

# Tomago Resource Recovery Facility

## Energy from Waste Management Plan – Eligible Fuels

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### 1.0 SCOPE

REMONDIS Australia Pty Ltd (REMONDIS) has received State Significant Development Approval (Reference SSD-10447) to, "Construct and operate a Resource Recovery Facility to process up to 98,201 tonnes per annum of solid and liquid waste from municipal, commercial, industrial and construction sources for reuse and recycling".

A key component of Tomago's operations will include the operation of a Material Recovery Facility (MRF). The residual waste stream from the MRF will be used to manufacture refuse derived fuel (RDF), which pending approvals and a commercial agreement, will likely be used as a coal replacement at Boral's cement kiln in Berrima.

Part B of SSD-10447 requires Tomago to comply with the following Energy from Waste Management Plan – Eligible Waste Fuels conditions:

*B8. Prior to the commencement of operation, the Applicant must prepare an Energy from Waste Management Plan (EfWMP) for the handling and distribution of eligible waste fuels, to the satisfaction of the Planning Secretary. The EfWMP must form part of the OEMP and be prepared in accordance with condition C5. The EfWMP must:*

- a) be prepared by a suitably qualified and experienced person(s), in consultation with the EPA detail procedures for the handling and management of eligible waste fuels for energy recovery, including:
  - i. procedures to ensure full and ongoing compliance with Table 4 the NSW Energy from Waste Policy Statement 2020;*
  - ii. how the Applicant will compile and calculate percentages of incoming waste streams every three months and retain this information for submission to the EPA on request;*
  - iii. a procedure for providing evidence to the EPA that incoming material was previously going to landfill; and*
  - iv. a procedure for the management of out of specification waste.**

*B9. The Applicant must:*

- a) not commence operation until the EfWMP is approved by the Planning Secretary;*
- b) implement the most recent version of the EfWMP approved by the Planning Secretary for the operational life of the development.*

This plan documents Tomago's compliance against these conditions, in addition to Tomago's compliance with Boral's Specification for Solid Recovered Fuel (SRF). SRF is used interchangeably with RDF and Solid Waste Derived Fuel (SWDF) in this plan.

### 1.1 Evidence of Higher Use on Waste Hierarchy

REMONDIS currently tips approximately 80% of all residual waste at a general solid waste (non-putrescible) landfill (Newline Road, Port Stephens). REMONDIS only tips the remaining 20% of waste at putrescible landfills that are geographically closer, not because the waste would be rejected if received at the non-putrescible landfill.

Energy recovery via the combustion of RDF is higher on the waste hierarchy than disposal of waste to landfill. As all general waste collected by REMONDIS locally is currently sent to landfill, the MRF and RDF facility combined will deliver a superior environmental outcome via recycling and energy recovery in accordance with the NSW EPA's waste hierarchy below.

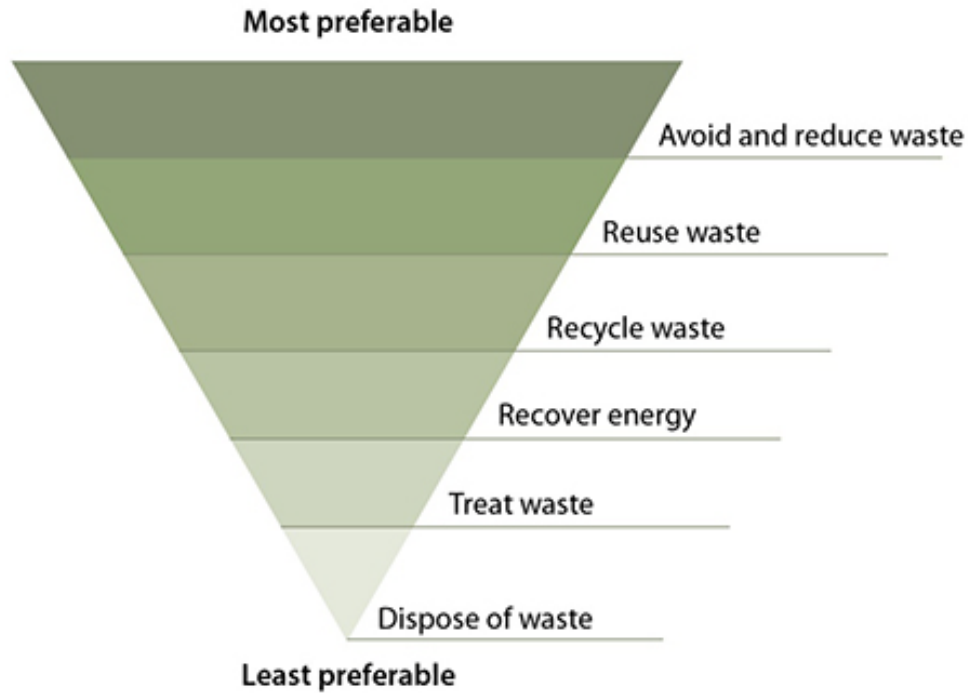


Figure 1 Waste Hierarchy (Source: NSW EPA, 2017)

## 2.0 DEFINITIONS

EfW – Energy from Waste

EPA – Environmental Protection Authority

EPL – Environmental Protection Licence

MRF – Material Recovery Facility

RDF – Refused Derived Fuel

SWDF – Solid Waste Derived Fuel

tpa – Tonnes per Annum

### 3.0 FLOW CHART

The material flow for RDF is summarised in Figure 1 consistent with our planned operations set out in our Environmental Impact Statement.

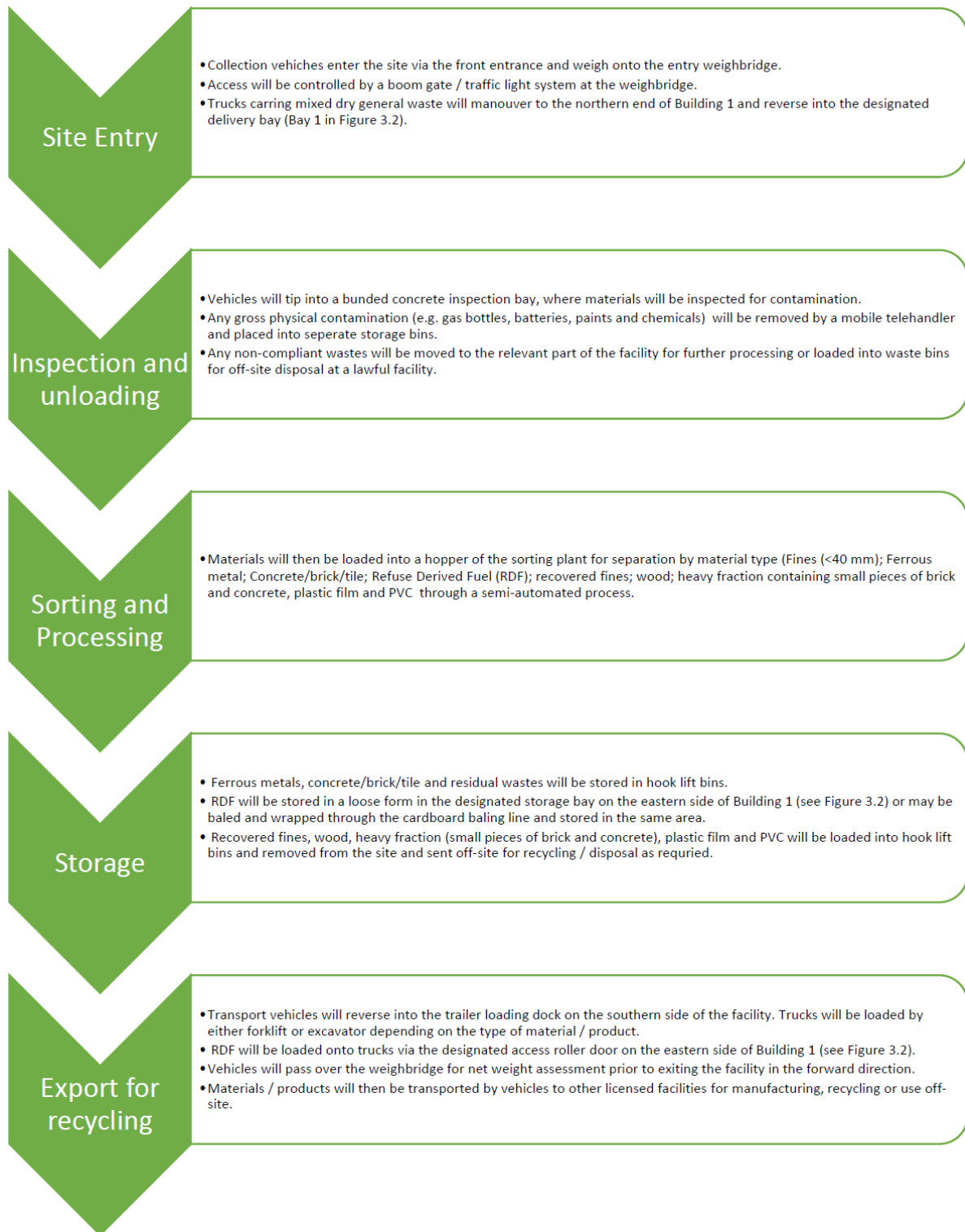


Figure 2 Material Flow Chart for MRF/RDF Line

4.0 REGULATORY COMPLIANCE REQUIREMENTS

REMONDIS has summarised the regulatory compliance requirements for the manufacture of RDF in Table 1 below.

Table 1 Regulatory Compliance Requirements and compliance approach.

Authority	Requirement	How Compliance is Achieved
Minister for Planning and Public Spaces: SSD-10447	<p><i>B8. Prior to the commencement of operation, the Applicant must prepare an Energy from Waste Management Plan (EfWMP) for the handling and distribution of eligible waste fuels, to the satisfaction of the Planning Secretary. The EfWMP must form part of the OEMP and be prepared in accordance with condition C5. The EfWMP must:</i></p> <ul style="list-style-type: none"> <li><i>a) be prepared by a suitably qualified and experience person(s), in consultation with the EPA</i></li> <li><i>b) detail procedures for the handling and management of eligible waste fuels for energy recovery, including:                             <ul style="list-style-type: none"> <li><i>i. procedures to ensure full and ongoing compliance with Table 4 the NSW Energy from Waste Policy Statement 2020;</i></li> <li><i>ii. how the Applicant will compile and calculate percentages of incoming waste streams every three months and retain this information for submission to the EPA on request;</i></li> <li><i>iii. a procedure for providing evidence to the EPA that incoming material was previously going to landfill; and</i></li> <li><i>iv. a procedure for the management of out of specification waste.</i></li> </ul> </i></li> </ul>	<p>This Energy from Waste Management Plan (EfWMP) provided for review to the NSW EPA.</p> <p>Following finalisation of any review points from the NSW EPA, submit EfWMP to the Planning Secretary for review.</p>
	<p><i>B9. The Applicant must:</i></p> <ul style="list-style-type: none"> <li><i>a) not commence operation until the EfWMP is approved by the Planning Secretary;</i></li> <li><i>b) implement the most recent version of the EfWMP approved by the Planning Secretary for the operational life of the development.</i></li> </ul>	<p>Finalise any review points received from the Planning Secretary prior to operation.</p> <p>Version review approval from Planning Secretary tracked in the version control table on Page One, with the date and person</p>

Authority	Requirement	How Compliance is Achieved
		<p>approving to be documented for each version of this EFWMP.</p>
<p>NSW EPA</p>	<p><i>Scheduled Activities Environment Protection Licence 21636</i></p> <p><i>L5.1 Prior to accepting any waste at the premises the licensee must provide the EPA with an Energy from Waste Management Plan in accordance with condition B8 of consent SSD-10447.</i></p>	<p>As above.</p>
<p>Boral Appendix 1 – Specification for Solid Recovered Fuel</p>	<p><i>1.2 The Supplier shall ensure appropriate regulatory approved procedures are developed, implemented, and certified with the aim of qualifying the supply of SRF to Boral and assuring that SRF meets the following requirements:</i></p> <ul style="list-style-type: none"> <li><i>• Iodine, pharmaceutical, pesticide and biocide products in any formulation except as a constituent of another material and at levels, which are minimised as far as is reasonably practical;</i></li> <li><i>• Exclusion of radioactive, nuclear, hospital and clinical waste; and</i></li> <li><i>• Exclusion of explosive materials including propellants and cartridges.</i></li> </ul>	<p>Implement procedures and record keeping processes approved in EfWMP, which include the removal/exclusion of the materials listed.</p>
<p>Boral Appendix 2 – Quality Assurance for Solid Recovered Fuel</p>	<p><i>1.1 The Supplier shall ensure that the test methods in the Table 2 – SRF Test Methods below are conducted and reported to Boral for the Parameters listed in accordance with relevant Australian and International standards and used to demonstrate compliance with the Specification.</i></p> <p><i>1.2 The Supplier shall agree in writing with Boral any changes to the test methods and procedures for testing and sampling SRF as specified in this Appendix 2 – Quality Assurance for Solid Recovered Fuel.</i></p> <p><i>1.3 The Supplier shall ensure that testing of all parameters in Table 2 – SRF Test Methods is undertaken according to the requirements and by a laboratory certified to NATA for the test procedures specified above. This requirement does not apply to samples tested as per Paragraph 2.5 and 2.6 below.</i></p>	<p>Establish an on-site laboratory for sample storage and to perform daily testing for: calorific value, chlorine and moisture, and weekly testing for particle size testing prior to commencement of operation.</p> <p>HRL Technology (HRL) engaged to perform all external testing requirements.</p>

Authority	Requirement	How Compliance is Achieved
	<p><i>2.5 The Supplier shall ensure that the particle size analysis test is carried out at least weekly using a representative composite sample made up from the samples taken during that week and shall provide the test result to Boral by the next working day.</i></p> <p><i>2.6 The Supplier shall conduct daily monitoring for CV, chlorine and moisture prior to delivery to Boral. The results from this monitoring will be available to Boral upon request and must be maintained in accordance with the Supplier's agreed QA/QC system.</i></p> <p><i>2.7 The Supplier shall agree with Boral on the details for final procedures of sampling and testing SRF as part of Supplier's QA/QC system.</i></p>	
<p>Boral DA 401-11-2002-I July 2015 Modification</p>	<p><i>1.4H Prior to the receipt of the first batch of a Group 2 Non-Standard Fuel from a particular supplier, the Applicant shall certify in writing to the Secretary that the supplier has met the pre-qualification requirements set out in the approved Quality Assurance and Control Procedure for Receipt and Use of Solid Waste Derived Fuels (Appendix 1 of this consent) and the Applicant's responsibilities under this consent can be met. At the request of the Secretary, the Applicant shall forward a copy of the supplier's quality control and quality assurance procedures to the Department demonstrating how these procedures cause the Applicant to meet the requirements of this consent.</i></p>	<p>Boral to conduct a third-party audit of the Tomago RDF manufacture process.</p> <p>Boral to certify in writing to the Secretary that REMONDIS has met the pre-qualification requirements.</p>

## 5.0 DESIGN COMPLIANCE WITH TABLE 4 OF THE NSW EFW POLICY

The MRF has been designed to receive up to 31,000 tonnes of non-putrescible material per annum for processing, consisting of approximately:

- 18,600 tonnes per annum of commercial and industrial mixed general solid waste; and
- 12,400 tonnes per annum of construction building waste from residential and commercial construction

REMONDIS has designed the manufacture of the RDF consistent with the requirements of the requirements set out in Table 4 of the NSW Energy from Waste Policy.



Table 2 NSW Energy from Waste Policy Statement – Table 4 Excerpt

Waste Stream	Processing Facility	% Residual Waste Allowed for Energy Recovery
Mixed commercial and industrial waste (C&I)	Facility processing mixed C&I waste	Up to 50% by weight of the waste stream received at a processing facility
	Facility processing mixed C&I waste where a business has separate collection systems for all relevant waste streams	No limit by weight of the waste stream received at a processing facility
Mixed construction and demolition waste (C&D)	Facility processing mixed C&D waste	Up to 25% by weight of the waste stream received at a processing facility

#### 5.1.1 Facility processing mixed C&I waste where a business has separate collection systems for all relevant waste streams

REMONDIS has long-standing relationships with large-scale generators in the Hunter region including mines, supermarkets, and shopping centre precincts. The total waste management service offered to REMONDIS' customer base includes the provision of bins and equipment to facilitate source separation and recycling. As REMONDIS has only ever managed resource recovery facilities in the region, its market position has always been to maximise recycling and reduce tipping at competitor-owned transfer stations and landfills. The current and future customer base is therefore well positioned to transition to an alternative solution for non-recyclable general waste that is currently landfilled.

REMONDIS calculated the waste accepted for its 22 largest residual waste generator customers to inform its EIS submission. The summary of this analysis is detailed in **Attachment A**: List of existing REMONDIS clients for mixed C&I waste and recycling. These customers continue to be REMONDIS' largest residual waste generator customers in the Hunter region. The total amount of residual waste generated by these suppliers at the time of submission was approximately 5,380 tonnes. These suppliers' residual waste streams complied with the "C&I no limit" category given the resource recovery solutions that have already been implemented by REMONDIS and third-party waste service providers.

Accordingly, the total accepted C&I waste was forecasted at 5,380 tpa from businesses with a separate collection system for all relevant waste streams. In accordance with Table 1, 100% by weight (5,380 tpa) of this waste stream received at the MRF is allowed for energy recovery.

#### 5.1.2 Facility processing mixed C&I waste

It has been conservatively assumed that 9,300 tpa of the non-putrescible commercial and industrial mixed general solid waste that will be delivered to the MRF will be from businesses without a separate collection system for all relevant waste streams. In accordance with Table 2, up to 50% by weight, or 4,650 tpa of this waste stream received at the MRF is allowed for energy recovery.

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### 5.1.3 Mixed construction and demolition waste (C&D)

In accordance with Table 2, 25% of the 12,400 tonnes per annum of construction waste received at the MRF, that is 3,100 tpa is allowed for energy recovery.

### 5.1.4 Total manufactured RDF

Based on these forecast total waste tonnages, the total amount of residual waste received at the MRF for potential processing as RDF could be up to 17,050 tpa. The facility's design capacity is limited to 15,500 tpa of RDF, as set out in Table 3.

REMONDIS will at all stages be complying with the resource recovery thresholds in the NSW EfW Policy Statement.

Table 3 Tomago waste streams and resource recovery thresholds for RDF manufacture

Waste Stream	REMONDIS Tonnes	% Residual Waste Allowed for Energy Recovery	Total Tonnes Allowed for Energy Recovery
Mixed C&I waste	9,300	50%	4,650
C&I waste where a business has separate collection systems for all relevant waste streams	5,380	100%	5,380
C&D	12,400	25%	3,100
<b>Total Allowable</b>	<b>27,080</b>	<b>N/A</b>	<b>13,130</b>
<b>RDF Manufacture Equipment Design</b>	<b>N/A</b>	<b>N/A</b>	<b>15,500</b>
<b>Excess Compliant Waste for RDF above equipment design</b>	<b>N/A</b>	<b>N/A</b>	<b>1,550</b>

## 6.0 MANUFACTURING RDF

The below process steps set out how the activity is conducted, in a manner that ensures that all regulatory and customer specifications are met, whilst ensuring the health and safety of our people and protection of the environment. The MRF will sort the material into resource recovery streams and a landfill residual stream.

### 6.1 Site Entry

Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording and then will enter Building 1 for unloading.

REMONDIS' on-site weighbridge will be calibrated consistent with the requirements of the National Measurement Act 1960. The proposed weighbridge will be installed by an accredited weighbridge supplier in the Australian market, whose products are accredited with the National Measurement Institute (NMI). Each waste transaction destined for the RDF facility will be allocated one of the following two waste stream codes:

- C&I, or
- C&D

To provide transparent reporting based on the weighbridge data, REMONDIS will classify each load at the point of accepting the waste over the weighbridge and will arrange for these codes to be available in the weighbridge recording software. This will ensure that collected data is correctly identified both on the incoming waste docket and within the reporting system.

Building 1 will house the Materials Recycling Facility (MRF) for sorting and recycling non-putrescible commercial and industrial mixed general solid waste via front-lift bin collections (approximately 60% of total waste received) and construction building waste from residential and commercial construction, including office fit-outs (approximately 40% of total waste received). The MRF is expected to process up to 31,000 tonnes per annum.

All incoming waste from construction sites will be managed in accordance with the Standards for Managing Construction Waste in NSW (NSW EPA, 2018) and the Waste Classification Guidelines (NSW EPA, 2014).

At the verified weighbridge on entry into the facility, trained personnel must:

1. Inspect the entire top of each load from an elevated inspection point or by using a video camera connected to a monitor and determine whether the load contains any asbestos waste and any other unpermitted waste;
2. Where the load is identified as containing, or is reasonably suspected to contain, any asbestos waste, reject the entire load of waste by directing the driver to immediately leave the facility and record the information required in 022-ENV-FO-003 Rejected Load Register; and
3. Where the load is not rejected, direct the driver and the load of waste to proceed directly to the unloading area.

## 6.2 Load Inspection and Unloading

Accepted waste will be tipped in the "tip and spread inspection area" which is in a bunded inspection bay. This area will be used solely for tipping, spreading, turning and inspecting each load of waste as required. Rejected loads and unwanted materials will be managed accordingly. Any gross physical contamination will be removed by a Material Handler and placed into a waste disposal bin.

At inspection point 2 – tip and spread inspection area (inside Building 1), trained personnel must:

1. Direct the driver of the vehicle to tip the entire load on the tip and spread inspection area;
2. Spread the entire load and inspect the visible surface area for any asbestos waste and any other unpermitted waste;
3. Manually turn, or direct a plant operator to turn, the entire load and inspect the entire load for any asbestos waste and any other unpermitted waste on or beneath the visible surface;
4. Where any asbestos waste is identified, reject the entire load of waste.
5. Where any other unpermitted waste is identified as per Section 4.3 below, remove that waste from the load or reject the entire load of waste.
6. Where a load is rejected under Section 4.3, ensure that the entire load is immediately reloaded onto the vehicle in which it arrived or onto another vehicle and ensure that the vehicle with the rejected load leaves the facility on the same business day and then immediately record the information in the 022-ENV-FO-003 Rejected Load Register; and

REMONDIS personnel will also be trained to identify and remove any of the following contaminants:

- iodine, pharmaceutical, pesticide and biocide products in any formulation except as a constituent of another material

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- radioactive, nuclear, hospital, or clinical waste; and
- explosive materials including propellants and cartridges.

### 6.3 Sorting and Processing

Waste materials suitable for processing will then be loaded into a hopper of the sorting plant for separation by material type. The MRF processing line will produce the following:

- Recovered fines;
- Shredded wood;
- Heavies (concrete/brick/tile);
- Loose refuse-derived fuel (RDF);
- Plastics; and
- PVC.

The RDF feedstock will consist of the dry calorific fractions derived from the waste which usually contains plastics, timber, paper, cardboard, rubber and textiles. These materials will be separated on-site, shredded, stored loose or baled, and wrapped prior to being transported as feedstock to a third-party user. This process ensures the RDF generated on-site does not consist of recyclable or hazardous materials.

### 6.4 Waste Storage

All waste outputs will be stored in separate storage areas. RDF will be stored in a dedicated, signposted area.

### 6.5 Waste Export for Recycling

REMONDIS' primary off taker is expected to be Boral's cement kiln in Berrima. Confidential advanced discussions have been held between both parties and specifications have also been supplied by Boral.

RDF is a Group 2 Solid Waste Derived Fuel (SWDF) under Schedule 2 of DA 401-11-2002-i. Boral's consent was modified in July 2015 and defines SWDF as:

*Encompasses a range of solid waste derived fuel streams made from materials recovered from general waste, including wood waste and refuse derived fuel. They are sourced from waste industry operators who screen and recover appropriate materials out of general waste streams that are collected from commercial, industrial, and residential properties before processing for consumption as fuel. These are the types of fuel that are the subject of this assessment. It also includes rubber tyre chips, for which Boral already has approval to use.*

Prior to receiving REMONDIS' RDF, Boral is required to certify in writing to the Secretary that REMONDIS has met the pre-qualification requirements set out in the approved Quality Assurance and Control Procedure for Receipt of Solid Waste Derived Fuels, outlined in **Attachment B: Boral Appendix 1 – Specification for Solid Recovered Fuel**.

To ensure future receipt facilities of RDF are permitted to receive the material, REMONDIS will ensure the lawful place requirements outlined in the Energy from Waste Policy are met.

#### 6.5.1 On-site Laboratory Testing

REMONDIS will establish an on-site laboratory to perform routine testing of key parameters to comply with Boral's Appendix 1 – Specification for Solid Recovered Fuel (SRF) (refer to **Attachment B: Boral Appendix 1 – Specification for Solid Recovered Fuel**). Specifically, REMONDIS will meet the following requirements:

*2.5 The Supplier shall ensure that the particle size analysis test is carried out at least weekly using a representative composite sample made up from the samples taken during that week and shall provide the test result to Boral by the next working day.*

*2.6 The Supplier shall conduct daily monitoring for CV, chlorine and moisture prior to delivery to Boral. The results from this monitoring will be available to Boral upon request and must be maintained in accordance with the Supplier's agreed QA/QC system.*

### 6.5.2 Sampling and Storage for On-site Testing

REMONDIS consulted Boral regarding the appropriate composite sample size for testing. By following the D95 methodology, and assuming the product passes the particle size specification of  $\leq 50\text{ mm}$  in any direction with  $>95\%$  passing  $35\text{mm}$ ; No dimension to be  $>50\text{mm}$ , Boral advised sample sizes will be approximately two to three litres in volume. A composite sample is defined as a sample that combines four discrete sub-samples of equal size into a single sample for the purpose of analysis.

Given the nature of the equipment layout and the variability in incoming waste streams, REMONDIS will take composite samples from the shredded RDF stockpile at the end of the processing line.

All samples will be prepared with consideration for the guidance provided in EN14780:2017 "Solid Biofuels – Sample Preparation" as detailed in Boral's specifications.

REMONDIS consulted NATA accredited lab HRL regarding appropriate storage requirements for RDF samples. REMONDIS will place samples for on-site testing in poly bags 600mm (W) X 870mm (L) with 100uM thickness, or equivalent non-porous plastic bags. If samples are not tested immediately, they will be double bagged to preserve moisture integrity and stored within the on-site laboratory prior to testing. All samples will be labelled at the time of sampling.

### 6.5.3 Laboratory Equipment

REMONDIS engaged with Boral's Technical Manager to confirm which equipment will be required in the on-site laboratory to ensure compliance with Boral's specifications. The equipment is detailed in Table 4 below.

Table 4 Tomago Laboratory Equipment

Equipment	Supplier	Model	Purpose
Balance	Shimadzu	AP244X	Weighing samples
Moisture analyser	Leco	MS 70	Test moisture content
Mill	Retsch	SM 300	Shredding samples to an appropriate size for testing in the bomb calorimeter
Bomb calorimeter and consumables	Leco	AC 500	Measuring calorific value and creating a liquid residual for chlorine testing
UV spectrometer	Shimadzu	UV-1900i	Measuring chlorine content

Equipment	Supplier	Model	Purpose
Automatic Belt Composite Sampler	TBC	TBC	Collect representative samples for quality control analysis
Cylinder rack / gas cylinders	Leco	N/A	Safely securing gas cylinders to the wall
Sieves	TBC	N/A	Particle size analysis testing
Analytical grade glassware	Lab Direct	N/A	Making chlorine standards
Chemical consumables	Sigma / Bacto	N/A	Support all testing regimes
Composite Sampler	TBC	TBC	Providing a representative sample of RDF

All relevant equipment suppliers will provide on-site training to personnel who will be responsible for the daily and weekly product testing regimes.

#### 6.5.4 Record Keeping

A lab-specific computer/s will be used for recording all testing results. Data will include results uploaded directly from the specialised equipment and possibly some manual entries for the less advanced testing methods. REMONDIS will work with the equipment suppliers to ensure data capture and storage is performed efficiently and accurately. A computer is included as part of the standard specification provided by Shimadzu for the UV spectrometer. The Shimadzu and/or a second computer will be linked to REMONDIS' existing on-site IT network, ensuring local and external backups are performed so as not to lose any results or data. The computer/s will be connected to the internet.

### 6.6 NATA Accredited Laboratory Testing

#### 6.6.1 Laboratory

REMONDIS intends to send two initial samples, 20 baseline characterisation samples, and ongoing monthly samples to HRL for testing against Boral's specification. HRL is a NATA accredited laboratory in Melbourne that is familiar with Boral's product specifications and provides similar services to other RDF suppliers in the market.

#### 6.6.2 Sampling, Storage and Transport

Following consultation with HRL, REMONDIS will send two 10-15 kg samples to HRL prior to commencing the baseline characterisation testing regime. The results of these tests will inform REMONDIS of any process or equipment changes that may need to be made to the MRF / RDF line.

After process amendments have been made, REMONDIS will start to collect 20 baseline (characterisation) composite samples for testing by HRL. Following approval of Tomago's RDF operations by both Boral and the Regulator, REMONDIS will prepare two composite samples on a monthly basis for testing by HRL; a primary composite sample and a duplicate composite sample. Duplicate composite samples will be retained as a reference for a period of three months in a correctly labelled and suitably sealed container.

REMONDIS will use the sampling method detailed in Section 5.2.1 for the initial, baseline (characterisation), and monthly testing obligations. Samples will be double bagged and sealed to preserve moisture integrity prior to being sent to HRL in Melbourne in cardboard boxes. This will ensure the bag/s cannot be damaged while being couriered to Melbourne.

### 6.6.3 Reporting

REMONDIS will provide Boral the results of the monthly composite sample testing performed by HRL within 21 days of the collection of the last sample in the month, pending turnaround times at HRL which fall outside of REMONDIS' control.

REMONDIS will notify Boral of any exceedances of the limits provided in the specifications as soon as practicable.

## 7.0 MEASURING NSW ENERGY FROM WASTE POLICY COMPLIANCE DURING OPERATIONS

To ensure that the design compliance with the NSW Energy from Waste Policy is achieved whilst in operation, the following formula will be used to determine the % of input tonnes that can be converted into RDF on a day to day basis.

$$\text{Allowable RDF (\%)} = \frac{0.5 \times \text{C\&I up to 50\%} + \text{C\&I no limit} + 0.25 \times \text{C\&D}}{\text{Total MRF Tonnes}}$$

The data sources and record keeping arrangements for this data is set out below. And all will be measured by weight using REMONDIS' on-site weighbridge, each waste transaction destined for the RDF facility will be allocated one of the following two waste stream codes:

- C&I, or
- C&D

To provide transparent reporting based on the weighbridge data, REMONDIS will classify each load at the point of accepting the waste over the weighbridge and will arrange for these codes to be available in the weighbridge recording software. This will ensure that collected data is correctly identified both on the incoming waste docket and within the reporting system.

### 7.1.1 Bulk Loads

Bulk loads are wholly classified as either C&I or C&D and tracked according to the client. A list of clients for which waste will be assigned 100% to RDF due to the extensive source separation systems already in place has been provided in **Attachment A: List of existing REMONDIS clients for mixed C&I waste and recycling**. For all other clients, the 50% attribution for EfW will apply. REMONDIS may update the list at Appendix A from time to time.

### 7.1.2 Front Lift Loads

REMONDIS' software system (WastEdge) is a modern cloud-based software platform with integrated Google mapping, route optimisation and mobile apps that support a wide variety of organisations in the waste and service industry sectors. WastEdge is used to keep accurate records for every service performed for REMONDIS' customers. Records include:

- service address
- postal address

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- route details
- individual service details: including waste types, waste container serviced, waste destinations, collection frequencies and pricing. Where available this will include the waste amount collected (kg).
- container inventory including bin type, size, locks etc.
- equipment inventory including bin lifters, compactors etc.
- all received weighbridge docket data
- booking history including collection weights and collection frequencies
- site access time restrictions
- hazardous waste site references and duty of care agreement details
- customer notes including photos and scanned document attachments
- personnel involved in service; and
- non-service periods.

REMONDIS will use these capabilities to assist with the record keeping requirements for residual waste generators whose waste streams will be directed to the MRF/RDF facility to ensure compliance with the NSW EfW Policy Statement's resource recovery criteria.

C&I waste is typically collected from several businesses on a single collection run, therefore the vehicle will comprise a mix of waste collected from customers. A list of clients for which waste will be assigned 100% to RDF due to the extensive source separation systems already in place has been provided in **Attachment A**: List of existing REMONDIS clients for mixed C&I waste and recycling. For all other clients, the 50% attribution for EfW will apply. REMONDIS may update the list at Appendix A from time to time.

REMONDIS will extract records from WasteEdge at the end of each month to document the waste received for the manufacture of RDF.

### 7.1.3 Quarterly EPA Reporting

REMONDIS will use the above methodologies to calculate a total allowable RDF for manufacture and provide the measured tonnes produced for submission to the EPA on a quarterly basis.

REMONDIS will work with the EPA to agree an appropriate timeframe for the EPA to review and provide feedback on this reporting.

## 8.0 REFERENCES

- New South Wales Energy from Waste Policy Statement: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/waste/21p2938-energy-from-waste-policy-statement.pdf>
- New South Wales Environment Protection Authority – The Waste Hierarchy: <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>



## 9.0 ATTACHMENTS

- A: List of existing REMONDIS clients for mixed C&I waste and recycling
- B: Boral Appendix 1 – Specification for Solid Recovered Fuel, Boral Appendix 2 – Quality Assurance for Solid Recovered Fuel, and Boral Appendix 3 – Operational Requirements

# Energy from Waste Management Plan

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### Attachment A: List of existing REMONDIS clients for mixed C&I waste and recycling

*Please note that all entities generating residual waste have effective and operating collection systems for all waste streams they generate that have reuse or recycling opportunities available. For example, paper/cardboard collection, organics collection, and residual waste collection. REMONDIS has sought to provide reuse and recycling systems to all clients listed below where applicable for all waste streams.*

CUSTOMERS	GENERAL WASTE	TIMBER	PAPER / CARDBOARD	ORGANIC
Daracon – Multiple Sites	775.17	-	1.12	9.70
Mount Thorley Warkworth Mine	599.97	67.05	35.45	-
Bengalla Mine	388.97	58.89	22.29	-
Bayswater Power Station	243.88	100.90	10.93	-
Affordable Wardrobes – Head Office Kitchens Pty Ltd	316.79	-	3.07	-
Thiess P/L – Mt Arthur South Mine	261.72	34.10	11.35	-
Mach Energy – Mt Pleasant Mine	208.98	65.04	13.98	-
Thiess P/L – Mt Owen Mine	202.06	56.97	8.65	-
Belmont 16's	249.48	-	-	-
Wyong Works Centre – TfNSW	248.56	-	-	-
Liddell Power Station	187.74	41.52	8.41	-
Delta Coal – Chain Valley Mine	217.67	8.28	0.55	-
Thornton MRF – Waste	178.21	32.00	-	-

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CUSTOMERS	GENERAL WASTE	TIMBER	PAPER / CARDBOARD	ORGANIC
Jesmond Central	207.13	-	40.69	-
Joy Global – Rutherford	126.54	66.60	5.46	-
D'albora Marina	182.70	-	11.13	-
Donaldson Australasia Pty Ltd	181.82	-	244.94	-
Terrace Timber Trusses	148.43	-	-	-
Fingal Bay Holiday Park	145.18	-	6.88	17.08
Coates Hire	124.02	-	5.51	-
Ray Pitstock Real Estate	114.54	-	9.53	-
Hume Doors & Timber	69.39	43.18	2.50	-
<b>Grand Total (tonnes)</b>	<b>5,379.17</b>	<b>574.53</b>	<b>442.44</b>	<b>26.78</b>

## Appendix 1 – Specification for Solid Recovered Fuel

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### 1. Specification

The following specification forms the basis for which SRF is to be supplied to Boral. These details are subject to change to ensure compliance to regulatory requirements and the achievement of the optimum outcomes in the processing and use of SRF as agreed between the Parties.

- 1.1. The Supplier is responsible for sampling and testing SRF in accordance with the requirements of this Agreement.
- 1.2. The Supplier shall ensure appropriate regulatory approved procedures are developed, implemented and certified with the aim of qualifying the supply of SRF to Boral and assuring that SRF meets the following requirements:
  - Iodine, pharmaceutical, pesticide and biocide products in any formulation except as a constituent of another material and at levels, which are minimised as far as is reasonably practical;
  - Exclusion of radioactive, nuclear, hospital and clinical waste; and
  - Exclusion of explosive materials including propellants and cartridges.
- 1.3. The Supplier shall ensure that the results for each monthly composite sample of SRF delivered under this agreement as sampled in accordance with Appendix 2, Paragraph 2 - Sampling and tested in accordance with Appendix 2, Paragraph 1 – SRF Test Methods complies with the Specification in Table 1 – SRF Specification
- 1.4. The Supplier must ensure that any testing of samples required under this agreement is undertaken by analytical laboratories accredited by the National Association of testing Authorities (**NATA**) or equivalent for such testing.

**Table 1. SRF Specification**

Parameter <sup>1</sup>	Specification
Gross Calorific Value (MJ/kg)	≥15.0
Ash	≤15.0% m/m
Moisture (as H <sub>2</sub> O)	≤15.0% m/m
Chlorine (as Cl)	≤0.2% m/m
Total Fluorine, Bromine, Iodine (as F, Br, I)	≤0.2% m/m
Sulphur (as S)	≤1.0% m/m

Parameter <sup>1</sup>	Specification
Particle size	≤ 50 mm in any direction with >95% passing 35mm. No dimension to be >50mm.
K <sub>2</sub> O (%)	1.0
Na <sub>2</sub> O (%)	0.5
Mercury (Hg) (mg/kg)	≤1.2
Cadmium (Cd) (mg/kg)	≤20
Thallium (Tl) (mg/kg)	≤20
Total Group II metals (mg/kg) Cadmium (Cd) + Thallium (Tl)	≤30
Copper (mg/kg)	≤500
Lead (mg/kg)	≤1000
Total Group III metals (mg/kg) Antimony (Sb) + Arsenic (As) + Cobalt (Co) + Copper (Cu) + Chromium (Cr) + Lead (Pb) + Manganese (Mn) + Nickel (Ni) + Vanadium (V)	≤3000
PCB's (Polychlorinated biphenyls)	<10mg/kg
PCP's (Phencyclidines)	<100mg/kg

<sup>1</sup>All parameters to be reported on an as received basis

- 1.5. The Supplier is permitted for just two (2) of the gross calorific value or moisture results in any of the twelve (12) consecutive monthly composite samples to be outside the values specified in Table 1. SRF Specification but any such result must comply with the following limits:
- Gross calorific value                    ≥ 12.0 MJ/kg
  - Moisture (as H<sub>2</sub>O)                        ≤ 20.0% (m/m)
- 1.6. In the event that ongoing non-compliance or inconsistency occurs throughout the duration of this agreement, the parties agree to use best endeavours to work together to resolve the inconsistencies and reduce variability in the quality of the Goods delivered.

**Appendix 2 – Quality Assurance for Solid Recovered Fuel**

The following information forms the basis for which testing, sampling and reporting of SRF is to be conducted for products supplied to Boral. These details are subject to change to ensure compliance to regulatory requirements and the achievement of the optimum outcomes in the processing and use of SRF as agreed between the Parties.

**1. Test Methods**

- 1.1. The Supplier shall ensure that the test methods in the Table 2 – SRF Test Methods below are conducted and reported to Boral for the Parameters listed in accordance with relevant Australian and International standards and used to demonstrate compliance with the Specification:

**Table 2 – SRF Test Methods**

<b>Parameter</b>	<b>Test Method</b>
Gross and Net Calorific Value	EN 15400:2011
Moisture content	EN 15414:2010
Chlorine	EN 15408:2011
Sulphur	EN 15408:2011
Nitrogen	EN 15407:2011
Carbon Content	EN 15407:2011
Biomass	EN 15440:2011
Ash	EN 15403:2011
K <sub>2</sub> O, Na <sub>2</sub> O	EN 15410:2011
Particle Size	EN 15412-1:2011
Metals – Mercury, cadmium, thallium, copper, lead, Total Group II metals, Total Group III metals including Selenium (Se), Tin (Sn) and Beryllium (Be)	EN 15411:2011

- 1.2. The Supplier shall agree in writing with Boral any changes to the test methods and procedures for testing and sampling SRF as specified in this Appendix 2 – Quality Assurance for Solid Recovered Fuel.
- 1.3. The Supplier shall ensure that testing of all parameters in Table 2 – SRF Test Methods is undertaken according to the requirements and by a laboratory certified to NATA for the

test procedures specified above. This requirement does not apply to samples tested as per Paragraph 2.5 and 2.6 below.

- 1.4. The Supplier acknowledges that Boral have the right to perform visual inspection of the material being delivered as well as monitor samples of that material at any time prior to acceptance of the Goods.

## 2. Sampling

- 2.1 Prior to the commencement of the OPP the Supplier will be required to conduct sampling of each type of Goods to determine the characterisation of the fuel for composition and variability to ensure conformance with the Appendix 1 – Specification for Solid Recovered Fuel.
- 2.2 Twenty (20) Composite Samples will be collected and analysed for all parameters specified in Appendix 1 – Table 1 – SRF Specification to establish a baseline (characterisation) data set. A **Composite Sample** is defined as a sample that combines four (4) discrete sub-samples of equal size into a single sample for the purpose of analysis.
- 2.3 The sampling will be conducted in accordance with EN14780:2011 “*Solid Biofuels – Methods for sample preparation.*”
- 2.4 The Supplier must undertake a routine sampling process as follows;
  - (a) Every month, two (2) Composite Samples (one primary and one duplicate sample) will be collected from the Goods prior to despatch.
  - (b) Sample will be taken from a belt conveyor, falling stream or truck.
  - (c) The monthly samples must be taken from a batch, truckload or stockpile that has not been previously sampled, for the purpose of assessing compliance with the Appendix 1 – Specification for Solid Recovered Fuel. Every Composite Samples will be sealed and labelled. All samples collected during a month will be sent to an independent NATA accredited laboratory. The samples will be prepared with consideration for the guidance provided in EN14780:2011 “Biofuels – Methods for sample preparation”. The primary Composite Sample will be tested for all parameters specified in Appendix 4 – Table 4 SRF Test Methods using the corresponding test methods (or equivalent as agreed with Boral). The duplicate Composite Sample will I be retained as a reference for a period of three (3) months stored in a correctly labelled and suitably sealed container.
- 2.5 The Supplier shall ensure that the particle size analysis test is carried out at least weekly using a representative composite sample made up from the samples taken during that week and shall provide the test result to Boral by the next working day.
- 2.6 The Supplier shall conduct daily monitoring for CV, chlorine and moisture prior to delivery to Boral. The results from this monitoring will be available to Boral upon request and must be maintained in accordance with the Supplier’s agreed QA/QC system.
- 2.7 The Supplier shall agree with Boral on the details for final procedures of sampling and testing SRF as part of Supplier’s QA/QC system.

## 3. Reporting

- 3.1. The Supplier shall ensure that tests for all parameters in Appendix 1 Table 1 – SRF Specification are carried out on each monthly composite sample of SRF using the test methods define in Paragraph 1 – SRF Test Methods. The Supplier shall provide Boral in

writing with the individual monthly composite sample results within 21 days of the collection of the last sample within the month.

- 3.2. The Supplier shall provide written notification to Boral of any exceedances of the limits provided in Appendix 1 - Table 1 as soon as reasonably practicable. If an exceedance is reported for any material that has already been received by Boral from the Supplier, Boral will review the causes of the exceedance with the Supplier with a view to the Supplier making changes to prevent further exceedances.
- 3.3. Any dispute as to the quality or specification of the SRF which cannot be amicably resolved between the Supplier and Boral within 60 days either party may refer such dispute for determination by an Expert agreed between the parties. Such person shall act as expert and not arbitrator and make such determination within 20 days of his appointment and his determination shall be final and binding on both parties. The expert shall determine the issue of costs, which shall also bind the parties.



## Appendix 3 – Operational Requirements




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The below Operational Requirements will be reviewed in accordance with the timeframes agreed in Part B Paragraph 9 - Operational Management Meetings.

At the commencement of the Agreement, any items without agreed specifications listed will be confirmed between the parties for the commencement of the OPP. Throughout the OPP and beyond, these operational requirements can be reviewed for compliance and suitability to the requirements of Boral. Where necessary, the below agreed specifications can be amended, as agreed between the parties, to reflect the optimal operational requirements of the operation during the OPP and beyond.

Any changes agreed in the below format will constitute an amendment to the specifications in the Agreement and will be applicable unless revised and agreed between the parties.

**Operational Management Meeting**

<b>Date:</b>			
<b>Location:</b>			
<b>Supplier Name:</b>			
<b>Attendees:</b>			
<b>Status:</b>	 On Track	 At Risk	 Non-compliant

Item	Criteria	Agreed Specification	Status Supplier	Status Boral	Comments or amendments agreed to specifications.
<b>1</b>	<b>Delivery and Packaging as per Part B paragraph 1.3</b>				
1.1	Delivery frequency and timing SRF		<input type="radio"/>	<input type="radio"/>	
1.2	Packaging compliance	Loose delivered	<input type="radio"/>	<input type="radio"/>	
1.3	Delays	Nil	<input type="radio"/>	<input type="radio"/>	
<b>2</b>	<b>Product volume as per Part B paragraph 1.1</b>				
2.1	Quantity delivered as per weighbridge data SRF per month	Tonnes			
2.2	DIFOT	100%	<input type="radio"/>	<input type="radio"/>	

Item	Criteria	Agreed Specification	Status Supplier	Status Boral	Comments or amendments agreed to specifications.
<b>3</b>	<b>Testing Methods</b>				
3.1	Gross and Net Calorific Value	EN 15400:2011	○	○	
3.2	Moisture content	EN 15414:2010	○	○	
3.3	Chlorine	EN 15408:2011	○	○	
3.4	Sulphur	EN 15408:2011	○	○	
3.5	Nitrogen	EN 15407:2011	○	○	
3.6	Carbon Content	EN 15407:2011	○	○	
3.7	Biomass	EN 15440:2011	○	○	
3.8	Ash	EN 15403:2011	○	○	
3.9	K <sub>2</sub> O, Na <sub>2</sub> O	EN 15410:2011	○	○	
3.10	Particle Size	EN 15412-1:2011	○	○	
3.11	Metals – Mercury, cadmium, thallium, copper, lead, Total Group II metals, Total Group III metals including Selenium (Se), Tin (Sn) and Beryllium (Be)	EN 15411:2011	○	○	

Item	Criteria	Agreed Specification	Status Supplier	Status Boral	Comments or amendments agreed to specifications.
<b>4</b>	<b>Sampling – SRF</b> - In accordance with EN14780:2011 “ <i>Solid Biofuels – Methods for sample preparation.</i> ”				
4.1	Frequency	On a monthly basis	<input type="radio"/>	<input type="radio"/>	
4.2	Batch size	Two (2) Composite Samples	<input type="radio"/>	<input type="radio"/>	
4.3	Method	Two Composite Samples as per EN14780:2011 “ <i>Solid Biofuels – Methods for sample preparation.</i> ”  The primary Composite Sample will be tested for all parameters  The duplicate Composite Sample will be retained as reference for 3 months.	<input type="radio"/>	<input type="radio"/>	
4.4	Daily Monitoring	CV  Chlorine  Moisture	<input type="radio"/>	<input type="radio"/>	
<b>5</b>	<b>Specification – SRF as per Appendix 1</b>				
5.1	Gross Calorific Value (MJ/kg)	≥15.0	<input type="radio"/>	<input type="radio"/>	
5.2	Ash	≤15.0% m/m	<input type="radio"/>	<input type="radio"/>	
5.3	Moisture (as H <sub>2</sub> O)	≤15.0% m/m	<input type="radio"/>	<input type="radio"/>	

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Item	Criteria	Agreed Specification	Status Supplier	Status Boral	Comments or amendments agreed to specifications.
5.4	Chlorine (as Cl)	≤0.05% m/m	○	○	
5.5	Total Fluorine, Bromine, Iodine (as F, Br, I)	≤0.2% m/m	○	○	
5.6	Sulphur (as S)	≤1.0% m/m	○	○	
5.7	Particle size	≤ 50 mm in any direction with >95% passing 35mm. No dimension to be >50mm.	○	○	
5.9	K <sub>2</sub> O (%)	1.0	○	○	
5.10	Na <sub>2</sub> O (%)	0.5	○	○	
5.11	Mercury (Hg) (mg/kg)	≤1.2	○	○	
5.12	Cadmium (Cd) (mg/kg)	≤20	○	○	
5.13	Thallium (Tl) (mg/kg)	≤20	○	○	
5.14	Total Group II metals (mg/kg) Cadmium (Cd) + Thallium (Tl)	≤30	○	○	
5.15	Copper (mg/kg)	≤500	○	○	
5.16	Lead (mg/kg)	≤1000	○	○	

Item	Criteria	Agreed Specification	Status Supplier	Status Boral	Comments or amendments agreed to specifications.
5.17	Total Group III metals (mg/kg) Antimony (Sb) + Arsenic (As) + Cobalt (Co) + Copper (Cu) + Chromium (Cr) + Lead (Pb) + Manganese (Mn) + Nickel (Ni) + Vanadium (V)	≤3000	<input type="radio"/>	<input type="radio"/>	
5.18	PCB's (Polychlorinated biphenyls)	<10mg/kg	<input type="radio"/>	<input type="radio"/>	
5.19	PCP's (Phencyclidines)	<100mg/kg	<input type="radio"/>	<input type="radio"/>	
<b>6</b>	<b>Other</b>				
			<input type="radio"/>	<input type="radio"/>	
			<input type="radio"/>	<input type="radio"/>	
			<input type="radio"/>	<input type="radio"/>	
			<input type="radio"/>	<input type="radio"/>	
			<input type="radio"/>	<input type="radio"/>	
			<input type="radio"/>	<input type="radio"/>	

Signed as acceptance of the above information

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Name	Company	Date	Signature
	Boral		
	<Vendor>		

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