



Boral Cement Limited

Berrima Works

Waste Management Plan

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2	7 October 2008	Grant Williams	Update to include requirements of Boral Cement corporate procedure, include NSF requirements.
3	September 2011	Alex Wnorowski	Global revision and formatting change
4	September 2014	Michael Curley	3-yearly review



TABLE OF CONTENTS

1	PURPOSE.....	3
2	SCOPE.....	3
3	MANDATORY REQUIREMENTS.....	3
4	DEFINITIONS.....	4
5	RESPONSIBILITIES.....	5
6	PROCESS.....	7
6.1	WEIGHBRIDGE SYSTEM WASTE CODES	7
6.2	OWN WASTE REUSED	8
6.3	TEMPORARY STORAGE OF OWN WASTE MATERIAL	8
6.4	WASTE REFRACTORIES	10
6.5	WASTE TO LANDFILL	11
6.5.1	<i>Hazardous Waste</i>	11
6.5.2	<i>General Putrescible Waste</i>	11
6.5.3	<i>General Non-Putrescible Waste</i>	12
6.6	WASTE OILS AND GREASES	13
6.7	OTHER WASTES RECYCLED	13
7	IMPLEMENTATION & TRAINING REQUIREMENTS	14
8	RECORD KEEPING	14
9	LEGAL REFERENCES.....	15

Attachments:

Site Waste Register

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 2 of 16



1 PURPOSE

Boral policy requires that all sites to monitor and measure all waste materials produced, reused and recycled and disposed off. There are also licence and regulatory requirements for the disposal of waste materials that must be complied with.

This Management Plan defines the procedures for the handling, disposal and tracking of waste materials at the Berrima Works to ensure compliance with site Environmental Protection Licence (EPL), Development Approvals (DAs) and other regulatory requirements.

The procedure also facilitates the collection of waste data for use in preparing the annual Boral Sustainability Report.

2 SCOPE

This Management Plan applies all to waste materials or by-products generated at the Berrima Works.

This document has been based on the Boral Cement's Corporate SOP No. **CEM-ENV-013 Waste Management**.

The Plan does not apply to Non-Standard Fuels or external waste materials bought into the Berrima Works as recovered resources for use in clinker and cement manufacture.

3 MANDATORY REQUIREMENTS

The minimum mandatory requirements for compliance with this Management Plan are outlined in the table below:

	Requirement	Examples of Evidence / Verification
1	Implement the appropriate method of storage/reuse/disposal for each waste type created on site.	Documented records of materials transfers, contractor records, monthly reports and computer/weighbridge records to verify proper implementation.
2	Maintain a register of the main types of waste on site and their storage/disposal methods.	Documented register of waste types and their storage/disposal methods.



4 DEFINITIONS

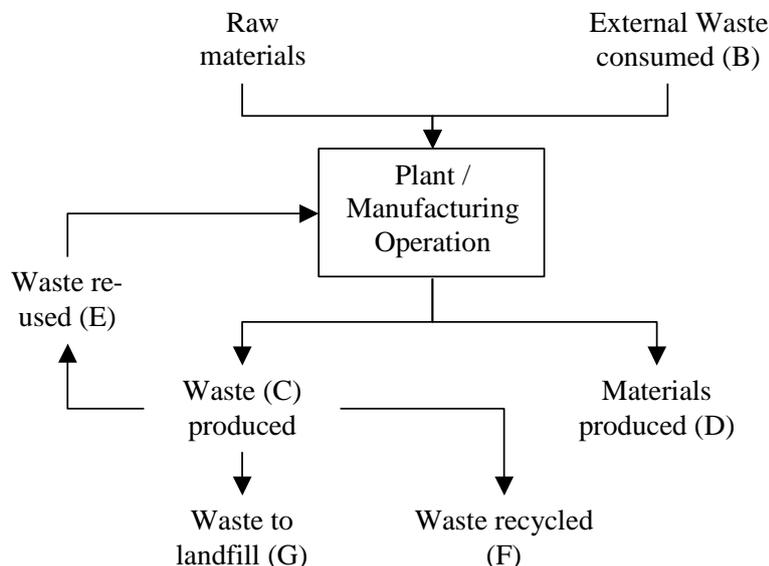
The following waste definitions and descriptions correspond to those used in the Boral Sustainability Report.

Waste product produced (tonnes)	
<i>Waste product produced (tonnes) (C)</i>	The material that is produced as an unwanted side effect of a production process.
<i>Own waste reused (tonnes and % of total weight of waste product produced) (E)</i>	Own waste material reused as a raw material in clinker or cement manufacture.
<i>Own waste recycled (tonnes and % of total weight of waste product produced) (F)</i>	Own waste material being used by an external business or by another Boral business.
<i>External waste consumed (recovered resource) (tonnes) (B)</i>	External product reused as raw materials or supplementary cementitious materials in manufacture of clinker or cement.
Waste to landfill (tonnes; off site and on site)	
<i>Waste to landfill (G)</i>	The unwanted material produced for which there is no alternative but to discard.
<i>Hazardous waste produced (tonnes)</i>	A subset of solid waste that is ignitable, explosive, reactive, corrosive or toxic and which may pose a substantial or potential hazard to human health and safety or to the environment when improperly managed.
<i>Putrescible waste produced (tonnes)</i>	Household food waste, green waste and certain wastes arising from commercial and industrial sources, all of which will easily decompose and breakdown.
<i>General waste produced (tonnes)</i>	General factory waste and rubbish which does not easily decompose and breakdown including wood, rubber, used filter bags etc.
<i>Special wastes</i>	Special waste specifically refers to clinical and related waste, asbestos waste, waste tyres.
Other wastes recycled	
<i>Waste paper and cardboard recycled (F)</i>	Waste paper and cardboard being used by an external business to manufacture paper and cardboard.
<i>Waste scrap metal recycled (F)</i>	Waste steel, iron and non-ferrous metals being used by an external business to manufacture new metal.
<i>Waste oils and greases</i>	Waste oils and greases either sent for recycling or disposal.



These waste materials are shown graphically in the diagram below.

Figure 1 - Typical Site Waste Streams



5 RESPONSIBILITIES

In addition to the specific responsibilities listed in the procedures below, the following general responsibilities apply.

<i>Employees</i>	Observe waste procedures at all times. Immediately report any observed incorrect or unauthorised dumping.
<i>Team Leaders / Front Line Supervisors</i>	Ensure all personnel are aware of the waste procedures, and monitor compliance with procedures.
<i>Production Services and Logistics Superintendent</i>	<ul style="list-style-type: none"> ➤ Controlling and monitoring the dry tip area and assigning areas to be used for storage of waste materials. ➤ Report the tonnages of each material returned to the process to Manufacturing Analyst each month
<i>HSE Advisor</i>	Monitor compliance with procedures. Report outcomes of monitoring of compliance with procedures to Berrima Management and identify opportunities for improvement.
<i>Production Manager, Technical Manager and Engineering Manager</i>	Responsibility and authority to ensure that the site environmental dust objectives are achieved. This includes: <ul style="list-style-type: none"> ➤ Ensuring staff are trained with respect to waste management responsibilities, instructions and procedures; ➤ Ensuring waste incidents are investigated and corrective and preventative action taken; ➤ Ensuring operations comply with the conditions of

**BERRIMA WORKS
WASTE MANAGEMENT PLAN**



	<p>Development Approvals, Environmental Protection Licence and relevant legislation;</p> <ul style="list-style-type: none"> ➤ Reviewing operations and implementing strategies to reduce waste generation from the Works.
<i>Site Operations Manager</i>	<p>Responsible for:</p> <ul style="list-style-type: none"> ➤ Implementing Boral environmental policy on site; ➤ Ensuring site environment performance objectives and targets are established, monitored and achieved; ➤ Defining responsibilities for the EMS; ➤ Ensuring the availability of resources; ➤ Communicating the importance of the EMS and meeting the statutory and regulatory requirements; ➤ Conducting management reviews of the EMS; ➤ Ensuring that material environmental incidents are immediately reported to 5 compulsory Government Authorities; ➤ Verifying the implementation of corrective and preventive actions; and ➤ Recognising and responding to community concerns. ➤ Review operation of waste procedures, compliance with procedures and recommendations for improvements.
<i>Manufacturing Analyst</i>	<ul style="list-style-type: none"> ➤ Collate waste data and report monthly into the Boral Cement Sustainability Data Capture Spreadsheet. ➤ Report waste data into the BC Sustainability Data Capture Spreadsheet for use in preparing the annual Boral Sustainability Report and for review by site management.



6 PROCESS

Procedures described below shall be used for each waste material.

For materials not defined in the procedure the HSE Advisor / Production Services and Logistic Superintendent must be consulted before the material is moved or disposed of.

Note:

The Boral Cement Berrima's EPL does not allow for the disposal of waste materials on site. Material that cannot be reused or recycled must not be disposed on the Berrima site and must be sent to offsite disposal in a licensed waste facility using a licensed contractor.

Note:

All waste materials taken off site must be weighed on the Berrima weighbridge and the weights used in the preparation of the Boral Sustainability Report.

To facilitate this, waste codes for the weighbridge have been introduced for all waste materials. See Section 6.1.

6.1 Weighbridge System Waste Codes

NSW Government has assigned specific waste codes to various types of waste materials. The following product codes should be used to record all waste movements off the Berrima Works site (includes GES and Administration Building):

Code	Waste
501	General Waste
502	Hazardous Waste
504	Putrescible Waste
505	Waste Paper and Cardboard
508	Scrap Metal
509	Waste Oil
516	Waste Grease
532	Waste Refractories



6.2 Own Waste Reused

By-products and process waste materials from the clinker and cement manufacturing process may be reused in the cement making process where their reuse does not affect the quality of the finished products or cause process control problems.

These materials should, where possible, be returned directly to process without intermediate temporary storage or processing. Materials returned immediately to the process are not required to be weighed or recorded except where this information is for use in process investigations, etc.

All materials not returned immediately to the process and sent to temporary storage before processing and reuse must be weighed for reporting through the Boral Sustainability Report.

Procedure

Details of all materials from the temporary stockpiles in the Quarry and Dry Tip areas, reused in the process, are to be recorded. The information to be recorded is:

- the details of the material (e.g. limestone, mixed raw materials, clinker, cement etc);
- where the material was returned to the process;
- number of loads;
- weight(s) of loads;
- estimated total weight of material;
- the driver's name.

Responsibilities

- *Loader Operator & Yard Operator(s)* – record daily details as listed above for all materials carted from the temporary stockpile, returned to the process, in duplicate book; provide copy to Production Superintendent daily.
- *Truck Operator(s)* – record daily details as listed above for all materials carted from the temporary stockpile, returned to the process, in duplicate book; provide copy to Production Superintendent daily.

6.3 Temporary Storage of Own Waste Material

Plant by-products, raw materials and process waste materials that cannot be immediately reintroduced to the process can be sent to the stockpiles at the Quarry/Dry Tip or other defined areas for temporary storage prior to being recycled to external users or reused in the cement manufacturing process.

Procedures for reuse of the various waste materials are included in the Standard Work Procedures Manual.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 8 of 16



Materials that can be sent to the Quarry/Dry Tip or other defined areas for temporary storage are:

- ✓ raw materials rejected because of contamination with metal;
- ✓ raw materials, clinker, cement, conditioning tower dust etc that are wet/contaminated with no hazardous materials, oils and grease etc that cannot be reused in the manufacture of clinker or cement without treatment or blending with other materials;.and
- × **No other materials are to be disposed to the dry tip area without the written approval of the HSE Advisor / Production Services and Logistic Superintendent.**

Procedure

The Production Superintendent is responsible for controlling and monitoring the site's dry tip area and assigning this and/or other areas to be used for the temporary storage of waste materials.

The details of all materials sent to the stockpiles at the dry tip, quarry or other defined areas are to be recorded. The information that should be recorded is:

- the details of the material (e.g. limestone, mixed raw materials, clinker, cement etc);
- the source of the material;
- why the material has been sent to the dry tip area;
- the assigned location that the material has been tipped at;
- any contaminants present (e.g. gloves, wood, cardboard, plastic etc);
- number of loads;
- weight(s) of loads;
- estimated total weight of material; and
- the driver's name.

Responsibilities

- *Yard Operator(s)* – record daily details as listed above for all materials carted to the temporary stockpile at dry tip area in duplicate book; provide copy to Production Superintendent daily.
- *Vacuum Truck Operator(s)* – record daily details as listed above for all materials carted to the temporary stockpile dry tip area in duplicate book; provide copy to Production Superintendent daily.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 9 of 16



6.4 Waste Refractories

Note:

Used or spent kiln and preheater refractories and coating and build-up can be temporarily stored in designated area on site for later reuse on site in the cement manufacturing process.

All refractory materials not suitable for reuse must not be disposed on site and must be sent to off site disposal using a licensed contractor.

Procedure

The weight of all waste refractories, coating and build-ups shall be estimated by the Production Superintendent. The Production Superintendent should then arrange for the waste refractory material to be transferred to an intermediate storage area allocated by the Production Services and Logistic Superintendent.

Waste refractory materials that are not to be processed and reused on site must be sampled prior to sending for disposal at an approved landfill site using a licensed contractor following the procedures in the Waste Regulations for the classification of the material. The samples of the materials are to be sent to a NATA approved laboratory (currently ALS) for waste classification according to the approved methods (in NSW, refer to the EPA *Waste Classification Guidelines, December 2009*).

Waste refractory materials that are to be reused are to be processed according to the procedures in the Standard Work Procedures Manual.

Responsibilities

- HSE Advisor and Production Services and Logistic Superintendent – confirm that the waste refractories can be reused on site and allocate the temporary storage areas for the material or for those materials that cannot be reused, arrange for suitable disposal.
- Production Services and Logistic Superintendent – arrange for the materials to be transferred to the allocated temporary storage and for representative samples of the materials to be taken and provided to the site laboratory; estimate the tonnage of waste refractory materials sent to the temporary storage area or to off site disposal and report the tonnages to the Administration Manager each month.
- *Site Laboratory* – arrange for any samples taken to be sent to a NATA approved laboratory for waste classification; report the results of the tests to the Production Superintendent.
- *Manufacturing Analyst* – report weights monthly into the BC Sustainability Data Capture Spreadsheet for use in preparing the annual Boral Sustainability Report and for review by site management.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 10 of 16



6.5 Waste to Landfill

6.5.1 Hazardous Waste

Note:

The disposal of hazardous and other prescribed waste is not permitted on the Berrima site. All such materials must be sent to offsite disposal in a licensed waste facility using a licensed contractor.

All hazardous wastes must be weighed out across the Berrima weighbridge.

Responsibilities

- *Licensed Waste Contractor* – transfer of hazardous wastes off site in compliance with all state and federal regulations and provide the records for all transfers.
- Production Services and Logistic Superintendent – check and verify the details of all transfers; report the details and tonnages of each hazardous material to the Manufacturing Analyst each month.

6.5.2 General Putrescible Waste

Note: The disposal of putrescible waste is not permitted on the Berrima site. All such materials must be sent offsite disposal using a licensed contractor.

All putrescible wastes must be weighed either on the Berrima weighbridge or on the local tip weighbridge.

The following waste must not be deposited in these waste bins:

- x Asbestos and asbestos containing materials;
- x Liquids;
- x Tyres;
- x Chemicals;
- x Lead acid batteries;
- x Medical wastes; and
- x Scrap steel and other metals (these are to be placed in scrap metal bins).

Responsibilities

- *Licensed Waste Contractor* – transfer of putrescible wastes off site in compliance with all state and federal regulations; tare and gross each load of putrescible waste either using the Berrima weighbridge or across the local tip weighbridge and invoicing Boral according to the local tip weighbridge.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 11 of 16



6.5.3 General Non-Putrescible Waste

Note: The disposal of general Non-Putrescible solid waste is not permitted on the Berrima site. All general waste materials must be sent to offsite disposal using a licensed contractor.

All general non-putrescible wastes must be weighed out across the Berrima weighbridge.

The following waste materials can be deposited in the general waste bins:

- ✓ Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete;
- ✓ Paper or cardboard;
- ✓ Grits and screenings that do not contain free liquids;
- ✓ Garden waste;
- ✓ Wood waste;
- ✓ Empty containers that have been cleaned by washing or vacuuming;
- ✓ Crushed drained oil filters;
- ✓ Gloves, rags and oil absorbent materials that only contain non-volatile petroleum hydrocarbons and do not contain free liquids;
- ✓ Drained motor oil containers that do not contain free liquids;
- ✓ Synthetic fibre waste such as filter bags that are packaged securely to prevent dust emissions;
- ✓ Virgin excavated natural material in small quantities (less than one Bobcat bucket);
- ✓ Building and demolition waste in small quantities;
- ✓ Asphalt waste in small quantities;
- ✓ Cured concrete waste in small quantities;
- ✓ Set thermosetting polymers and fibre reinforcing resins; and
- ✓ Dried residues of resins, glues, paints, coatings and inks.

The following waste must not be deposited in these waste bins:

- × Asbestos and asbestos containing materials;
- × Liquids;
- × Tyres;
- × Chemicals;
- × Lead acid batteries;
- × Medical wastes; and
- × Scrap steel and other metals (these are to be placed in scrap metal bins).

HOUSEHOLD AND DOMESTIC WASTES MUST NOT BE DEPOSITED IN HERE.

Breeches of these requirements can have serious implications for the Company and will lead to serious disciplinary action which may include dismissal.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 12 of 16



Responsibilities

- *Licensed Waste Contractor* – transfer of general wastes off site in compliance with all state and federal regulations; tare and gross each load of general factory wastes using the assigned codes in the weighbridge system.
- *Manufacturing Analyst* – report weights monthly into the BC Sustainability Data Capture Spreadsheet for use in preparing the annual Boral Sustainability Report and for review by site management.

6.6 Waste Oils and Greases

Waste oils and greases are sent for either recycling or disposal.

Note:

The disposal of oils and greases is not permitted on the Berrima site. All such materials must be sent to offsite disposal using a licensed contractor.

All waste oils and greases must be weighed out across the Berrima weighbridge.

Responsibilities

- Production Services and Logistic Superintendent – notify the licensed contractor when the waste oil containers are full and require emptying or when there is an economic number of waste grease containers ready for disposal; check and verify the details of all transfers; report the details and tonnages of waste oils and greases to the Administration Manager each month.
- *Licensed Waste Contractor* – transfer of waste oils and greases of site in compliance with all state and federal regulations and provide the records for all transfers.
- *Manufacturing Analyst* - *report weights monthly into the BC Sustainability Data Capture Spreadsheet for use in preparing the annual Boral Sustainability Report and for review by site management.*

6.7 Other Wastes Recycled

Other wastes recycled typically include paper and cardboard and scrap metal.

Waste paper and cardboard is collected by a licensed contractor for recycling by an external business to manufacture paper and cardboard.

Waste steel, iron and non-ferrous metals are collected from the site by a contractor for recycling.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 13 of 16



Responsibilities

- *Licensed Waste Contractor* – tare and gross each load of waste using the assigned codes in the site’s weighbridge system; transfer of waste oils and greases off site in compliance with all state and federal regulations; and provide the records for all transfers.
- *Manufacturing Analyst* – record the weights for use in preparing the annual Boral Sustainability Report and for review by Management.
- *Maintenance Planner* – notify the licensed contractor when the waste metal bin is full and requires emptying or when additional bins are required (as indicated by work programs).

7 IMPLEMENTATION & TRAINING REQUIREMENTS

In order to implement this SOP and comply with its intent, it is important that all staff are aware of the site procedures in relation to the appropriate disposal of wastes.

Staff with particular responsibilities in relation to waste disposal is to receive additional training to ensure that they are competently able to carry out their roles.

The HSE Advisor and the Site Operations Manager will determine the level of training required by site personnel for any changes to this and other procedures and will develop a training program.

All training conducted will be recorded in the Training Records System.

Audits and checks will verify compliance with procedures.

8 RECORD KEEPING

The records indicated below should be captured as a minimum to provide evidence of complying with this SOP:

- Waste Register
- Records of offsite disposal.

Other documents and communications generated as part of this activity should also be captured in keeping with the **Records Information Management Business Rules** available on WizBiz.

SiteSafe software is mandatory to record all spills and leaks on site, with any actions arising that are tracked until progressed and closed.

All records are to be retained for the time periods required by statutory timeframes and/or Boral policies (refer Boral Group SOP No. **GRP-OHS-007 Document Control and Records Management**).

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 14 of 16



9 LEGAL REFERENCES

For the current list of Federal and State regulations relevant to this Management Plan refer to Boral Cement SOP No. **CEM-ENV-004 *Environmental Legal Requirements***.

Issue Date: 01 September 2014	Printed On: 25 May 2015	Printed copies are uncontrolled
Next Review Date: September 2017	Review Date is 3 years from Issue Date	Page 15 of 16

SITE WASTE REGISTER

Insert details of any waste/waste controls carried out/produced/located on site that may have an impact on the environment.

Site	Berrima Cement Works	Last Updated	September 2014
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Waste	Source	Liquid / Solid / Hazardous	Storage Location	Waste Contractor	Contractor Licence Held? (Yes/No)	Waste Disposal Location	Location Licence Held? (Yes/No)	Receipts on File (Yes/No)
Oil	6 Cement Oil Bund	Liquid	6 Cement Oil Bund	Transpacific	Yes	Offsite	Yes	Yes
General Waste	Lunchroom Amenities	Solid	15m Skip Bin North Side CCR	Veolia	Yes	Offsite	Yes	Yes
Cardboard	Packaging	Solid	Skip Bin North Side CCR	Wingecarribee Shire Council	Yes	Offsite	Yes	Yes
Recyclables	Lunch Room Amenities	Solid	North Side Machine Shop	Wingecarribee Shire Council	Yes	Offsite	Yes	Yes
Commercial Waste	Machine Shop	Solid	North & South Machine Shop	Veolia	Yes	Offsite	Yes	Yes
Oil	Machinery	Liquid	6 Raw Mill & 7 Raw Mill	Transpacific	Yes	Offsite	Yes	Yes
Grease	Coal Mill	Liquid	West Side Loco Shed	Transpacific	Yes	Offsite	Yes	Yes
Oil & Water	Diesel Bunds	Liquid	Diesel Bunds	Transpacific	Yes	Offsite	Yes	Yes
Steel	Manufacturing	Solid	Scrap Yard	Ward Scrap Metal	Yes	Offsite	Yes	Yes