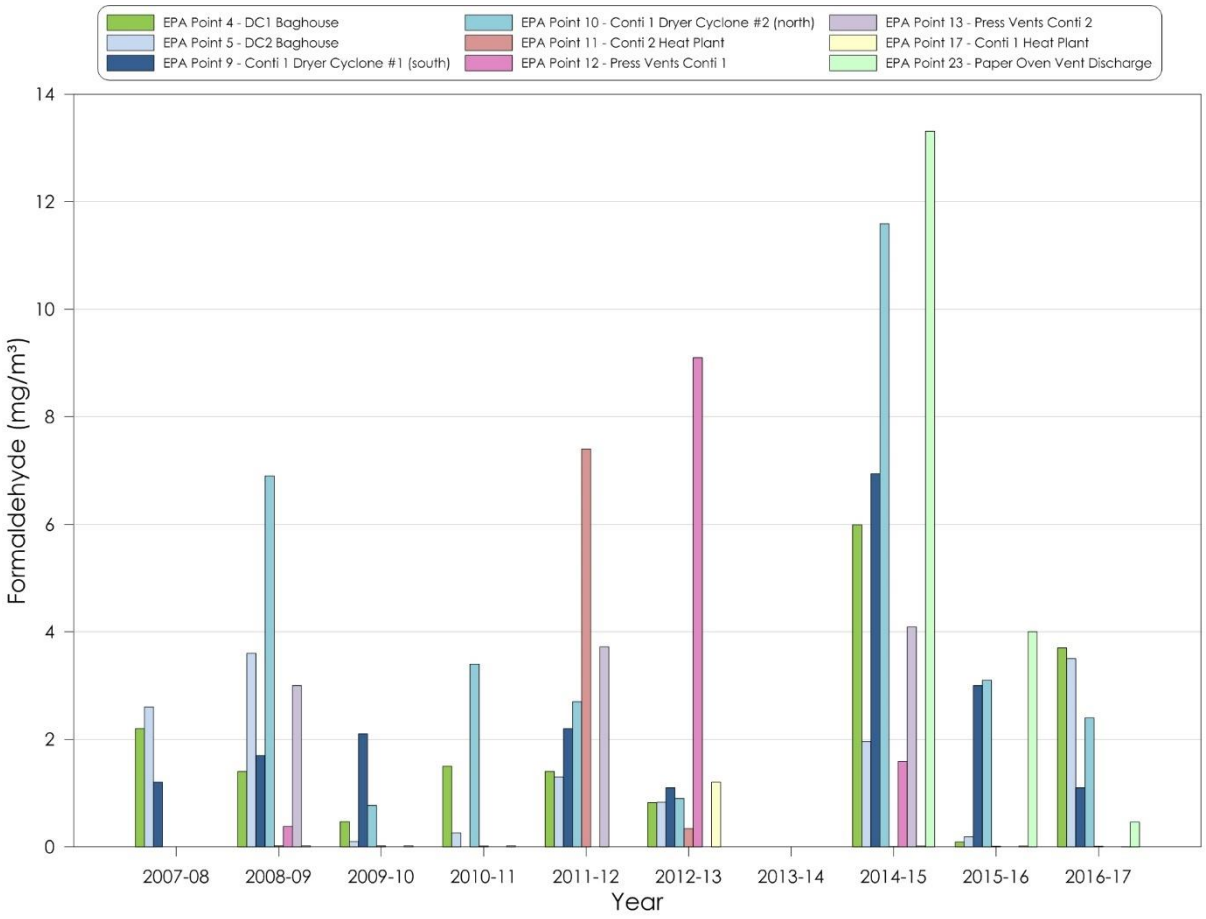


Figure 6 – Formaldehyde Monitoring Results

5.1.4 Volatile Organic Compounds

EPA Identification Points 9 Conti 1Dryer Cyclone #1 (south), 10 Conti 1Dryer Cyclone #2 (north), 11 Conti 2 Heat Plant and 17 Conti 1 Heat Plant have an EPL air concentration limit for volatile organic compounds of 10 mg/m^3. All monitoring locations complied with EPL limits for VOC emissions.

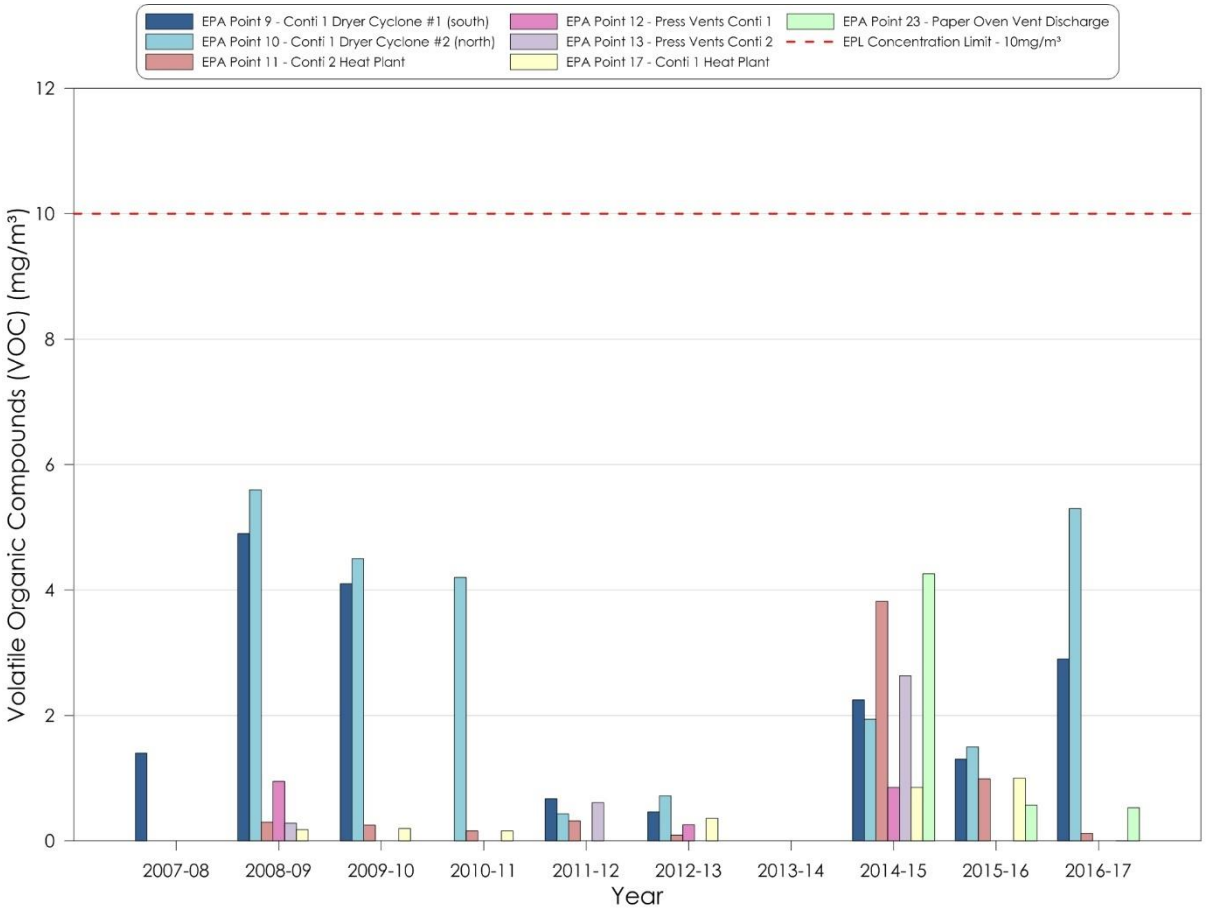


Figure 7 – Volatile Organic Compounds Monitoring Results

5.2 Depositional Dust Monitoring Data

Whilst there are no site limits, depositional dust monitoring is conducted to assist with site management. **Figure 8** shows depositional dust rolling averages and **Figure 9** shows depositional dust annual averages from 2015 when Borg Panels commenced depositional dust gauge monitoring, to 2017.

DDGs 1-4 (in blue colours) are located on-site. DDG 5 and DDG 6 (pink and red colours) are located at off-site sensitive receiver locations. See **Figure 11** in Section 7 for dust gauge locations.

DDG 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. During the monitoring periods included in this Plan (i.e. 2015 – 2017) DDG 2 was located immediately adjacent an active construction site. Though the location of DDG 2 remains the same, the construction activities associated with this area were complete by November 2019.
Note that the dust deposition criterion does not apply to the on-site dust levels, only off-site levels.

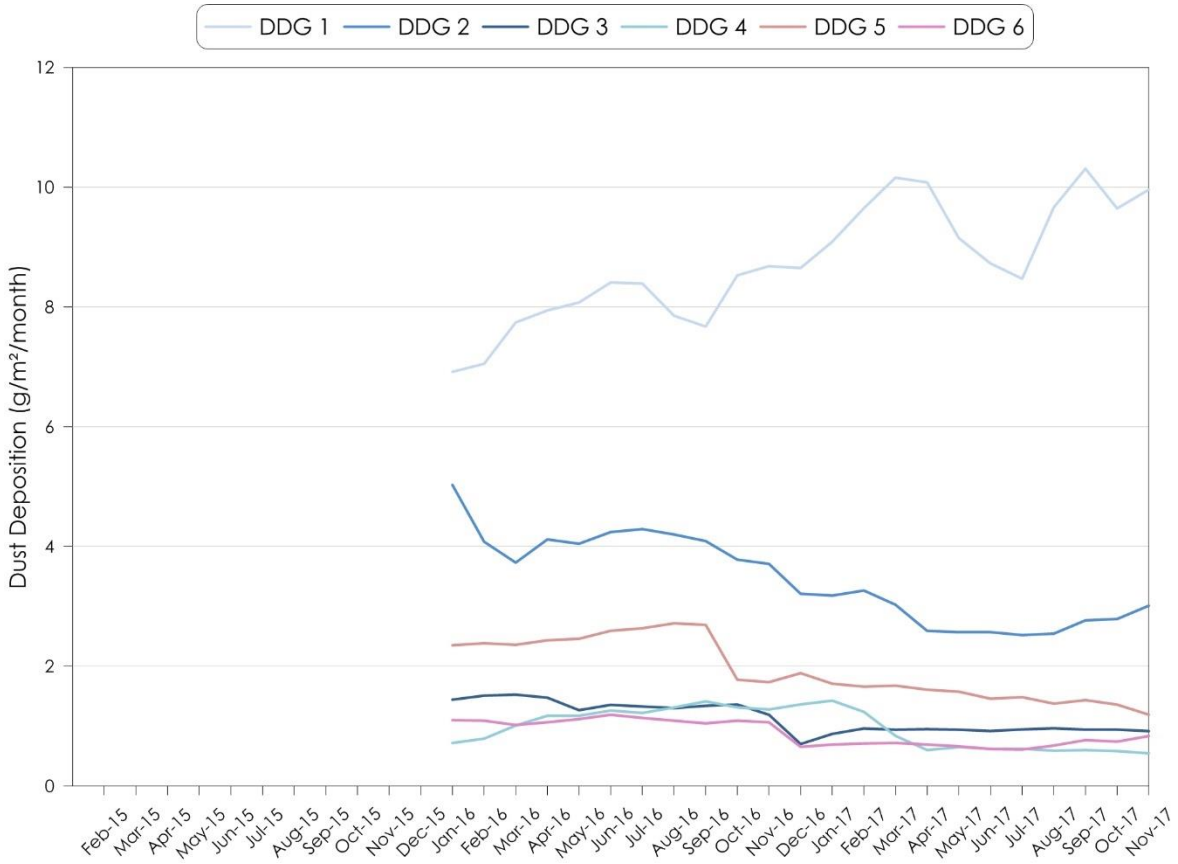


Figure 8 – Depositional Dust Rolling Averages

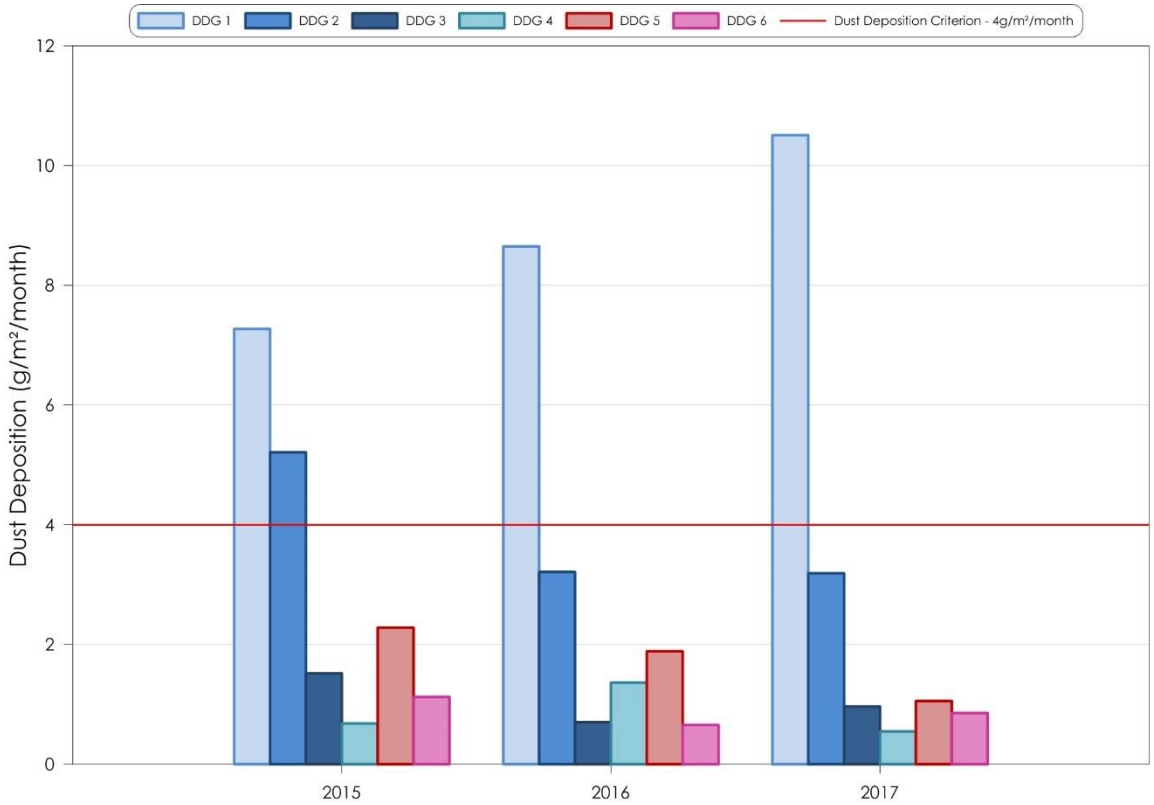


Figure 9 – Depositional Dust Annual Average Results (criterion applies to DDG 5 & 6)

5.3 Meteorological Monitoring

Meteorological monitoring is undertaken on-site using the site meteorological weather station (monitoring Point 26) in accordance with EPL 3035 requirements. Annual and seasonal wind roses prepared from data collected between June 2019 and May 2017 is presented in **Figure 10**. The wind roses indicate typical wind patterns for Oberon with winds predominantly along a west-west north west and east-east south east axis with few winds from the north and south quadrants.

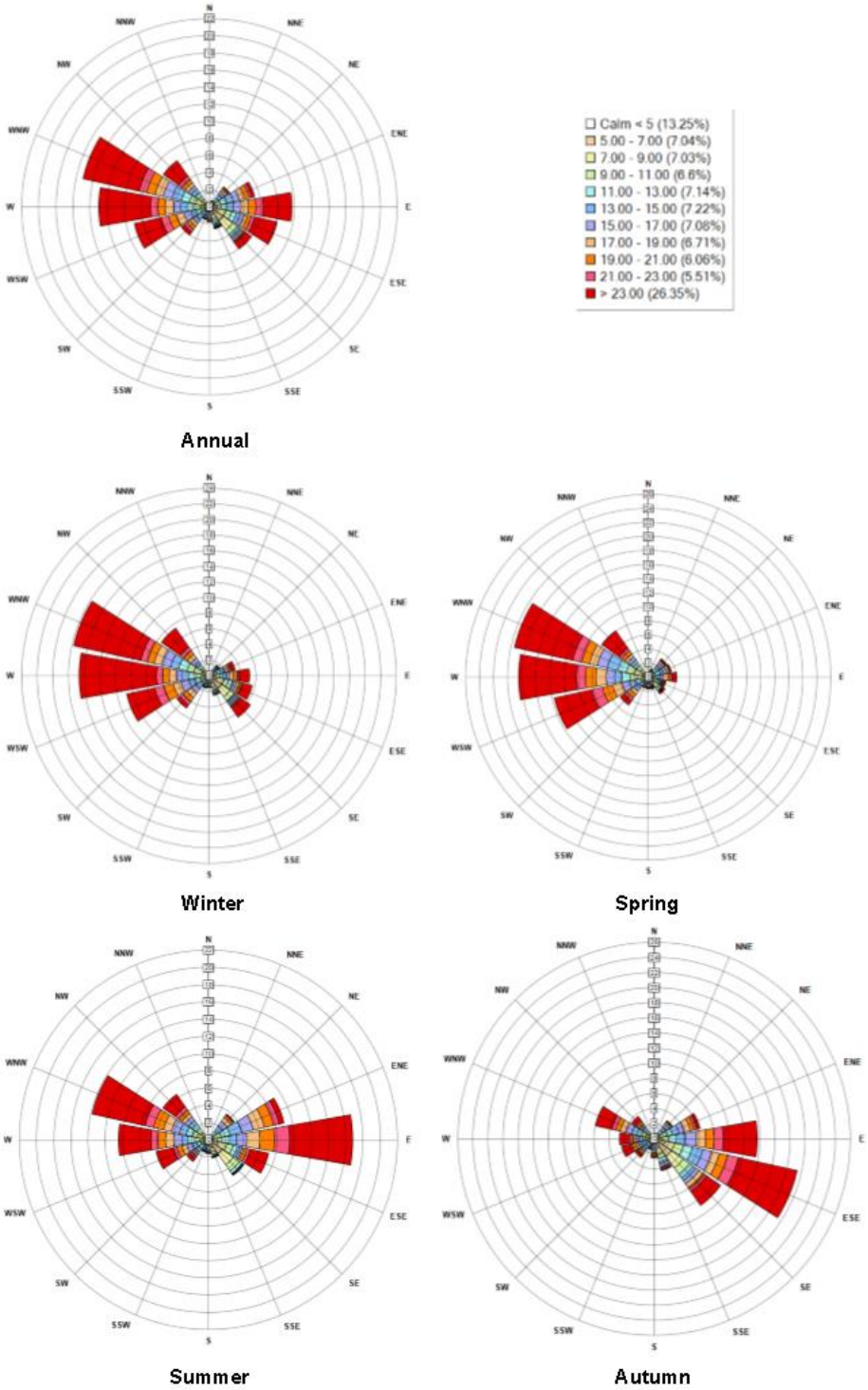


Figure 10 – Annual and Seasonal Wind roses for Borg Panels (June 2016 – May 2017)

6 Management Measures

6.1 Air Quality Management Measures

The air quality management measures described in this section are designed to minimise the impact of the operation's site activities on the surrounding environment. Air emissions are generally constant and are being emitted from a fixed point resulting from an established process. The primary measures to control air emissions for the facility are set out in **Table 7**.

Table 7 – Summary of Air Quality Mitigation Measures

EPA Identification Point No.	Location Description	Control measure (described further in Section 6.2, per pollutant controlled)
4	DC1 Baghouse	Differential pressure monitoring to indicate bag performance, failure or leak Resin formulation to minimise VOC emissions
5	DC2 Baghouse	Differential pressure monitoring to indicate bag performance, failure or leak Resin formulation to minimise VOC emissions
7	Conti 2 Stage 1 Dryer Cyclone #1 (west)	Cyclone particle separation to minimise emitted particulate Resin formulation to minimise VOC emissions Temperature to optimise clean combustion
8	Conti 2 Stage 1 Dryer Cyclone #2 (east)	Cyclone particle separation to minimise emitted particulate Resin formulation to minimise VOC emissions Temperature to optimise clean combustion
9	Conti 1 Dryer Cyclone #1 (south)	Cyclone particle separation to minimise emitted particulate Resin formulation to minimise VOC emissions Temperature to optimise clean combustion
10	Conti 1 Dryer Cyclone #2 (north)	Cyclone particle separation Resin formulation to minimise VOC emissions Temperature to optimise clean combustion
11	Conti 2 Heat Plant	Fuel type control. Fuels are chosen to ensure correct size, type and moisture level is maintained. Operational measures to limit furnace temperature. Cyclone particle separation to minimise emitted particulate
12	Press Vents Conti 1	Resin formulation to minimise VOC emissions
17	Conti 1 Heat Plant	Fuel type control. Fuels are chosen to ensure correct size, type and moisture level is maintained. Operational measures to limit furnace temperature Cyclone particle separation to minimise emitted particulate
18	Press exhaust vents discharge	Resin formulation to minimise VOC emissions
19	Dryer stack	Cyclone particle separation to minimise emitted particulate
20	Reject cyclone DC 11	Cyclone particle separation to minimise emitted particulate

EPA Identification Point No.	Location Description	Control measure (described further in Section 6.2, per pollutant controlled)
21	Reject cyclone DC 12	Cyclone particle separation to minimise emitted particulate
22	Reject cyclone DC 13	Cyclone particle separation to minimise emitted particulate
27	Combined Conti 2 Press Vent	Press vapour water scrubber to capture solid particles, water soluble VOC's and formaldehyde
29	Forming Line baghouse	Differential pressure monitoring to indicate bag performance, failure or leak Resin formulation to minimise VOC emissions
30	Form station baghouse	Differential pressure monitoring to indicate bag performance, failure or leak Resin formulation to minimise VOC emissions
31	Particleboard press extraction	Capture and direct emissions into scrubber oxidation system for treatment
32	Wet Electrostatic Precipitator (WESP)	Removes fine particles Reduces VOC emissions
33	Cogeneration Unit 1	Controlled combustion chamber temperature
34	Cogeneration Unit 2	Controlled combustion chamber temperature

6.2 Control Measures for Each Emission Source

Process control measures are implemented to reduce emissions to air. These measures incorporate various plant and process operational procedures, pollution control equipment, maintenance and monitoring regimes, as outlined below.

6.2.1 Particulate Matter (Total Solid Particles)

The main processes in the production of MDF that generate particulate matter emissions include drying of fibre following the addition of resin and wax, sanding and sawing of pressed board, and burning of wood fuels in the heat plants. The production of particleboard uses similar processes to MDF production. The following process control measures are implemented to reduce particulate matter emissions:

- Baghouse filtration used for particle or fibre conveying processes, which are low temperature and or not moisture laden.
- Cyclonic separation for large air flow volumes which are hot and or wet at the dryer cyclones, heat plants and reject cyclones.
- Site maintenance to control fugitive dusts, including manual and mechanical sweeping.
- Wet Electrostatic Precipitator (WESP) filtration device.
- Press fume extraction system replacing roof ventilators at Conti 2 press line.

6.2.2 Nitrogen Dioxide

NO_x emissions are generated from all site combustion activities, including operation of both heat plants, and in smaller volumes from gas burners around the site.

The following process control measures are implemented to reduce NO_x emissions:

- Furnace control methods including excess over fire air to control the formation of NO_x.

- Fuel type, quality and solid fuel size is controlled to assist in maintaining consistent combustion characteristics.
- Dedicated energy plant operators monitoring furnace temperature and operating conditions to optimise combustion and hence emissions.
- Press fume extraction system replacing roof ventilators at Conti 2 press line.

6.2.3 Formaldehyde Emissions

Formaldehyde emissions are generated from various activities around the site, these include drying of the resinated fibre, processing fibre and pressing of the board. Smaller quantities are generated in heat plant operation and as fugitive emissions.

The following process control measures are implemented to reduce the formaldehyde emissions:

- Resin reformulation is controlled to ensure free formaldehyde levels are low.
- Dryer temperatures are maintained low to reduce volatilization of formaldehyde from the polymer.
- Press temperatures are maintained at lower levels to reduce resin hydrolysis and escape of formaldehyde.
- Heat plants are operated to ensure maximum residence time ensuring complete oxidation of formaldehyde.
- WESP/scrubber system exposing gases to high temperatures resulting in the oxidation of formaldehyde.
- Press fume extraction system replacing roof ventilators at Conti 2 press line.

6.2.4 Volatile Organic Compounds

Volatile Organic Compounds are generated when naturally occurring light organic oils within the wood fibre are volatilised. Processes on site that generate VOCs include drying fibre and pressing of the board. Smaller quantities of VOCs are also generated in the heat plants. The following process control measures are implemented to reduce the VOC emissions:

- Low temperatures used in the fibre drying process to reduce quantity of VOCs escaping from the wood fibre.
- Heat Plant temperatures and residence times are maintained to ensure complete combustion of escaped VOCs.

7 Air Quality Monitoring

Borg Panels conduct air emissions monitoring to assess compliance with the approval criteria performance indicators and to meet the monitoring requirements of EPL 3035. Additionally, Borg Panels also monitor for depositional dust and meteorological conditions.

7.1 Monitoring Methods

7.1.1 Emissions to Air

Emissions to air monitoring is performed in accordance with the methodologies recommended by the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2016) 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.

7.1.2 Dust Deposition

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS/NZS 3580.10.1:2003: Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method*. Samples are also analysed for ash residue and combustible matter to the Australian Standard to assist in determining dust sources.

7.1.3 Meteorological Monitoring

The site meteorological weather station is capable of continuously monitoring rainfall, relative humidity, sigma theta (the standard deviation of horizontal wind directions), temperature, wind direction and wind speed. This monitoring is conducted in accordance with the requirements of the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2016).

7.2 Monitoring Locations

7.2.1 Emissions to Air

The locations of air emissions monitoring are listed in **Table 8**.

Table 8 – Location of Air Emissions Monitoring

EPA Identification Point No.	Location 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 Stack venting Conti 2 Press Vents and DC1 and DC2 Baghouses
29	Forming Line baghouse
30	Form station baghouse
31	Particleboard press extraction
32	Wet Electrostatic Precipitator (WESP)
33	Cogeneration Unit 1
34	Cogeneration Unit 2

While EPA Identification Points 20, 21 and 22 (reject cyclones) are recognised as discharge points in EPL 3035, there is no requirement to monitor the concentration of pollutants discharged at these points as this plant is dormant.

Redundant EPA Identification Point 23 was removed from EPL 3035 in the licence variation on 9 October 2017. Exhaust from Point 23 Paper Oven Vent Discharge is ducted to Point 11 Conti 2 Heat Plant.

Variations to EPL dated 4 September:

- Removal of redundant licence Point 13 and associated monitoring requirements;
- The addition of new licence discharge and monitoring points 29, 30, 31 and 32, and the addition of monitoring conditions for these points;
- The renaming of 'Particulate' matter to 'Total Solid Particles';
- The removal of monitoring requirements for points 11 and 17 (and removal of volatile organic compound monitoring from points 7, 8, 9 and 10); and
- The removal of monitoring requirements for dormant licence discharge points 18 and 19.

Note, variations to EPL 3035 can occur without update to this Plan. The electronic version of EPL 3035 should be checked for validity.

7.2.2 Dust Deposition

The locations of dust depositional gauges are listed in **Table 9** and shown on **Figure 11**.

Table 9 – Location of Dust Depositional Gauges

Dust Depositional Gauge	Location Description	Locale
DDG 1	Borg Panels eastern boundary with Woodchem	On-Site
DDG 2	South West of Conti 2	On-Site
DDG 3	Water treatment plant (east of Spring dam)	On-Site
DDG 4	Water treatment plant (northern boundary)	On-Site
DDG 5	Highlands Motor Inn	Off-Site
DDG 6	Albion Street (south east of Borg Panels facility)	Off-Site

Figure 11 – Location of Depositional Dust Gauges and Meteorological Station

7.2.3 Meteorological Monitoring

The meteorological monitoring station is identified as *Weather Station* on **Figure 11**.

7.3 Monitoring Frequency

7.3.1 Emissions to Air

The frequency of monitoring of emissions to air is detailed in **Table 10**.

Table 10 – Frequency of Monitoring

EPA Identification	Pollutant	Units	Frequency
Point 4	Total Solid Particles	mg/m^3	Yearly
	Formaldehyde	mg/m^3	Yearly
Point 5	Total Solid Particles	mg/m^3	Yearly
	Formaldehyde	mg/m^3	Yearly
Point 7	Total Solid Particles	mg/m^3	Yearly
Point 8	Total Solid Particles	mg/m^3	Yearly
Point 9	Total Solid Particles	mg/m^3	Yearly
	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM_{10}	mg/m^3	Yearly
	Smoke Emissions	percent Opacity	Every 6 months
Point 10	Total Solid Particles	mg/m^3	Yearly
	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly

EPA Identification	Pollutant	Units	Frequency
	PM_{10}	mg/m^3	Yearly
	Smoke Emissions	percent Opacity	Every 6 months
Point 12	Total Solid Particles	mg/m^3	Every 3 years
	Formaldehyde	mg/m^3	Every 3 years
	Nitrogen Oxides	mg/m^3	Every 3 years
	PM_{10}	mg/m^3	Every 3 years
Point 27	Total Solid Particles	mg/m^3	Yearly
	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM_{10}	mg/m^3	Yearly
Point 29	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM10	mg/m^3	Yearly
	Smoke Emissions	mg/m^3	Yearly
	Total Solid Particles	mg/m^3	Yearly
Point 30	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM10	mg/m^3	Yearly
	Smoke Emissions	mg/m^3	Yearly
	Total Solid Particles	mg/m^3	Yearly
Point 31	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM10	mg/m^3	Yearly
	Smoke Emissions	mg/m^3	Yearly
	Total Solid Particles	mg/m^3	Yearly
Point 32	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM10	mg/m^3	Yearly
	Smoke Emissions	mg/m^3	Yearly
	Total Solid Particles	mg/m^3	Yearly
Point 33	Formaldehyde	mg/m^3	Yearly
	Nitrogen Oxides	mg/m^3	Yearly
	PM10	mg/m^3	Yearly
	Smoke Emissions	mg/m^3	Yearly
	Total Solid Particles	mg/m^3	Yearly
Point 33	Nitrogen Oxides	mg/m^3	Yearly
	VOC's (as N-propane equivalents)	mg/m^3	Yearly
Point 34	Nitrogen Oxides	mg/m^3	Yearly
	VOC's (as N-propane equivalents)	mg/m^3	Yearly

7.3.2 Dust Deposition

Depositional dust gauge samples are collected every 30 +/- 2 days.

7.3.3 Meteorological Monitoring

The meteorological monitoring station is a continuous weather recording station with data available in real time.

8 Contingency Plan for Unpredicted Impacts

In the event of previously unpredicted air quality impacts, resulting from either an exceedance of criteria, a valid complaint, or site staff observations, the following process will be implemented:

- The Environment Coordinator is to be notified;
- Environment Coordinator to determine if the unpredicted impact constitutes an environmental incident that requires external reporting (**Section 9**);
- Investigate to evaluate the contributing factors to the event. The investigation may include (where applicable):
    - Assessment of weather conditions for the period of monitoring, including wind speed and direction;
    - Visual assessment of the area surrounding the monitoring location to identify any potential sources of dust generation (on-site and off-site);
    - Review of operational activities during the period of monitoring;
- Implement remedial response and/or adaptive management measures, dependant on the outcomes of the above investigation; and
- Implement the Review component (**Section 10**) of this Plan as required.

9 Reporting

Borg Panels will manage all internal and external reporting requirements in accordance with the Operational Environmental Management Plan (OEMP). Specific reporting functions relevant to this Plan are detailed below.

9.1 Internal Review

The Environment Coordinator/Manager will review dust deposition monitoring results monthly and emissions to air monitoring results annually. Results of investigations of any complaints and any exceedances of the air quality impact assessment criteria will be reported to senior management promptly.

9.2 Scheduled Reporting

Air quality emissions performance is reported externally as follows:

- Annual emissions to air compliance monitoring reports, which include a comparison of measured air emissions with operational air quality criteria conditioned in EPL 3035;
- Annual updates of monitoring results on the Borg website;
- Annual Review. A copy of the Annual Review is sent to relevant stakeholders, including DP&E, EPA and Oberon Council and is available on the Borg website; and
- EPA Annual Return, statement of compliance and a monitoring and complaints summary annually as required by EPL 3035.

9.3 Exceedance of Criteria / Environmental Incident Management

Notification procedures and actions upon identification of an exceedance of any impact assessment criteria or management levels will be as per the Operational Environmental Management Plan (OEMP), and any specific requirements of the relevant management plan or monitoring program.

In the event that a pollution incident causes or threatens material harm to the environment, the Borg Panels Pollution Incident Response Management Plan (PIRMP) is to be immediately implemented, including immediate notification of authorities as outlined in the OEMP and PIRMP

Where an exceedance of the impact assessment criteria and/or performance criteria outlined in the *Air Quality Impact Assessment* (Todoroski Air Sciences, February 2017) continually occurs:

- A detailed examination of the existing processes to identify the potential for emissions reduction will be undertaken; and
- Where practicable and economically feasible to do so measures may be put in place to further reduce emissions.

9.4 Complaints

Community complaints will be managed in accordance with the procedures in the Operational Environmental Management Plan (OEMP). The 24-hour free call community liaison line contact number is included in the OEMP.

10 Review

In accordance with Development Consent SSD 7016 Condition C10, this Plan 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.

This is a dynamic Plan which will also be reviewed, and if necessary revised, where any modification to site procedures that have the potential to impact air emissions are needed, or for example to be current following any updates or amendments to legislation.

Revisions to the Operational Air Quality Management Plan will be submitted to the Secretary DP&E for approval.

11 References

National Environment Protection Council (NEPC) Act 1994

National Environment Protection (Ambient Air Quality) Measure 2016. National Environment Protection Council, Canberra, February 2016.

NSW DEC (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. Department of Environment and Conservation, August 2005.

Protection of the Environment Operations (Clean Air) Regulation 2010

Todoroski Air Sciences (16 February 2017) *Air Quality Impact Assessment Revised Borg Manufacturing Timber Panels Processing Facility Expansion*. Prepared by Todoroski Air Sciences Pty Ltd for Borg Manufacturing.

United States Environment Protection Agency: https://www.epa.gov/environmental-topics/air-topics

WHO (2010) *WHO guidelines for indoor air quality: selected pollutants*, World Health Organisation, 2010.

Appendices

Appendix A – Emissions Monitoring Data

EPA Identification Point 4 - DC1 Baghouse												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly	3.8	8.4	3	2.4	3.9	4.6		0.15	4.3	2.3
Formaldehyde	mg/m3	Yearly	2.2	1.4	0.47	1.5	1.4	0.82		5.99	0.09	3.7

EPA Identification Point 5 - DC2 Baghouse												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly	3.8	4.3	2	2	0.93	1.6		0.1	2.4	2
Formaldehyde	mg/m3	Yearly	2.6	3.6	0.099	0.26	1.3	0.83		1.96	0.19	3.5

EPA Identification Point 7 - Conti 2 Stage 1 Dryer Cyclone #1 (west)												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly		17	23	14	21	5.9		18.93	19	40

EPA Identification Point 8 - Conti 2 Stage 1 Dryer Cyclone #2 (east)												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly		11	18	14	18	7.7		11.98	21	33

EPA Identification Point 9 - Conti 1 Dryer Cyclone #1 (south)												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly	16	12	20		6.6	7.6		6.7	29	9.8
Formaldehyde	mg/m3	Yearly	1.2	1.7	2.1		2.2	1.1		6.94	3	1.1
Nitrogen Oxides	mg/m3	Yearly	99	86	100		5.2	8.6		49	250	150
PM10	mg/m3	Yearly	13	8	15		3.9	5.3		7.6	25	5.9
Volatile Organic Compounds	mg/m3	Yearly	1.4	4.9	4.1		0.67	0.46		2.25	1.3	2.9

EPA Identification Point 10 - Conti 1 Dryer Cyclone #2 (north)												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly		11	13	23	6.4	7.3		10.8	31	21
Formaldehyde	mg/m3	Yearly		6.9	0.77	3.4	2.7	0.9		11.59	3.1	2.4
Nitrogen Oxides	mg/m3	Yearly		69	88	110	6.7	7.8		44	250	170
PM10	mg/m3	Yearly		3.9	11	19	4.6	5.1		5.46	28	8
Volatile Organic Compounds	mg/m3	Yearly		5.6	4.5	4.2	0.43	0.72		1.94	1.5	5.3

EPA Identification Point 11 - Conti 2 Heat Plant													
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**Concentration Limit**
Particulate Matter	mg/m3	Yearly		72	66	140	100	76		81.7	75	130	200
Formaldehyde	mg/m3	Yearly		0.02	0.02	0.017	7.4	0.34		0.005	0.01	0.01	5
Nitrogen Oxides	mg/m3	Yearly		640	660	410	440	630		663	530	530	No Limit
PM10	mg/m3	Yearly		42	53	67	96	69		73.97	37	80	No Limit
Volatile Organic Compounds	mg/m3	Yearly		0.3	0.25	0.16	0.32	0.095		3.82	0.99	0.12	10
Smoke Emissions	percent Opacity	Every 6 months		0	0	0	0	0		0	0	0	No Limit
Notes:	* Particulate Matter and PM10 corrected to 6.5% CO2 mg/m3												

EPA Identification Point 12 - Press Vents Conti 1												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Every 3 years	-	2.84	-	-	-	9.47	-	2.35	-	-
Formaldehyde	mg/m3	Every 3 years	-	0.38	-	-	-	9.1	-	1.59	-	-
Nitrogen Oxides	mg/m3	Every 3 years	-	4.1	-	-	-	4.1	-	3.2	-	-
PM10	mg/m3	Every 3 years	-	2.68	-	-	-	5.83	-	2.2	-	-
Volatile Organic Compounds	mg/m3	Every 3 years	-	0.95	-	-	-	0.26	-	0.85	-	-
Notes:	Mean of results for 5 press vents reported											

EPA Identification Point 13 - Press Vents Conti 2												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Every 3 years	-	4.88	-	-	8.18	-	-	1.896	-	-
Formaldehyde	mg/m3	Every 3 years	-	3	-	-	3.72	-	-	4.092	-	-
Nitrogen Oxides	mg/m3	Every 3 years	-	4.1	-	-	4.1	-	-	2.2	-	-
PM10	mg/m3	Every 3 years	-	2.86	-	-	8.68	-	-	1.094	-	-
Volatile Organic Compounds	mg/m3	Every 3 years	-	0.28	-	-	0.61	-	-	2.636	-	-
Carbon Dioxide	mg/m3	Every 3 years	-		-	-		-	-		-	-
Carbon Monoxide	mg/m3	Every 3 years	-		-	-	2.5	-	-	2.5	-	-
Notes:	EPA Point 13 due for sampling in 2018											

EPA Identification Point 17 - Conti 1 Heat Plant													
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17~**	**Concentration Limit**
Particulate Matter	mg/m3	Yearly		140	77	77	-	1200	-	994	190	0	200
Formaldehyde	mg/m3	Yearly		0.02	0.02	0.02	-	1.2	-	0.017	0.017	0	5
Nitrogen Oxides	mg/m3	Yearly		890	550	270	-	500	-	868	1000	0	No Limit
PM10	mg/m3	Yearly		100	49	56	-		-	167	140	0	No Limit
Volatile Organic Compounds	mg/m3	Yearly		0.18	0.2	0.16	-	0.36	-	0.85	1	0	10
Smoke Emissions	percent Opacity	Every 6 months		0	0	0	-	0	-	0	0	0	No Limit
Notes:	~ No flow. Exhaust from Conti 1 Heat Plant now ducted back into the Conti 1 production system												
	* Particulate Matter and PM10 corrected to 6.5% CO2 mg/m3												

EPA Identification Point 18 - Press Exhaust Vents Discharge												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Every 3 years						Dormant	Dormant	Dormant	Dormant	Dormant
Formaldehyde	mg/m3	Every 3 years						Dormant	Dormant	Dormant	Dormant	Dormant
Volatile Organic Compounds	mg/m3	Every 3 years						Dormant	Dormant	Dormant	Dormant	Dormant
Velocity	mg/sec	Every 3 years						Dormant	Dormant	Dormant	Dormant	Dormant

EPA Identification Point 19 - Dryer Stack												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly						Dormant	Dormant	Dormant	Dormant	Dormant
Nitrogen Oxides	mg/m3	Yearly						Dormant	Dormant	Dormant	Dormant	Dormant
Volatile Organic Compounds	mg/m3	Yearly						Dormant	Dormant	Dormant	Dormant	Dormant
Velocity	mg/sec	Yearly						Dormant	Dormant	Dormant	Dormant	Dormant

EPA Identification Point 23 - Paper Oven Vent Discharge												
Pollutant	**Units**	**Frequency**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Particulate Matter	mg/m3	Yearly								4.5	3.1	8.5
Formaldehyde	mg/m3	Yearly								13.31	4	0.46
Volatile Organic Compounds	mg/m3	Yearly								4.26	0.57	0.53

Appendix B – Operational Noise Management Plan

EMS0005

Operational Noise Management Plan

Borg Panels

124 Lowes Mount Road

Oberon

Borg Panels Pty Ltd

2 November 2021

This document should be read in conjunction with the EMS0001 Operational Environmental Management Plan, EMS0029 Mobile Wood Chipper Operation Management Plan

Revision History

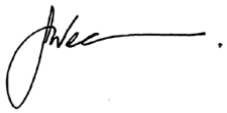
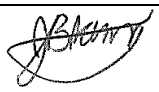
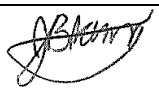
Rev No.	Revision Date	Author / Position	Details	Reviewed / Authorised	
				Name / Position	Signature
0	14/11/2017	Carly McCormack Planning and Environmental Officer	Draft	Victor Bendevski Environmental and Regulatory Compliance	
1	16/11/2017	C McCormack Planning and Environmental Officer	Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
2	16/11/2017	C McCormack Planning and Environmental Officer	Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
3	17/11/2017	C McCormack Planning and Environmental Officer	Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
4	28/11/2017	C McCormack Planning and Environmental Officer	Draft	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
5	28/11/2017	C McCormack Planning and Environmental Officer	Final	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
6	11/12/2017	C McCormack Planning and Environmental Officer	Final Incorporating DP&E Comments	Jeremy Welbourne Acoustics Engineer – Global Acoustics	
7	13/11/2018	Jacqui Blomberg Environment Manager	Review as per SSD7016 C10 Nil changes required	J Blomberg Environment Manager	
8	06/10/2020	J Blomberg Environment Manager	Review as per SSD7016 B19(c) and B19(d)	J Blomberg Environment Manager	
9	8/11/2021	J Blomberg Environment Manager	Review as per SSD 7016 C10(d)	A Brady Environmental Manager	

Table of Contents

Definitions and Abbreviations

Abbreviation	Description
ABL	Assessment background level (ABL), the 10th percentile background noise level for a single period (day, evening or night) of a 24 hour monitoring period.
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Background Noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed.
Day	The period from 7:00am to 6:00pm on Monday to Saturday, and 8:00am to 6:00pm on Sundays and Public Holidays
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to describe human response to noise.
DPIE	NSW Department of Planning, Industry and Environment
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence issued by the EPA under the POEO Act
Evening	The period from 6:00pm to 10:00pm
Existing Development	The continuation of the existing MDF facility, located at 124 Lowes Mount Road, Oberon (Lot 26 DP 1200697), comprising the main production hall, warehouse, moulding plant, sawing plant, thin MDF plant and outdoor infrastructure, as described in the EIS and RTS, and the documents, drawings and plans in Appendix C of Development Consent SSD 7016
Incident	A set of circumstances causing or threatening material harm to the environment, and/or exceedance of the limits of performance criteria in Development Consent SSD 7016
$L_{Aeq\ (15\ min)}$	The average noise energy during a 15 minute period.
Night	The period from 10:00pm to 7:00am on Monday to Saturday, and 10:00pm to 8:00am on Sundays and Public Holidays
MDF	Medium Density Fibreboard
Mod/MOD	Modification
OEMP	Operational Environmental Management Plan
ONMP	Operational Noise Management Plan

Abbreviation	Description
Project	The construction and operation of a particle board facility and alterations and additions to the Existing Development, as described in the EIS and RTS, and as generally depicted on the plans in Appendix A of Development Consent SSD 7016
RBL	Rating background level (RBL), the background noise level for a period (day, evening or night) determined from ABL data.
Sound Level Meter (SLM)	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.

1 Introduction

1.1 Background

Borg Panels operates a medium density fibreboard (MDF) and particleboard facility in Oberon NSW manufacturing a range of Customwood MDF and particleboard products including:

- Standard MDF;
- Moisture resistant MDF;
- E0 (low formaldehyde emitting) MDF;
- Ultraprime MDF mouldings;
- Standard particleboard;
- Moisture resistance particleboard;
- Particleboard flooring products for structural applications;
- Decorative laminated MDF and particleboard; and
- Treated paper for the lamination of MDF and particleboard

On 29 May 2017 Development Consent SSD 7016 was granted by the Minister for Planning to construct a particleboard manufacturing facility, modify the existing MDF manufacturing facility and undertake general site works (the Project) at the existing site located at 124 Lowes Mount Road, Oberon. Since that date, the Minister for Planning has approved three modifications to SSD 7016:

- SSD 7016 Mod 1 on 20 November 2018;
- Mod 2 on 29 November 2019; and
- Mod 3 on 22 May 2020.

Conditions contained within the Consent require Borg to provide for the ongoing environmental management of the Development. Though initially developed to satisfy conditions B18, C4 and C9, this Operational Noise Management Plan has been updated as per condition B19. See section 2.2 Conditions of Consent for further detail.

1.2 Purpose and Objectives

This Plan has been developed to:

- Ensure that operational noise generated by the facility is managed;
- Maintain compliance with conditions of approval and legislation relating to noise;
- Provide a protocol for monitoring and evaluation of noise impacts on surrounding private residences and sensitive receivers;
- Communicate with the local community and regulators regarding Borg Panels activities.

1.3 Structure of the ONMP

This ONMP has been developed to manage operational noise at the facility and to satisfy the requirements set out in Conditions B18, B19 and C9 of Development Consent SSD 7016, and includes information on the following:

- Section 2 – Legislative and Regulatory Compliance
- Section 3 – Sensitive Receivers
- Section 4 – Noise Criteria

- Section 5 – Noise and Vibration Impact Assessment
- Section 6 – Impact Management Measures
- Section 7 – Noise Monitoring
- Section 8 – Contingency Plan for Unpredicted Impacts
- Section 9 – Reporting
- Section 10 – ONMP Review
- Section 11 – References

1.4 Consultation

The ONMP (28 November 2017) was provided to the EPA for review and consultation, and submitted to the Secretary of the Department of Planning and Environment (DPIE) for approval on 29 November 2017 in accordance with SSD 7016 condition C4. DPIE were satisfied that the ONMP met with the terms of the relevant conditions of consent and issued approval on 21 December 2017.

As required under condition B19, this ONMP was re-submitted to the Secretary of the Department of Planning, Industry and Environment (DPIE) 7 October 2020.

As per condition C10, subsequent revised versions of the ONMP will be submitted to the Secretary for approval..

1.5 Training

Training and Assessment Manual *EMS0018 Environmental Standard Awareness Noise* has been developed and will be delivered to all Supervisors and Operators on site. The Standard outlines Borg employee's responsibilities to assist with managing noise at the facility to ensure regulatory compliance, and to mitigate against noise nuisance to the local community. Training records are maintained in DataStation, Borg's information management system. The Training and Assessment Manual will be reviewed as necessary where site conditions change to ensure it accurately reflects site operations and training requirements.

2 Legislative and Regulatory Compliance

2.1 Relevant Legislation

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

- *Protection of the Environment Operations Act 1997*; and
- *Environmental Planning and Assessment Amendment Act 2017*

2.2 Conditions of Consent

Borg Panels operations are subject to the conditions contained in Development Consent SSD 7016 dated 29 May 2017, and the following modifications:

- SSD 7016 Mod 1 – site layout changes (approved 20 November 2018)
- SSD 7016 Mod 2 – installation of an electricity generating gas turbine and ancillary equipment (approved 29 November 2019)
- SSD 7016 Mod 3 – additional material handling equipment, extension to northern warehouse, changes to the site surface water system and construction of further hardstand (22 May 2020

No additional conditions were imposed by the Minister during the assessment and approval of Mod 1. Mod 2 contains new condition B19(c) and Mod 3 new condition B19(d).. See Table 1 for consent condition details.
Approved hours of operation, operational noise limits and noise mitigation measures for the facility are listed in Table 1 Development Consent Conditions. Specific requirements for an ONMP (Schedule 2, Condition B18) and general requirements for environmental management plans (Schedule 2, Condition C9) are also detailed in Table 1.

Table 1 Development Consent Conditions

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

Table 1: Hours of Work
<table><tr><th>Activity</th><th>Day</th><th>Time</th></tr><tr><td>Earthworks and Construction</td><td>Monday – Friday
Saturday</td><td>7 am to 7 pm
8 am to 1 pm</td></tr><tr><td>Operation</td><td>Monday – Sunday</td><td>24 hours</td></tr></table></td><td>Section 4</td></tr>
<tr><td></td><td>Operational Noise Limits</td><td></td></tr>
<tr><td>B16</td><td>The Applicant must ensure that noise generated by the Development does not exceed the noise limits in Table 2.

Table 2: Noise Limits dB(A)
<table><tr><th>Location</th><th>Day
$L_{Aeq(15\ minute)}$</th><th>Evening
$L_{Aeq(15\ minute)}$</th><th>Night
$L_{Aeq(15\ minute)}$</th></tr><tr><td>All sensitive receivers</td><td>55</td><td>50</td><td>45</td></tr></table>
Note: Noise generated by the Development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.</td><td>Section 4</td></tr>
<tr><td></td><td>Noise Mitigation</td><td></td></tr>
<tr><td>B17</td><td>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.</td><td>Section 6</td></tr>
<tr><td></td><td>Operational Noise Management Plan</td><td></td></tr>
<tr><td>B18</td><td>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:</td><td>This Plan</td></tr>
<tr><td></td><td>a) be prepared by a suitably qualified and experienced noise expert;</td><td>Revision History</td></tr>
</table>

No.	Requirement	Document Reference
	b) describe the measures that will be implemented to minimise noise from the Existing Development including: 1. (i) all reasonable and feasible measures being employed on site; 2. (ii) maintain equipment to ensure it is in good order; 3. (iii) traffic noise is effectively managed; 4. (iv) the noise impacts of the Existing Development are minimised during any meteorological conditions when the noise criteria in this consent do not apply; 5. (v) compliance with the relevant conditions of this consent;	Section 6
	c) includes a noise monitoring program that: 1. (i) must be carried out until otherwise agreed to in writing by the Secretary; 2. (ii) is capable of evaluating the performance of the Existing Development; and 3. (iii) includes a protocol for determining exceedances of the relevant conditions of this consent and responding to complaints; and	Section 7 Section 9
	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.	Section 8
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:	This Plan
	a) description of the noise monitoring program to measure the performance of the Development against this consent and the EPL;	Section 7
	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;	Section 2.3 Section 6
	c) details of the noise attenuation measures for the gas turbine and ancillary equipment associated with the particleboard material handling area; and	Section 6
	d) details of the noise attenuation measures for the materials handling equipment approved for installation and operation under SSD-7016-Mod-3.	Section 2.3 Section 6
	MANAGEMENT PLAN REQUIREMENTS	
C9	The Applicant must ensure that the environmental management plans required under Condition C4 of this consent are prepared by a suitably qualified person or persons in accordance with best practice and include:	Revision History

No.	Requirement	Document Reference
	a) detailed baseline data;	Section 7.2
	b) a description of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures/criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;	Section 2 Section 4 Section 6
	c) a description of the management measures that would be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria;	Section 6
	d) a program to monitor and report on the: (i) impacts and environmental performance of the Development; and (ii) effectiveness of any management measures (see (c) above);	Section 9
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 8
	f) a program to investigate and implement ways to improve the environmental performance of the Development over time;	Section 6
	g) a protocol for managing and reporting any: (i) incidents; (ii) complaints; (iii) non-compliances with statutory requirements; and (iv) exceedances of the impact assessment criteria and/or performance criteria; and	Section 9
	h) a protocol for periodic review of the plan.	Section 10
	Note: These requirements also apply to the preparation or updates of management plans for the Existing Development and the Project.	

2.3 Mitigation Measures

Appendix B Applicant's Management and Mitigation Measures to Development Consent SSD 7016 details the reasonable and practical measures to avoid or minimise impacts to the environment and community that may arise as a result of activities at Borg Panels Oberon. Borg is committed to providing further noise attenuation to certain items of plant to achieve sufficient sound power reductions to allow additional noise sources to be added to the site. This includes the following:

- the air intake for the Conti 1 dryer fan was redesigned and fan speed reduced;
- additional insulation was installed to the housing of the booster fan and fan speed reduced;
- a concrete enclosure constructed around the fibre transport fan;
- locating fan units in between buildings/structures and acoustically treating (insulating) them;
- acoustically treating (insulating) the blowers; and
- enclosing the cyclops' and roller screen within sheet metal housing.

Borg continually revise design of plant and equipment housing to reduce noise emissions as far as is reasonably practicable. Management measures have also been implemented for the mobile chipping plant to minimise noise impacts on nearby sensitive receivers (see EMS0029 Mobile Wood Chipper Operation Management Plan). Management and mitigation measures are detailed in Section 5.1.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL3035) specifies noise limits for operation of the facility. L4 Noise Limits provides for limit conditions, which are reproduced below:

L4 Noise limits

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

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

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

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

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

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

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

2.5 Guidelines and Standards

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

- EPA 2017, *Noise Policy for Industry (NPfI)*, Environment Protection Authority. Sydney NSW.
- EPA 2000, *NSW Industrial Noise Policy (INP)*, Environment Protection Authority: Sydney NSW.

- DECCW 2011, *NSW Road Noise Policy*, Department of Environment, Climate Change and Water NSW. Sydney NSW.
- DEC 2006, *Assessing Vibration: A Technical Guideline*, Department of Environment and Conservation. Sydney NSW.

3 Sensitive Receivers

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

The Oberon LEP 2013 identifies a designated buffer area that aims:

a) to protect the operational environment of industries operating within the OTC; and

b) to control development near the OTC and waste disposal facilities to minimise land use conflict.

Before granting development consent to development on land to which is identified as being within the designated buffer area, the consent authority must consider the following:

a) the impact that any noise, odour or other emissions associated with existing land uses may have on the development;

b) any proposed measures incorporated into the development that limit the impact of such noise and other emissions associated with the existing land use;

c) any opportunities to relocate the development outside the designated buffer area; and

d) whether the development is likely to adversely affect the operational environment of any existing development within the designated buffer area.

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

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

Table 2 Noise Sensitive Receivers

Receiver ID	Receiver Location
R01	32 O'Connell Road
R02	6 Herborn Street
R03	Oberon High School
R04	10 Tasman Street

Receiver ID	Receiver Location
R05	127 Hazelgrove Road
R06	26 Cunnygham Street
R07	131 Hazelgrove Road
R08	2 Herborn Street
R09	15-19 Albion Street
R10	Jenolan Holiday Park
R11	Oberon Christian Life Centre

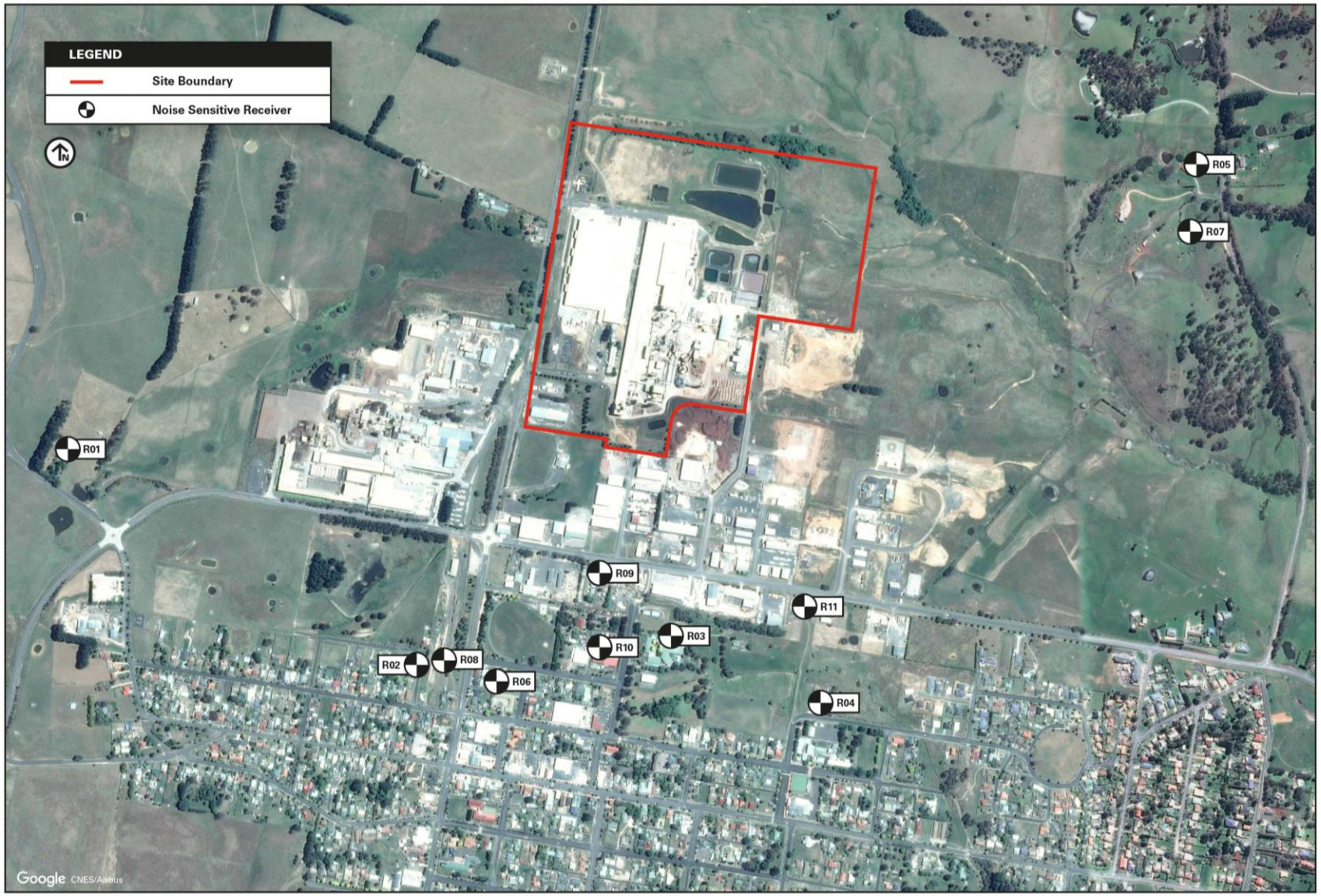


Figure 1 Noise Sensitive Receivers

4 Noise Criteria

4.1 Hours of Operation

The Borg Panels facility is approved to operate 7 days per week 24 hours per day.

4.2 Operational Noise Limits

Relevant limits are detailed in Table 3. Monitoring locations are detailed in Table 6.

Table 3 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.*

EPL3035 Condition L4.2 specifies:

> *To determine compliance with condition L4.1 [Table 3 above], noise must be measured at or computed for Oberon High School or any other noise sensitive locations (such as a residence/school). A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "NSW Industrial Noise Policy (EPA, January 2000)".*

In October 2017 the EPA released the *Noise Policy for Industry* (EPA, 2017). The *Noise Policy for Industry* (EPA, 2017) replaces the *NSW Industrial Noise Policy* (EPA, 2000). Implementation and transitional arrangements have been developed to ensure that there is an orderly and transparent transition from the *NSW Industrial Noise Policy* (2000) to the *Noise Policy for Industry* (2017).

Section 8 of the *Implementation and Transitional Arrangements for the Noise Policy for Industry* (2017) states:

> *The NSW Industrial Noise Policy (2000) will continue to apply where it is referenced in existing statutory instruments (such as consents and licences), except for the* NSW Industrial Noise Policy *Section 4 modifying factors, which will be transitioned to the Noise Policy for Industry (2017) Fact Sheet C through a NSW Industrial Noise Policy application note. This approach has been taken because the* Noise Policy for Industry *(2017) modification factor approach reflects more recent understanding of the impact of tonal and low-frequency noise on the community.*

The *Industrial Noise Policy* (2000) application notes state:

> *Section 4 of the INP is withdrawn and the modifying factor adjustments outlined in the Noise Policy for Industry (2017) – Fact Sheet C are to be used when assessing the characteristics of a noise source. Fact Sheet C provides approaches to modifying factors that are supported by contemporary science and policy considerations.*

As such, modifying factors will now be assessed in accordance with the *Noise Policy for Industry* (2017) as detailed in Section 4.3.

The noise limits set out in Table 3 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or

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

c) Stability category G temperature inversion conditions.

Data recorded by the on-site meteorological station must be used to determine meteorological conditions.

Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the *NSW Industrial Noise Policy* (2000) (EPL 3035 Condition L4.4). Again, the procedure for use of sigma-theta data has been updated in Section D1.4 of the *Noise Policy for Industry* (EPA, 2017). This new method for estimating stability class will be used.

4.3 Modifying Factors

As detailed in Section 4.2, the *Noise Policy for Industry* (2017) *Fact Sheet C: Corrections for Annoying Noise Characteristics* will be used to assess modifying factors that may apply.

This section outlines the correction factors to be applied to the source noise level at the receiver before comparison with the project noise levels specified in Table 3, to account for the additional annoyance caused by these noise characteristics.

As defined in the *Noise Policy for Industry* (2017):

> *Tonal noise: noise containing a prominent frequency and characterised by a definite pitch.*
>
> *Low-frequency noise: noise with an unbalanced spectrum and containing major components within the low-frequency range (10–160 Hz) of the frequency spectrum.*
>
> *Intermittent noise: 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.*
>
> *Correction for duration: this is applied where a single-event noise is continuous for a period of less than two and a half hours in any assessment period. The allowable exceedance of the $L_{Aeq,15min}$ equivalent noise criterion* [is detailed] *for the duration of the event. This adjustment is designed to account for unusual and one-off events, and does not apply to regular and/or routine high-noise level events.*
>
> *Maximum correction: the maximum correction to be applied to the predicted or the measured level where two or more modifying factors are present. The maximum adjustment is 10 dB(A) where the noise contains two or more modifying factors (excluding the duration correction).*

The facility typically operates with relatively continuous noise emission levels, and low frequency, intermittent and tonal noise characteristics have not been identified during historical monitoring. Future monitoring will include evaluation of these noise characteristics,

and modifying penalties as defined in the *Noise Policy for Industry* (2017) will be applied to measured levels as appropriate.

5 Noise and Vibration Impact Assessment

Global Acoustics was engaged by Borg to carry out a noise and vibration impact assessment for the proposed expansion of the MDF manufacturing facility and construction of a particleboard facility (SSD 7016 May 2017). The resulting *Borg Panels Timber Panel Processing Facility Oberon NSW Noise and Vibration Impact Assessment (May 2016)* considered impacts associated with noise and vibration from the existing site, and the proposed expansion.

Global Acoustics also provide updated noise models and acoustic advice for any subsequent modifications to SSD 7016.

5.1 Noise Assessment

5.1.1 Development Consent SSD 7016

Modelling undertaken for the 2016 Impact Assessment indicated the site operated close to EPL3035 criteria during periods of enhancing meteorological conditions. Management measures and noise control for some plant were recommended to both manage and reduce noise emission from the site.

Model predictions indicated:

- Compliance with existing EPL criteria was predicted for all receivers during non-enhancing meteorological conditions;
- Compliance with existing EPL criteria was predicted for all receivers for the evening and night periods during prevailing (enhancing) meteorological conditions;
- At R09 (Figure 1), a minor 1 dB exceedance was predicted for the day period during enhancing meteorological conditions when one mobile chipper is operational; and
- A minor 1 dB exceedance was predicted for R03 and R10, and a moderate exceedance of 4 dB for R09 for the day period during enhancing meteorological conditions if two mobile chippers are operated concurrently.

The following management measures were recommended:

- Mobile chipping plant should be restricted to the day period;
- Two mobile chippers should not operate concurrently during enhancing meteorological conditions;
- During periods of strong meteorological enhancement to the south, neither mobile chipper should operate; and
- Conti 1 dryer fan, main fibre transport fan, and booster fan drive should be provided with further noise control (attenuation).

5.1.2 SSD-7016-Mod-1

Acoustic advice for S96(1A) modification to Development Consent SSD 7016 (Mod 1) was provided for each of the proposed modifications, these being:

1. Materials handling building reorientation;
2. Extension to the mouldings warehouse;
3. Extension to the particleboard chipper/debarker building;
4. Northern boundary noise bund extension; and
5. Design changes to the surface water management system.

The site noise model was updated to incorporate the materials handling building reorientation and a minor 1dB increase for night period during noise enhanced meteorological conditions at R09 (see Figure 1) was predicted. The installation of an acoustic barrier (minimum 30mL x 7.8mH) on the eastern side of the building was recommended, as this will provide sufficient attenuation to mitigate the predicted noise increase. Compliance with EPL 3035 noise limits is predicted for all time periods with this barrier included.

For the each of the remaining modifications under Mod 1 it was concluded that there would be no significant acoustic implications to long-term operational noise emissions from the site.

5.1.3 SSD-7016-Mod-2

Acoustic advice for S4.55 modification to Development Consent SSD 7016 (Mod 2) was provided for each of the proposed modifications, these being:

1. Remove requirement for installation of acoustic barrier as recommended in Mod 1 adjacent to the materials handling building and replace with attenuation treatment at the source for key plant items;
2. Changes to the location, orientation and construction materials of selected buildings and items of plant associated with development as approved under SSD 7016 (29 May 2017);
3. As a result of further detailed design (element 2 above), changes to noise emission data; and
4. Installation of an electricity generating gas turbine.

The site noise model was revised and updated to reflect changes proposed under Mod 2. The results showed compliance with EPL 3035 noise limits for all time periods with the exception of a 1dB exceedance at R09 (see Figure 1) during the day period if a mobile chipper is operational. SSD 7016 provides restrictions for the operation of mobile chippers that will prevent this exceedance (see EMS0029 Mobile Wood Chipper Operation Management Plan).

Overall, a reduction in site noise emissions is predicted due to these modifications relative to Mod 1 assessment, with development considered substantially the same as no increase to site noise emissions is expected.

5.1.4 SSD-7016-Mod-3

Acoustic advice for S4.55 modification to Development Consent SSD 7016 (Mod 3) was provided for each of the proposed modifications, these being:

1. Addition of an enclosed awning on the northern end of the northern warehouse extension to optimise loading and unloading activities;
2. Addition of plant items in the materials handling area and a sorting tower to improve the efficiency of material flow in these areas; and
3. Addition of hardstand areas and improved drainage infrastructure. Though these changes will not affect ongoing operational noise emissions from site, construction activities have the potential to cause nuisance. These activities will be conducted and managed in accordance with the site Construction Noise Management Plan.

Modelled predictions were updated by Global Acoustics to reflect the changes proposed under Mod 3 by allocating sound power for equivalent plant items modelled in the original project EIS for the items of equipment under Mod 3. For the northern warehouse extension, door openings (located on the east, north and west sides of the enclosed awning) were modelled as fully open to consider the worst-case scenario. Three forklifts and three prime mover trucks were modelled within the awning enclosure. Conservatively, Global Acoustics assumed all equipment operates concurrently, with trucks operating at 1500rpm, a scenario that is unlikely to occur.

Overall, only a minor 1 dB increase is predicted for select receptors due to the proposed changes under Mod 3. In all cases, the predicted increase is due to rounding, with actual change being less than 1 dB. Global Acoustics concluded that continued compliance with noise limits shown in Table 3 is predicted for all receptors.

5.2 Vibration Assessment

Global Acoustics concluded that for the facilities manufacturing operations, there would be no measurable vibration impact to surrounding residences due to:

- The equipment and processing of material does not involve blasting or generate any vibration of significance; and
- The separation distance from the plant to residences being significantly large enough for any vibrations to be damped out.

Therefore, there will be no further discussion regarding vibration impacts in this Plan.

6 Mitigation & Management Measures

Model predictions indicated reductions of up to 5 dB at receiver locations may result from implementation of noise control. Table 4 describes the general mitigation and management measures that will be implemented at Borg Panels Oberon to assist with meeting noise level criteria.

Section 6.1 specifically details the noise attenuation measures for the gas turbine and Section 6.2 the ancillary equipment associated with the particleboard material handling area as per SSD 7016 condition B19 (c). Section 6.3 details the changes required under Mod 3 for the northern warehouse extension works.

Table 4 Operational Noise Impact Mitigation Measures

Measure	Timing	Responsibility
Administrative Controls		
Provide an induction to site personnel addressing the requirements of this ONMP and their responsibilities with regard to noise management.	Prior to starting work on site	Borg Panels WHS and/or Environment Manager
Ensure truck drivers are informed of designated vehicle routes, parking locations, delivery hours, and minimising engine exhaust braking and idling.	Prior to starting work on site	Borg Panels Management
Provide education to supervisors, operators and sub-contractors on the need to minimise noise through Toolbox meetings	As needed	Borg Panels WHS and/or Environment Manager

Measure	Timing	Responsibility
Deliver Training and Assessment Manual *EMS0018 Environmental Standard Awareness Noise* to site personnel	Prior to starting work on site	Borg Panels Environment Manager, Supervisors
Procedures for handling noise complaints (**Section 9**) will be implemented including recording, reporting and acting on complaints.	As needed	Borg Panels Environment Manager
Operational Controls		
Select low noise emission plant where possible.	When new plant introduced to site	Borg Panels Management
Ensure all equipment is equipped with reasonable and feasible noise control (e.g. mufflers, acoustic enclosures, flashing lights or 'quackers' as an alternative to traditional reversing beepers) and is turned off when not in use.	Daily	Borg Panels Management
Ensure equipment is operated in the correct manner and adequately maintained - including replacement of engine covers, repair of defective silencing equipment, tightening of rattling components, repair of leakages in air lines and shutting down equipment not in use.	Daily	Borg Panels Management, WHS and/or Environment Manager
Where practicable, maintenance work on all plant will be carried out away from noise sensitive receivers.	Daily	Borg Panels Management
Ensure all noise attenuation measures are maintained in good working order.	Daily	Borg Panels Management
Minimise noise impacts during any meteorological conditions when noise criteria do not apply (refer Section 2.4 L4.3).	As needed	Borg Panels Management, Environment Manager
Mobile Wood Chipper operation is to be in accordance with EMS0029 Mobile Wood Chipper Operation Management Plan.	Daily	Borg Panels Management, Environment Manager
Conti 1 dryer fan, main fibre transport fan, and booster fan drive to be provided with further noise control (attenuation).	Prior to operation of the particleboard line	Borg Panels Operations Manager
Operational Noise Monitoring		
Monitor operational noise levels to verify compliance with the ONMP.	As needed	Environment Manager
Report any exceedance of limits to DPIE and EPA in accordance with Development Consent SSD 7016 and EPL 3035.	As needed	Environment Manager/Corporate Manager/Operations Manager

Measure	Timing	Responsibility
Engage a suitable qualified consultant to undertake annual noise monitoring.	Annually	Environmental Manager

6.1 Gas Turbine

The primary noise source for this plant is the turbine unit. All noise generating equipment associated with the turbine, other than the air intake, is housed within an acoustic enclosure of dimensions 14.7 x 4.79 x 4.65m. This has a maximum sound pressure level (SPL) of 85 dB (A) at 1m.

The air intake is located on top of the turbine enclosure and includes an acoustic silencer. The exhaust is ducted back into the main plant, resulting in negligible noise emission during normal operation.

The emergency stack will only be used in emergencies at which time the main plant will not be operating.

The acoustic enclosure and silencer are proprietary items from the turbine supplier and have been specifically designed to maximise noise reduction for this unit.

A Noise Verification Study was undertaken to demonstrate compliance with noise limits set in EPL 3035. This Study was conducted in accordance with SSD 7016 condition B20A. DPIE concluded that the Study demonstrated compliance with the relevant noise impact assessment criteria in their letter dated the 28th of September 2021.

6.2 Materials Handling Area

Under the approval granted as Mod 1, Borg had proposed to install an acoustic barrier at the Materials Handling area to mitigate against the 1dB exceedance predicted in the noise model due to reorientation of the Materials Handling building. The requirement for this barrier was able to be removed under Mod 2 as further design changes including alterations and additions to existing structures at the facility now affording sufficient acoustic treatment. These changes include:

- Increase to building extents
- Increase to silo height
- Construction of concrete enclosures to plant
- Installation of roller doors to external access areas
- Reduction in number of plant items
- Plant locations revised and relocated where applicable

Noise verification monitoring has been undertaken to demonstrate compliance with noise limits set in EPL 3035.

6.3 Northern Warehouse & Material Handling Equipment

Truck loading and unloading has been identified as a bottleneck for the site. The extension (awning) proposed under Mod 3 to the northern warehouse will allow segregation between these activities, further improving these operations. The enclosed awning will typically allow these truck activities to occur within the enclosed area. It is expected that this addition to site will reduce noise from the loading/unloading activities by reducing the need to perform these activities outside. Ongoing annual operational noise monitoring and quarterly construction noise monitoring will demonstrate compliance with EPL3035 noise limits.

Modification 3 includes the installation of additional equipment at the material handling area located at the south western section of the facility. The noise attenuation measures for this component are discussed in Section 2.3 above. Noise verification monitoring will be undertaken within three months of commissioning the materials handling equipment approved for installation and operation under SSD-7016-Mod 3 condition B20B.

7 Noise Monitoring

7.1 Overview

Noise monitoring is conducted at the nearest sensitive residential receptors in accordance with the *NSW Industrial Noise Policy* (2000), *Noise Policy for Industry* (2017) and *Australian Standard AS1055 Acoustics, Description and Measurement of Environmental Noise*.

Operational noise monitoring will be will be undertaken to:

- Verify compliance with the noise criteria for the facility as specified in Development Consent SSD 7016 and EPL 3035;
- In response to any exceedance of limits; and
- In response to complaints where this is considered appropriate.

7.2 Baseline Data

During the 2014-15 reporting period, Vipac Engineers and Scientists Ltd (Vipac) undertook an Environmental Noise Survey (Vipac, 30 January 2015) of the facility. The purpose of that survey was to measure and quantify the overall ambient noise levels and noise contribution from industrial operations in accordance with relevant Australian Standards and procedures. The findings of the report included:

- The survey determined the internal noise level monitored at Oberon High School was within the prescribed limit.
- It is apparent from the results of both the attended noise surveys and the unattended noise logging surveys that noise emission from the Borg facility, in addition to the other industrial sites in the area, including the Carter Holt Harvey site and the Australian Pine Products site are notable contributory sources to the ambient noise levels in the area.
- The noise emissions from the industrial sites however are not generally the dominant noise source during the daytime or evening due to the masking effect of other extraneous noise sources in the area. The contribution of industrial noise sources is more influential during the night-time due to the reduction in road traffic noise levels in the area during the night-time.

Global Acoustics prepared a Noise and Vibration Impact Assessment for the proposed expansion of the MDF facility (May 2016). This assessment included both attended noise surveys and unattended noise logging surveys. Attended monitoring results were compliant with EPL3035 criteria. Compliance with the EPL[1] night period operational noise criterion was demonstrated. Day and evening periods were not monitored.

During May to July 2016 Borg Panels undertook an Environmental Noise Survey of the facility as existing to measure and quantify the influence of Borg Panels mobile chippers on

[1] EPL 3035 licence version date: 08-Apr-2016

the overall ambient noise levels measured at a noise sensitive receptor within the Oberon community. The survey included both attended noise survey and unattended noise logging. The key findings of this report included:

- The mobile chippers were found to have no discernible impact on the OTC's compliance to the established EPL noise limits; and
- The noise monitoring survey confirmed that the Oberon Industrial Area was compliant to Borg Panels EPL3035 levels ~98% of the time. It is worth noting that this is a conservative assessment of the entire OTC, and not just the Borg premises. The non-compliance outcomes were largely due to:
    - Engine idle noise;
    - Trucks entering and leaving factories;
    - General urban noises; and
    - Non OTC industry noises.

In summary, the facility typically operates with relatively continuous noise emission levels, and low frequency, intermittent and tonal noise characteristics have not been identified during historical monitoring.

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.

The Environmental Manager can, in certain circumstances for verification purposes, undertake attended noise monitoring. A suitably qualified noise expert will undertake annual attended noise monitoring (see 7.3.1 below).

7.3.1 Compliance Monitoring

Compliance monitoring at each location identified in Table 6 will be undertaken 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 annual compliance noise monitoring is to be investigated. The acoustic consultant undertaking the attended monitoring is to contact the Environment Manager 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.

Annual compliance monitoring is to be undertaken by a suitably qualified noise expert. Appropriate techniques should be applied to determine noise contributions from the facility 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 facility should be fully operational at the time of monitoring.

Operational noise performance is reported as detailed in Section 9.

7.3.2 Complaints Monitoring

In the event of a noise complaint being received, the complaint is to be investigated (refer Section 9.4). As soon as practicable following receipt and validation of the complaint follow-up monitoring is to be undertaken. If exceedance of limits is demonstrated further 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.

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 5 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 or can be sourced from the site meteorological weather station. 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 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.

Figure 2 Noise Monitoring Locations

8 Contingency Plan for Unpredicted Impacts

In the event of unpredicted noise impacts, resulting from either an exceedance of criteria or valid complaint, the following process will be implemented:

- The Environment Manager is to be notified;
- Investigate to evaluate the contributing factors to the event. The investigation may include (where applicable):
    - Assessment of meteorological conditions for the period of monitoring, including wind speed and temperature inversion conditions;
    - Review of operational activities during the period of monitoring;
- Implement remedial response and/or adaptive management measures, dependant on the outcomes of the above investigation;
- Record exceedance/complaint and outcome from investigation in SharePoint; and
- Implement the Review component (Section 10) of this ONMP as required.

9 Reporting

Borg Panels will manage all internal and external reporting requirements in accordance with the Operational Environmental Management Plan (OEMP). Specific reporting functions relevant to this ONMP are detailed below.

9.1 Internal Review

The Environment Manager will review noise monitoring results annually. Results of investigations of any complaints and any exceedances of the criteria outlined in Table 3 will be reported to senior management promptly.

9.2 Scheduled Reporting

Results of the annual noise compliance monitoring and any complaints investigations are reported externally as follows:

- Annual noise compliance monitoring reports, which include a comparison of measured noise emissions with operational noise criteria conditioned in Development Consent SSD 7016 and EPL 3035;
- Annual updates of monitoring results on the Borg website;
- Annual Review. A copy of the Annual Review is sent to relevant stakeholders, including DPIE, EPA and Oberon Council and is available on the Borg website; and
- EPA Annual Return, statement of compliance and a monitoring and complaints summary annually as required by EPL 3035.

9.3 Exceedance of Criteria / Environmental Incident Management

Notification procedures and actions upon identification of an exceedance of any impact assessment criteria or management levels will be as per the Operational Environmental Management Plan (OEMP), and any specific requirements of the relevant management plan or monitoring program.

Where an exceedance of the impact assessment criteria and/or performance criteria outlined in Development Consent SSD 7016 and EPL 3035 continually occurs:

- A detailed examination of the existing processes to identify the potential for noise emissions reduction will be undertaken; and
- Where practicable and economically feasible to do so measures may be put in place to further reduce noise emissions.

9.4 Complaints

Community complaints will be managed in accordance with the procedures in the Operational Environmental Management Plan (OEMP).

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 DPIE for approval.

11 References

Borg Panels (August 2016) *Borg Panels Oberon NSW In-House Noise Monitoring Survey. Survey Period May-July 2016*. Prepared by Borg Panels.

Broner 2010, *A Simple Method for Low Frequency Noise Emission Assessment*, JLFNV Vol 29-1 pp.1 to 14 2010)

DEC 2006, *Assessing Vibration: A Technical Guideline*, Department of Environment and Conservation. Sydney NSW.

DECCW 2011, *NSW Road Noise Policy*, Department of Environment, Climate Change and Water NSW. Sydney NSW.

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

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

Environment Protection Authority (October 2017) *Noise Policy for Industry*. ISBN 978 1 76039 481 3. EPA 2016/0524.

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

Global Acoustics (January 2018) Borg Panels Oberon, S96(1A) modification to Development Consent SSD 7016

Global Acoustics (March 2019) Borg Panels Oberon, S96(1A) modification to Development Consent SSD 7016

Global Acoustics (March 2020) Borg Panels Oberon, Modification 3 to Development Consent SSD 7016

Vipac, 30 January 2015 *Borg Oberon Environmental Noise Survey*. Prepared for Borg Manufacturing. Vipac Engineers and Scientists, Toronto NSW.

Appendix C – Mobile Wood Chipper Operation Management Plan

EMS0029

Mobile Wood Chipper Operation Management Plan

Borg Panels

124 Lowes Mount Road, Oberon NSW

Borg Construction Pty Ltd

2 November 2021

This document should be read in conjunction with EMS0060 Construction Environment Management Plan, EMS0001 Operational Environmental Management Plan, EMS0061 Construction Noise Management Plan and EMS0005 Operational Noise Management Plan

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
0	28/03/17	Carly McCormack Planning and Environmental Officer	Draft for Site Consultation	Victor Bendevski Environmental and Regulatory Compliance	
1	27/04/17	Carly McCormack Planning and Environmental Officer	Final Draft	Victor Bendevski Environmental and Regulatory Compliance	
2	01/06/17	Carly McCormack Planning and Environmental Officer	Final	Victor Bendevski Environmental and Regulatory Compliance	
3	02/11/18	Jacqui Blomberg Environmental Manager	Review as per SSD7016 C10	Victor Bendevski Environmental and Regulatory Compliance	
4	8/07/2020	J Blomberg Environmental Manager	Review as per SSD7016 C10 No changes	V Bendevski Environmental and Regulatory Compliance	
5	2/11/2021	J Blomberg Environmental Manager	Review as per SSD7016 C10 (d) Updates to section 1 and 6	A Brady Environmental Manager	

Table of Contents

1 Introduction

The purpose of this Mobile Wood Chipper Operation Management Plan is to minimise noise impacts on nearby noise sensitive receivers resulting from operation of Mobile Wood Chippers at Borg Panels Oberon.

Mobile chipping plant are the highest noise emitters on site by a significant margin. Operation of mobile chippers does not form part of 'normal' operations. They are typically only used during breakdown of electric plant.

The Noise Impact Assessment prepared by Global Acoustics in May 2016 for the initial Development Consent SSD 7016 (approved 29 May 2017) predicted minor to moderate exceedances for noise sensitive receivers south of site for the day period when mobile chipping plant is operational during prevailing (enhancing) meteorological conditions.

Subsequent noise impact assessments prepared by Global Acoustics in January 2018 for MOD 1, in January 2019 for MOD 2 and in March 2020 for MOD 3 concluded that the modifications to the Borg Panels Oberon timber manufacturing facility would not materially change site noise emission levels and that continued compliance is predicted for all receptors.

This Mobile Wood Chipper Operation Management Plan documents mitigation and management measures to assist Borg in meeting noise limits. Exceedances can be avoided through monitoring weather and restricting use of mobile chipping plant during periods of meteorological enhancement.

Routine noise compliance monitoring is undertaken to measure compliance with noise limits.

2 Compliance Requirements

2.1 Development Consent

The Development Consent SSD 7016 conditions relevant to mobile chipper operation that have been considered in this Plan are detailed in Table 1.

Table 1 – Development Consent Conditions

No.	Requirement	Document Reference
	Mobile Wood Chippers	
B22	During construction, the Applicant must ensure that mobile wood chippers are not operating simultaneously with rock/concrete breaking activities.	Section 4.4
B23	The use of mobile wood chippers on site is restricted to the day time period only and to periods of breakdown or maintenance of the permanent wood debarkers and electric chippers, and must not operate under the following conditions: a) in the open when winds are from the north-west through to the north-east (315°, through 0°, to 45°); and b) when winds are from the west through to the east (270°, through 0°, to 90°), two or more mobile wood chippers are not to operate simultaneously.	Section 4.2 Section 4.3 Section 4.1 Section 4.1

B24	Within 6 months of the date of this consent or the commencement of construction of the Project, whichever occurs first, the Applicant must prepare a Mobile Wood Chipper Operation Management Plan for the Development. The plan must outline how the requirements under Conditions B22 and B23 will be achieved and must include any reasonable and feasible mitigation measures to limit operation to periods of breakdown or maintenance of the permanent debarkers and electric chippers.	This Plan Section 4.3

Development Consent SSD 7016 also stipulates noise limits, which are not to be exceeded, for noise generated by the Development as shown in Table 2.

Table 2 Noise Limits dB(A)

Location	Day LAeq (15 minute)	Evening LAeq (15 minute)	Night LAeq (15 minute)
All sensitive receivers	55	50	45

2.2 Environment Protection Licence

The Environment Protection Licence 3035 (EPL 3035) conditions relevant to mobile chipper operation that have been considered in this Plan are detailed in Table 2.

EPL 3035 also stipulates noise limits, which are not to be exceeded, for noise generated by the Development. These limits mirror those noted in Table 2.

Table 3– Environment Protection Licence Conditions

No.	Requirement	Document Reference
L5	**Hours of Operation**	
L5.1	The Hours of Operation for any mobile log chipper used on the premises are limited to 7:00am to 6:00pm Mondays to Saturdays and 8:00am to 6:00pm Sundays and Public Holidays.	Section 4.2

3 Meteorological Monitoring

Borg operates a meteorological monitoring station located on-site, south east of the Spring Dam. This is a real-time weather station that monitors wind speed, wind direction, air temperature, rainfall, barometric pressure, relative humidity, dew point, evaporation, peak wind gust and solar radiation.

Wind directional data clearly signifying when one or two mobile chippers may be operated, or when they are not to be operated, is to be displayed as a live feed from the meteorological station in full view of the Log Yard Supervisor. The Supervisor will review data and advise operators when wind direction prevents operation and to shut down equipment.

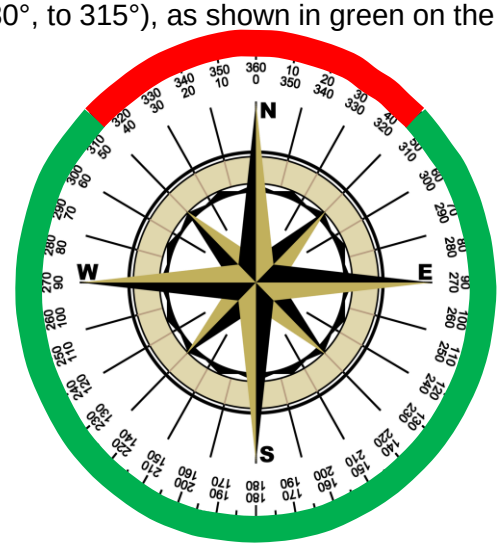
Note: If wind speed falls below 5 km/hr (1.4 m/s) the wind direction sensor (wind vane) becomes inaccurate.

4 Operating Conditions

4.1 Wind Direction

One Mobile Chipper

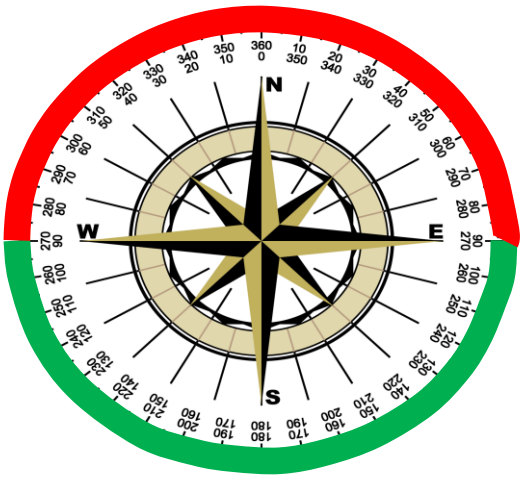
One mobile chipper **MAY** be operated when wind direction is from north-east through to north west (45°, through 180°, to 315°), as shown in green on the compass below.



One mobile chipper must **NOT** operate when wind direction is from the north-west through to the north-east (315°, through 0°, to 45°), as shown in red on the compass above.

Two Mobile Chippers

Two mobile chippers **MAY** be operated simultaneously when wind direction is from east through to west (90°, through 180°, to 270°), as shown in green on the compass below.



Two mobile chippers must **NOT** operate simultaneously when wind direction is from the west through to the east (270°, through 0°, to 90°), as shown in red on the compass above.

4.2 Timing

Mobile wood chippers are **ONLY** to be operated during the daytime period, defined as:

- 7:00am to 6:00pm Monday to Saturday
- 8:00am to 6:00pm Sundays and Public Holidays

4.3 Electric Chippers

The use of mobile wood chippers on site is restricted to periods of breakdown or maintenance of the permanent wood debarkers and electric chippers.

4.4 Rock/Concrete Breaking Permit to Work

Mobile wood chippers are not to operate simultaneously with rock/concrete breaking activities.

Construction activities involving rock/ concrete breaking require a completed Permit to Work to be submitted to both the Construction Project Manager and Log Yard Supervisor. Approval of both parties is required prior to commencement of rock/concrete breaking activities.

5 Responsibilities

Table 4 Roles & Responsibilities

Position	Responsibility
Area Manager	Ensure that the requirements of this Plan are met.
Log Yard Supervisor	Inform, instruct and train operators regarding the requirements of this Plan. Monitor and review meteorological station data and advise when mobile wood chipper operation to cease Enforce and discipline staff for non-conformance of this plan, where necessary.
Mobile Chipper Operators	Operate mobile wood chippers in accordance with this Plan.
Environmental Manager	Review, and if necessary revise, this plan following a modification to either Development Consent SSD 7016 or EPL 3035, or submission of an incident report to either Department of Planning, Industry and Environment or Environment Protection Authority.

6 References

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

Global Acoustics (January 2018) *Borg Panels Oberon, S96(1A) modification to Development Consent SSD 7016*

Global Acoustics (January 2019) *Borg Panels Oberon, S96(1A) modification to Development Consent SSD 7016*

Global Acoustics (March 2020) *Borg Panels Oberon, Modification 3 to Development Consent SSD 7016*

Appendix D – Surface Water Management Plan

EMS0006

Surface Water Management Plan

Borg Panels

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

25 November 2021

This document should be read in conjunction with EMS0060 Construction Environment Management Plan and EMS0001 Operational Environment Management Plan

Revision History

Rev No.	Revision Date	Author / Position	Comments	Details	Authorised	
					Name / Position	Signature
0	06/09/17	Carly McCormack Planning and Environmental Officer		Draft	Victor Bendevski Environmental and Regulatory Compliance	
1	03/10/17	Carly McCormack Planning and Environmental Officer		Final Draft for Consultation with DPI	Victor Bendevski Environmental and Regulatory Compliance	
2	08/11/17	Carly McCormack Planning and Environmental Officer		Final Draft for Consultation with EPA	Victor Bendevski Environmental and Regulatory Compliance	
3	21/11/17	Carly McCormack Planning and Environmental Officer		Final	Victor Bendevski Environmental and Regulatory Compliance	
4	13/12/17	Carly McCormack Planning and Environmental Officer		Final Incorporating DP&E Comments	Victor Bendevski Environmental and Regulatory Compliance	
5	02/11/18	Jacqui Blomberg Environmental Manager	Remove reference to Trade Waste Licence/Service Contract	Review as per SSD7016 C10	Victor Bendevski Environmental and Regulatory Compliance	
6	27/11/20	J Blomberg Environmental Manager		Review and update as per SSD7016 B33 & C10	V Bendevski Environmental and Regulatory Compliance	
7	25/11/21	A Brady Environmental Manager		Review and update as per SSD 7016 C10(d)	J Blomberg Environmental Manager	

Table of Contents

1 Introduction

1.1 Background

Borg Panels operates a Medium Density Fibreboard (MDF) and particleboard manufacturing facility in Oberon, NSW. This facility manufactures a range of Customwood MDF and Custompine particleboard products including:

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

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

Conditions contained within the Consent require Borg to provide for the ongoing environmental management of the Development. Though initially developed to satisfy conditions B32, C4 and C9, this Surface Water Management Plan (SWMP) has been updated to include for condition B33. Additionally, this SWMP will be reviewed and updated as per SSD 7016 condition C10.

1.2 Purpose and Objectives

The purpose of this SWMP is to:

- Consolidate and address the relevant conditions of Development Consent SSD 7016 and Environment Protection Licence (EPL) 3035 to manage surface water at the Borg Panels facility.

The objectives of the SWMP are to:

- Define the strategies and procedures to be implemented to ensure that the Borg Panels facility does not result in unacceptable off-site impacts on surface water systems and downstream users;
- Define a program to monitor and report on the impacts and environmental performance of the Borg Panels facility, and the effectiveness of any management measures; and
- Define a protocol for managing and reporting any incidents, complaints, non-compliances with statutory requirements, and exceedances of the impact assessment criteria and/or performance criteria.

1.3 Structure of this Surface Water Management Plan

This SWMP has been developed to manage site surface water at Borg Panels and to satisfy the requirements set out in Development Consent SSD 7016, and includes information on the following:

- Section 2 – Legislative and Regulatory Compliance
- Section 3 – Site Water Management
- Section 4 – Stormwater Management
- Section 5 – Erosion and Sediment Control
- Section 6 – Surface Water Monitoring Program
- Section 7 – Surface Water Impact Assessment Criteria
- Section 8 – Reporting
- Section 9 – SWMP Review

1.4 Consultation

In accordance with condition C4 the SWMP (dated 28 November 2017) was provided to NSW EPA for review and consultation and submitted to the Secretary of the Department of Planning and Environment for approval on 29 November 2017. The Department were satisfied that the SWMP met with the terms of the relevant conditions of consent and issued approval on 21 December 2017.

As required under condition B33, the SWMP was re-submitted to NSW EPA, DILW and DPIE on 11 December 2020.

As per condition C10, subsequent revised versions of the SWMP will be submitted to the Secretary for approval.

1.5 Training

Training and Assessment Manual EMS0017 Environmental Standard Awareness Water has been developed for the site. This training will be delivered to all Supervisors and Operators on site. The Manual outlines Borg employees' responsibilities to assist with managing potential pollution to the surface water and groundwater systems across the site. The Training and Assessment Manual will be reviewed as necessary where site conditions change to ensure it accurately reflects site operations and training requirements.

2 Legislative and Regulatory Compliance

2.1 Relevant Legislation

Key environmental legislation relating to surface water management for the site includes:

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

2.2 Conditions of Consent

The facility operations are subject to the conditions contained in Development Consent SSD 7016 and the following modifications:

- MOD 1 – extension of mouldings warehouse, reorientation of materials handling building, layout change to particleboard chipper/debarker building, extension of northern noise bund, reconfiguration of elements of the surface water management system, reclamation of the Spring Dam* (approved 20 November 2018)

*MOD 1 condition B33A requires preparation of a Spring Fed Dam Reclamation Management Plan therefore details are not included in this SWMP.

- MOD 2 – installation of an electricity generation gas turbine and ancillary equipment (approved 29 November 2019)
- MOD 3 – additional materials handling equipment, extension to northern warehouse, changes to the site surface water system and construction of further hardstand

For each of the above modifications, the Minister did not impose any additional conditions specific to this Management Plan. As noted above MOD 1 required a Spring Fed Dam Reclamation Management Plan which was developed in accordance with condition B33A.

The specific requirements for a SWMP (Schedule 2, Condition B32 and B33) and general requirements for environmental management plans (Schedule 2, Condition C9) are detailed in Table 1.

Table 1 Development Consent Conditions

No.	Requirement	Document Reference
	SOILS, WATER QUALITY AND HYDROLOGY	
	Surface Water Management Plan	
B32	Within 6 months of the date of this consent, the Applicant must prepare a Surface Water Management Plan (SWMP) for the Existing Development, that incorporates the *Oberon Stormwater Management Strategy*, Rev G, prepared by Parsons Brinckerhoff, dated March 2012, to the satisfaction of the Secretary. The SWMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The SWMP must:	This Plan
	a) be prepared in consultation with the EPA and DPI;	Section 1.4
	b) detail water use, metering, disposal and management on-site;	Section 3
	c) detail the water licence requirements for the Existing Development;	Section 2
	d) describe the surface water management system on-site;	Section 4
	e) include a program to monitor: (i) surface water flows and quality; (ii) surface water storage and use; and (iii) sediment basin operation;	 Section 6 Section 4 Section 5
	f) include a sediment and erosion control plan;	Section 5
	g) include surface water impact assessment criteria, including trigger levels for investigating and potential adverse surface water impacts; and	Section 7
	h) include a protocol for the investigation and mitigation of identified exceedances of the surface water impact assessment criteria.	Section 7

No.	Requirement	Document Reference
B33	Prior to commencement of operation of the Project, the Applicant must update the SWMP required under Condition B32 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 B32, and must incorporate the following:	This Plan
	a) details of the proposed mitigation measures outlined in Section 6.0 of Proposed Particle Board Facility Water Cycle Impact Assessment, prepared by the Sustainability Workshop and dated May 2016, in particular, the final design specifications of the additional stormwater treatment and storage pond and emergency spill basin;	Section 2.3 Section 4
	b) details of the stormwater harvesting and reuse scheme; and	Section 2.7 Section 3.2
	c) outline the surface water monitoring program to measure the performance of the Development against this consent and the EPL.	Section 4, 5 and 6
	MANAGEMENT PLAN REQUIREMENTS	
C9	The Applicant must ensure that the environmental management plans required under Condition C4 of this consent are prepared by a suitably qualified person or persons in accordance with best practice and include:	
	a) detailed baseline data;	Section 6
	b) a description of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures/criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;	 Section 2 Section 6 Section 6
	c) a description of the management measures that would be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria;	Sections 3, 4 and 5
	d) a program to monitor and report on the: (i) impacts and environmental performance of the Development; and (ii) effectiveness of any management measures (see (c) above);	 Section 8
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 7
	f) a program to investigate and implement ways to improve the environmental performance of the Development over time;	Section 7

No.	Requirement	Document Reference
	g) a protocol for managing and reporting any: (i) incidents; (ii) complaints; (iii) non-compliances with statutory requirements; and (iv) exceedances of the impact assessment criteria and/or performance criteria; and	Section 8
	h) a protocol for periodic review of the plan.	Section 9

2.3 Development Consent SSD 7016 Mitigation Measures

Appendix B Applicant's Management and Mitigation Measures to Development Consent SSD 7016 details the reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the Project. The following management and mitigation measures listed below were identified by the Sustainability Workshop in the *Proposed Particle Board Facility Water Cycle Impact Assessment (May 2016)*:

- A new swale with a longer flow path to convey the CHH [Structaflor] runoff around the site and into a new catchment pond has been constructed. This provides for the additional reduction of TSS and remove tannins. The swale has been grassed and vegetated using spray seed to stabilise the banks.
- New swales were constructed to connect overflows from the pond to the existing creek line in accordance with any Controlled Activity guidelines/permits and conditions of consent.
- Construction of a new stormwater first flush basin with a maximum volume of 11ML. This is located downstream of the existing pond and accepts runoff for the whole of the subject site, including any overflows from the existing stormwater treatment pond.
- The 11ML water quality dam was constructed approximately 40m from the top of bank of the nearest watercourse.
- Stormwater harvesting is undertaken as part of the development. The demand for stormwater from both basins is estimated to be approximately 300m^3/day with an estimated operational time of 300 days per year. The predicted yield for harvesting is estimated at up to 100ML/year.

As noted above in Section 2.2, the Project is currently working under approved modification 3 (MOD 3) to SSD 7016 dated 22 May 2020. As such, the mitigation and management measures suggested by Sustainability Workshop in May 2016 do not wholly apply as these subsequent modifications to the building infrastructure resulted in necessary modifications to the site surface water management system. These modifications to the water management system will be discussed further in below sections of this SWMP.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL 3035) specifies discharge to waters points, water concentration limits and monitoring requirements for operation at the facility.

2.5 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 2.

Table 2 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

2.6 Trade Waste Licence

Borg Panels were not offered a renewal on the Trade Waste Service Contract with Oberon Council. Further DPI Water did not provide concurrence due to the category of discharge. As such, liquid trade waste is now treated on site via the water treatment plant and does not discharge to the sewerage system.

2.7 Stormwater Harvesting

Only polluted runoff from operational areas and roof runoff is harvested for reuse. This runoff is directed via open swales and underground pipe network to the pre-existing stormwater flush basin and to the newly constructed stormwater flush basin. The site is yet to fully realise those volumes estimated for harvesting by the Sustainability Workshop in the *Proposed Particle Board Facility Water Cycle Impact Assessment (May 2016)*.

See Figure 3 for schematic of the site stormwater/surface water management system and section 3.2 for site stormwater consumption.

No runoff from the undeveloped rural land to the west of Lowes Mount Road is harvested. This unpolluted runoff is separated from the polluted industrial runoff into its own swale.

Given that clean/unpolluted runoff is not harvested, there is no need to calculate or exercise any harvestable rights as the only water harvested is from industrial land uses.

3 Site Water Management

3.1 Overview

The following production processes use water for manufacturing:

- **Chip Wash** – Chip is washed via a water washing system, which is used to remove the contaminants (foreign particles and minerals) from the chip. This process promotes longevity of the refiner discs and improves board quality and usability.

- **Chip Squeeze Out and Steaming Bin** – After the chip washing process large steel vessels are filled with clean chip. These are heated using steam to soften the chips making the refining process easier, this also increases the fibre length as it prevents overworking. Prior to refining, the chip is squeezed to remove excess water. This excess water is used for top up water for the chip wash process.

- **WESP** – is a system for electrical wet waste gas purification which serves to purify waste gases from wood chip drying processes.

- **SAP90** – is a wet extraction system for press exhaust air purification which is used to collect and purify press exhaust vapours from the wood-based panel industry.

In addition to the MDF and particleboard production processes, water is also used:

- In the manufacture of treated paper for use as decorative laminates;
- For creation of steam used in the fibre preparation process; and
- In cooling water for the refiner seals.

Figure 1 provides an overview of the major components of the site water management system and shows metering locations.

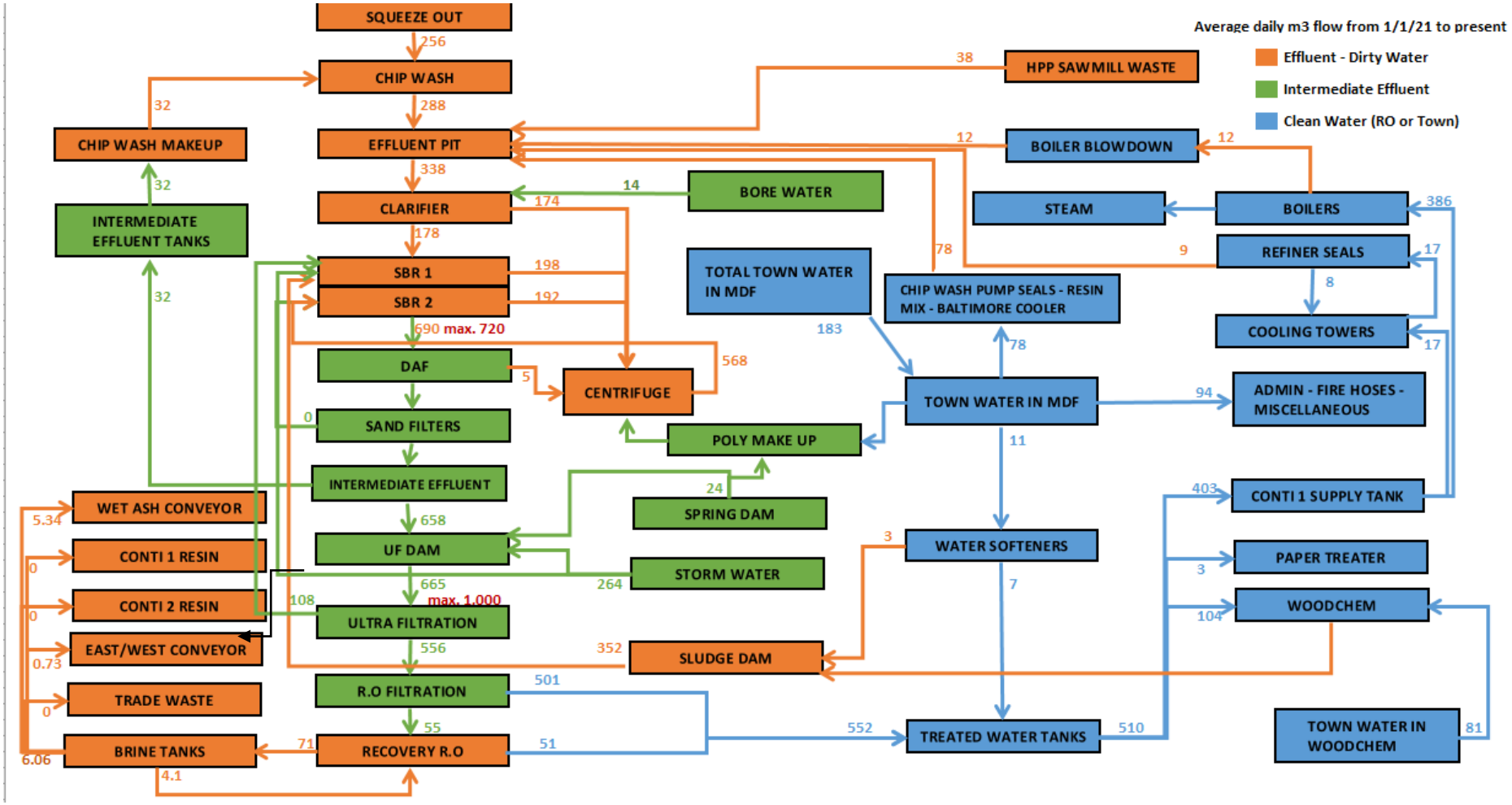
3.2 Water Consumption

Inflow water sources to the Borg Panels facility (refer Figure 1) include:

- Town Water – average daily flow of 280m^3 metered at entry to the facility on Lowes Mount Road; and
- Recycled water from water treatment plant – average total daily flow of 570m^3. Recycled water is made up of:
    - Spring Dam Water (Ground Water Access Licence 28951 (refer Section 2.5)) – average daily flow of 24m^3 up to a maximum extraction of 28 mega litres per annum, metered at Spring Dam pump station;
    - Harvested Stormwater – average daily flow of 264m^3 metered at FF2 Dam meter;
    - Process Water – average daily flow of 280m^3 metered at the process locations shown on Figure 1.

The total daily site water usage for the facility is estimated at approximately 850m^3. All water meters are read and recorded daily.

Figure 1 Average Daily Flow



3.3 Water Treatment

All site effluent (wastewater) is treated in the water treatment plant. Effluent is also received from HPP Sawmill Site 2 and Woodchem in the form of boiler blow down, cooling tower bleed water and wash down water.

The water treatment plant utilises filtration and biological degradation to remove contaminants from the water for re-use, capturing over 400kL per day from the site and reusing it in the manufacturing process.

Borg Panels produces most of the incoming effluent and consumes a large proportion of recycled water, mainly in steam generation. Effluent is generated by the washing and squeezing of chip during the initial stages of the manufacturing process. The volume of effluent generated depends on chip volumes (production rates) and chip moisture. Moist chip will generate more waste effluent than dry chip and typically a greater volume of effluent is generated during the winter months. Air emission control devices that were installed for the particleboard line also generate effluent. This is from the WESP and SAP90 purification systems. Approximately 400-500kL/day of effluent is generated by the facility.

High quality recycled water produced by the Reverse Osmosis (RO) system is used for the boiler (300-400kL/day approximately) and Woodchem (100-150kL/day approximately). The Paper Treater also requires a small amount of high-quality RO or soft water.

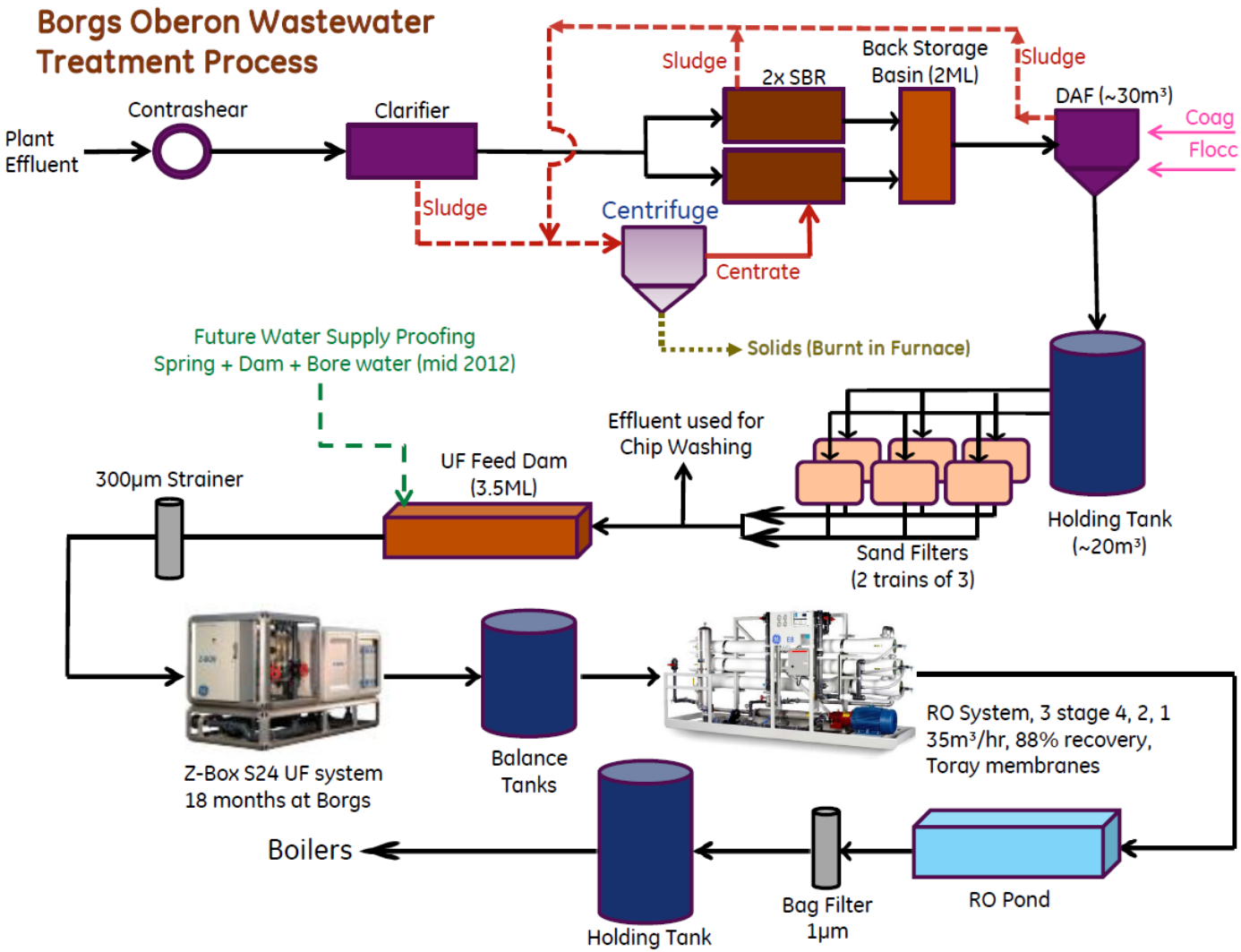
Intermediate effluent or low-quality recycled water treated by dissolved air floatation (DAF) is used for the chip wash systems (approximately (50kL/day). Dewatered waste sludge (biomass) from the centrifuge is sent to the heat plant as fuel for the furnace.

Figure 2 provides an overview of the major components of the water treatment system.

3.4 Wastewater

The water treatment plant produces brine, a waste product from the Reverse Osmosis (RO) system, which is high in dissolved solids. Brine solids are currently recycled within the water treatment plant and reused by way of dilution in the MDF and particleboard manufacturing process.

Figure 2 Major Components of Water Treatment System



4 Stormwater Management

4.1 Overview

Generally, the site grades towards the east, and the licenced discharge points to the tributary which runs to Kings Stockyard Creek are located in the north eastern corner of the site. A high ground water table is known to exist at the site and generally flows towards the north eastern corner. This fluctuating ground water table is a significant constraint of the site since excavation below this level cannot occur without consequential groundwater recharging taking place however is not expected that any excavation will occur which will intercept the groundwater table.

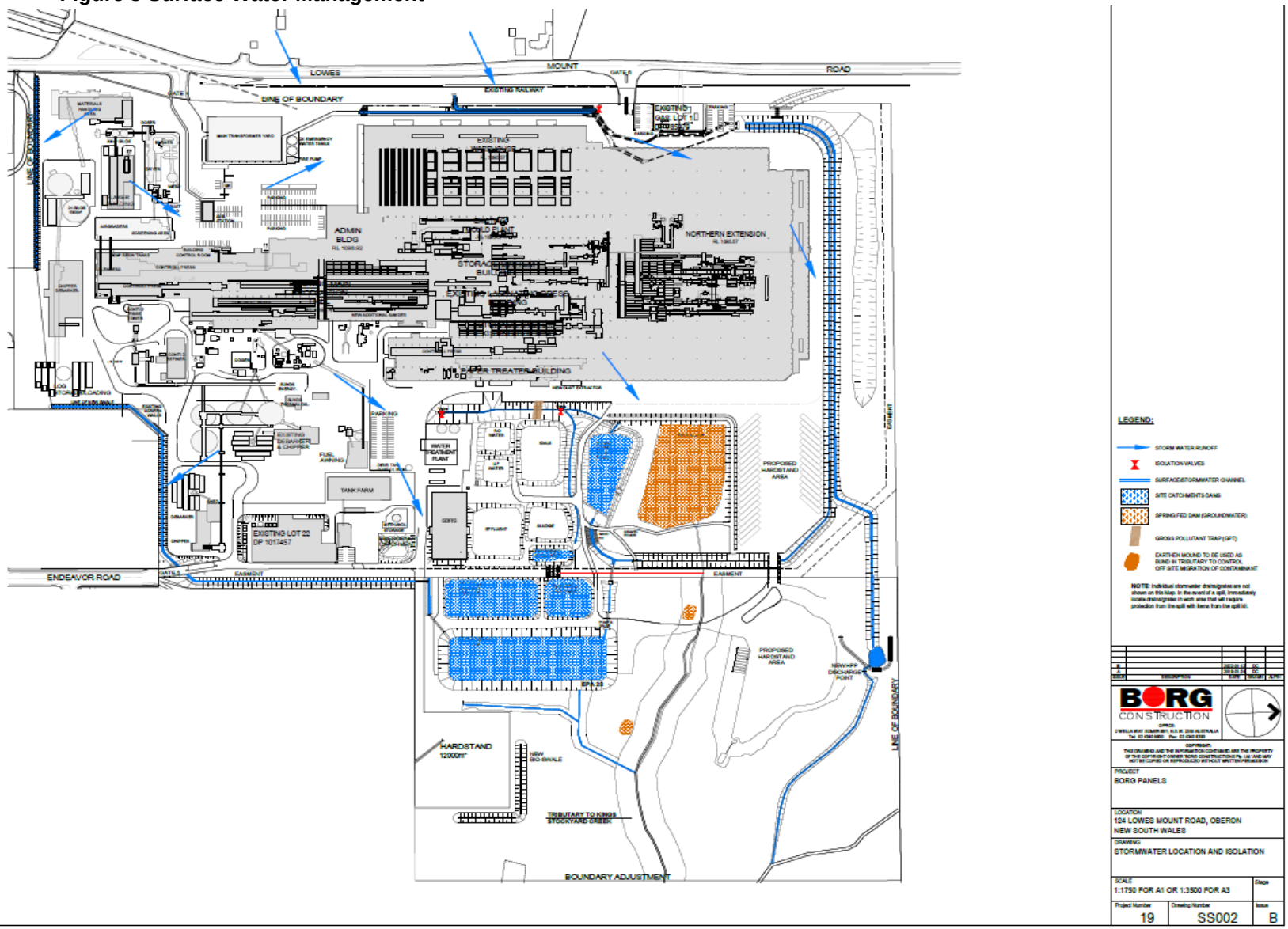
The surface water management system includes runoff from adjoining properties in the Oberon Timber Complex on the western side of Lowes Mount Road, and operates as follows:

- Runoff from Structaflor and Highland Pine Products (HPP) facilities flow across Lowes Mount Road and is directed onto the site in a 'dirty' water swale. This swale was extended to provide a longer flow path during construction under SSD 7016.
- Clean water from rural undeveloped parts of Lowes Mount Road is also directed onto the site in a 'clean' water swale, which runs alongside the dirty water swale.
- Borg Panels roof runoff and runoff from the western side of the facility is directed into the dirty water swale and then conveyed into the existing stormwater flush basin (Flush basin 1) and from there, into the newly constructed stormwater flush basin (Flush basin 2) with a holding capacity of 11ML.
- Runoff from the eastern and open parts of the site, which contains fine fibrous wood material, is directed first to a gross pollutant trap and then into stormwater flush basin 2.
- Runoff from the southern part of the facility drains into open swales before being piped to stormwater flush basin 2.
- Emergency catchment dams are strategically located to contain runoff in the event of a contamination event.

In accordance with EPL 3035, Borg Panels monitor discharge from the HPP Swale and from the stormwater flush basin (EPA point 28) to the unnamed creek that discharges to Kings Stockyard Creek. The location of the HPP Swale monitoring point is on the outflow of the northern boundary HPP basin. The outflow from the stormwater flush basin (Point 28) is on the eastern side of the basin where a spill way has been constructed. Overflow from this spill way makes its way through riprap to existing grassed swales connected to the tributary which flows to Kings Stockyard Creek. This is shown on Figure 3.

Figure 3 shows the current design specifications including the additional stormwater treatment and storage basin (First Flush Basin), additional effluent storage pond and emergency spill catchments.

Figure 3 Surface Water Management



4.2 Objectives

The main objectives of the stormwater management system are to:

- Ensure water quality discharging from the site adheres to the sites various Environmental Protection Licence 3035 requirements;
- Be capable of conveying the 100-year ARI rainfall event to the discharge location on Kings Stockyard Creek;
- Provide adequately sized retention basins to allow water to be reused on-site;
- Minimise peak flow rates; and
- Maintain the separation of upstream HPP Site 1/rural runoff clean stormwater flows.

4.3 Site Strategy

The main stormwater strategy for the site is to convey and treat stormwater from both the Borg Panels facility and upstream sites using large, grassed swales, underground pipe network and stormwater flush basins. The two flush basins allow water to be captured for reuse on-site and for sediments to settle out. A detailed schematic of the stormwater system is shown in Figure 3.

A 1050 mm diameter culvert under Lowes Mount Road connects Structaflor/HPP2 with the western grass dirty water swale. A 900 mm diameter culvert connects HPP Site 1 with the western clean water swale.

Due to the flat topography of the site the western grassed swales act as elongated basins holding a significant volume of water prior to discharging into the channel systems downstream from Gate 6.

These swales are linked to the channel systems which run along the northern boundary via four (4) x 1050mm diameter culverts constructed in two separate arrangements. The inlet levels to these culverts are raised slightly higher than the upstream swale invert and a large concrete pit connects the culverts below Gate 6.

The northern boundary channel system continues to separate the Structaflor/HPP2 (herein referred to as HPP2) and Borg flows from the HPP1/rural runoff flows (herein referred to as HPP1). The culverts and swales are sized to convey the 100-year flow rates from upstream catchments. In rainfall events greater than 1-year ARI water from all sites converge.

As can be seen in Figure 3, the clean water swale conveying HPP1 is then directed into a basin/discharge point located in the north-eastern part of site. Water from the Spring Dam is conveyed via a grassed swale to the Flush 1 stormwater basin.

Water from the southern and eastern parts of the site drains towards the north eastern corner and licenced discharge points through a series of swales, underground pipes and sediment basins. Water from the log yard containing fine fibrous wood material, is directed first to a gross pollutant trap and then into the stormwater flush basins.

4.4 Controls

Infrastructure for the protection of stormwater quality at the Borg Panels facility includes the following:

- Bunding of chemical and petroleum products tanks;
- Segregation of stormwater and process waters;
- Treatment and reuse of harvested stormwater;
- Gross pollutant trap to remove fine fibrous wood material; and
- Penstock gate valves to allow for shutting down the stormwater system in the event of a spill or fire emergency.

4.5 Maintenance

Regular cleaning, through manual sweeping and mechanical street sweeping of production areas is undertaken to help prevent dirt, wood fines and chip from entering the stormwater system. The gross pollutant trap also catches debris that is not swept up, further preventing entry to the stormwater basins. This cleaning of production areas helps ensure the final water quality discharging from the site is within EPL limits.

Regular maintenance of the penstock, headwall and other valves, trash racks, and gross pollutant trap ensure the system runs smoothly and that in the event of an emergency all items of equipment are operational. These areas are inspected at least monthly with condition and any identified actions captured on the Monthly Inspection Checklist. Action items are tracked using DataStation.

Due to the flat longitudinal swale grades and physical controls, it is possible that sediment will build up in the swale system. The swales and basins are to be cleaned when a significant amount of sediment builds up to keep the swales operating at their optimal performance level.

Monthly inspections are undertaken which identify the need to clean any excess sediment build up.

5 Erosion and Sediment Control

5.1 Overview

Changes in land use have the potential to disturb soils, alter drainage patterns and affect environmental values both on and off site (Landcom, 2004). The operation is a MDF and particleboard manufacturing facility with limited potential for erosion and sediment generation. The facilities and surface water management system have been developed over time as the site has developed and any undeveloped areas are well vegetated.

Erosion is mostly a short-term problem that results from the removal of vegetation and ground cover for construction purposes. The MDF infrastructure areas were constructed many years ago and have become stabilised over time. The newer infrastructure constructed for the particleboard line under SDD 7016 has seen an increase in hardstand area, reducing the potential for erosion and excess sedimentation to occur across the facility.

5.2 Site Activities and Potential for Soil Erosion

The MDF manufacturing facility is well established and areas that were disturbed during the construction phase have been stabilised. Construction for the particleboard line are complete though subsequent modifications see continued additions to the original development consent under SSD 7016. Where these activities have potential to impact on erosion and sedimentation, management and mitigation measures are captured in the Construction Environmental Management Plans.

Surface water has the potential to cause erosion and is managed as part of the normal site operations. Figure 3 shows the surface water management system for the entire Borg Panels site.

Several types of erosion control measures have been implemented with the aim of preventing soil erosion and the entry of sediments into any of the surrounding water bodies.

Open swales and drains shown on Figure 3 are typically constructed with either a parabolic or trapezoidal cross section rather than a V-shape, which can be easily eroded. Channels and associated banks have been grassed or had concrete applied to assist with stability during water flows and to minimise sediment movement. Channels are periodically inspected (at least monthly or following significant rainfall events) to identify and repair damage caused by scour, sediment deposition, channel obstruction and loss of vegetative cover. Physical controls have also been implemented to assist in the slowing the velocity of water flows to allow flocculation of sediment. Physical controls include sediment fence, geofabric wrapped haybales and ballast rock check walls.

Stormwater flush basins constructed within the surface water management system shown on Figure 3 have been designed and located to contain dirty water runoff which is then typically harvested for reuse in the production process.

This infrastructure is regularly maintained and cleaned out once the capacity of the structure is deemed to have been reduced significantly. The structures are inspected after major rainfall events and repairs made as required.

5.3 Maintenance of Erosion and Sediment Controls

The Borg Panels facility has been operational for many years and there are relatively limited opportunities for erosion and sediment generation at this established site, including for the new particleboard facility. Regardless, regular inspection and maintenance of permanent structures ensures that the water management system and erosion controls remain effective. At active disturbed areas, regular inspections are undertaken to monitor the condition and effectiveness of controls.

Measures to minimise erosion and sediment generation include:

- Identification and review of surface activities that may change surface water flows and result in erosion;
- Minimising the clearing of vegetation and where clearing is necessary site rehabilitation of disturbed areas;
- Regular checking of rehabilitated areas;
- Installation of temporary and/or additional permanent controls to manage locations that have been identified as requiring attention;
- Diversion of surface and road runoff away from disturbed areas;
- Regular inspection and cleaning of catch drains and structures following storm events or other activities such as vehicle movements that may result in damage; and
- Clearing of excessive vegetation and weeds along drainage lines.

5.4 Managing Stormwater Discharge Quality

Borg Panels have committed to the reduction of pollution through the management of water quality and controlled discharges. A standard operating procedure has been developed for the controlled discharge of water from Flush 2 stormwater basin. Meteorological data for the site is closely monitored and if rainfall is predicted, samples are collected from the EPA

license monitoring point (Point 28). If results are below the license discharge limits capacity is obtained by pump out. If water does not comply with the licensed discharge limits for total suspended solids, water is treated by mixing micronized Gypsum with water and sprayed evenly over the surface of the dam using a water cart/cannon. Once desired laboratory results are obtained, water is pumped out to ensure suitable storage capacity for a rain event.

Another treatment method recently employed on site is the circulation and natural filtering of water between the two stormwater basins (Flush 1 and 2). Water is regularly pumped from flush 2 up hill to flush 1 where the water overtops over/under weir and is naturally treated through a swale system that has been developed to include vegetation and manmade physical controls such as rock check dams, floc blocks and geofabric covered haybales.

6 Surface Water Monitoring Program

Surface water monitoring is undertaken in accordance with the requirements of EPL 3035 issued under the *Protection of the Environment Operations Act 1997*.

6.1 Location of Monitoring/Discharge Points

Surface water is discharged from site via EPA Identification/Licenced discharge point 28 and the HPP Swale discharge point.. Both points discharge to a tributary (unnamed creek) of Kings Stockyard Creek as shown on Figure 3.

The locations and type of surface water monitoring and discharge points are listed in Table 3.

Table 3 – EPL 3035 Surface Water Monitoring and Discharge Points

EPA Identification No.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to waters; Discharge quality monitoring	Discharge to waters; Discharge quality monitoring	Discharge from Hpp Swaleto unnamed creek that discharges to Kings Stockyard Creek.
28	Discharge to waters; Discharge quality monitoring	Discharge to waters; Discharge quality monitoring	Discharge from First Flush Basin to unnamed creek as shown on monitoring point figure provided to the EPA on 22 August 2017

6.2 Concentration Limits

The concentration of a pollutant discharged from EPA Identification/Licenced discharge point 28 and the HPP Swale discharge point must not exceed the water concentration limits specified in Table 4.

Table 4 – Water Concentration Limits EPA Identification Point 1

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
Aldrin	µg/L		0.3

Pollutant	Units of Measure	50 percentile concentration limit	100 percentile concentration limit
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

6.3 Requirement to Monitor and Frequency

For EPA Identification/Licenced discharge point 28 and the HPP Swale discharge point Borg Panels must monitor, by sampling and obtaining results of analysis, the concentration of each pollutant specified in Table 4.

Sampling is undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales* (DEC, March 2004). Water samples are collected by trained personnel and analysed by NATA accredited laboratories.

The frequency of sampling is weekly during any discharge.

6.4 Surface Water Monitoring Data

All surface water monitoring data is uploaded monthly to Borg Panels website:

https://www.borgs.com.au/locations/oberon-nsw/

7 Surface Water Impact Assessment Criteria

This section sets out the surface water response plan for Borg Panels facility. Potential impacts on surface water, triggers, actions and responsibilities for addressing impacts are summarised in Table 7.

7.1 Water Quality Exceedance

Should water quality monitoring indicate that the criteria set out in EPL 3035 (Table 4) have been exceeded, Borg Panels will conduct an incident investigation into the potential sources and/or causes.

As the limits specified in EPL 3035 are the 100-percentile concentration limit, all exceedances will generate an investigation, however the exceedance will need to be determined to be *causing or threatening material harm to the environment* to trigger the pollution incident response measures detailed in the Pollution Incident Response Management Plan.

In the event that a pollution incident causes or threatens material harm to the environment, the Borg Panels Pollution Incident Response Management Plan (PIRMP) is to be immediately implemented, including immediate notification to authorities as outlined in the PIRMP.

Environmental incidents which are identified as *not* causing or threatening material harm to the environment should be contained if safe to do so, then the Borg Panels Incident Reporting procedure undertaken. Exceedances classified as not causing or threatening material harm to the environment will be reported annually in the Annual Review.

Full details on environmental incident investigation and reporting are provided in the OEMP.

7.2 Unlicensed Discharge

In the event of an unlicensed discharge, Borg Panels will notify the EPA immediately after becoming aware if this and undertake an investigation of the discharge event. In the unlikely event that a discharge poses a threat to health of surrounding property owners and occupiers, Borg Panels will implement the Pollution Incident Response Management Plan (PIRMP), which includes notification with those likely to be affected. A list containing surrounding property owner's and occupier's contact details is held by Borg Panels.

The notification procedure is to be initiated by the Environmental Managerfor Borg Panels. In the absence of the Environmental Managerthe notification procedure is to be initiated by the person designated as fulfilling the responsibilities of the Environmental Manager. Notification will occur within 24 hours of it becoming known to site personnel that surrounding property owners and occupiers are likely to be adversely affected by discharges from the site. A record will be kept of all property owners and occupiers contacted and this will be recorded in DataStation by the Environmental Manager.

An investigation report on the unlicensed discharge will be prepared and provided to the EPA or other relevant agency, including DPIE.

7.3 Contingency Plan to Manage Any Unpredicted Impacts

Should impacts eventuate that have not been predicted or considered in the SWMP, the following contingency plan will apply:

1) Assess whether impacts constitute a material risk of harm to the environment, and trigger the PIRMP and reporting requirements of the OEMP if necessary;
2) Investigate the cause of the unpredicted impact. This may include onsite process owners or external specialists as required;
3) Consult with government agencies regarding the unpredicted impact if the impact is material and require additional management strategies; and
4) Revise the SWMP.

The scale of the unpredicted impact will inform the level of response required through this process and whether the impact is material and therefore requires external notification.

Table 7 – Surface Water Response Plan – Triggers, Actions and Responsibilities

Aspect	Trigger	Action	Timeframe	Responsibility	Further Information
Water quality impacts	Exceedance of water quality criteria set out in EPL 3035 (Table 4)	Determine if the event is a pollution incident causing or threatening material harm to the environment. If yes, implement the Borg Panels Pollution Incident Response Management Plan (PIRMP) immediately. If not a pollution incident causing or threatening material harm to the environment, follow the Borg Panels Incident Reporting procedure.	Material harm incidents are to be reported immediately to DPIE, EPA and any other relevant agency. A written report on the incident is to be provided within 7 days. Incidents/exceedances classified as not causing or threatening material harm to the environment will be reported annually in the Annual Review.	Environmental Manager	Section 7.1
Surface water discharge	Surface water discharge that is not licenced under EPL 3035	Notify DPIE, EPA and any other relevant agency and potentially affected persons (where necessary). Trigger the Pollution Incident Response Management Plan immediately if required (PIRMP material harm incident). Investigate and prepare report outlining causes, impacts and recommended mitigation measures. Supply report to agencies. Implement report recommendations.	Notify DPIE, EPA and any other relevant agency immediately. Trigger PIRMP immediately if of sufficient magnitude. Provide written report within 7 days.	Environmental Manager	Section 7.2

8 Reporting

8.1 Monitoring Data Review

The Environmental Manager will review all surface water quality monitoring results following a licenced discharge and ensure corrective action is taken where results or trends indicate non-compliance or risk of future non-compliance to the development consent or EPL criteria.

The surface water results are included in the Annual Review. The Annual Review includes a summary of monitoring results during the past year, comparison against the water quality criteria specified in the EPL, and summary of the previous year's monitoring results.

The Annual Review also identifies any trends in water quality impacts and any non-conformance over the year, as well as describing any actions currently implemented or planned to ensure compliance with the water quality impact criteria. The Annual Review is available to the relevant authorities including the Department of Planning, Industry and Environment (DPIE) and Environment Protection Authority (EPA). It is also placed on the company's website along with a summary of environmental monitoring results in accordance with the requirements of Development Consent SSD 7016 and EPL 3035.

The EPA is provided with an annual return, statement of compliance and a monitoring and complaints summary annually as required by EPL 3035.

Borg Panels conducted an Independent Environmental Audit in 2018 and 2021 and will continue at three yearly intervals in accordance with SSD 7016 condition of consent C15.

8.2 Reporting

8.2.1 Annual Review

In accordance with Development Consent SSD 7016 an Annual Review report is prepared and submitted to the Secretary Department of Planning, Industry and Environment on an annual basis.

The Annual Review summarises the environmental performance of Borg Panels activities for the reporting year. The results of the monitoring undertaken as specified in this SWMP will be compared against the impact assessment criteria in the relevant environmental management plans or monitoring programs and/or limits contained in Development Consent SSD 7016 and EPL 3035 to assess the effectiveness of environmental management.

8.2.2 Exceedance of Criteria / Environmental Incident Management

Notification procedures and actions upon identification of an exceedance of any impact assessment criteria or management levels will be as per the Operational Environmental Management Plan (OEMP), and the Pollution Incident Response Management Plan.

8.2.3 Complaints

Community complaints will be managed in accordance with the procedures in the Operational Environmental Management Plan (OEMP).

9 SWMP Review

In accordance with Development Consent SSD 7016 Condition C10, this SWMP 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.

The SWMP will also be updated as required to reflect any change to on-site management or monitoring programs referred to in this document, or any changes to Development Consent SSD 7016 or EPL 3035.

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

Appendix E – Waste Management Plan

EMS0007

Waste Management Plan

Borg Panels

124 Lowes Mount Road, Oberon NSW

Borg Panels Pty Ltd

17 December 2021

This document should be read in conjunction with EMS0060 Construction Environment Management Plan, EMS0001 Operational Environment Management Plan, EMS0006 Surface Water Management Plan, SEP Waste Storage Areas and SEP Stockpile Map

Revision History

Rev No.	Revision Date	Author / Position	Comments	Details	Authorised	
					Name / Position	Signature
0	24/11/17	Carly McCormack Planning and Environmental Officer		Final	Victor Bendevski Environmental and Regulatory Compliance	
1	02/11/18	Jacqui Blomberg Environmental Manager	Update 2.4 Environment Protection Licence condition L3 & L7	Review as per SSD7016 C10(d)	Victor Bendevski Environmental and Regulatory Compliance	
1	07/12/18	J Blomberg Environmental Manager	No updates necessary, remains as Rev. 1	Review as per SSD7016 C10(a) MOD 1 granted 20/11/18		
2	02/10/19	J Blomberg Environmental Manager	Update Section 2.4 to include for EPL waste			
3	18/01/21	J Blomberg Environmental Manager	Update as per SSD 7016 condition B52		V Bendevski Environmental and Regulatory Compliance	
4	17/12/21	A Brady Environmental Manager	Update as per SSD 7016 condition B52		J Blomberg Environmental Manager	

Table of Contents

1 Introduction

1.1 Background

Borg Panels operates a medium density fibreboard (MDF) and particleboard facility in Oberon NSW manufacturing a range of Customwood MDF and particleboard products including:

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

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

Conditions contained within the Consent require Borg to provide for the ongoing environmental management of the Development. Though initially developed to satisfy conditions B51, C4 and C9, this Waste Management Plan has been updated to include for condition B52. Additionally, this WMP will be reviewed and updated as per SSD 7016 condition C10.

1.2 Purpose and Objectives

The purpose of this WMP is to provide the management and performance requirements related to waste at the Borg Panels facility, and includes:

- Requirements for management of waste for operations at the facility as stipulated by regulatory approvals for the Development;
- Description of potential sources of wastes and risks related to waste management;
- Detail the ‘waste’ materials to be reused/recycled for production;
- Detail procedures for managing, handling and accepting the materials to be reused/recycled;
- Description of the environmental controls to meet objectives, and regulatory approval requirements; and
- Overview of the environmental monitoring programs associated with environmental controls and management actions.

The objectives of the WMP are to:

- Advise site personnel of their responsibilities in managing waste generated at the site;
- Advise site personnel of their responsibilities in managing, handling and accepting waste that will be reused on-site in the manufacturing process; and
- Ensure compliance with the conditions of approval related to waste management.

1.3 Structure of this Waste Management Plan

This WMP has been developed to manage waste generated by the facility and to satisfy the requirements set out in conditions of Development Consent SSD 7016, and includes information on the following:

- Section 2 – Legislative and Regulatory Compliance
- Section 3 – Process Overview
- Section 4 – Urban Wood Residue/Reuse Material
- Section 5 – Implementation
- Section 6 – Incidents and Complaints Management
- Section 7 – Monitoring and Review

1.4 Approval of the WMP

The WMP was submitted to the Secretary of the (then) Department of Planning and Environment (DP&E) on 30 November 2017. The Department reviewed the Plan and were satisfied it met the terms of the relevant conditions of consent. Accordingly, the WMP was approved by the Department on 21 December 2017.

Any subsequent versions of the WMP will be submitted to DPIE for approval as per SSD 7016 Condition C10 as is necessary.

1.5 Training

Training and Assessment Manual EMS0020 Environmental Standard Awareness Waste has been developed for the site. This training will be delivered to all Supervisors and Operators on site. The Manual outlines Borg employees responsibilities to assist with managing waste across the site and ensure ongoing regulatory compliance. The Training and Assessment Manual will be reviewed as necessary where site conditions change to ensure it accurately reflects site operations and training requirements.

Standard Operating Procedure EMS0030 Receiving and Accepting Urban Wood Residue (UWR) has been developed for site. This is to ensure the type and quality of UWR received on site which is to be incorporated into new particleboard meets Borg specification, EPA licence and Development Consent conditions, and NSW Government Regulations.

All training records are maintained in DataStation.

2 Legislative and Regulatory Compliance

2.1 Relevant Legislation

Key environmental legislation relating to waste management for the facility includes:

- *Protection of the Environment Operations Act 1997;*
- Protection of the Environment Operations (Waste) Regulation 2014; and
- *Waste Avoidance and Resource Recovery Act 2001*.

2.2 Conditions of Consent

The operations at Borg Panels are subject to the conditions contained in Development Consent SSD 7016 and the following modifications:

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

For each of the above modifications, the Minister did not impose any additional conditions specific to this Management Plan.

The specific requirements for a WMP (Schedule 2, Condition B51 and B52) and general requirements for environmental management plans (Schedule 2, Condition C9) are detailed in Table 1.

Table 1 - Development Consent Conditions

No.	Requirement	Document Reference
	WASTE MANAGEMENT	
	Waste Management Plan	
B51.	Within 6 months of the date of this consent, the Applicant must prepare a Waste Management Plan (WMP) for the Existing Development to the satisfaction of the Secretary. The WMP must form part of the OEMP required by Condition C4 and be prepared in accordance with Condition C9. The WMP must:	This Plan
	a) detail the type and quantity of waste generated by the Existing Development;	Section 3
	b) describe the handling, storage and disposal of all waste streams generated on site, consistent with the POEO Act, *Protection of the Environment Operations (Waste) Regulation 2014* and the *Waste Classification Guideline* (Department of Environment, Climate Change and Water, 2009);	Section 4
	c) detail the materials that are being reused or recycled, either on or off site; and	Section 4

No.	Requirement	Document Reference
	d) include the Management and Mitigation Measures included in Appendix B.	Section 2.3
B52	Prior to commencement of operation of the Project, the Applicant must update the WMP required under Condition B51 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 B51, and must incorporate the following:	This Plan
	(a) details of the materials to be reused and recycled for the Project; and	Section 4
	(b) details of the procedures for managing, handling and accepting materials to be reused or recycled on-site for the Project.	Section 4
	MANAGEMENT PLAN REQUIREMENTS	
C9	The Applicant must ensure that the environmental management plans required under Condition C4 of this consent are prepared by a suitably qualified person or persons in accordance with best practice and include:	Revision History
	a) detailed baseline data;	Section 3
	b) a description of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures/criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;	Section 2
	c) a description of the management measures that would be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria;	Section 4
	d) a program to monitor and report on the: (i) impacts and environmental performance of the Development; and (ii) effectiveness of any management measures (see (c) above);	Section 6
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 5.4
	f) a program to investigate and implement ways to improve the environmental performance of the Development over time;	Section 4.3

No.	Requirement	Document Reference
	g) a protocol for managing and reporting any: (i) incidents; (ii) complaints; (iii) non-compliances with statutory requirements; and (iv) exceedances of the impact assessment criteria and/or performance criteria; and	Section 5
	h) a protocol for periodic review of the plan.	Section 6.5
	Note: *These requirements also apply to the preparation or updates of management plans for the Existing Development and the Project.*	

2.3 Development Consent SSD 7016 Mitigation Measures

Appendix B Applicant's Management and Mitigation Measures to Development Consent SSD 7016 details the reasonable and practical measures to avoid or minimise impacts to the environment that may arise as a result of the Project. The following is included for waste:

Recovered Wood Material/Products

EPA approval will be obtained prior to the use of recycled materials in the particleboard manufacturing process.

In 2019-2020, Borg Panels undertook an EPA approved trial for the receipt, storage, processing and use of urban wood residue (UWR) as an alternative raw material to be used in the production of particleboard. Upon successful completion of the trial, Borg applied to the EPA for a site specific resource recovery order and exemption to allow for the continued use of UWR in the manufacture of particleboard. The EPA issued Borg with The Borg Panels Urban Wood Residue order March 2021 and The Borg Panels Urban Wood Residue exemption March 2021.

2.4 Environment Protection Licence

Environment Protection Licence 3035 (EPL 3035) specifies waste that may be received at the premises and use of that waste during operation of the facility.

Condition L3 Waste of EPL 3035 states:

L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled "Waste" and meeting the definition, if any, in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled "Other Limits" in the table below.

This condition does not limit any other conditions in this licence.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
NA	General or Specific exempted waste	Borg Panels Urban Wood Residue that meets all the conditions of The Borg Urban Wood Residue Trial Order September 2019' under Part 9 Clause 93 of the Protection of the Environment Operations (Waste) regulation 2014	As specified in each particular resource recovery exemption	NA
NA	General or Specific exempted waste	Soil that meets all the conditions of the Sydney Trains screened soil order under Part 9 Clause 93 of the Protection of the Environment Operations (Waste) regulation 2014	As specified in each particular resource recovery exemption	NA
NA	General or Specific exempted waste	Reclaimed Asphalt, that meets all the conditions of the reclaimed asphalt pavement order under Part 9 Clause 93 of the POEO (Waste) Regulation 2014	As specified in each particular resource recovery exemption	NA
NA	General or Specific exempted waste	Waste glass, that meets all the conditions of the recovered glass sand order under Part 9 Clause 93 of the POEO (Waste) Regulation 2014	As specified in each particular resource recovery exemption	NA
NA	General or Specific exempted waste	Waste ceramic tiles, sourced from National Ceramic Industries Australia Pty Limited, Rutherford NSW, that meets all the conditions of the recovered aggregate resource recovery order under Clauses 91-96 of the POEO (Waste) Regulation 2014	As specified in each particular resource recovery exemption	NA
NA	Non-standard Fuel sourced from materials generated within the Oberon Timber Complex	As defined in condition L7.2		Used in accordance with conditions L7.1 and L7.2

Code	Waste	Description	Activity	Other Limits
NA	Non-standard Fuel generated offsite from material originally manufactured within the Oberon Timber Complex	As defined in Condition L7.2		Used in accordance with conditions L7.1 and L7.2

Note: For the purposes of condition L3.1, the Oberon Timber Complex refers to the businesses known as Structaflor, Highland Pine Products, Borg Panels and Woodchem.

Condition L7 Other limit conditions of EPL 3035 states:

L7.1 Only the following materials may be used as fuel within the Conti 1 and Conti 2 heat plants: -

a) Standard Fuel; and
b) Non-Standard Fuel.

L7.2 For the purposes of condition L7.1, Non-Standard Fuels are those fuels that have been assessed by the EPA as being appropriate for use as a fuel additive and comprise those materials that are derived from Oberon Timber Complex activities. Non-Standard Fuels currently approved for use are: -

a) MDF Board;
b) Particle Board sourced from Borg Panels and Structaflor premises;
b) Shredded MDF Board;
c) Sander Dust;
d) Laminated MDF Board;
e) Water Treatment Plant sludge; and
f) Saw dust/off-cuts sourced from Bearers 4 U Pty Limited (Lot 4 Albion Street, Oberon)

Licence version date 4 September 2019 includes section 8 Special Conditions which are specific to the UWR trial. Condition E1 Trial of Urban Wood Residue – Particleboard Factory states:

The licensee must undertake a trial of the receipt, storage, processing and use of Urban Wood Residue (UWR) as an alternative raw material to be use at the particleboard factory within the premises. The trial is to be conducted over a period of 12 months and conclude on 30 August 2020.

All UWR received at the premises must be managed n accordance with the Urban Wood Residue Quality Assurance and Control Plan, v2.0.

The condition also outlines requirements for sampling and testing of the material, and the preparation of a Report following the conclusion of the trial.

3 Process Overview

3.1 MDF Plant

The MDF plant produces medium density fibreboard from the compression and densification of wood fibres treated with Melamine/Urea Formaldehyde polymer and wax. The MDF plant operates with two fully automated press lines producing boards of various dimensions. Product from the MDF plant is also used in the mouldings plant.

There are two heat plants (HP) in operation supplying heat to the facility. Fuel from the heat plants is sourced from both raw materials purchased for the plants and waste products obtained in accordance with EPL 3035 requirements (Section 2.4).

A schematic overview of the MDF process is shown in Figure 1.

3.1.1 Waste Streams

The following waste streams are generated in the MDF plant:

- Bark;
- Oversize and undersize wood chips;
- Fibre;
- Off-spec product / reject board;
- Sawdust and sanding belts;
- MDF trim;
- Packaging materials; and
- Heat plant ash.

3.1.2 Bark

Sorted logs are transferred to a debarking plant either directly from incoming trucks or from the log yard. Bark from this process falls to a lower deck and is collected by a scraper, which feeds the bark to a conveyor and stockpile.

Bark and other log wood refuse is then used as fuel for the heat plant or on-sold for landscaping purposes.

3.1.3 Oversize and Undersize Woodchips

De-barked logs are fed into a chipper, which converts the full log into a standard size chip suitable for further processing. The created chip is then fed by conveyor onto the chip piles. Chips are stored in large chip piles that utilise horizontal screw reclaimers at the base of the piles to feed chips into the refining process. Chips are screened and washed prior to the refining process to remove any oversize or undersize chip fractions and any stones, metal, or dirt that may cause process disruptions or flaws in the finished product. Undersize and oversize chip is collected and fed as fuel to the MDF heat plants.

3.1.4 Fibre – Prior to Press Line

Following washing, dewatered chips are refined into fibre. Fibre is produced by passing wood chip through a defibrator, a steam pressurised disk refinement process. The fibre produced is light and fine, which means it is easily spread by wind.

Wax and resin are added to the fibres before the fibre drying process. Wax is added to improve the moisture resistance of the board, and resin is added as an adhesive for the MDF board pressing process.

Process disruptions during start-up or fibre production can lead to a 'fibre dump' from the dryer start-up cyclone. Dumped fibre is collected in designated fibre dump pits located in the outdoor MDF plant area. The quantity of fibre dumped is not officially recorded either manually or automatically as part of the process control system. The size of the fibre 'dump' varies according to whether the dump is due to process start-up and shut-down or process disruptions.

The fibre dumps are generally constructed with three surrounding walls and an open front to allow collection of the fibre by a front-end loader. This design provides some protection from the risk of windblown fibre spreading throughout the plant.

Additionally, a street sweeper operates on a full-time basis to collect and control the spread of fibre across the outside areas of the MDF plant, and subsequently the spread of windblown fibre to other areas of the timber complex and surrounding properties. Fibre collected by the street sweeper is placed in the fibre dumps.

Fibre from the fibre dumps is taken to the fuel storage and mixing bunker at the MDF plant for blending with other approved fuels for use in the MDF heat plants.

Loose fibres from within enclosed buildings of the MDF plant are collected with a vacuum, which is also emptied into the fibre dumps.

3.1.5 Fibre – Press Line

Ensuring the fibre matt is of appropriate quality and thickness is essential to achieving the required finished product standard. Therefore, the fibre quality is subject to online analysis following the pre-press. If unsatisfactory, the load of fibre on the conveyor can be 'dumped' prior to entering the press.

The edges of the pre-pressed matt are trimmed to provide a clean edge prior to the main press. Trimmed fibre is recycled back into the process, with return to fibre storage prior to the pre-press. There is no online analysis of the flowrate of fibre back into the process from the pre-press, or of reject fibre to the fibre dumps.

3.1.6 Reject Board

The quality of MDF exiting the main press is analysed online, with board that fails to meet the required standard being rejected prior to entering the star cooling wheel. The quantity of reject board from both the Conti 1 and Conti 2 press lines is recorded in the daily operations reports.

Board can also be rejected at later stages of the process by visual inspection. Board can be rejected from the production line by operators following sanding and trimming, and prior to packaging.

Rejected board from the press-line and later production stages is stockpiled for later use, predominantly as product packaging bearers. Leftovers and offcuts from the bearer making process are used as fuel in the MDF heat plant.

3.1.7 Sawdust and Sanding Belts

Following cooling and storage, MDF is sanded down to the required thickness and finish. Sawdust from the sanding process is collected under vacuum to a baghouse filter, prior to being blown across to sawdust storage silos at the MDF heat plant.

Sanding belts are approximately 2.65m x 2.8m and come packaged in large cardboard boxes. Approximately 1 belt per head requires changing each 12-hour shift. There are two thicknesses of finishing heads. Both the sanding belts and their cardboard packaging are disposed of as general waste to landfill.

3.1.8 MDF Trim

MDF is cut to the required size boards according to different product requirements. Trim offcuts can vary according to the product being produced. Wood trim from the trim saws (both the length and width cut) is automatically dropped onto a conveyor belt and fed to a wood hogger. The board is crushed and broken into smaller pieces in the hogger, which is then blown across to the fuel storage and mixing bunker for the MDF heat plant.

3.1.9 Product Packaging

MDF products are packaged using wood bearers, plastic strapping and plastic shrink wrap. All packaging wastes are disposed of as general mixed waste to landfill.

The plastic strap used in the MDF plant is recyclable, however there is no segregated collection of plastic strap for recycling at the MDF plant.

3.1.10 Heat Plant Ash

Ash is the main waste stream from the heat plant. Ash is currently disposed of to landfill.

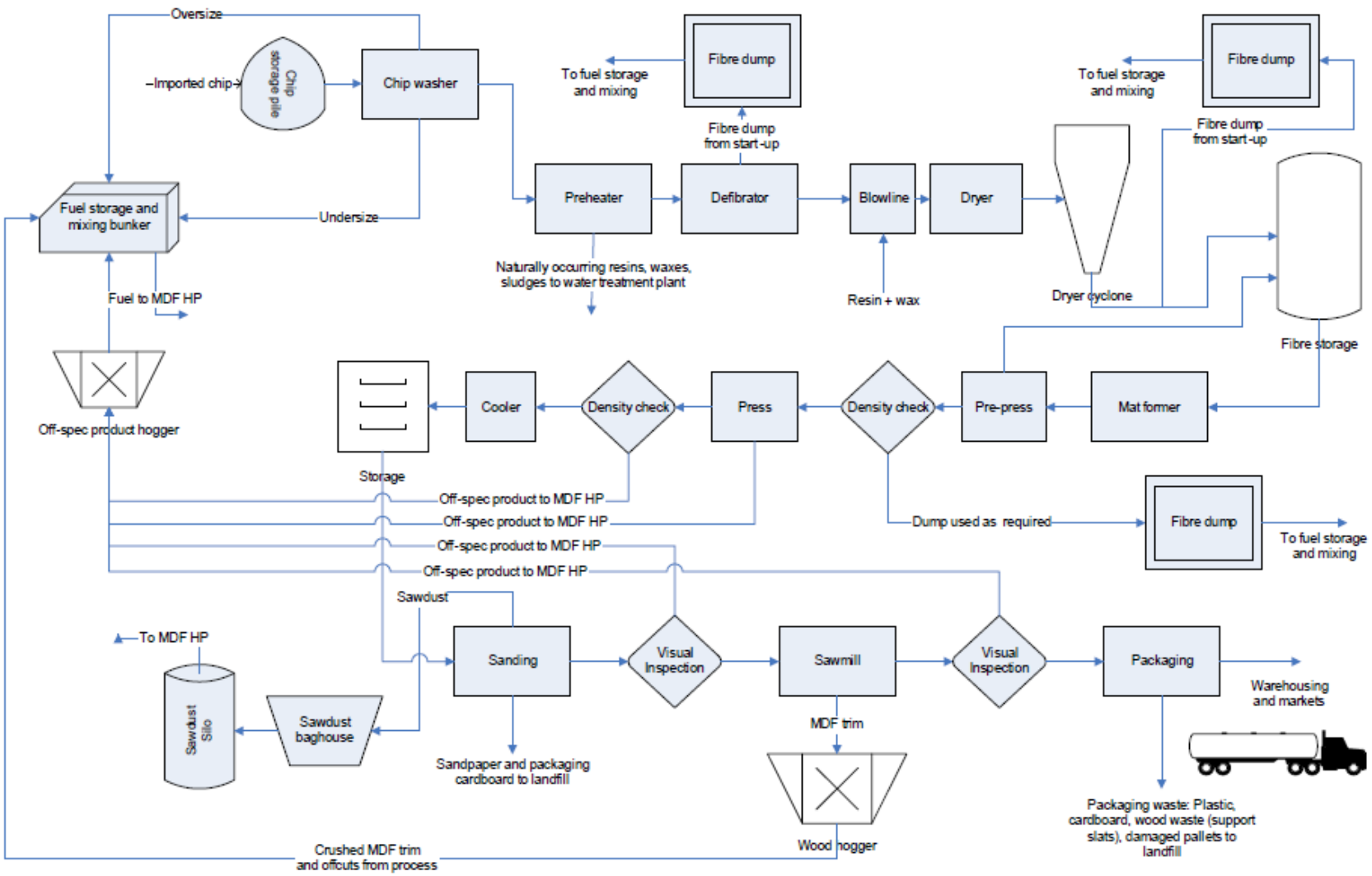


Figure 1 – Schematic Overview of the MDF Production Process

3.2 Particleboard

Particleboard manufacturing involves both the processing of virgin wood, residual wood waste from sawmills and the recycling and processing of appropriate used wood (UWR) to create suitable sized particles. These particles are blended with glue and a blend of urea formaldehyde with a paraffin wax emulsion. After blending, the particles are sent to the appropriate mat forming stations. The mat is then conveyed to the press via the forming line. The forming line is able to reject and recycle mat before pressing. Any reject material is reused on the site. Once processed, the board it cut, cooled and sanded, then stored for shipping.

3.2.1 Waste Streams

Waste streams generated from the manufacturing of particleboard include the following:

- Bark;
- Oversized and undersized wood ships;
- Off-spec product/board reject;
- Sawdust and sanding belts;
- Particleboard trim;
- Packaging materials; and
- WESP waste material.

3.2.2 Bark

Plantation timber logs are brought to site from external locations and processed through the timber yard. This includes processing the timber through a debarker and chipper. This chip is then fed on a covered conveyor to the chip storage silos (x2). Any fallen chip is swept up and added to the stockpile in the silos or taken to the fuel storage area.

3.2.3 Flaking

Chips are moved from the silos via covered belts and conveyors to the knife ring flakers designed to produce the optimum macro sized particles for processing. Saw dust is also introduced to the particles at this point. The flakers are located within an enclosed building. Any dust/small particles deposited outside the ring flaker are manually swept up and either used to fuel the heat plants or reintroduced into the particleboard production system.

3.2.4 Dryer

The dry saw dust and wet wood particles are then dried in a fully enclosed rotating drum drier. Any small particles generated during the drying process which are smaller than required are removed using cyclone extractors. Any surplus air generated which is not required for the drying process is cleaned using a Wet Electrostatic Precipitator (WESP) prior to being released to the atmosphere as clean air. Once dry and processed in this manner, the particles are removed and stored in a third silo.

Once this process has been carried out, screening is undertaken with any appropriate sized particles and dust sent to storage. Any oversized particles are sent to the grinding mill to reduce them to an appropriate size.

Dump chutes similar to those described in section 3.1.4 Fibre – Prior to Press Line are located in this area and waste from these are managed in the same way.

3.2.5 Blending, Forming, Pressing

Particles are then blended with glue and additives including urea formaldehyde and paraffin wax emulsions and sent to the mat forming stations. The forming stations ensure that there is an even distribution of particles across both the width and thickness of the board. The mat is weighed and adjusted to ensure the finished product has a consistent density. Any reject mat is returned to the flaking system and reintroduced into the manufacturing process.

The forming line then transports the layered mat in a continuous format to the press. The forming line is able to reject and recycle the mat before pressing if the specified product parameters are not of a suitable standard. Any rejected material is reused on site. The press then applies the specified heat and pressure to cure and consolidate the board to meet or exceed Australian Standards.

3.2.6 Trimming, Sanding, Finishing

Once processed, the pressed board is then square cut, cooled and stored in an automated storage system. Any off cuts are put back through the system to create particleboard.

Once cooled and cured, the boards are removed from storage and processed through the sander to ensure they meet final standards. Sawdust from the sanding process is manually swept up by a mechanical sweeper for reuse on site.

Product packaging for particleboard is the same as for MDF described in section 3.1.9 above.

3.3 Mouldings Plant

3.3.1 General

The mouldings plant processes MDF sheets into finished (painted) mouldings suitable for use as skirting boards, doorjambs and architraves.

The main input materials to the mouldings process include MDF sheets from the MDF plant, paint, plastic wrap and strapping used in the final product packaging.

MDF sheets are cut to the required size using a multi-saw, prior to moulding and sanding to the required style and shape. The mouldings undergo a two stage (two coat) painting process with drying and intermediate de-nibbing (rubbing down) between paint stages, prior to visual inspection of the product, packaging, storage and delivery of product to markets.

A schematic overview of the mouldings process is shown in Figure 2.

3.3.2 Waste Streams

The following waste streams are generated in the mouldings plant:

- Plastic strapping and packaging from MDF receival;
- Product trim and offcuts;
- Sawdust;
- Paint, paint filters, and paint washdown;
- Product packaging; and
- Reject material.

3.3.3 Plastic Strapping and Packaging from MDF Receival

MDF sheets delivered to the mouldings plant are stacked on wood bearers supported with plastic strapping and are labelled.

The plastic strapping removed from the MDF is recyclable, however there is no segregated collection of plastic strap for recycling at the mouldings plant. MDF labels (equivalent to a printed A4 sheet) are disposed of as general waste.

Wood bearers are reused wherever possible. Undamaged wood bearers are returned to the MDF plant for reuse. Damaged wood bearers are collected and sent to the heat plants for use as fuel.

3.3.4 Product Trim and Offcuts

MDF offcuts from the initial sawing process are collected and sent to the MDF heat plants for use as fuel. The number of offcuts is dependent on the product specification and size of MDF board.

3.3.5 Sawdust

Sawdust from the sawing line, moulder, and sander is collected under vacuum to a baghouse filter, prior to being blown across to sawdust storage silos at the MDF heat plants.

Material removed from the painted timber surface in the denibbing process (following the first painting stage) is collected under vacuum to a baghouse filter, prior to being blown across to sawdust storage silos at the MDF heat plants.

Sawdust is also used to clean up any paint spillages. Paint soaked sawdust is dried and disposed of to a suitable landfill location.

3.3.6 Paint, Paint Filters and Paint Washdown

Painting is undertaken in a bunded area, allowing for cleaning and washdown of each painting area. The area is cleaned using water, and the washdown water is recycled back into the process via mixing with fresh paint in the paint day-tank or is sent to the water treatment plant for treatment.

Paint filters are cleaned and reused as required.

3.3.7 Product Packaging

Waste streams generated from the packaging line include:

- Cardboard boxes (received from delivery of packaging materials);
- Cardboard cores from rolls of plastic wrap;
- Damaged wood bearers;
- Plastic wrap; and
- Plastic strapping offcuts from the strapping machine.

Finished mouldings are stacked on laminated wooden bearers prior to strapping and covering with plastic wrap. Plastic wrap used in the wrapper is coiled over a cardboard core that is currently not returnable to the manufacturer, thus the cores are disposed of as general waste to landfill.

Bearers used to support mouldings products are made from MDF or untreated wood, therefore they are suitable for use as fuel in the MDF heat plants. Attempts are made to repair and reuse damaged wood bearers as much as possible. Broken bearers are used for fuel in the MDF heat plants.

3.3.8 Reject Material

Product is subject to visual inspection following application of the second coat of paint and prior to packaging. Product that fails to meet the required quality standard is removed from the process and recorded as reject. Rejected product is stockpiled for use as fuel in heat plants.

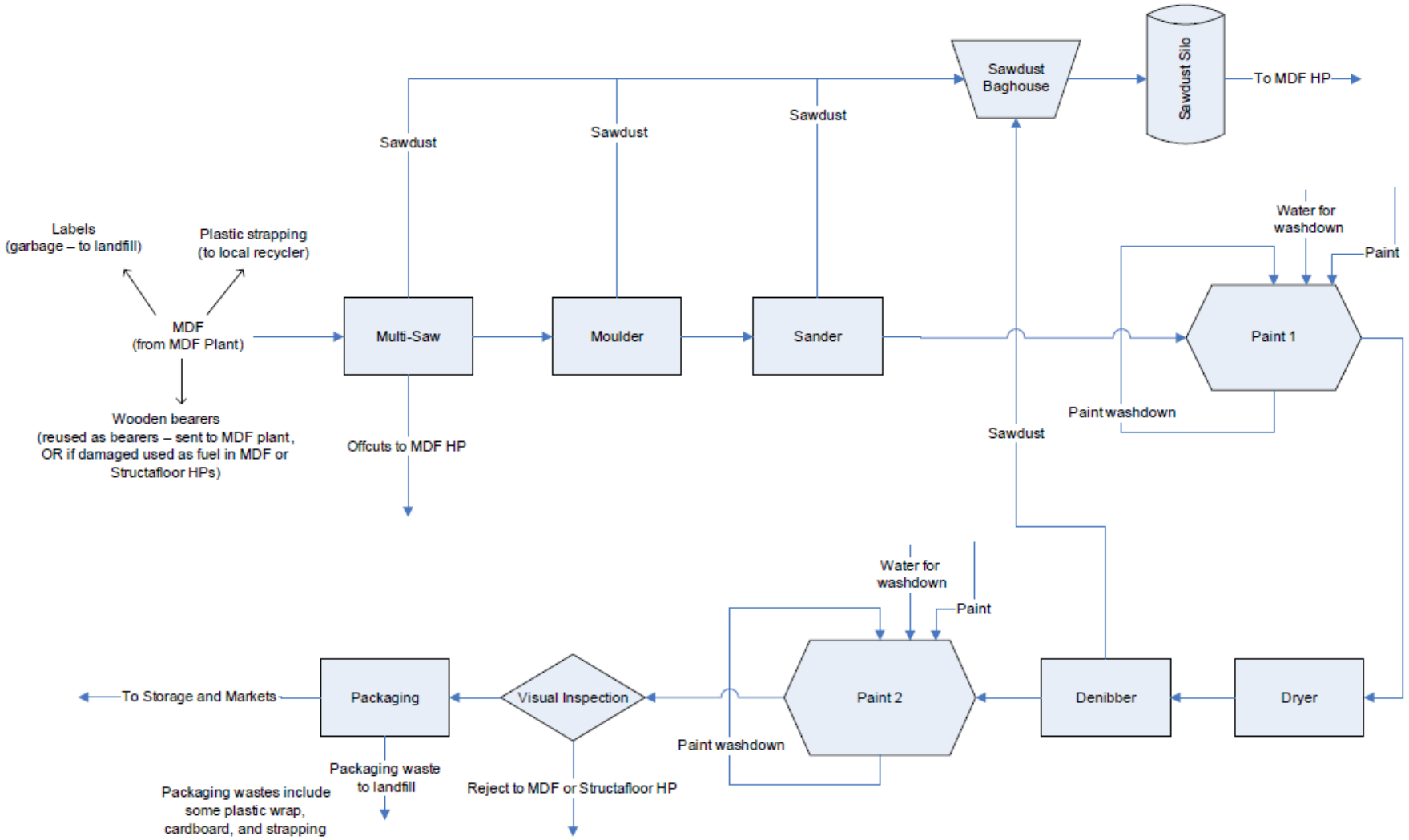


Figure 2 – Schematic Overview of the Mouldings Production Process

3.4 Paper Treater

3.4.1 General

The paper treater manufactures resin treated paper films that are used to laminate onto the surface of the MDF and particle board sheets. These films provide colour, texture and durability to the surface of the board.

The paper treatment process uses urea and melamine formaldehyde adhesives which are saturated into and onto a continuous paper web. The resin filled paper web is dried sufficiently, in gas fired flotation ovens, until they no longer tack together when placed in contact with one another.

The continuous web is then cut into suitable sized sheets or reeled onto a core for use on a continuous laminating press line.

3.4.2 Waste Streams

Waste streams generated from the paper treatment process include the following items:

- Raw paper;
- Cardboard cores;
- Waste resin;
- Dried treated paper; and
- Wet treated paper.

3.4.3 Raw Paper

The dense cardboard protective outer wrapping of the paper rolls is removed prior to preparation for the paper treatment process. Additionally, some of the decorative raw paper is also recycled or sent to the MDF heat plant to be used as fuel.

3.4.4 Cardboard Cores

Raw decorative paper is coiled over a cardboard core. Used cardboard cores are disposed of as general waste to landfill.

3.4.5 Waste Resin

Waste resin is generated at the end of a production run, or when there are process upsets to out of specification resin. End of run material can be pH stabilised and utilised during the next suitable production run. Out of specification material can be reused in the MDF board making process if the opportunity exists, otherwise it is chemically set to solidify and disposed of to landfill.

3.4.6 Dried Treated Paper

Dried treated paper is generated in process upset conditions when the continuous web is broken. This paper is very brittle and has no alternatives uses and is therefore sent to landfill.

3.4.7 Wet Treated Paper

Wet treated paper is generated in process upset conditions when the continuous web is broken. This wet paper has no alternative uses and is also sent to landfill.

3.5 Laminating Presses

3.5.1 General

Laminating presses are used to thermally fuse the treated paper to the surface of the MDF and particleboard substrate. They operate by applying heat and pressure to the treated paper leaf and board assembly, which activates the glue causing it flow and bond to the surface of the board product.

3.5.2 Waste Streams

Waste streams generated from the laminating press process include the following:

- Dry treated paper;
- Reject laminated board;
- Plastic film from wrapping; and
- Packaging.

3.5.3 Dry Treated Paper

Dry treated paper that is broken or damaged during setup of the laminating process is sent to landfill.

3.5.4 Reject Laminated Board

Board that is not suitable for resale after the laminating process is generally reused by sanding and then re-laminated into A grade product. Alternatively, the board product is used in the bearer making process. Offcuts from the bearer making process are used onsite as fuel in heat plants.

3.5.5 Plastic Film Wrapping

Plastic film is used for wrapping treated paper to prevent moisture ingress. Used plastic film is sent to landfill.

3.5.6 Packaging

Treated paper is transported for use at other manufacturing sites in flat sheets. The paper sheets are protected with thick MDF top and bottom. Treated paper for use onsite is rolled onto aluminium cores.

Both the MDF used for transport and aluminium cores used onsite are reused in the same process until end of life, at which time the MDF is sent to the heat plants for fuel and aluminium cores are recycled.

3.7 Water Treatment Plant

3.7.1 General

The on-site water treatment plant processes all the effluent (process water) generated from various activities at site. The water treatment plant utilises filtration and biological degradation to remove contaminants from the water for re-use, capturing over 400KL per day from the site and reusing it in the manufacturing process.

More detail on the function and operation of the water treatment plant is provided in EMS0006 Surface Water Management Plan.

3.7.2 Waste Streams

Waste streams generated from operation of the water treatment plant include the following:

- Chemical containers;
- Brine; and
- Solids from filtration.

3.7.3 Chemical Containers

The water treatment plant requires chemicals for its operation, the chemicals are generally supplied in IBCs or bags for solid materials. Management of IBCs on-site is detailed in Section 3.6.3. Empty bags are disposed of to landfill.

3.7.4 Brine

The water treatment plant produces brine, a waste product from the Reverse Osmosis (RO) system, which is high in dissolved solids. Brine solids are currently treated within the water treatment plant by way of dilution then reused in the manufacturing process.

3.7.5 Solids from Filtration

Dewatered waste sludge (biomass) from the centrifuge is sent to the heat plant as fuel for the furnace.

3.8 Common Waste Streams

The following waste streams are common to more than one process on-site, and are handled, processed and recorded collectively for the facility.

3.8.1 Scrap Metal

Scrap metal with potential for reuse within the plant is stockpiled on site and reused wherever possible.

Other scrap metal that is not stockpiled is placed in scrap metal skip bins for removal from site to a metal recycler.

3.8.2 Waste Oil

Waste oil is collected from site for recycling by Cleanaway.

3.8.3 Chemical Containers

Empty chemical containers (IBCs) are washed and stored on-site prior to recycling, reuse or disposal. The majority of IBC's are reused at site, with the remainder that are not re-purposed or are at end of life being cut up or crushed and sent to landfill.

Waste drums of metal construction are triple rinsed and sent to the recyclers.

Waste requiring burial is made up of urea formaldehyde spade-able resin and paraffin wax bladders. Quantities of these are sporadic and disposal of resin in this manner is considered as a last resort as the product has a high capital cost. This waste is disposed of to Bathurst Regional Council Waste Management Centre.

3.8.4 General Waste

All general waste from work areas, offices and staff amenities is collected in bulk skip bins and taken to Oberon Council Waste Depot for disposal. There is no segregation of recyclable materials.

3.9 Waste Quantities

A summary of estimated waste generation at the Borg Panels facility is provided in Table 2.

Table 2 – Summary of Waste Generated in Borg Panels Facility

Waste Stream	Estimated Annual Waste Generation	Disposal / End Use
Bark	30,000 tonnes	Fuel in heat plant or on-sold for landscaping purposes
Oversize and undersize woodchips	190,000 tonnes	particleboard manufacturing
Fibre	Not recorded	Fuel in heat plant or particleboard manufacturing
Reject Product	2,200 tonnes (assumed average density of 730kg/m3)	Fuel in heat plant or particleboard manufacturing
Ash	800m^3	Landfill
Sawdust	9,000 tonnes	particleboard manufacturing
Trim and Offcuts	7,000 tonnes	Fuel in heat plant or particleboard manufacturing
Wood Bearers	Included in MDF trim and offcuts	Fuel in heat plant
Scrap Metal	Not recorded	Recycled
Waste Oil	40,000 litres	Recycled
Oil Drums	500 drums	Reused or returned
General Mixed Waste (sanding belts, cardboard, plastic strapping, shrink wrap, labels, paint filters, treated paper, general waste)	7,000 m^3	Landfill
Brine (from WTP)	100% reuse captured in board production	Reuse
Sludge (from WTP)	Not recorded	Fuel in heat plant
Chemical Containers (IBCs)	Included in general mixed waste	Reuse, recycle and landfill

Waste Stream	Estimated Annual Waste Generation	Disposal / End Use
Waste resin (spade-able or solidified) and paraffin wax bladders	150 tonnes	Bathurst Council Waste Management Centre – waste requiring burial

4 Implementation

4.1 Minimising Waste Production

Borg Panels aim to appropriately manage and minimise waste generation at the Oberon facility, including domestic waste production and the reuse and recycling of waste where possible.

4.2 Waste Hierarchy

Borg Panels will endeavour to manage the waste generated on site by following the best practices as set out in the *Waste Avoidance and Resource Recovery Act 2001*. The Waste Hierarchy of Control is detailed in Figure 3.

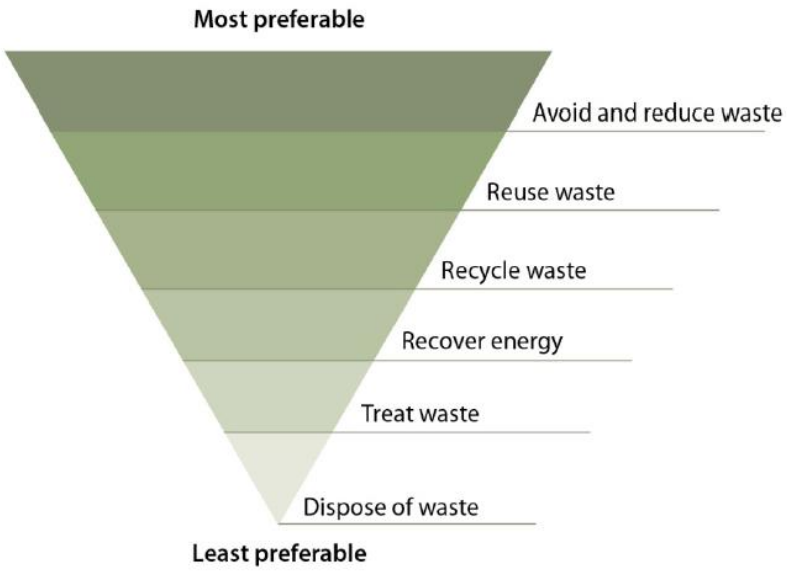


Figure 3 – Waste Hierarchy of Control

Waste is separated on site into different classes in accordance with the NSW EPA *Waste Classification Guidelines*. Before waste is removed from site it is assessed for suitability for the intended destination. Waste is classified into the groups identified in Table 3.

4.3 Waste Monitoring

Waste monitoring is undertaken at a corporate level. The focus of the monitoring program is to investigate and implement ways to reduce waste generation and increase recycling opportunities of the facility

4.4 Management of Waste Streams

Waste produced at the site is disposed of either by Borg staff or licenced contractors to licenced waste facilities. The classification, management and disposal of wastes is outlined in Table 3.

Table 3 – Waste Classification, Management and Disposal

Waste Category	Source	Management	Disposal
General solid waste (putrescible)	Food scraps and wrappers from site personnel	No separation from general solid waste (non-putrescible)	Off site disposal at Oberon Council Licenced Waste Facility
General solid waste (non-putrescible)	Sanding belts	Collected in skip bins	Off site disposal at Oberon Council Licenced Waste Facility
	Heat plant ash	Stockpiled and disposed of to landfill as general waste	Off site disposal at Oberon Council Licenced Waste Facility
	Paint solids, filters, spillages and linings	Dried and disposed of to landfill as general waste	Off site disposal at Oberon Council Licenced Waste Facility
	Plastic strapping and wrapping	Collected in skip bins	Off site disposal at Oberon Council Licenced Waste Facility
	Cardboard cores and cardboard boxes	Collected in skip bins	Off site disposal at Oberon Council Licenced Waste Facility
	Treated paper	Collected in skip bins	Off site disposal at Oberon Council Licenced Waste Facility
	Waste resin (spade-able or solidified) and paraffin wax bladders	Collected in skip bins	Bathurst Council Waste Management Centre – Waste requiring burial
General solid waste (recyclable)	Bark, oversize and undersize woodchip, fibre, sawdust, wood trim, bearers and reject product	Stored on site	Fuel in heat plants or particleboard manufacturing
	Scrap metal	Metal recycling facility or reused on site	Off site to metal recycler
	Oil drums	Reused or returned	Off site to drum re-conditioner

Waste Category	Source	Management	Disposal
	Sludge (from WTP)	Stored on site	Fuel in heat plants
Liquid waste	Waste oil	Cleanaway	Off site disposal by licenced contractor
	Brine (from WTP)	captured in production process	As detailed in EMS0006 *Surface Water Management Plan*
Hazardous waste	Chemical containers	Recycled, reused or disposed	Cleaned, cut up or crushed and sent to Bathurst Regional Council Waste Management Centre
Special waste	Asbestos waste	Asbestos register	Off site disposal by licenced contractor
	Waste tyres (any used, rejected or unwanted tyres including shredded or tyre pieces)	Tyres collected and stored on site for disposal as required	Off site disposal by licenced contractor

4.5 Waste Storage Areas

Designated waste storage areas are provided at various locations around the facility as follows:

- Paper treater building;
- Board offcuts skip bins in various locations;
- Metal recycling skip bins at various locations;
- Small general waste bins throughout the facility; and
- Large general waste skip bin.

4.6 Waste Minimisation and Avoidance

Borg Panels aim is to avoid and reduce waste wherever possible. Borg Panels has implemented a waste minimisation program by:

- Waste monitoring and tracking to enable Borg Panels to account for trends in waste generation and set targets for reduction where possible;
- Incorporating information on waste classification and disposal into personnel training and communication material;
- Provision and clear identification of separate waste stream disposal bins and/or locations; and
- Discussion of opportunities for waste minimisation during staff and contractor meetings.

4.7 Waste Receipt and Handling On-Site

As described in Section 2.4 of this Plan, EPL 3035 allows specified waste to be received at the premises and stipulates use of that waste at the facility.

Each waste identified as *General or Specific exempted waste* in Section 2.4 must be managed in accordance with the particular resource recovery exemption as issued by the NSW EPA.

5 Incidents and Complaints Management

5.1 Incidents

Any environmental incident relating to waste management will be managed in accordance with the procedures in EMS0001 Operational Environmental Management Plan (OEMP).

5.2 Complaints

Community complaints will be managed in accordance with the procedures in EMS0001 Operational Environmental Management Plan (OEMP).

5.3 Non-Compliances

In the event it is determined that a non-compliance with waste legislation has occurred, notification procedures will be as per EMS0001 Operational Environmental Management Plan (OEMP).

5.4 Contingency Planning

If any unclassified waste material is encountered, it is to be classified in accordance with the NSW EPA *Waste Classification Guideline* prior to disposal off site by a licenced waste contractor to a licenced waste facility.

Any emergency involving the generation of waste is to be managed in accordance with the Borg Panels *Emergency Response Plan*.

6 Monitoring and Review

6.1 Inspections

The Yard Supervisor is responsible for managing waste on a daily basis. The Yard Supervisor undertakes daily inspections and arranges weekly disposal of waste to landfill, and other collections as required.

Regular inspection of waste storage facilities is also undertaken as part of routine environmental inspections.

6.2 Waste Tracking

Waste generated by Borg Panels is weighed by either the licenced waste disposal contractor or receiving waste management facility. Oberon Council receive waste based on a cubic metre volume. Bathurst Regional Council Waste Management Centre records waste received in tonnage. The following details are recorded:

- Amount and classification of waste transported;
- Date transported;
- Truck registration; and
- Name and location of the receiving waste facility.

Borg Panels undertakes a review of waste management data on an annual basis and reports the findings in the Annual Review report.

6.3 Documentation and Record Keeping

Borg Panels retains all records of waste disposal for traceability, including:

- Waste receipts; and
- Waste Transfer Certificates.

Records relating to waste disposal are kept for a minimum of 4 years.

6.4 Reporting

Relevant information relating to waste management will be reported by Borg Panels as follows:

- Annual Review. A copy of the Annual Review is sent to relevant stakeholders, including DPIE, EPA and Oberon Council and is available on the Borg website.

6.5 Review and Auditing of this Plan

In accordance with Development Consent SSD 7016 Condition C10, this WMP 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 WMP will be submitted to the Secretary DPIE for approval.