<table>
<thead>
<tr>
<th>Application No.</th>
<th>1003013</th>
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<tr>
<td>Name</td>
<td>Paper Australia Pty Ltd (trading as Australian Paper)</td>
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<tr>
<td>Address of Premises</td>
<td>Traralgon West Road, Maryvale Vic 3840</td>
</tr>
<tr>
<td>Proposal</td>
<td>To construct a waste to energy facility (moving grate) with combined heat and power recovery. The facility will thermally treat non-hazardous residual municipal, commercial and industrial waste.</td>
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| Scheduled Category     | **Existing operation**  
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F03 Paper Pulp Mills  
A07 Composting  

**Proposed operation**  
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K01 (power station) |
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AP</td>
<td>Australian Paper</td>
</tr>
<tr>
<td>APM</td>
<td>Australian Paper Mill</td>
</tr>
<tr>
<td>BAT</td>
<td>Best available techniques as defined in the IED</td>
</tr>
<tr>
<td>Beneficial uses</td>
<td>Uses and values of the environment that government and communities want to protect both now and in the future</td>
</tr>
<tr>
<td>Best Environmental Practice</td>
<td>The best combination of eco–efficient techniques, methods and processes or technology used in an industry sector or activity that demonstrably minimises the environmental impact of a generator of emissions in that industry sector or activity</td>
</tr>
<tr>
<td>BOD</td>
<td>Biological oxygen demand</td>
</tr>
<tr>
<td>BP</td>
<td>Best practice</td>
</tr>
<tr>
<td>BREF</td>
<td>Best Available Techniques Reference Document – Incineration</td>
</tr>
<tr>
<td>C&amp;I</td>
<td>Commercial and Industrial</td>
</tr>
<tr>
<td>CHP</td>
<td>Combined heat and power, a plant that has the capability to generate both heat and electricity.</td>
</tr>
<tr>
<td>Contamination</td>
<td>The action or state of making or being made impure by polluting or poisoning</td>
</tr>
<tr>
<td>DELWP</td>
<td>Department of Environment, Land, Water and Planning</td>
</tr>
<tr>
<td>DHHS</td>
<td>Department of Health and Human Services</td>
</tr>
<tr>
<td>EFW</td>
<td>Energy from waste</td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Protection Authority Victoria</td>
</tr>
<tr>
<td>EPA Pollution Abatement Notice</td>
<td>Notice issued under section 31A of the Environment Protection Act 1970, aimed to prevent further occurrence of pollution or potential environmental risk</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse gases unless otherwise stated expressed as tonnes of CO₂ equivalent.</td>
</tr>
<tr>
<td>IBA</td>
<td>Incinerator bottom ash</td>
</tr>
<tr>
<td>IED</td>
<td>European Union – Industrial Emissions Directive</td>
</tr>
<tr>
<td>Information Session</td>
<td>Information session held between EPA, Australian Paper and the community</td>
</tr>
<tr>
<td>LCC</td>
<td>Latrobe City Council</td>
</tr>
<tr>
<td>Leachate</td>
<td>Water that has percolated through a solid and leached out some of the constituents</td>
</tr>
<tr>
<td>MEA</td>
<td>Maximum Extent Achievable, means a degree of reduction in the emission of wastes from a particular source that uses the most effective, practicable means to minimise the risk to human health from those emissions and is at least equivalent to or greater than that which can be achieved through the application of best practice</td>
</tr>
<tr>
<td>MSW</td>
<td>Municipal solid waste</td>
</tr>
<tr>
<td>MWe</td>
<td>Megawatts electric</td>
</tr>
<tr>
<td>MWpa</td>
<td>Megawatts per annum</td>
</tr>
<tr>
<td>MWRRG</td>
<td>Metropolitan Waste Resource Recovery Group</td>
</tr>
<tr>
<td>Nm³</td>
<td>Normal cubic metre</td>
</tr>
<tr>
<td>NOx</td>
<td>Nitrous oxides</td>
</tr>
<tr>
<td>PAH</td>
<td>Polyaromatic hydrocarbon</td>
</tr>
<tr>
<td>PBDDD</td>
<td>Polybrominated dibenzodioxins</td>
</tr>
<tr>
<td>PBDF</td>
<td>Polybrominated dibenzofurans</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>PCB</td>
<td>Polychlorinated biphenyl</td>
</tr>
<tr>
<td>PCDD</td>
<td>Polychlorinated dibenzodioxins</td>
</tr>
<tr>
<td>PCDF</td>
<td>Polychlorinated dibenzofurans</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>Particle matter of a size of less than 10 microns that is, 0.01 mm</td>
</tr>
<tr>
<td>PM_{2.5}</td>
<td>Particle matter of a size of less than 2.5 microns that is, 0.0025 mm</td>
</tr>
<tr>
<td>PPA</td>
<td>Planning Permit application</td>
</tr>
<tr>
<td>Prescribed Industrial Waste (PIW)</td>
<td>Waste specified as industrial waste under the <em>Environmental Protection Act 1970</em> and <em>Environmental Protection (Industrial Waste Resource) Regulations 2009</em></td>
</tr>
<tr>
<td>PXDD</td>
<td>Mixed halogenated dibenzo–p–dioxins</td>
</tr>
<tr>
<td>PXDF</td>
<td>Mixed halogenated dibenzofurans</td>
</tr>
<tr>
<td>Referral body</td>
<td>Any statutory body required to have a works approval application referred to under the <em>Environmental Protection Act 1970</em>; and other agencies referred to due to vested interest with works approval application</td>
</tr>
<tr>
<td>Residual waste</td>
<td>As defined in EPA publication 1559</td>
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<tr>
<td>S20B conference</td>
<td>Section 20B conference under the <em>Environmental Protection Act 1970</em></td>
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<td>S22 Notice</td>
<td>Section 22 notice under the <em>Environmental Protection Act 1970</em></td>
</tr>
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<td>Scheduled Premises</td>
<td>Prescribed premises under the <em>Environmental Protection Act 1970</em> and <em>Environment Protection (Scheduled Premises) Regulations 2017</em></td>
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<tr>
<td>Scheduled Premises Regulations</td>
<td>Environment Protection (Scheduled Premises) Regulations 2017</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective catalytic reduction</td>
</tr>
<tr>
<td>SEPPs</td>
<td>State environment protection policies</td>
</tr>
<tr>
<td>SEPP</td>
<td>State environment protection policy</td>
</tr>
<tr>
<td>SNCR</td>
<td>Selective non–catalytic reduction</td>
</tr>
<tr>
<td>SOx</td>
<td>Sulphur oxides</td>
</tr>
<tr>
<td>SV</td>
<td>Sustainability Victoria</td>
</tr>
<tr>
<td>SWRRIP</td>
<td>Statewide Waste and Resource Recovery Infrastructure Plan</td>
</tr>
<tr>
<td>TDS</td>
<td>Total dissolved solids</td>
</tr>
<tr>
<td>TOC</td>
<td>Total organic carbon</td>
</tr>
<tr>
<td>tpa</td>
<td>Tonnes per annum</td>
</tr>
<tr>
<td>tph</td>
<td>Tonnes per hour</td>
</tr>
<tr>
<td>TSS</td>
<td>Total Suspended Solids</td>
</tr>
<tr>
<td>TVOC</td>
<td>Total volatile organic carbon</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile organic compounds</td>
</tr>
<tr>
<td>WA</td>
<td>Works approval</td>
</tr>
<tr>
<td>WAA</td>
<td>Works approval application</td>
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<td>WAAAR</td>
<td>Works approval application Assessment Report</td>
</tr>
<tr>
<td>Waste</td>
<td>As defined in the <em>Environmental Protection Act 1970</em></td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WMP</td>
<td>Waste Management Plan</td>
</tr>
<tr>
<td>WtE</td>
<td>Waste to energy</td>
</tr>
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</table>
1. EXECUTIVE SUMMARY

Paper Australia Pty Ltd (trading as Australian Paper) has applied for a works approval from the Environment Protection Authority (EPA) Victoria for a moving grate waste to energy plant. The plant will process municipal solid waste, industrial and commercial waste.

Australian Paper (AP) is operating a paper mill on Traralgon West Road, Maryvale Victoria. The mill currently purchases approximately 6 PJ of natural gas annually which could be reduced to 2 PJ through this project. Taking into account fluctuating natural gas prices, this project aims to secure the future competitiveness of the paper mill and secure the plant’s capability to operate into the future.

1.1 Works approval process

Key stages of the works approval application (WAA) process and technical assessment included (in chronological order):

- 4 April 2018, EPA received payment for the WAA
- 24 April 2018, EPA received WAA, additional information was requested and the WAA was not accepted
- 25 May 2018, EPA received and accepted an updated WAA for assessment
- 30 May 2018, EPA advertised the WAA in Herald Sun and Latrobe Valley Express, and opened the Engage Victoria website for public comment.
- 5, 6 and 19 June 2018, public information sessions were held in Morwell and in Traralgon.
- An extended public comment period was run until 6 July 2018. EPA received a total of 115 submissions of which: 84 indicated support, 8 indicated support subject to conditions and 8 objected. Nine were undecided and the remainder of submissions were received through email where the question of support was not directly asked
- July 2018, EPA decided to hold a public conference under the powers defined by section 20B of the EP Act, (referred to as a section 20B conference)
- 10 July 2018, EPA issued a notice under section 22 of the EP Act requiring additional information and a response by 23 July 2018
- 23 July 2018, EPA received a response to the section 22 notice.
- 25 July 2018, EPA held the section 20B public conference, run by an independent chair, at the Premiere Function Centre, Traralgon
- 10 August 2018, EPA published the independent chair report from the public conference which contains recommendations for consideration by EPA in making its determination
- 27 September 2018, Australian Paper submitted a Health Impact Assessment to supplement the WAA. EPA made this document available for public comment between 2 October and 16 October. EPA received a total of 13 submissions of which 6 indicated stakeholders felt less confident of the appropriateness of the project and 7 felt more confident after having reviewed the Health Impact Assessment.
- 28 November 2018, EPA decided to approve the works approval subject to conditions.
Note: the statutory timeframe was extended by agreements under section 67A of the EP Act

1.2 Proposed works

The proposed activities subject to this works approval application (WAA) relate to the:

- construction of a waste to energy facility on the Australian Paper site in Maryvale
- up to 3 lines (moving grate) capable of a total annual residual waste treatment capacity of 650,000 (+/−10 per cent) tonnes
- construction to commence November 2019, commissioning to commence in 2022 and project completion expected in 2023
- plant to operate for 24 hours per day, seven days per week (approximately 8,000 hrs/yr) with periods of planned outage for plant maintenance
- targeted residual waste feedstock will consist of commercial waste, industrial waste and municipal solid waste.

The proposed works have been designed to meet the requirements of the Victorian state environment protection policies (SEPPs) which include requirement to meet world’s best practice. This is achieved by assessing the application against the strictest emission controls in the European Industrial Emissions Directive and demonstration that the plant is designed and built to Best Available Techniques standard

Key features of the proposal include:

- a waste bunker under constant negative pressure with odorous air captured and fed into the combustion chamber;
- crane operating in the bunker that moves the waste into a hopper and gravity feeds this into the moving grate combustion chamber
- combustion process with sufficient temperature, residence time and turbulence to be able to destroy harmful pollutants
- urea injection to reduce concentrations of nitrogen dioxide
- lime injection to reduce concentrations of acid gases
- activated carbon injection prior to progression to a baghouse to remove persistent organic pollutants and volatile metals
- stormwater collected and sent to existing onsite treatment system
- wastewater collected and treated in existing onsite treatment system
- combined heat and power plant which allows for production of both electricity and process steam which can be utilised in the paper mill and also exported to the electricity grid.

The waste to energy facility will generate wastes from the process including ash. Metals will be removed from the ash and sent for recycling. The remaining ash streams will be managed in accordance with Victorian waste regulations.
1.3 Assessment

The works approval application assessment process considered the following key issues:

**Track record**

AP has provided an accurate account of its paper mill compliance track record and EPA considers Paper Australia Pty Ltd to meet the ‘fit and proper person’ requirement of the EP Act.

**Waste**

Incineration creates three types of ash: incinerator bottom ash, boiler ash and air pollution control residue (also known as fly ash). Incinerator bottom ash will be stored onsite pending re-use or disposal. Boiler and fly ash will be stored in a silo pending treatment which is determined by testing prior to being disposed of in a suitable landfill. Waste management system complies with relevant Victorian waste legislation.

**Wastewater**

The application investigated the worst-case scenario for wastewater which will be treated through the site’s existing wastewater treatment system. EPA has investigated the capabilities of this system and concludes that it can treat the additional wastewater generated by the waste to energy plant. The existing EPA licence can accommodate the additional wastewater without exceeding the discharge limits.

**Groundwater**

The plant will be built on an impermeable layer (concrete) which will minimise the risk of pollution to groundwater. The existing groundwater has been correctly assessed and described in the application and the impact from this proposal is compliant with policy.

**Land**

To enable the construction of the plant, land will need to be cleared on the site. As part of that clearance AP will perform a thorough assessment of existing contamination of that land and manage any contaminated material in accordance with Victorian waste regulations. The waste to energy plant will be fitted with stormwater capture and be built on an impermeable layer and reduce any potential impacts to soil.

**Air**

Incineration of waste generates emissions to air. The flue gas treatment system will mitigate the emissions effectively and the best practice controls will achieve compliance with the *State Environment Protection Policy – Air Quality Management*. The regulatory air dispersion software program AERMOD was used to model the air quality impacts from the project. This modelling indicated compliance with the specified design criteria.

The system will be built with continuous emission monitoring systems for key pollutants with a feedback system that measures untreated flue gas so that injection of reagents can be adjusted to treat the flue gas to best practice.

**Odour**

The odour mitigation controls in place will be sufficient to reduce the risk of potential odour beyond the boundary of the premises. The waste bunker will be constantly under negative pressure and air will be injected to the combustion chamber to destroy the odorous gases.

**Greenhouse gases**

The existing paper mill uses natural gas fired boilers to generate process steam for use in the paper production process. The waste to energy plant will offset emissions from the burning of
natural gas as well as reduce the volume of greenhouse gases that would be emitted if the feedstock waste were to be sent to landfill. By adding these negative offsets to the carbon dioxide generated through the combustion process, it is demonstrated that the plant will achieve a net reduction in greenhouse gas emissions.

Noise

Operational noise will meet the permissible noise levels set in the *Noise from Industry in Regional Victoria* guideline (NIRV) both during the day, evening and the night. Noise measurements will be performed during the operation of the facility to confirm that the actual noise of the operations reflects the predictions provided in the WAA.

Human health

EPA has considered the potential effects on human health posed by this proposal. An independent literature review was performed during the assessment period (June 2018) which aimed to collate publicly available research on potential human health impacts from air emissions from modern waste to energy facilities. This review was carefully considered to determine the impacts on the health of the residents in closest proximity of the facility and across the Latrobe Valley region. It was concluded that potential for exposures to emissions for nearest sensitive receptors and the broader population and the potential for health impacts were negligible.

Climate change

EPA has considered the potential impacts of climate change in its decision and determined that the plant has appropriately addressed the impacts and identified key parameters that require review throughout the lifetime of the project.

Consistency with SWRRIP, MWRRIP and GWRRIP

The proposed facility is considered to be consistent with the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP), Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP) and Gippsland Waste and Resource Recovery Implementation Plan (GWRRIP).

1.4 Decision

EPA has assessed the works approval application and has issued Paper Australia Pty Ltd a works approval subject to conditions. In granting the works approval, EPA considered a range of information, including:

- the works approval application (including further information supplied through the process)
- referral responses and submissions
- the recommendations from the chair of the S20B conference.
2. BACKGROUND INFORMATION

2.1 Paper Australia Pty Ltd

Paper Australia Pty Ltd (trading as Australian Paper and referred to throughout this report as Australian Paper or AP) operates the Australian Paper Mill (APM) at Traralgon West Road, Maryvale, Victoria in the Latrobe Valley (the premises).

Australian Paper, a registered Australian company, is a wholly owned subsidiary of Nippon Paper Industries Co. Ltd, incorporated in Japan. Nippon Paper Group is one of the 10 largest companies in the global forest, paper and packaging industry. As well as operating more than 20 paper mills in Japan, Nippon Paper has business interests in Asia, Oceania, North and South America and Europe. AP is Nippon Paper’s largest investment outside Japan.

Prior to its acquisition by Nippon Paper Group in 2009, APM Maryvale was a wholly owned subsidiary of PaperlinX Ltd.

2.2 Existing Australian Paper Maryvale operations

The APM has been located on the premises since 1937 and has undergone several upgrades since its establishment. The APM produces kraft liner board, pulp, packaging, office and printing papers for domestic and export markets.

The existing plant operates under an EPA licence (46547) scheduled as A05 – Landfill, F03 Paper Pulp Mill and A07 Composting. The Mill is additionally licensed as a Major Hazards Facility under the Occupational Health and Safety Act 2004.

The APM operation requires a significant amount of steam and electricity. In 2016, the paper mill consumed ~6.7 petajoules (PJ) of natural gas which represents ~5 per cent of Victoria’s gas consumption and 30 MWe of electricity purchased from the National Electricity Market (NEM).

Taking into account fluctuations in natural gas and electrical prices, this project aims to secure the future competitiveness of the paper mill and secure the plant’s capability to operate into the future. It seeks to reduce the reliance on natural gas usage at the premises. The proposed WtE facility would replace two of the three existing natural gas fired boilers and reduce natural gas usage at the mill to approximately 2 PJ/yr.

In 2017, AP received $5 million (AUD) from state and federal government sources, to perform a feasibility study for a waste to energy (WtE) facility. AP also contributed $2.5 million (AUD) of its own funds to the study. Throughout this process, AP performed several investigations which were considered in its drafting of the works approval application (WAA).

2.3 Overview of waste to energy

The combustion of waste has occurred in large-scale facilities throughout the world for hundreds of years. The capture of energy for beneficial uses is, however, a more recent development but is widespread with over 1,600 facilities globally, primarily in Japan, and throughout Europe.

‘Waste to energy’ and ‘energy from waste’ are terms that are often used interchangeably. For the purposes of this works approval application Assessment Report (WAAAR) ‘waste to energy’ is used, (usually shown as WtE).
WtE infrastructure and technologies vary in scale, efficiency, costs (capital and operational), outputs and environmental performance. Energy can be generated from a range of different materials, including food and agricultural organics, wood, timber, tyres and residual waste.

Residual waste is the waste that is left over after suitable materials have been recovered for re-use and recycling. This generally means the environmental or economic costs of further separating and cleaning the waste are greater than any potential benefit of doing so.

In response to the adverse effects of emissions of oxides of nitrogen and sulphur (causing acid rain) and creation of toxic combustion by-products from the first generation of waste incinerators and high-temperature combustion plants in the 1980s, subsequent decades have seen increasing legislative controls and emissions standards being adopted worldwide and particularly in Europe.

With over 450 operating WtE facilities across Europe and an active pro-environmental European legislature, the European Union (EU) has developed very strict emissions standards. The implementation of the EU Industrial Emissions Directive 2010/75/EU (hereafter referred to as the EU IED) has seen the closure of some of the older first-generation high-temperature combustion plants and WtE facilities which could not meet the required emission standards. To support the implementation of the EU IED and facilitate designers and operators of temperature combustion plants and WtE facilities captured by the Directive, the EU has developed guidance documents. The most relevant to this WAA is the EU’s Waste Incineration – Best Available Techniques (BAT) Reference Document (known as the BREF).

WtE technologies can be divided into two broad categories: biological processing of biodegradable waste and thermal treatment of residual waste. Thermal treatments include direct combustion, gasification and pyrolysis.

The main thermal treatment technologies include: combustion to produce heat; gasification, including plasma gasification or plasma-assisted gasification, to produce a combustible syngas; pyrolysis to produce syngas, oil or char; and biological processes such as anaerobic digestion or fermentation to produce biogas or alcohol.

The most common type of WtE technology globally is direct combustion of waste to create heat, which can be used directly to generate electricity or a combination of both, known as combined heat and power (CHP) plants. The potential efficiency of CHP facilities is about 70–100 per cent.

At present, Victoria has a small number of EPA-approved and EPA-licensed waste to energy facilities. These are, however, at a much smaller scale and do not use the same waste feedstocks as proposed by AP. Those currently operational under EPA licence include: VISY – 15 tonnes per hour (paper machine rejects, Material Recovery Facility rejects and urban wood waste (untreated)); Australian tartaric ~5 tonnes per hour (biomass boiler); and 10 landfill gas WtE licences. Two additional facilities have been approved and are under construction or being commissioned including: Yarra Valley Water – Wollert; Select Harvest ~3 tonnes per hour (biomass boiler).

Other recipients of EPA approvals with WtE component, but may not be regulated as A08, typically involve anaerobic digestion (AD) such as Waranga Green Energy Pty Ltd (AD); Gippsland Water Factory (AD); Western Treatment Plant (AD); and Eastern Treatment Plant (AD).

### 2.4 Site

The WtE facility will be built next to the existing APM between Morwell and Traralgon. The Latrobe river runs immediately to the north of the mill beyond which lies farming land used for dairy farming
and grazing. To the east and to the south the mill, land is used for plantation forestry and sand quarrying. To the west lies plantation forestry.

**Figure 1: Location of the WtE facility and the surrounding sensitive receivers and monitoring stations (AP–N, AP–E, BoM LVA and EPA–ME)**

(Source: Australian Paper WAA)

The closest sensitive receivers are located at: Derhams 1 (residence/farm); Old Melb (residence/farm); Paul (residence); Scrub 1, 2 and 3, (Scrubby Lane 1, 2 and 3); Alex (Alexander Road); GRCH (Gippsland Rotary Centenary House); Derhams2 (Derhams Road); Sawyers (Sawyers Lane); Littles (Littles Lane); Tyers (Tyers Road); and Cem (Cemetery). The closest sensitive receivers are 2–3 kilometres from the proposed WtE facility.
Figure 2: Australian Paper premises (red border) and location of the proposed WtE facility (yellow border) within a regional context
(Source: Australian Paper WAA)
2.4.1 Land Use and Planning

The proposed WtE is located within the administrative boundary of Latrobe City Council (LCC). As illustrated in Figure 3 below, under the Latrobe Planning Scheme, the WtE is located in an Industrial Zone 2.

Land immediately to the north of the mill and Latrobe river is zoned for farming. To the east and to the south of the mill, land is zoned for farming. To the west lies land zoned for a special use zone.

Additionally, it is noted that around the mill there is within the Latrobe Planning Scheme the Maryvale Australian Paper Mill buffer. This is an Amenity Rural Buffer, an Amenity Lifestyle Precinct and an Amenity Lifestyle Investigation Precinct and acts as an odour buffer zone for the mill.

Further, it is noted that the mill is located within a Bushfire Overlay, District 27 (Morwell).
Figure 3. Location of the proposed waste to energy facility (yellow outline) and the surrounding land use zones
(Source: Australian Paper WAA)
2.5 Approvals required

The location of the WtE facility is located in an Industrial 2 Zone (IN2Z) and the proposed works are permitted under the Latrobe Planning Scheme subject to acquiring a planning permit. At the point in time when the decision was made for this WA, a planning permit had not been issued to build a WtE plant.

AP referred the proposal to DELWP for review by the Minister for Planning to determine the requirement to perform an Environment Effects Statement (EES) under the Environment Effects Act 1978. The Minister subsequently determined on 2 May 2018 that an EES was not a requirement for this proposal (see Appendix 3).

2.6 Relevant legislation, policy and guidance assessment framework

The WAA is required to comply with the Environment Protection Act 1970 (EP Act) and relevant subordinate legislation, which regulate waste disposal activities such as that proposed. There is also other related legislation that needs to be considered – such as the Climate Change Act 2017.

2.6.1 Environment Protection Act 1970

Key sections of the Act, relevant to consideration of this WAA are set out below:

- section 1 – which sets out the principles for environmental protection, in particular:
  - 1B: Principle of integration of economic, social and environmental considerations
  - 1C: The precautionary principle
  - 1D: Principle of intergenerational equity
  - 1I: Principle of wastes hierarchy
  - 1L: Principle of accountability
- section 19A – Scheduled premises
- section 19B – Works approval
- section 19CA – Duration of works approval
- section 20 – Licensing of certain premises
- section 20B – Conferences
- section 20C – Consideration of policy
- section 21 – Special conditions
- section 22 – Power of authority to require further information
- sections 38 and 39 – Discharges etc to comply with policy, pollution of water
- sections 40 and 41 – Discharges etc to comply with policy, pollution of atmosphere
- sections 44 and 45 – Discharge or deposit of waste onto land to comply with policy, pollution of land
- section 49— Resource efficiency
• section 50 – Victorian Waste and Resource Recovery Infrastructure Planning Framework and in particular sections 50C(1) and 50C(2).

2.6.2 Climate Change Act 2017

The *Climate Change Act 2017* (CC Act) came into effect on 1 November 2017 after being passed by the Victorian Parliament. When assessing a works approval application, the particularly relevant sections of the CC Act are:

• section 17 (1) a requirement for EPA to consider climate change in works approval decisions;
• section 17 (2) have regard to the potential impacts of climate change relevant to the decision or action and the potential contribution to the state's greenhouse gas emissions of the decision or action;
• section 17 (3) which sets out the relevant considerations for EPA in having regard to the potential impacts of climate change. These are the potential biophysical impacts, the potential long- and short-term economic, environmental, health and social impacts, the potential beneficial and detrimental impacts, the potential direct and indirect impacts, and the potential cumulative impacts;
• section 17 (4) sets out the relevant considerations for EPA in having regard to the potential contribution to the state’s greenhouse gas emissions. These are the potential short-term and long-term greenhouse gas emissions, the potential direct and indirect greenhouse gas emissions, the potential increases and decreases in greenhouse gas emissions, and the potential cumulative impacts of greenhouse gas emissions.

2.6.3 State environment protection policies and EPA guidance

The EPA considers that the following state environment protection policies (SEPPs) and protocols for environmental management (PEMs) are of particular relevance for this proposal:

• SEPP (Waters of Victoria) (SEPP (WoV))
• SEPP (Waters)
• SEPP (Groundwaters of Victoria) (SEPP (GoV))
• SEPP (Prevention and Management of Contamination of Land) (SEPP (PMCL))
• SEPP (Air Quality Management) (SEPP (AQM))
• *The Protocol for Environmental Management: Greenhouse Gas Emissions and Energy Efficiency in Industry* EPA publication 824
• SEPP (Control of Noise from Commerce, Industry and Trade No.N1)

2.6.4 Victorian Waste and Resource Recovery Infrastructure Planning Framework

The EP Act, regulations, waste management policies SEPPs, establishes a framework to ensure that waste treatment infrastructure is appropriately located, designed, constructed, operated and managed to minimise risks to the environment and public health.

The EP Act establishes the strategic framework for waste management need through the establishment of regional waste management group framework and through the preparation of
regional waste management plans. This is to ensure that appropriate waste management strategies are planned and implemented in line with accepted and approved waste management principles for the State of Victoria.

The SWRRIP for Victoria develops an integrated waste and recovery system that protects the environment and public health, maximising the productive value of resources and minimising the cost to the Victorian community. Based on the SWRRIP, the waste and resource recovery groups (WRRGs) develop regional waste and resource recovery implementation plans (RWRRIPs) to assess infrastructure needs in specific regions.

MWRRIP and GWRRIP have each been identified as the relevant waste management plans for the targeted waste feedstock.

At present regional plans and the SWRRIP provide no direct intervention in either the method, technology, nor scheduling of WtE facilities. However, EPA must still have consideration of the objectives of these plans when exercising its approval powers. Section 50C of the EP Act provides EPA the specific power to refuse approval of waste management facilities if the operations are inconsistent with the SWRRIP or the applicant is in breach of any relevant requirements of a schedule of existing and required waste and resource recovery infrastructure within a Regional Waste and Resource Recovery Implementation Plan.
3. WORKS APPROVAL APPLICATION PROCESS OVERVIEW

3.1 Assessment methodology

As described in section 2.2 a key requirement of the proposed development is that it meets international best practice. To build a better understanding of current world’s best practice for WtE facilities which combust residual waste and ensure EPA Victoria could assess the WAA against best practice, members of EPA’s assessment team:

- undertook a study tour to Europe. The study tour in May–June 2018 included several site visits at operational WtE facilities in the United Kingdom (4), France (3) and Scandinavia (7) visiting environmental regulators of those facilities – the United Kingdom Environmental Agency; the French Direction Régionale et Interdépartementale de l'Environnement et de l'Energie (DRIEE); Sweden’s Uppsala Länsstyrelsen, Skåne; Länsstyrelsen, Finland’s AVI Southern Finland; and organisations that are connected to the thermal treatment of municipal solid waste – Avfall Sverige (Swedish Waste Management Association); Motala municipality; Ramboll (consultancy); Ballast phoenix; and Swerec
- reviewed European Directives and member state legislation which govern WtE facilities and maintained close correspondence with international regulators.

The key stages of the technical assessment of this WAA are briefly described below.

3.2 Consultation and referrals June to October 2018

AP undertook its own pre-submission stakeholder engagement, as detailed in Section 2 of the WAA. Following the submission of the WAA, EPA consulted with the community, with EPA referring the WAA to relevant stakeholders and referral bodies as described below.

3.2.1 Community engagement

As per the requirements under section 19B(3)(b) of the EP Act, the WAA was advertised in a newspaper circulating generally throughout Victoria (*Latrobe Valley Express* and *Herald Sun*). Notification was also provided on a dedicated EPA Victoria webpage and the Engage Victoria website.

The WAA was open for an extended period of public comment between 30 May 2018 and 6 July 2018. During this consultation period, an Information Session was held on 5, 6 and 19 June 2018 where members of the local community and the referral bodies could attend in person to discuss:

- the WAA
- the works approval process and how they could be involved
- AP current activities and licence (regulated by EPA)
- the oversight of the WAA activities from EPA and AP.

The public events were attended by a total of 55 residents or interested persons. The information sessions were held in Morwell (5 and 19 June) and Traralgon (6 June).

Submissions were received both in writing, via email and through the Engage Victoria website.
A total of 115 submissions were received by EPA during the consultation period: 6 submissions were received via email and 109 submissions were lodged online through the Engage Victoria website. The Engage Victoria website allowed submitters to directly express their support or objection to the WAA – results are shown in Figure 4 and below:

- 84 support the WAA
- 8 support the WAA subject to conditions
- 8 object to the WAA
- 9 undecided (blank).

**Figure 4: Submission responses received through the Engage Victoria website during the consultation period**

Analysis of submission subjects listed as of highest importance to the community is shown in Table 1, and ranked below (1: Highest – 5: Lowest):

1. Sustainability social, economic and environmental
2. Waste generation and disposal
3. Climate change
4. Health risks and/or hazards
5. Energy and greenhouse gas emissions.

The subjects that received the highest percentage of 'no concerns' is shown in Table 1 and ranked below (1: Highest – 5: Lowest):

1. Land and soil resources
2. Climate change
3. Surface water resources
4. Existing site or applicant's performance and compliance
5. Sustainability social, economic and environmental.

**Table 1: Submission response according to topic and level of concern**
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<tr>
<th>Topic</th>
<th>No concern</th>
<th>Low concern</th>
<th>Medium concern</th>
<th>High concern</th>
<th>Very high concern</th>
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</table>

3.2.2 Section 20B conference

Following a review of the responses received during the consultation process, a conference, pursuant to section 20B of the EP Act, (a section 20B conference) was organised by EPA and held on 25 July 2018 at Premiere Function Centre, 29 Grey Street, Traralgon.

The conference provided an additional opportunity for the community to raise concerns and where possible, attempt to reach a just resolution of those concerns. The conference was hosted by an independent chairperson who published a section 20B report detailing recommendations for EPA. Following a review of the submissions received, topics 1–6 were identified for detailed consideration at the conference, with detailed consideration also given at the conference to potential human health impacts and assessments thereof.

- Topic 1 – Air emission monitoring and control technology to prevent health impacts
- Topic 2 – Best practice handling of waste and European Standards
- Topic 3 – Waste Hierarchy and waste composition
- Topic 4 – Management of incoming waste and residual waste
- Topic 5 – Greenhouse gas emissions and odour from the site
- Topic 6 – Track record and public consultation

In accordance with section 20B (4) of the EP Act, EPA has taken into consideration the discussions and resolutions of the section 20B conference including the recommendations contained in the section 20B report. Responses specific to the recommendations of the section 20B report (see Appendix 2) have been considered as part of EPA’s determination.
3.2.3 Public consultation – Health Impact Assessment

Australian Paper submitted a Health Impact Assessment (HIA) to supplement the WAA. The EPA received this information on the 27 September 2018 and opened the document up for comments by the public between 2 October and 16 October. This second consultation period was communicated through:

- EPA’s website
- Engage Victoria website
- email communications to submitters that included their email address during the first consultation, attendees of the S20B conference, and referral agencies.

During this second consultation period, EPA received a total of 13 additional submissions. Concerns included:

- concerns relating to feedstock and undermining recycling
- methodology of the Health Impact Assessment
- concerns for air emissions and their long-term impacts on health
- deposition of pollutants around the site.

The engagement also resulted in positive submissions that included:

- diversion of waste going to landfill
- strict regulation of WtE and making sure it complies with best practice
- the health benefits to the community
- trust of European technology and operation of WtE facilities.

EPA also requested submitters to answer if the information contained in the HIA provided more, or less, comfort toward the application. Of the 13 submissions, 6 felt less confident and 7 felt more confident.

3.2.4 Consultation and referral body response

The WAA was referred to statutory and non-statutory agencies. EPA additionally consulted with agencies relevant to the regulation of the activity described in this WAA. A summary of responses are provided below, full responses received are provided in Appendix 3 and are considered more fully in Section 5.

As part of changes to the EP Act (1 January 2018), EPA must refer a works approval that is considered a significant works approval to the Secretary to the Department of Health and Human Services (DHHS)(19B(3)(ii)). A significant works approval application (Environment Protection Act 1970) is an application that meets the criteria specified by the Minister published in the General Government Gazette No. G51 Thursday 21 December 2017 (GG2017G051).

- poses public health risks that cannot be adequately assessed and mitigated using the current Victorian policy framework and suite of relevant guidance as documented in EPA publication 1658 (as updated)
- the Chief Environmental Scientist, in consultation with the Chief Health Officer, believes that EPA is unable to assess the public health risks and mitigation measures.
The procedure for determining a significant works approval and the referral process has been established according to the requirements of the General Government Gazette and detailed under a Joint Standing Operating Procedure (JSOP) between the Chief Environmental Scientist (of EPA) and Chief Health Officer (of DHHS). At the lodgement of the WAA, EPA determined it did not meet the criteria of a significant works approval and the potential risks and impacts to human health could be adequately assessed and mitigated using the current Victorian policy framework and suite of relevant guidance.

EPA can determine that this proposal is not considered a significant works approval as defined under section 19B (9) of the EP Act and no formal referral to DHHS is required.

AP submitted the WAA to DELWP for review by the Minister for Planning to determine the requirement to perform an Environment Effects Statement (EES) under the Environment Effects Act 1978. It was identified that a requirement to perform an EES may be triggered due to the potential of greenhouse gas emissions to exceed 200,000 tonnes of CO$_2$ equivalents per annum (Department of Sustainability and Environment, 2006). A determination was made by DELWP on 2 May 2018 that an EES was not a requirement for this proposal (see Appendix 3).

EPA was informed that DELWP could not provide specific comment on Australian Paper’s WAA, but indicated a position statement for waste to energy will be incorporated into a larger future Victorian policy for a Circular Economy Policy.

EPA consulted with the Latrobe Health Advocate (LHA) throughout the assessment process and extended an invitation to attend and provide comment during public consultation sessions. LHA made a formal submission commenting on the Health Impact Assessment, which was taken into consideration by EPA in making its determination.

Key comments from the referral bodies are provided below.

- **Latrobe City Council.** As the relevant planning authority, Latrobe City Council provided a response to the referral of the WAA, dated 5 July 2018 (see Appendix 3). The response identified that the premises is located in an Industrial 2 Zone under the Latrobe Planning Scheme (see Figure 3). The proposed works and use (operation of a WtE facility) is allowed under the scheme subject to the issue of a planning permit for buildings and works. At the time of assessment, Latrobe City Council had not made a determination to issue a planning permit. In making its determination, EPA has fully considered the referral response from Latrobe City Council.

- **WorkSafe Victoria.** WorkSafe Victoria provided a response dated 6 September 2018 (see Appendix 3) to the referral of the WAA. The response identified that due to the activities currently performed at the premises (Dangerous Goods (storage and handling)) it is listed as a major hazard facility (MHF). The integration of the proposed WtE activity at the premises will require WorkSafe Victoria to perform a review of the premises activities and all risk management procedures as follows:
  - risk assessment should be completed to demonstrate the risk of major incidents at the site and knock-on effects to other dangerous goods stored onsite
  - WorkSafe Victoria indicated it would work with Australian Paper to update the safety case for the major hazard facility. In making its determination, EPA has fully considered the referral response from WorkSafe Victoria.

- **Country Fire Authority (CFA).** As the premises is located within a Bushfire Overlay, District 27 (Morwell) of the CFA were contacted as a referral authority. The referral
requested a review of the proposed fire mitigation equipment at the WtE facility and the potential impact of operating a facility located at a premises with a Bushfire Overlay. EPA received advice that the proposal must comply with EPA guideline publication and when the safety case for the MHF is updated (performed by WorkSafe Victoria) the CFA should be included. WorkSafe Victoria was notified of this request during the assessment period. In making its determination, EPA has fully considered the referral response from the CFA.

- **Sustainability Victoria (SV).** On 26 June 2018, SV responded to the referral of the WAA (see Appendix 3), stating the WAA can be considered consistent with the SWRRIP, provided materials that can be viably recovered are removed from targeted feedstocks. SV expressed concerns about the potential composition of a future feedstock given the expectation the organic fraction will be reduced or removed from the waste stream feedstock. This should be considered in the facility design so that works accommodate potential changes to the feedstock in the future. EPA has fully considered the matters raised by SV further in Section 5 of this report.

- **Metropolitan Waste and Resource Recovery Group (MWRRG).** MWRRG provided a response on 21 June 2018 to the referral of the WAA from EPA (see Appendix 3). The response confirmed that the proposal is considered consistent with the Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP).
  - Specifically, the WAA is consistent with the goals of the plan by diverting waste away from landfill and higher up the waste hierarchy. MWRRG also referred to the business case for group procurement of municipal residual waste handling offered by local governments across Melbourne. Construction and operation of the proposed WtE facility will be largely dependent on securing a large portion of the waste procured through this process. The MWRRG business case for waste procurement, although technology agnostic, does identify an advanced waste treatment (including moving grate incineration with energy recovery) as an appropriate waste treatment method.
  - As the facility will source up to ~85 per cent of its feedstock waste from the metropolitan area there are potential implications to the waste and resource recovery infrastructure and planning in Melbourne. The procurement process will determine the treatment of residual municipal waste after 2021 and it is voluntary for councils to be included (www.mwrrg.vic.gov.au/procurement/advanced-waste-processing/).

- **Gippsland Waste and Resource Recovery Group (GWRRG).** GWRRG provided a response on 19 June 2018 to the referral of the WAA from EPA (see Appendix 3). The response recognised the proposal constitutes a better alternative than landfilling the waste and that it is largely consistent with the Gippsland Waste and Resource Recovery Implementation Plan (GWRRIP). To fully align with the GWRRIP the project needs to have contingency in place for periods of unplanned or larger shutdowns and demonstrate that the facility is capable of accepting the volumes of waste that are expected to be produced in the future in the Gippsland region.
  - In making its determination EPA has fully considered the referral response from the GWRRG.

- **West Gippsland Catchment Management Authority (WGCMA).** WGCMA provided a response on 4 July 2018 to the referral of the WAA from EPA (see Appendix 3). The
response suggested that EPA satisfy itself as to the potential quality and volume of water discharged to the Latrobe River. This has been considered as part of the works approval assessment and is further assessed under Section 5.

- **Gippsland Water Factory.** Gippsland Water Factory was unable to provide a definitive comment regarding its capability to receive any additional wastewater as the requirement will be identified at the detailed final design stage. It has been identified that should the facility be required to discharge waters to the Gippsland Water Factory, it can be accommodated under a trade waste agreement.

3.4 Requests for further information

EPA reviewed the submissions, recommendations from the Section 20B Conference Report, the referral responses, and technical advice from EPA specialists. Following the reviews, EPA considered that further information was required from AP to enable a robust technical assessment to be completed.

3.4.1 Section 22 notice

Accordingly, EPA issued a formal notice on 10 July 2018 under section 22(1) of the EP Act to Australian Paper. The notice identified the further information EPA considered necessary and relevant to enable it to determine the WAA. The further information was categorised into three themes:

- submissions: formally requesting that Australian Paper respond to the 115 submissions received during the initial consultation period
- responding to the referral authorities
- requesting additional information to best practice.

3.5 Peer review process

3.5.1 Internal EPA assessment and peer review

The WA assessment and this WAAAR have been undertaken by EPA Development Assessment Unit staff (Senior Project Manager, Works Approvals) with input from EPA’s:

- Senior Applied Scientists – Air and Odour
- Specialist Applied Scientists – Air and Noise
- Senior Applied Scientist – Noise and Vibration
- Specialist Applied Scientist – Environmental Chemistry
- Specialist Applied Scientist – Waste Management
- Senior Applied Scientist – Waste and Chemicals
- Senior Specialist – Landfills
- Team Leader – Environmental Public Health
- Senior Health Risk Advisor – Environmental Public Health


4. THE WORKS APPROVAL APPLICATION

4.1 Overview of the proposal

The proposed WtE facility is considered a scheduled activity under the Environment Protection (Scheduled Premises) Regulations 2017, defined as A08 Waste to Energy and K01 Power Stations, requiring an EPA works approval to be constructed and an EPA licence to operate.

4.1.1 Description of the proposal

The development proposal involves the construction and operation of an incinerator with CHP recovery, producing steam that can be directly used in the operation of the APM or used to drive a turbine for electrical power use in the APM, or potential export to the electrical grid network depending on APM operational requirements.

The proposed WtE facility will be co-located within the boundaries of the APM premises and integrated into the APM operations. The facility will produce approximately 30 megawatts electric (MWe) and 150 tonnes per hour (tph) of steam in accordance with APM's heat and power needs. This will largely replace that provided by the mill's current natural gas fired boilers.

The proposed WtE facility will accept and incinerate 650,000 tonnes (+/-10 per cent) per annum (tpa) of municipal solid waste (MSW) (80 per cent) and commercial and industrial waste (C&I) (20 per cent) sourced from metropolitan Melbourne and the Gippsland region. This waste feedstock will be diverted from municipal landfills only. The plant will not accept hazardous or recycling waste streams. Waste will be collected from the existing municipal waste collection network and be transferred to the site via road and rail.

The combustion process produces incinerator bottom ash, fly ash and air pollution control residues in quantities representing up to 25 per cent of the feedstock volume. It is proposed these outputs will be managed for subsequent treatment, re-use or final disposal in accordance with Victorian regulations.

The facility will also include:

- waste receipt, handling and storage infrastructure
- rail spur line and siding
- wastewater treatment (integration with existing wastewater treatment plant)
- incinerator bottom ash, fly ash and air pollution control residue handling and storage.

The construction of the plant is planned to start in November 2019 and expected to transition into commissioning in September 2022.

4.1.2 Concept design and reference plants

As described in section 5.2 of the WAA, a series of studies have been completed by AP including: feasibility of using WtE, site selection within the mill, WtE option and main plant equipment technology selection. This has enabled the development of a concept design with minimum design and technical specifications.

Going forward and as described in subsection 4.5.3 of the WAA, an engineering, procurement and construction (EPC) tender design process will be followed. In such a process, potential EPC contractors competitively tender to design, procure and construct the power plant and undertake
proof of performance testing to verify that the as-built plant meets the technical specification established in the EPC contract. This is normal practice in power plant procurement. At the time the WAA was lodged, AP had progressed as far as the shortlisting three EPC contractors following a worldwide search to identify the potential contractors who had a proven track record of designing, building and commissioning WtE facilities that meet the EU’s IED best practice requirements.

The concept design developed sets of the basic specifications for the WtE facility, that the subsequent detailed design by the winning EPC contractor must comply with. The imposition of a suitably worded WA condition requiring the final detailed design to adhere to the minimum specifications identified in the concept design then allows modelling and assessments of the concept design to be undertaken now and a WAA to be lodged and determined, prior to detailed design of the WtE (Condition WA_W1).

As described in section 7.2 of this WAAAR, if a WA is granted, details of the final design would need to be submitted to EPA (as required by a condition of any approval) to verify that this conforms with the concept design assessed and approved. Subsequently, the EPC contractor would need to undertake proof of performance testing that the EPC contractor would need to undertake as part of their contract with AP, such testing would be undertaken under a section 30A commissioning approval, as described in section 7.4 of this WAAAR.

For full-scale installations where EPA approval is required, the proposed technologies must be proven, well understood and robust. The EPA requires applicants to explain key processes and technologies with a proposal in EPA guideline 1658 (Works Approval Application Guideline). This includes key inputs, key outputs, emission control and waste treatment. WtE is considered novel technology in Victoria and performance could be established by including suitable references to locally or internationally established plants which use the same technologies and treat comparable waste streams at a similar scale.

The EPA required a demonstration that the proposed technology is suitable for the waste targeted and that current best practice techniques and processes are employed in relation to air, land, water, noise and odour management. It must be demonstrated that discharge of pollutants to the environment, and risks to human health and the environment have been reduced to the minimum.

The proposed design is a ‘moving grate’ incinerator; this technology is the most common technology within equivalent facilities globally. The selected design is based on several operational reference facilities.

The WAA relies on eight operational WtE facilities as reference plants to predict emissions to air from the proposed WtE facility. The selection of reference facilities has been based on the designs, waste feedstock, and operational controls. Table 2 summarises the reference facilities and boxes 1–5 provide additional details. The EPA has determined the references facilities are suitable for the purposes of the assessment of the WAA. Suitability was determined based on: flue gas treatment system; technology provider; technology (moving grate); waste feedstock; and capacity.
Table 2: Summary of the eight reference plants as described in the WAA

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Reference for</th>
<th>Capacity (tpa)</th>
<th>System</th>
<th>Waste</th>
<th>EA permit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUEZ Recycling and Recovery Suffolk Ltd</td>
<td>Ipswich, UK</td>
<td>Design and waste</td>
<td>269,000</td>
<td>Martin GmbH</td>
<td>MSW and industrial/commercial</td>
<td>WP3438HZ</td>
</tr>
<tr>
<td>Veolia ES Leeds Ltd</td>
<td>Leeds, UK</td>
<td>Design</td>
<td>165,000</td>
<td>Martin GmbH</td>
<td>MSW and commercial</td>
<td>GP3334CX</td>
</tr>
<tr>
<td>Veolia ES South Downs Ltd</td>
<td>Newhaven, UK</td>
<td>Design PM$_{2.5}$</td>
<td>200,000</td>
<td>HZI grate</td>
<td>MSW, commercial, industrial and agricultural wastes</td>
<td>BV8067IL</td>
</tr>
<tr>
<td>Veolia ES Staffordshire Ltd</td>
<td>Staffordshire, UK</td>
<td>Design</td>
<td>320,000</td>
<td>Martin GmbH</td>
<td>MSW, street cleaning, markets, commercial, bulky and non-recyclable wood</td>
<td>HP3431HK</td>
</tr>
<tr>
<td>Riverside Resource Recovery Ltd</td>
<td>London, UK</td>
<td>Design PM$_{2.5}$</td>
<td>670,000</td>
<td>HZI grate</td>
<td>MSW and industrial/commercial</td>
<td>FB3038AB/A001</td>
</tr>
<tr>
<td>MES Environmental Ltd</td>
<td>Hanford, UK</td>
<td>PM$_{2.5}$</td>
<td>180,000</td>
<td>Martin GmbH</td>
<td>MSW and industrial/commercial</td>
<td>QP3234SX</td>
</tr>
<tr>
<td>Lakeside Energy From Waste Ltd</td>
<td>Colnbrook, UK</td>
<td>PM$_{2.5}$</td>
<td>410,000</td>
<td>Takuma grate</td>
<td>MSW and industrial/commercial</td>
<td>BT7116IW</td>
</tr>
<tr>
<td>Multifuel Energy Ltd</td>
<td>Knottingley, UK</td>
<td>Noise</td>
<td>675,000</td>
<td>HZI grate</td>
<td>MSW and industrial/commercial</td>
<td>EPR/YP3332WV</td>
</tr>
</tbody>
</table>

Hitachi Zosen Inova (HZI) and MARTIN GmbH für Umwelt und Energietechnik (Martin GmbH) are two of the EPC contractors chosen to provide quotes on the final detailed design.
Box 1: SUEZ Recycling and Recovery Suffolk Ltd, Ipswich, Suffolk UK.
Permit Number EPR/WP3438HZ, under the Environmental Permitting (England and Wales) Regulations 2016.

The facility is a moving grate incinerator WtE facility, and is permitted the following:

- two incineration line with a total capacity of approximately 30 tonnes per hour of waste feedstock
- steam is generated in boiler and will be used to drive a turbine to generate electricity, approximately 24 MW will be exported to the electricity grid
- processes non-hazardous waste including municipal solid waste and commercial and industrial waste
- maximum quantity of waste: 269,000 tonnes per year for incineration
- minimum operating temperature of 850 °Celsius for at least two seconds
- the WtE plant is collocated with a bottom ash recovery plant
- combustion air is treated by:
  - SNCR, using dry urea, will be used for oxides of nitrogen;
  - bag filters for particulate matter
  - hydrated lime injection for acid gases
  - activated carbon injection for dioxins and mercury
  - after treatment emitted from 81 m stack
- incinerator emission stacks are equipped with a Continuous Emissions Monitoring System (CEMS) and continuously monitors for: particulate matter, total organic carbon, hydrogen chloride, carbon monoxide, sulphur dioxide and oxides of nitrogen (expressed as (NO₂)
  - other periodic monitoring: hydrogen fluoride (quarterly in first year, then bi-annual), cadmium and thallium and their compounds (quarterly in first year, then bi-annual), mercury and its compounds (quarterly in first year, then bi-annual), [antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni) and vanadium (V) and their compounds] (quarterly in first year, then bi-annual), ammonia (NH₃), nitrous oxide (N₂O) (quarterly in first year, then bi-annual), polychlorinated dibenzodioxins (PCDD), polychlorinated dibenzofurans (PCDF) (quarterly in first year, then bi-annual), dioxin-like polychlorinated biphenyls (PCBs) (quarterly in first year, then bi-annual) and specific individual poly-cyclic aromatic hydrocarbons (PAHs) (quarterly in first year, then bi-annual).
Box 2 Leeds Recycling and Energy Recovery Facility, Cross Greens, Leeds UK.
Permit Number EPR/GP3334CX, under the Environmental Permitting (England and Wales) Regulations 2010.

The facility is a moving grate incinerator WtE facility, and is permitted the following:

- a single incineration line with a capacity of 20.5 tonnes per hour of waste feedstock
- steam is generated in boiler and will be used to drive a turbine to generate electricity, 11 MW will be exported to the electricity grid
- processes non-hazardous waste including municipal solid waste and some commercial wastes
- maximum quantity of waste quantity of waste processed: 214,000 tonnes per year for pre-treatment and then incineration, and 179,580 tonnes per year for incineration – this quantity includes wastes after the pre-treatment
- minimum operating temperature of 850 °Celsius for at least two seconds
- ash is treated offsite for recovery where possible
- combustion air is treated by:
  - SNCR, using dry urea, will be used for oxides of nitrogen
  - bag filters for particulate matter
  - dry lime injection for acid gases
  - activated carbon injection for dioxins and mercury
  - after treatment emitted from 75 m stack
- incinerator emission stacks are equipped with a Continuous Emissions Monitoring System (CEMS) and continuously monitors for: particulate matter, total organic carbon, hydrogen chloride, carbon monoxide, sulphur dioxide, oxides of nitrogen (expressed as (NO₂), ammonia (NH₃)
  - other periodic monitoring: hydrogen fluoride (quarterly in first year, then bi-annual), cadmium and thallium and their compounds (quarterly in first year, then bi-annual), mercury and its compounds (quarterly in first year, then bi-annual), [antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni) and vanadium (V) and their compounds] (quarterly in first year, then bi-annual), nitrous oxide (N₂O) (quarterly in first year, then bi-annual), polychlorinated dibenzodioxins (PCDD), polychlorinated dibenzofurans (PCDF) (quarterly in first year, then bi-annual), dioxin-like polychlorinated biphenyls (PCBs) (quarterly in first year, then bi-annual) and specific individual polycyclic aromatic hydrocarbons (PAHs) (quarterly in first year, then bi-annual).
Box 3 Veolia ES South Downs Ltd, Newhaven Energy Recovery Facility

Permit Number EPR/BV8067IL, variation application number EPR/BV8067IL/V005 under the Environmental Permitting (England and Wales) Regulations 2016

The facility is a moving grate incinerator WtE facility, and is permitted the following:

- two incinerator lines with a designed capacity of 14 tonnes/hour each or total 28 tonnes per hour
- steam is generated in a boiler and will be used to drive a turbine to generate approximately 19 MW of electricity with 16.5 MW exported to the national grid
- processes non-hazardous waste including municipal solid waste, commercial, industrial and agricultural wastes
- maximum quantity of waste: 242,000 tonnes per year
- minimum operating temperature of 850 °Celsius for at least two seconds
- ash is treated offsite for recovery where possible
- combustion air is treated by:
  - lime slurry and activated carbon injection to neutralise acid gases and absorb dioxins, volatile organic compounds (VOCs), HAPs and mercury
  - selective non-catalytic reduction and flue gas recirculation, used for oxides of nitrogen
  - bag filters for particulate matter
  - after treatment emitted from two 65 m stacks
- incinerator emission stacks are equipped with a Continuous Emissions Monitoring System (CEMS) and continuously monitors for: particulates, volatile organic compounds (VOCs as total organic carbon (TOC), hydrogen chloride (HCl), carbon monoxide (CO), sulphur dioxide (SO2), oxides of nitrogen (NO and NO2 expressed as NO2) and ammonia
  - other periodic monitoring: cadmium (Cd), thallium (Tl), mercury (Hg), antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V), dioxins and furans, dioxin-like polychlorinated biphenyls (PCBs), PAHs, hydrogen fluoride (HF) and nitrous oxide (N2O).

Box 4 Four Ashes Staffordshire Energy Recovery Facility, Wolverhampton, Staffordshire UK.

Permit Number EPR/HP3431HK, under the Environmental Permitting (England and Wales) Regulations 2010.

The facility is a moving grate incinerator WtE facility, and is permitted the following:

- two incineration lines with a capacity of 20 tonnes per hour of waste feedstock
- steam is generated in a boiler and will be used to drive a turbine to generate electricity, 26 MW will be generated with 3 MW required for internal use and 23 MW exported to the electricity grid
- processes municipal solid waste and also some wastes from street cleaning, markets, commercial, bulky and non-recyclable wood
- maximum quantity of waste quantity of waste processed: 300,000 tonnes per year
- minimum operating temperature of 850 °Celsius for at least two seconds
- good combustion will minimise the amount of bottom ash and will achieve <3 per cent of total organic carbon in the ash
- ash is treated offsite for recovery where possible
- combustion air is treated by:
  - selective non-catalytic reduction, using ammonia injection, used for oxides of nitrogen
  - bag filters for particulate matter
  - dry lime injection for acid gases
Activated carbon injection for metals and dioxins
- incinerator emission stacks are equipped with a Continuous Emissions Monitoring System (CEMS) and continuously monitors for: particulate matter, total organic carbon, hydrogen chloride, carbon monoxide, sulphur dioxide, oxides of nitrogen (expressed as (NO₂) and ammonia (NH₃)
- other periodic monitoring: hydrogen fluoride (quarterly in first year, then bi-annual), cadmium and thallium and their compounds (quarterly in first year, then bi-annual), mercury and its compounds (quarterly in first year, then bi-annual), [antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni) and vanadium (V) and their compounds and their compounds] (quarterly in first year, then bi-annual), nitrous oxide (N₂O) (quarterly in first year, then bi-annual), polychlorinated dibenzodioxins (PCDD), polychlorinated dibenzofurans (PCDF) (quarterly in first year, then bi-annual), dioxin-like polychlorinated biphenyls (PCBs) (quarterly in first year, then bi-annual) and specific individual polycyclic aromatic hydrocarbons (PAHs) (quarterly in first year, then bi-annual)

**Box 5 Multifuel Energy Limited, Ferrybridge Multifuel 2**

**Permit Number EPR/YP3332WV, under the Environmental Permitting (England and Wales) Regulations 2010**

The facility is a moving grate incinerator WtE facility, and is permitted the following:

- two incinerator lines
- steam is generated in a boiler and will be used to drive a turbine to generate approximately 90 MW gross of electricity for use onsite and export to the national grid
- maximum quantity of waste: 675,000 tonnes per year
- minimum operating temperature of 850 °Celsius for at least two seconds
- WtE plant collocated with bottom ash recovery plant
- incinerator emission stacks are equipped with a Continuous Emissions Monitoring System (CEMS) and continuously monitors for: particulates, nitrogen oxides, sulphur dioxide, volatile organic compounds, ammonia, carbon monoxide, hydrogen chloride, total organic carbon and oxygen
  - other periodic monitoring: cadmium (Cd), thallium (Tl), mercury (Hg), antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V), dioxins and furans, dioxin-like PCBs, PAHs, hydrogen fluoride (HF) and nitrous oxide (N₂O).

Permit included the following conditions regarding noise and vibration:

‘3.4.1 Emissions from the activities shall be free from noise and vibrations at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.’

‘3.4.2 The operator shall: (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration; (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.’
4.1.3 Key elements of the design

Table 3 shows a summary of some of the key features of the proposed WtE facility.

### Table 3: Key features of the proposed WtE facility

<table>
<thead>
<tr>
<th>Throughput volume</th>
<th>650,000 (+/-10%)pa. – Maximum 715,000 Minimum 585,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste processed</td>
<td>80% municipal solid waste (MSW) and 20% commercial and industrial waste (C&amp;I)</td>
</tr>
<tr>
<td>No. of lines</td>
<td>2 to 3 (dependent on detailed final design)</td>
</tr>
</tbody>
</table>
| Auxiliary fuel    | Hot commissioning performed with natural gas  
|                   | Ongoing operation – diesel generator for start-up and shutdown  
|                   | Emergency – diesel generator (200 kW) for emergency shutdown |
| Acid gas abatement| Dry/semi-dry lime injection |
| NOx abatement     | Selective non-catalytic reduction (SNCR)  
|                   | Urea |
| Water consumption | Up to 438 ML/year |
| Flue gas recirculation | System fitted with flue gas recirculation from the furnace to the main combustion chamber |
| Dioxin abatement  | Destruction of pre-cursor compounds and injection of activated carbon with a baghouse |
| Reagent consumption | Lime ~12,200 tpa  
|                   | Urea ~2,600 tpa  
|                   | Activated carbon ~316 tpa |
| Stack             | Height: 95 m  
|                   | Diameter: 3.72 m |
| Flue gas          | Flow: 198.7 m$^3$/s (130.6 Nm$^3$/s)  
|                   | Velocity: 18 m/s |
| Energy production | Combined heat and power recovery – 30 MW electricity or 130 tonnes per hour of high-pressure steam |
| Calculated efficiency | R1 between 0.72 and 0.87 |

As part of the WAA, AP provided a simplified mass balance describing inputs and outputs for the proposed WtE facility. Inputs are identified as:

**Mixed waste:**
- combustion air from bunker and tipping hall
- feed water
- reagents injection: Urea, activated carbon, lime and water
- ash quench water

**Outputs:**
- steam and electricity
- incinerator bottom ash (or bottom ash)
- metal removal
- separate bottom ash
- boiler and fly ash
- air pollution control residue
- Australian Paper predicted emissions to air
  - H₂O
  - NOₓ 110 mg/m³ (IED limit 200 mg/m³ 24 hours)
  - SOₓ 30 mg/m³ (IED limit 50 mg/m³ 24 hours)
  - CO 10 mg/m³ (IED limit 50 mg/m³ 24 hours)
  - HCl 2.6 mg/m³ (IED limit 10 mg/m³ 24 hours)
  - HF 0.2 mg/m³ (IED limit 1 mg/m³ 24 hours)
  - Hg <0.05 mg/m³ (IED limit 0.05 mg/m³ 24 hours).
Figure 5: Simplified mass balance of the proposed WtE facility
(Source: Australian Paper WAA)
4.1.4 Proposed design controls

The proposed design controls to be measured are:

- continuous emission monitoring system (CEMS) of pollutants
- continuous monitoring of crucial operating parameters (for example, temperature and some pollutants in untreated flue gas) to enable optimisation of waste combustion, energy generation and flue gas treatment efficiency.

CEMS are important to ensure that the flue gas treatment is functioning and operating at best practice. By including a spare CEMS, any faults with the system can be fixed without shutting down the plant. The monitoring of the untreated flue gas allows for reagent injection (and other pollutant-reducing functions) to be operated at best practice.

Key environment components of the design include:

- bunker and tipping hall operated under negative pressure to capture and prevent odorous gases from waste escaping
- storage of chemical in bunded area to reduce potential for chemicals to escape into soil, groundwater and surface waters in the event of spillages/leaks
- selective non-catalytic reduction (SNCR)
- acid scrubbing
- persistent organic pollutant reduction and metal reduction through addition of activated carbon
- CEMS of pollutants in the stack.

By keeping the bunker and tipping hall under negative pressure with the air feed into the incinerator, the odour will be sufficiently managed to not cause an offsite impact. Storing chemicals in a bunded area in accordance with EPA guideline 347.1 allows for leaks or spills to be managed and avoid pollution of stormwater, land and groundwater.

Managing pollutants are very important when combusting municipal solid waste. SNCR, lime injection, activated carbon, baghouse and CEMS are all used to make sure that the plant is operated at best practice.

4.2 Overview of a WtE facility process flow

Figure 6 was presented as part of the WAA and shows a process flow diagram which demonstrates the general process design for a WtE facility. The key process design can be described as:

1) Waste is collected, at the source or following aggregation at transfer stations, and transported to the site via road and rail. Waste is accepted in a tipping hall. Waste is deposited into a bunker (2) where a feeder crane is working continuously (3) to mix waste within the bunker and feed mixed waste into the hopper (4). The waste is fed into the combustion chamber (6) where the waste is combusted under stoichiometric conditions ensuring complete combustion. Combustion chamber feed air is drawn from the bunker creating a negative pressure within. Air from the bunker is captured and incinerated, destroying gases potentially generated through breakdown of waste in the bunker. This process aims to prevent odours from escaping into the environment. At the base
of the grate (19), fully combusted waste is reduced to ashes, stored and treated to recover valuable materials (metals), prior to removal for final disposal. Flue gas created from combustion moves into the furnace where urea is added (12) to reduce the NO\textsubscript{x} emission. The flue gas moves through to the cooled wall where a portion of the boiler ash falls out (7). The flue gas flows through to the economiser where super-heated steam is produced (8). Flue gas moves into an acid scrubber (9) where a caustic solution is added to remove acid gases. This proposal is for a dry or semi-dry scrubbing process. Activated carbon is added to the flue gas before it reaches the baghouse filter (10), which helps to remove heavy metals and complex halogenated compounds.

The diagram shows a wet scrubbing system (11) which is not proposed in the Australian Paper facility design. EPA does not consider a wet scrubbing system to be a requirement for a facility processing the feedstock detailed in AP’s WAA. Cleaned flue gas is emitted through the stack (14).

The steam created in the process can either be fed into district heating networks or industrial processes where it is used as process steam, or it can be used to drive a turbine (15) to create electricity. The steam is cooled by using air or water cooling and returned to liquid phase to be pumped back into the furnace. The steam system is a closed system and the cooling tower is an open system.
Figure 6: Simplified plan showing the flow diagram for a WtE facility. The diagram is taken from the AP’s WAA
Figure 7: Detail showing Australian Paper Mill premises and location of the proposed WtE facility (red border)
(Source: Australian Paper WAA)
Figure 8: Detail showing proposed WtE facility layout located on an area currently planted with plantation timber
(Source: Australian Paper WAA)
The proposed activities, subject to the WA being issued are:

- securing waste contracts
- obtaining other permits (for example, planning permit)
- final detailed design
- further detailed investigation of potential contamination of the land on which the plant will be built
- land clearance prior to commencing construction of the WtE plant
- construction phase
- commissioning phase
- operational of the plant (25-year lifetime).

### 4.3 Wastes to be incinerated

#### 4.3.1 Relevant documents

There are five key documents that are relevant for the assessment of the wastes accepted at the facility:

4. *Demonstrating Best Practice* (EPA publication 1517)
5. *Energy From Waste Guideline* (EPA publication 1559.1)

#### 4.3.2 Application

AP is proposing to incinerate the following non-hazardous wastes:

- municipal solid waste kerbside collection
- commercial and industrial waste.

These waste streams include:

- MSW wastes collected by or on behalf of councils
- C&I wastes collected by or on behalf of councils
- waste from private waste companies and industries (non-prescribed industrial waste).

AP is not currently proposing to sort any waste onsite. Waste Acceptance Criteria has been described under Section 10.5.2.1 of the WAA. Adoption and implementation of these acceptance criteria will prevent the plant from accepting materials that are unsuitable at the weighbridge (when possible) and with a CCTV installed in the bunker. There will be an audit mechanism that diverts waste to an inspection zone where it can be thoroughly assessed. Hazardous waste and waste that does not comply with waste acceptance criteria will be segregated and rejected.
AP proposes to engage a suitably qualified auditor to conduct audits of incoming waste during the first three years to ensure that the incoming waste at the facility complies with the Waste Acceptance Criteria.

The existing municipal kerbside collection includes waste from surrounding local government areas. AP has also proposed to source MSW from southeast Melbourne. The WAA has estimated the expected combined feedstock composition (MSW and C&I) through the 'naus waste intelligence tool' for the point in time when the plant is likely to commission operation (2020–2021). The same tool was used to predict the waste future feedstock availability in 2045–2046 (which is the predicted lifetime of the plant).

To further understand the calorific value of the waste feedstocks AP have commissioned a 12-month testing programme in December 2017. This on-going programme indicated after the first 3 months that the indicative calorific value would be 9.4 MJ/kg. The firing diagram (Figure 4.11 of the WAA) show that the design of the plant would be able to burn a waste with calorific value of 9.4 MJ/kg. The design parameters were further defined in the supplementary information sent to EPA on 25 May 2018 (see Table 4).

**Table 4: Design parameters as specified in the WAA**

<table>
<thead>
<tr>
<th>Design parameter</th>
<th>Unit</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustibles</td>
<td>wt%</td>
<td>18 to 85</td>
</tr>
<tr>
<td>Moisture</td>
<td>wt%</td>
<td>10 to 50</td>
</tr>
<tr>
<td>Inert</td>
<td>wt%</td>
<td>5 to 32</td>
</tr>
<tr>
<td><strong>Required operational range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating value</td>
<td>MJ/kg</td>
<td>7 to 13</td>
</tr>
</tbody>
</table>

In the supplementary information provided on 25 May 2018, AP included the chemical analysis of the MSW combusted at the Suffolk WtE reference facility. This was used to further strengthen the argument that the waste is likely to contain less than 1 per cent halogenated organic compounds expressed as chlorine.
Table 5: MSW chemical compositional data collected at the Suffolk reference plant

<table>
<thead>
<tr>
<th>Chemical component</th>
<th>Percentage of waste (wt% as received)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash</td>
<td>23.56</td>
</tr>
<tr>
<td>Water</td>
<td>27.39</td>
</tr>
<tr>
<td>Carbon</td>
<td>25.71</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>3.68</td>
</tr>
<tr>
<td>Oxygen</td>
<td>18.48</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>0.61</td>
</tr>
<tr>
<td>Sulphur</td>
<td>0.16</td>
</tr>
<tr>
<td>Chlorine</td>
<td>0.41</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
5. REGULATORY COMPLIANCE ASSESSMENT

5.1 Principles of Environment Protection Act 1970

5.1.1 Principles of the Act

Section 1A(3) of the EP Act requires EPA to consider the environment protection principles set out in the EP Act in its assessments and decisions. EPA requires an applicant for a works approval to demonstrate how it has considered the environment protection principles, and EPA considers this information during its assessment of the application.

5.1.2 Application

Sections 5.2, 5.3 and 5.4 of the WAA outline how the WAA has been developed with consideration for the principles of environment protection and how the WAA can be considered to meet the environmental protection principles.

5.1.3 Assessment

In assessing the WAA against the environment protection principles, EPA has considered its publication 1565 Application of environment protection principles to EPA’s approvals process (2014). This publication explains how EPA expects applicants to consider the environment protection principles when developing proposals and preparing applications for an EPA approval.

Publication 1565 discusses the relevance of the principles in Section 2.1 states:

all of the principles are relevant to some extent to all proposals within the approval process … the direct relevance of each principle depends on the issues arising in a particular proposal’

different principles (or combinations of principles) of varying significance may apply to different applications. They can moderate or balance each other in the overall assessment. However, none of the principles is treated as absolute or totally dominant in any given situation. The principles are commonly applied in an integrated fashion.

In applying the principles, EPA focuses on achieving efficient and practicable outcomes that are in proportion to the significance of the environmental problem(s) being addressed.

Also, the principles are not to be considered in isolation from the other matters (for example, best practice and other statutory policy requirements) that proponents and EPA need to consider.

EPA’s assessment gave particular consideration to the following principles:

- Section 1B – integration of economic, social and environmental considerations
- Section 1C – precautionary principle
- Section 1I – waste hierarchy.
5.1.4 Section 1B: Integration of economic, social and environmental considerations

The purpose of this principle is to ensure that economic, social and environmental issues are given equal attention in decision-making. Section 1B aims to optimise the outcome of available trade-offs or compromises between these three factors, and assist in reaching a balanced decision, rather than provide the absolute maximum level of protection of the environment. It requires the effective integration of economic, social and environmental considerations in decision-making processes with the need to improve community wellbeing and the benefit of future generations.

The application and consideration of this principle does not detract from the requirement to demonstrate consistency with State environment protection policies (SEPPs). The principle also does not require EPA to balance the financial viability of a proposal with broader economic, social and environmental concerns. Rather, it is the overall social, economic and environmental impact of a proposal that is of primary interest in applying the principle in s.1B.

As set out in the WAA and paragraphs 3.2– and 4.2 above, the proposed WtE facility would see the transfer of and treatment of waste from metropolitan Melbourne to the site in addition to locally collected waste from Gippsland. While concerns were raised by some submitters on potential air emissions and health impacts, and the transport of wastes into the Latrobe Valley, the majority (85 per cent) of submitters supported the WAA and the economic (job creation and stability) and social benefits associated with the proposal.

Accordingly, it can be considered that the WAA meets the principle of integration of economic, social and environmental considerations.

5.1.5 Section 1C: The precautionary principle

Applying section 1C requires the consideration of the risk–weighted consequences, rather than a total avoidance of all risks. This requires a reasonable balance between the risks and costs associated with various environment protection measures and the benefits to be derived from them.

In establishing if the precautionary principle is applicable to a WA, it is necessary to determine whether two necessary conditions are satisfied, namely the existence of:

1. the threat of serious or irreversible environmental impacts
2. scientific uncertainty about those impacts.

In relation to the threat, if it is considered serious, it does not matter whether the threat is irreversible or not. In addition, the expectation of damage should have ‘reasonable scientific plausibility’, even if it is not fully demonstrable.

The need for precautionary action increases with both the level of possible harm (potential threat) and the degree of uncertainty.

With regards to the consideration of this WAA, it is noted that WtE is a well-established waste disposal activity that occurs globally and is a heavily regulated industry. Accordingly, the potential environmental risks and impacts are well known, with evolving improvements in emission containment, control and monitoring technologies. The EU’s IED and BREF, which is the key compliance policy document that the proposal will need to meet, gets regularly updated to reflect international best practice.

It is noted that if a WA is issued, there would be appropriate controls on waste feedstock, and monitoring programmes conditioned as part of any WA and subsequent licence. The latter would be designed to monitor stack emissions and further information the performance monitoring of the
facility to complement the CEMS system. As such, if any offsite emissions of concern were detected, appropriate actions, overseen and regulated by EPA, could be taken to mitigate any potential effects.

In its assessment, the EPA has satisfied the proposal does not pose a threat of serious or irreversible environmental impacts and there is sufficient scientific certainty about those impacts. Accordingly, it is considered Principle 1C would be fully met.

5.1.6 Section 1I: Principle of wastes hierarchy

![Wastes Hierarchy Diagram](Source: EPA Victoria)

The wastes hierarchy is fundamental to EPA’s assessment of waste management facilities. The hierarchy establishes an order of preference for waste management.

With reference to the principles EPA encourages WtE options where energy recovery provides the best practicable environmental outcome for the management of the waste when the waste has a gross calorific value that can be recovered. It should be considered where generation of the waste cannot be avoided or the waste cannot be recovered for productive purposes through re-use and recycling.

Within the hierarchy, Waste to Energy is considered preferential to landfill, as it captures the energy value of waste and reduces the volume of waste sent to landfill by ~80 per cent (that is, 20 per cent residue composing incinerator bottom ash (IBA), boiler ash and air pollution control residues (APCr)). However, it is lower in the wastes hierarchy than waste avoidance, re-use and recycling which prevents waste or captures materials for re-use. Recovery of energy should not compete with avoidance, re-use or recycling.

Currently, the waste feedstock proposed to be processed at the AP facility is primarily managed through (landfill) disposal. This proposal will result in recovery of energy from that waste to generate steam and electricity for use at the Australian Paper Mill or distributed to the grid. After the combustion process, the metal fraction will also be recovered for re-use. A waste to energy facility which incorporates combined heat and power ensures optimal recovery and utilisation of energy.

Sustainability Victoria and community submissions have raised concerns about the recovery of materials that can be recycled or reused prior to incineration. Australian Paper advised that there are currently no existing Material Recycling Facilities (MRF) in Victoria which sort residual MSW as
there is no financial viability, nor market incentives, to build such a facility. In addition, EPA notes that pre-sorting MSW has not been required for operators of lower order waste facilities (such as landfills); and that the European Union does not require a recovery system to meet best practice unless warranted by the engineering design (European Union, 2010). EPA recognises the concerns of SV and the community and the present difficulty associated with sorting residual MSW. To address this issue, the approval will be conditioned to require provision in the plant for front-end processing to maximise recovery of recyclable materials in the future, if and when, this becomes viable.

It is considered the WAA is consistent with the wastes hierarchy.

5.1.7 Conclusion

The conclusions of the review are that:

- the WAA is consistent with the environmental protection principles of the EP Act.

5.2 Section 20C: track record and fit and proper person test

Under section 20C(3)(b) of the EP Act ‘The Authority may refuse to issue, transfer or amend an authorisation’ –

(b) if the person applying for the issue or amendment, or in the case of a transfer, the person to whom the authorisation is to be transferred –

(i) has been found guilty of one or more relevant offences in the 10 years immediately before the date the Authority received the application; and

(ii) as a result, the person is, in the opinion of the Authority, not a fit and proper person to hold the authorisation, or in the case of an application for amendment, to hold the authorisation in the amended for.

Accordingly, consideration needs to be given in the assessment of the WAA of whether AP meets these requirements, noting that consideration under subsection (b)(ii) is only triggered if a finding of guilt of a relevant offence has occurred in the 10 years preceding the receipt of the WAA.

Section 20(C) (1) of the EP Act defines a relevant offence to include an ‘indictable offence’ and certain summary offences.

5.2.1 Application

Information of AP’s track record is provided in Section 1.6 and Appendix B of the WAA, which was supplemented by additional information provided on 1 and 12 November 2018. Three relevant offences are identified in the preceding 10 years as set out in Table 6 below. The offences declared by AP are convictions for breach of the Occupational Health and Safety Act 2004 (the OHS Act), not the EP Act; however, the definition of ‘relevant offence’ in section 20C(1) of the EP Act includes breach of the OHS Act. Further, AP’s management of occupational health and safety is part of its broader operations management system (OMS), which includes its environmental management system (EMS).

Table 6: Summary of the relevant offences
<table>
<thead>
<tr>
<th>Type of offence</th>
<th>Date offence occurred and conviction date</th>
<th>Summary details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Occupational Health and Safety Act 2004 – section 21(2)(a)</strong></td>
<td>25 May 2005 26 August 2008</td>
<td>Incident at the Maryvale Mill resulted in a worker being fatally struck by a paper machine breast roll. Company fined $230,000. AP were found guilty for a failure to provide or maintain plant or systems of work that were, so far as reasonably practicable, safe and without risks to health.</td>
</tr>
<tr>
<td><strong>Occupational Health and Safety Act 2004 – section 21(2)(a)</strong></td>
<td>4 October 2010 13 August 2013</td>
<td>Incident where a worker’s leg was caught in a paper machine. Company fined $60,000. AP were found guilty for a failure to provide or maintain plant or systems of work that were, so far as reasonably practicable, safe and without risks to health.</td>
</tr>
<tr>
<td><strong>Occupational Health and Safety Act 2004 – section 21(2)(c)</strong></td>
<td>7 August 2015 27 September 2017</td>
<td>Incident in which grid mesh partly gave way as staff were crossing. Company fined $40,000. AP were found guilty for a failure to provide or maintain plant or systems of work that were, so far as reasonably practicable, each workplace under the employer’s management and control in a condition that was safe and without risks to health.</td>
</tr>
</tbody>
</table>

Australian Paper pleaded guilty to all offences and implemented measures to minimise risks of future breaches occurring (see Appendix B Supporting information of the WAA and the additional information provided on 1 and 12 November 2018).

Table 1.4 of the WAA summarises enforcement actions undertaken by EPA at the Maryvale site, with Table 1.5 summarising community complaints on odour and noise.
5.2.2 Assessment

As three relevant offences have occurred in the last 10 years, under section 20C(3) EPA must satisfy itself that AP is a ‘fit and proper person’. In considering whether AP is a fit and proper person, EPA has considered:

   a) the nature of the offences and the culpability of AP;
   b) the remedial and preventative actions AP implemented;
   c) the current status of AP’s licence issued by WorkSafe;
   d) AP’s risk profile compared to other industry participants; and
   e) AP’s environmental track record and compliance history.

All three relevant offences are for breach of the same provision of the OHS Act, section 21, which is the ‘general duty’ an employer owes to its employees. Each offence is a serious one, with a maximum penalty of 9,000 penalty units for a body corporate (based on the present value of a penalty unit this equates to a maximum fine of approximately $1.45 million). A review of the particulars of the offences¹, indicates that the first two offences related to incidents with machinery and the third offence related to maintenance of the facility.

EPA notes that the seriousness and degree of culpability are independent of the seriousness of the consequences: a serious offence may have a minor outcome; conversely, a minor offence may result in a serious outcome. EPA has borne this in mind when assessing whether the relevant offences preclude AP from meeting the fit and proper person test.

AP pleaded guilty to all three offences, accepted the sentences imposed by the courts and took proactive responses to address occupational health and safety risks:

1. Following the 2005 incident, AP convened an externally facilitated taskforce with employee and management representatives. The taskforce reviewed the safety management structures and the permit to work (PTW)/job safety analysis (JSA) systems and reported in December 2005. AP accepted all the recommendations of the taskforce and implemented changes at the facility. In addition, engineering modifications were made to the relevant paper machine and the safety risks of all other paper machines was reviewed with engineering modifications made as appropriate.

2. In response to the 2010 incident, AP undertook alterations to the equipment to prevent future incidents.

3. In response to the 2015 incident, AP commissioned a comprehensive structural engineering review of the area; completed rectification works; and augmented inspection routines to include a ‘structures’ monthly operator inspection, which is prompted by a computer-generated ‘Preventative Maintenance Routine’.²

AP advised that as they understand it the relevant courts in ruling on the three offences did not make any finding in sentencing AP that the offences were committed intentionally, recklessly, negligently or otherwise³.

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¹ Letter from AP to EPA dated 12 November 2019, pages 3 & 4
² Letter from AP to EPA dated 1 November 2018, page 2
³ Letter from AP to EPA dated 12 November 2018, page 4
AP advised that it regularly reviews its safety measures and following the 2015 incident has employed a structural engineer to review and inspect the facilities at the premises.

EPA accepts that the incidents exposed failures of processes that were acknowledged and rectified by AP and that AP has improved its systems in response to the incidents. Further, AP has ongoing processes for oversight and review of its risk management.

There was approximately five years between each incident that gave rise to the offences. This suggests that the breaches are not reflective of a culture of disregard for risk management or regulatory compliance, rather they were a result of particular issues identified in response to the incidents.

This conclusion is consistent with AP’s licence to operate a major hazard facility. The licensing framework for Major Hazard Facilities requires applicants to declare any findings of guilt under the OHS Act and WorkSafe must be satisfied that AP will be able to safely and competently operate the facility and is likely to comply with the terms and conditions of its licence. WorkSafe issued AP with a further licence to operate the paper mill from 2017 to 2022. This implies that WorkSafe does not consider the relevant offences to be indicative of a culture of disregard for risk management and regulatory compliance or to prohibit AP from operating a major hazard facility.

EPA has also considered AP’s risk profile in comparison with other similar industries. AP advised EPA that:

1. The Maryvale papermill generally has a materially higher lost time injury frequency rate (LTIFR) than other paper mills operated by its parent company. This difference is attributed to cultural differences between Australian and Japanese industries, which AP says make effectively utilising these comparisons extremely difficult and of limited value.

2. Based on published ‘injury frequency rate’ data, Australian Paper:
   a) has a similar medical treatment injury frequency rate (MTIFR) to Latrobe Valley power generators, a lower MTIFR than Canadian/US paper manufacturers and a higher MTIFR than some other heavy manufacturing industry participants in Australia
   b) tends to have similar LTIFR to heavy manufacturing industry both nationally and internationally, but somewhat higher LTIFR than Latrobe Valley power generators.

EPA acknowledges that within heavy industries and large facilities such as AP’s Maryvale facility, incidents do occasionally occur. EPA expects that in such instances the company would seek to learn from this and modify practices to reduce future likelihood. EPA accepts the comparison information provided by AP regarding the performance of the Maryvale facility compared to other similar industries both in Australia and overseas. EPA considers that AP’s occupational health and safety performance compares reasonably well with international paper industry facilities and other heavy manufacturing industries. EPA also accepts that there are inherent risks in facilities of this

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4 Reg 449(c), Occupational Health and Safety Regulations 2017 (Vic)
5 Reg 452(1)(b) of the OHS Regs
6 Injury frequency rates are the number of adverse events recorded over one million hours worked.
7 Letter from AP to EPA dated 1 November 2018, page 4
type and that AP has a comprehensive risk management process in place and has made improvements in response to the incidents.

AP currently holds EPA licence 46547, which allows for operation of the paper mill and an onsite landfill.

EPA has conducted 26 compliance inspections of the APM facility since 2009 when AP was acquired by its parent company, NPI. These have resulted in 14 remedial notices being issued. There are currently five active notices or warnings issued to AP (see Table 7).

Table 7: Active notices and warnings issued to the duty holder.

<table>
<thead>
<tr>
<th>Transaction type</th>
<th>Issue date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infringement notice</td>
<td>30 August 2018</td>
<td>Industrial trade waste discharged from an ephemeral drainage pipe. Characteristics of the water discharged as trade waste is considered waste and may have an impact on the environment and human health.</td>
</tr>
<tr>
<td>Remedial notice</td>
<td>07 August 2018</td>
<td>Odour detected in Traralgon was traced to the Australian Paper premises at Traralgon West Road. Source was the Kraft Eucalyptus Mill.</td>
</tr>
<tr>
<td>Remedial notice</td>
<td>21 June 2018</td>
<td>Landfill gas emissions exceeded levels described in Table 6.4 in EPA publication 788.3 Siting, Design, Operations and Rehabilitation of Landfills Best Practice Environment Management (the BPEM)</td>
</tr>
<tr>
<td>Remedial notice</td>
<td>13 April 2016</td>
<td>Environment Risk Assessment performed by Australian Paper identified issues with the existing salt cake cells.</td>
</tr>
</tbody>
</table>

AP is required to submit an Annual Performance Statement (APS) reporting compliance with its licence conditions. AP has reported eight non-compliances in each of its last three APSs. None of these non-compliances have resulted in an indictable offence.

- In the 12 months prior to AP submitting the WAA, EPA received 19 odour complaints alleging pollution from AP’s Maryvale premises. Complaints are also reported directly to AP, including noise.
There is a large protected Urban Amenity Buffer (UAB) around the AP site and significant capital investment projects appear to have reduced the number of odour complaints. However, the nature of the paper milling at the site does generate odour emissions and EPA periodically receives odour reports generally associated with adverse weather conditions. The WtE facility is not expected to contribute a significant new odour or noise source at the site. EPA considers it unlikely the frequency of odour and noise complaints will increase as a result of the works approval being issued.

5.2.3 Conclusion

AP has been found guilty of three relevant offences under the OHS Act in the 10 years preceding this WAA, so EPA has considered whether AP is a fit and proper person under section 20C(3)(b) of the EP Act.

Taking into account the matters addressed above – namely, the response of AP to the offences, the licence to operate a major hazard facility, and general compliance with the EP Act – EPA has determined that AP does satisfy the ‘fit and proper person’ requirements of the EP Act.

The conclusions of the review are that:

- AP was convicted of three relevant offences in the preceding 10 years
- the breaches were of a serious offence; however, EPA considers that AP responded appropriately to the offences in that it pleaded guilty and accepted the sentences imposed by the courts and took proactive steps to mitigate future risks
- EPA considers the offences are not indicative of a culture of disregard for risk management or regulatory compliance and that AP’s occupational health and safety record is consistent with other similar industries both in Australian and internationally
- AP maintains ongoing processes for oversight and review of its risk management
- EPA considers AP meets the ‘fit and proper person’ requirements of section 20(3)(b) of the EP Act.

5.3 Section 50C consistency with SWRRIP and regional WRRIP

In accordance with section 50C of the EP Act, EPA may refuse to consider applications that might be inconsistent with the SWRRIP or in breach of any relevant requirements of a schedule of existing and required waste and resource recovery infrastructure within a Regional Waste and Resource Recovery Implementation Plan.

5.3.1 Application

Section 10.2.4 of the WAA identifies and discusses alignment of the WAA with the SWRRIP, MWRRIP and GWRRIP as well as state and regional group of council waste strategies.
5.3.2 Assessment

As described in section 3.3.4 the WAA was referred to MWRRG, GWRRG and SV who each have a role in implementing the strategies of the waste and resource recovery plans and for coordinating the planning of waste infrastructure in Victoria.

The referral response from MWRRG and GWRRG indicated they considered the WAA to be consistent with the objectives of the relevant resource recovery infrastructure plans, subject to conditions and did not object to the proposal.

The referral response from SV considered the WAA to be consistent with the SWRRIP.

SV also specified that to meet the requirements of the SWRRIP, material which can be viably recovered should be recovered and taken out of the waste stream prior to being incinerated. The referral letter stated:

In summary, our view is that the proposal is in line with the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP), provided that materials which can be viably recovered, have been pre-sorted and removed from chosen feedstocks.

5.3.3 Conclusion

The conclusions of the review are that:

- the WAA is consistent with SWRRIP and two relevant regional WRRIPs
- the WAA will contribute to meeting waste disposal needs for Victoria and is considered compliant with the relevant resource recovery implementation plans
- for these reasons, the EPA has determined not to exercise its discretion in s.50C of the EP Act to refuse to consider the application
- works approval condition WA_G1 requires building the plant with provision for future incorporation of options to improve material recovery, if this becomes viable.

5.4 Climate Change Act 2017

5.4.1 Relevant documents

Climate Change Act 2017 (CC Act) sections 17(1), 17(2), 17(3), 17(4)


5.4.2 Application

Section 11.7 of the WAA details the AP’s consideration of climate change impacts, the resilience of the proposed WtE facility and need for adaptation measures. Consideration of greenhouse gas emissions (as required by section 17(2) and 17(4) of the CC Act) is provided in Section 7 of the WAA and is considered more fully in section 6.1 of this WAAAR.
5.4.3 Assessment

In the assessment of a WAA, EPA needs to have regard to potential impacts of climate change relevant to the decision and with relevant considerations identified in section 17(3) of the CC Act as listed in paragraph 2.6.2 of this WAAAR. This proposal’s impact on the state’s greenhouse gas (GHG) emissions is assessed under section 6.1.

EPA’s review of the WAA’s assessment of climate change impacts and adaptation is that it is comprehensive, and accords with EPA’s interim guidance *Works Approvals – Consideration of Climate Change*.

It is noted that several proposed risk treatment [or climate change adaptation] measures identified in Table 11.4 of the WAA require continual review or the establishment of a watching brief to review water usage, water sources and determine contingency plans [noting the climate projection for Gippsland of having a 0.99–2.27 per cent reduction in annual rainfall in 2030 with up to a 5.10 per cent reduction in winter]. Accordingly, it is noted that should a WA be issued it is recommended that a Climate Change Adaptation Management Plan (CCAMP) should be required as part of any subsequent operational licence. Specifically, this should include the review of water usage, supply and availability of water, plus the effectiveness of dust control.

5.4.4 Conclusion

The EPA has reviewed the information and determined that the requirements of the Climate Change Act have been met.

The conclusions of the review are that:

- the WAA has comprehensively considered potential climate change impacts in accordance with EPA’s interim guidance
- should a WA and subsequent licence be issued, a CCAMP should be required as a condition of that licence.
6. CONSIDERATION OF KEY ISSUES

6.1 Energy use and greenhouse gas (GHG) emissions

6.1.1 Relevant documents

Climate Change Act 2017 sections 17(1), 17(2), 17(4)


Demonstrating Best Practice (EPA publication 1517)


6.1.2 Application

The WAA addresses energy use and GHG emissions in Section 7 and Appendix F of the WAA.

The WAA followed the PEM requirements set out in PEM 2.1:

- Step 1 – Estimate energy consumption
- Step 2 – Estimate direct GHG emissions
- Step 3 – Identify and evaluate opportunities to reduce GHG emissions
- Step 4 – Document steps 1 to 3.

A baseline was assumed to be the current waste handling and energy consumption at the paper mill. GHG from the project include: carbon dioxide, methane and nitrous oxide.

The WAA separates estimated emissions of GHG into construction and operation phases:

- total emission during the construction phase has been estimated to be 13,071 tonnes carbon dioxide equivalents (tCO$_2$e) for all sources
- total emissions for the operational phase when including offsets are 20,400 tCO$_2$e for energy related emissions and -523,531 tCO$_2$e based on non-energy related emissions.

For the operational phase of the proposal the emissions were estimated for the following sources:

- the operation of the plant
- the offsetting of emissions through the avoidance of natural gas fired boilers
- offsetting of emissions through diversion of waste to landfill.

The estimation of the emissions from landfills were divided up into:

- waste going to a landfill with methane capture
- waste going to a landfill without methane capture.

The WAA adopts an assumed landfill gas (as methane) capture rate of 45 per cent based on available literature and information on current landfill capture in Victoria.
The WtE facility will emit 13,071 tCO$_2$e during the construction of the plant. The estimations were calculated using the methodology described by the Transport Authorities Greenhouse Group and included emissions from: construction fuel (transport diesel and transport petrol); construction fuel (stationary diesel); construction materials (embedded emissions); and construction material transport.

During construction, AP will seek to reduce the energy consumption and GHG emissions through:

- minimising unnecessary movement of material onsite
- explore opportunities to use biofuels
- explore opportunities to reduce cement usage through using reclaimed aggregates
- require high amounts of recycled steel for construction.

The net GHG emission during the operation of this plant is presented as -0.10 per cent for the total annual GHG emission in Australia and -0.45 per cent for the total annual GHG emission in Victoria.

The WtE facility achieves an energy efficiency which is associated with best practice of more than 0.65 R1 (calculated in accordance with EPA guidance 1559).

**6.1.3 EPA assessment**

EPA considers the WAA to have appropriately considered GHG emissions and the energy usage, with the methodology for estimating GHG emissions during operation and construction suitable.

A best practice assessment needs to include a degree of pragmatism and cost effectiveness. AP will further explore options to reduce GHG emission prior to commencing construction and take adopted recommendations for improvement, if determined cost effective.

Section 7.3.2 of the WAA describes sources of emissions of GHG from operating the plant. Scope 1 sources being direct emission sources associated with combusting the waste in the WtE facility. EPA considers the emissions to be credible and reliable based on investigations of emissions associated with operating WtE facilities. The WAA describes the specific treatment technologies and its proposed contribution to emissions of GHG. An example of this is the nitrous oxide that is emitted from the WtE facility by using a selective non-catalytic reduction treatment system.

Through the community consultation and the section 20B public conference, EPA was made aware of concerns regarding the GHG calculations.

AP took a holistic approach to reviewing the emissions of GHG which included: baseline – continued combustion of natural gas; baseline – GHG created by sending waste to a landfill (with or without landfill gas capture); and, electricity offset. The EPA agrees with this approach and considers it consistent with EPA publication 1658.

The proposed WtE facility will reduce the emissions from the natural gas fired boilers (current situation) and reduce the energy sourced from the electricity grid and it is considered appropriate to include these offsets in calculating net GHG emissions.

The WAA uses a landfill gas capture of 45 per cent for the state of Victoria. This is considered a reasonable estimation based on the current situation. It is also considered reasonable to take a state average for landfill capture rather than trying to estimate the region-specific landfill capture with waste contracts not won at the time of this WAA.

This application, when including the offsets, will have a net negative emission of greenhouse gases at state level.
6.1.4 Conclusion

The conclusions of the review of potential GHG and energy usage are that:

- the information provided in the WAA is credible and based on best available information
- the project will through its lifetime result in a net reduction in GHG emissions compared to the existing baseline
- the WAA includes best practices to reduce GHG during construction and operation.

6.2 Water resource use

6.2.1 Relevant documents

State Environment Protection Policy (Waters of Victoria) (SEPP (WoV))

6.2.2 Application

The existing paper mill uses between 70–80 ML per day. This plant will increase the raw water use by up to 6 ML per day of sourced from the Moondarra Reservoir. Raw water will be used in; cooling tower; ash handling; flue gas treatment (if semi-dry scrubber is used); demineralised water system; boiler chemistry control and online boiler cleans; and fire service system. During the final design of the WtE facility, the EPC contractor will provide a final water balance that intends to recycle as much water that is considered practicable. Potable water will be used for staff amenities, hygiene facilities and general water uses. The WAA has included an adaptation strategy for future climate, which includes continually reviewing and minimising the use of raw water.

6.2.3 Assessment

The use of potable water will only change slightly through this WtE plant and the uses are reasonable. The quality of raw water has been determined suitable to be used in the plant. AP will implement best practicable water savings through the detailed design. The adaptation strategy will ensure that AP continually review this environmental impact throughout the lifetime of the project – this is considered best practice.

6.2.4 Conclusion

The conclusions of the review of water resource use are that:

- raw water will be reused as far as practicable
- water quality and quantity is reasonable based on the intended use.

6.3 Air emissions

6.3.1 Relevant documents

State Environment Protection Policy (Air Quality Management) (SEPP (AQM))
State Environment Protection Policy (Ambient Air Quality) (1999) (SEPP (AAQ))
6.3.2 Application

Section 6 of the WAA details the air assessment undertaken to assess the proposal’s compliance with the IED, SEPP AQM and identifies other risk pollutants to include in the WAA. The air assessment was based on literature and the performance of representative operational plants in Europe. The pollutants that posed a risk of impact to environment and human health were found through risk assessment of both legislation and data from these operational WtE facilities. Chlorinated monocyclic aromatics, were not found in either the IED or the SEPP AQM and were deemed a lower risk. Higher-risk chlorinated polycyclic aromatics were modelled (such as PCDD/F) in the WAA.

The WAA reports that:

- combustion of waste can generate emissions such as organic compounds (total volatile organic compounds)
- individual hydrocarbons are destroyed in the combustion process and reformation is limited by flue gas control and injection of activated carbon prior to the baghouse
- individual harmful VOCs are expected to be small fraction of the total VOC
- PAHs were modelled as BaP in the WAA.

AP investigated the emissions of metals and metalloids associated with WtE facilities though the investigation of data obtained from operational reference facilities, which are cited in the WAA and compared with EPA SEPP design level criterion. The WAA identified that the highest risks for exceeding these criterions was from cadmium and hexavalent chromium. For cadmium, the predicted emission rate was 0.00391 g/sec (or a concentration of 0.03 mg/Nm$^3$) and for hexavalent chromium the predicted emission was 0.02 g/sec (or a concentration of 0.15 mg/Nm$^3$). The data to support this emission rate was taken from European plants and used the maximum measurement for the metal (in stack concentrations) with an added safety factor of 3x highest concentration applied.

The following pollutants were modelled at the upper limits of the IED (see Table 6.9 of the WAA):

- hydrogen chloride
- hydrogen fluoride
- sulphur dioxide
- oxides of nitrogen (expressed as NO$_2$)
- carbon monoxide
Ammonia was modelled at upper limits suggested in the BREF (2006). The WtE stack emissions (both in stack and mass emission) can be seen in Table 8 below. In addition to the WtE stack, the diesel generator was modelled as operational 24/7 with emissions seen in Table 9.

**Table 8: Predicted emissions from the WtE facility based on maximum velocity and upper limit emission values of the IED**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Australian Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/m³</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>150</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>400</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>200</td>
</tr>
<tr>
<td>Hydrogen fluoride</td>
<td>4</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>60</td>
</tr>
<tr>
<td>Particulate matter 2.5</td>
<td>30</td>
</tr>
<tr>
<td>Ammonia</td>
<td>30</td>
</tr>
<tr>
<td>Dioxins and furans</td>
<td>1.00E-10</td>
</tr>
<tr>
<td>PAH as B(a)P</td>
<td>0.01</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.05</td>
</tr>
<tr>
<td>Cd + Ti</td>
<td>0.05</td>
</tr>
<tr>
<td>Cadmium¹</td>
<td>0.03</td>
</tr>
<tr>
<td>Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V</td>
<td>0.05</td>
</tr>
<tr>
<td>Hexavalent chromium¹</td>
<td>0.15</td>
</tr>
</tbody>
</table>

¹ identified as a high-risk metal for design level criterion.

**Table 9: Design parameters of diesel generator (6 MW) from WAA**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>mg/m³</th>
<th>Exhaust flow Nm³/s</th>
<th>g/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOₓ</td>
<td>73</td>
<td>9.24</td>
<td>0.67</td>
</tr>
<tr>
<td>PM</td>
<td>3</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>CO</td>
<td>379</td>
<td></td>
<td>3.5</td>
</tr>
</tbody>
</table>
Most pollutants listed in Table 8 have been modelled, with some exceptions for metals and size fractions of particles (total dust was assumed to be PM$_{2.5}$ which excluded PM$_{10}$) with the following justification:

- Dust is made up of PM$_{2.5}$ and PM$_{10}$. As a conservative measure, all dust emissions were modelled as PM$_{2.5}$. This is considered conservative as PM$_{2.5}$ has a lower design criterion than PM$_{10}$.
  - When assuming the entire dust emission (30 mg/m$^3$) as PM$_{2.5}$ the plant had a contribution of 2 per cent of EPA’s design criterion at ground level at the closest sensitive receiver (1 μg/m$^3$). An emission of 30 mg/m$^3$ is considered very conservative with reference data submitted as part of the WAA (see Appendix B of the WAA) suggesting that the in-stack concentration of PM$_{2.5}$ is between 0.005–0.019 mg/m$^3$ at Riverside, Lakeside, Newhaven and Stoke-on-Trent. A concentration of 30 mg/m$^3$ also represents the worst-case scenario. The BREF (2006) suggests that emissions from MSW WtE facilities in Europe are between 1 and 5 mg/m$^3$ total dust.

- A risk assessment was performed to identify metals which indicated a likelihood of exceeding design criteria (including mercury) or which were recognised as of concerns from the community. The assessment indicated hexavalent chromium and cadmium as the highest risk and was modelled in the WAA and is outlined below.

Prior to formal acceptance of the WtE WAA, AP submitted a separate works approval application to upgrade an existing economiser within the APM operation (on 15 May 2018, EPA reference number 1003167). The proposed upgrade would result in a more efficient economiser capable of extracting additional heat from the WtE facility flue gas and therefore lowering the exhaust temperature by 43 °Celsius.

AP provided updated modelling results as part of the proposed WtE facility. This was done to factor in this potential reduction in the exhaust temperature and dispersion. Chapter 6 of the supplementary information describes this in more detail. AP remodelled emissions of PM$_{2.5}$, including the economiser upgrade. PM$_{2.5}$ was chosen as the sole pollutant to remodel for two reasons:

1) both the operations generate particulate matter
2) PM$_{2.5}$ modelling from the WtE facility resulted in cumulative ground level concentrations above the one-hour SEPP(AQM) design criteria.

The revised modelling showed that the WtE facility (excluding the APM operations) would contribute to ≤1 μg/m$^3$ of PM$_{2.5}$ at the sensitive receptor most impacted (Derhams Lane). When the upgraded economiser was included, the contribution would be ≤4 μg/m$^3$ at the sensitive receptor most impacted (Derhams Lane).

Background data used in the modelling represented values from 2012–2016: by choosing this timeframe, several sources of additional emissions which were operating no longer exist including: Morwell power station (decommissioned September 2014) and Hazelwood power station (decommissioned March 2017). The WtE plant will be built with two flues within one stack.

For more information, relevant for the emissions of air, see WAA Section 6 of the WAA, Appendix E and Section 6 of the supplementary information (Dated 25 May 2018).
6.3.3 Assessment

Clause 28 of the SEPP AQM gives EPA the power to request that emissions are modelled to predict ground level concentrations of emissions. The modelling was completed in accordance with Part B and Part C of the SEPP AQM which included:

- using an appropriate dispersion model (statutory model is set to be AERMOD) – noting justification for using AERMOD with the Economiser Upgrading project using the CALPUFF was provided
- relevant background data with modelling performed on an hourly basis and five years of data (minimum is one year) – noting background was estimated from Morwell East, Morwell South and Traralgon
- locally measured representative meteorological data for weather conditions
- estimations of background concentrations
- using conservative emission estimates, such as:
  - modelling assumed that the diesel generator was operating at full capacity continuously, whereas in reality it would only be used during start-up and shutdown
  - emissions from the stack were assumed to be at the upper limits of IED (for example, PM$_{2.5}$ 30 mg/m$^3$) which is markedly higher than measured operational emissions (for example, PM$_{2.5}$ 0.02 mg/m$^3$)
- modelling area or domain (extending 13 X 14 kilometres covering Morwell, Traralgon, Moe, and Churchill) was considered suitable. This domain was identified to include over 100 sensitive receptors including schools, medical centres, car centres and local residential areas
- elevated receptors 10 and 20 meters (above ground level) were included to represent multi-storey buildings such as apartments
- modelling results showing the maximum ground level concentrations (GLCs) contributed from the WtE were displayed on a map to show the extent of the highest ground level impacts
- prediction of 100 maximum GLC across the modelled area was included in the assessment
- discrete receptors (14) selected for hourly varying background or time series assessment were based on the extent of the highest ground level impacts to ensure the receptors represented the near-worst case receptors.

Data used in the modelling was conservative with Hazelwood power station and Morwell power station in operation, and bushfires would have contributed to the background. It is reasonable to say that the current background will be significantly less. The contribution from the WtE facility was modelled as being very low.

The WAA is considered to have made appropriately conservative assumptions regarding the emissions from the proposed WtE facility. The emissions from the waste combustion have been modelled at the upper limit of the IED.
The WAA identifies the WtE facility will be fitted with equipment that is considered compliant with BAT, further definition will be provided in the detailed design of the plant (see Section 5.4.6 of the WAA).

With equipment that is compliant with BAT, there is an expectation that the emissions profile will be within the emission limits specified in the BREF 2006 and BREF (draft) 2017. The BREF 2017 remains a draft at the time of assessment and may be subject to change, however, it is noted that European regulators including the United Kingdom Environment Agency (UK EA), Direction Régionale et Interdépartementale de l'Environnement et de l'Energie France (DRIEE), Länsstyrelsen Uppsala, Östergötland, Skåne – Sweden and Aluehallintovirastot Finland, have all indicated to EPA that it is prudent for both applicants and assessors to consider the stricter targets for pollutants.

Carbon monoxide (CO) is identified as a Class 1 indicator in Schedule A of the SEPP AQM with a design criterion of 29 mg/m$^3$ over a one-hour average. The modelling within the WAA shows an expected GLC of 6.3 mg/m$^3$, with EPA satisfied that the predicted emissions would be compliant with the SEPP.

Carbon monoxide in the flue gas is an indicator of incomplete combustion and AP has committed to measure it continuously in the stack. CO is reduced through good combustion practice which includes having sufficient time, appropriate temperature and enough turbulence to fully combust the waste. In an incinerator, the conditions allow complete combustion through adding excess oxygen (that is, greater than stoichiometric amount) to assist in achieving complete combustion.

Total organic carbon (TOC) is required under the IED to be continuously monitored at the exhaust in a WtE facility. Organic compounds and organic carbon are used interchangeably, as carbon is considered a requirement for a compound to be organic. There is a distinction between organic and inorganic carbon. To provide further clarity in our assessment we have defined volatile organic compounds as per the Environment Protection (Scheduled Premises) Regulations 2017:

- ‘volatile organic compound’ means any chemical compound based on carbon with a vapour pressure of at least 0·010 kPa at a temperature of 25 °Celsius or having a corresponding volatility under the particular conditions of use except carbon monoxide (CO), carbon dioxide (CO$_2$), carbonic acid, metallic carbides or carbonate salts.

By this definition, the organic compounds that are volatilised and remain in a gaseous form at the exhaust are volatile organic compounds. TVOC is used interchangeably with VOC as defined in the BREF 2017:

- BREF 2017: Total volatile organic carbon, expressed as C (in air).

By this definition, TVOC is a parameter that measures the number of gaseous organic substances in the flue gas. In the incineration process, there are several chemical processes that occur, though some are incomplete. TVOC is a measurement of the total organic fraction in the flue gas. This is considered suitable, with most of the TVOCs being emitted in trace amounts. Incineration provides high destruction efficiency of organic substances and the emission is considered to be in trace amounts.

It will be important at the commissioning stage to verify TVOC to ensure that the combustion is optimised and efficient, thereby reducing TVOCs as far as practicable. The BREF (2017) suggest that large-scale WtE facilities which have incorporated BAT should emit between 1–8 mg/m$^3$.

The EPA does not have a design criterion for volatile organic compounds but has chosen to include a performance-based requirement in line with BREF (2006–2017) and the IED during commissioning as part of any future commissioning approval or licence.
The EPA requires, that during commissioning, the plant must also perform individual testing for the various fractions of VOCs in the stack to confirm that the risk of these compounds has been appropriately addressed and will be included as a condition (Condition WA_R1(e)).

Nitrogen dioxide (NO$_2$) is identified as a Class 1 indicator in Schedule A of the SEPP AQM with a design criterion of 0.19 mg/m$^3$ over a one-hour average. The modelling within the WAA shows the highest levels of nitrogen dioxide as 0.0956 mg/m$^3$, with EPA satisfied that the predicted emissions would be compliant with the SEPP.

**Primary methods for reducing NO$_x$**

Nitrogen oxides are created in combustion processes where nitrogen (N$_2$) gas reacts with oxygen and creates NO and NO$_2$.

Flue gas circulation is a primary method of reducing the formation of nitrogen oxides. That is described in the BREF Section 2.5.5.1.2, where between 10–20 per cent of the flue gas of the secondary combustion air is circulated back into the boiler. This reduces the temperature and leads to less formation of nitrogen oxides. However, this needs to be balanced with the requirement that the temperature in the combustion chamber does not fall below 850 °Celsius. The EPA considers the circulation of flue gas of the secondary combustion air is representative of best practice for primary reduction of NO$_x$. The WAA includes recirculation of flue gas.

**Secondary treatment to reduce NO$_x$**

The WtE facility will use selective non–catalytic reduction (SNCR) to reduce the emissions of nitrogen oxides emitted from the plant. This process is described in Section 4.6.6 of the WAA and Section 2.5.5.2.1 of the BREF (2006). Urea is injected in the upper part of the furnace and reacts with water to create ammonia which reacts as per Reaction Equation 1 and Reaction Equation 2 to reduce the NO$_x$ emission.

**Reaction Equation 1** \[ \text{NH}_2\text{CONH}_2 + \text{H}_2\text{O} \rightarrow 2\text{NH}_3 + \text{CO}_2 \]

**Reaction Equation 2** \[ 4\text{NO} + 4\text{NH}_3 + \text{O}_2 \rightarrow 4\text{N}_2 + 6\text{H}_2\text{O} \]

**Reaction Equation 3** \[ 2\text{NO}_2 + 4\text{NH}_3 + \text{O}_2 \rightarrow 3\text{N}_2 + 6\text{H}_2\text{O} \]

Another way of reducing the nitrogen oxides is to use selective catalytic reduction (SCR) which involves the air passing over a catalytic bed where the same reaction described in Reaction Equation 1, Reaction Equation 2 and Reaction Equation 3 occurs.

The emission levels for a SCR system are between 40 and 150 mg/Nm$^3$ compared with between 80 and 180 mg/Nm$^3$ (European Union, 2017) for an SNCR system. Both SCR and SNCR systems are used as an operational requirement throughout facilities in Europe and are both defined in the BREF (2006). During discussions with contributing authors of the new draft BREF (2017), some European countries have strongly advocated for SCR to be considered as the single method of achieving BAT. It is expected the adoption of a final BREF will clearly define the method which is representative of BAT.

EPA issued a further information request under section 22 of the EP Act, dated 10 July 2018 where the question about best practice was raised with AP. In a response received 23 July 2018, AP provided a comparison between the SNCR and the SCR systems including: the estimated costs of incorporating a SCR system; and the GHG emissions. These arguments were put forward as the
main determinants in the selection of how SNCR can be considered representative of best practice.

As the WAA is under consideration while the BREF 2017 remains in draft, both SNCR and SCR will be considered BAT by EPA. However, the WAA provides a commitment to ensuring the facility is built with capacity to allow retrofitting with an SCR system should regulatory requirements change. It is recommended that a condition of any works approval issued requires the duty holder to ensure the provision for future incorporation of pollution controls which meet Best Available Technology (Condition WA_G1(f)).

It is concluded that SNCR can be considered best practice control under clause 19 (1) of SEPP AQM. This is supported by the BREF (2006) in Section 5.1 Generic BAT for all waste incineration which states that:

- the background environment can influence the expected performance of the equipment
- costs and advantage of implementing equipment should be considered (SCR is significantly more costly than SNCR).

The modelling for the discharge in the WAA (based on emission levels of 200 mg/m$^3$) shows no exceedances of NO$_2$. The highest modelled values are less than half of the SEPP AQM design criteria.

Ammonia is identified as a Class 2 indicator in Schedule A of the SEPP AQM with a design criterion of 0.6 mg/m$^3$ on a three-minute average. The modelling within the WAA shows the highest GLC of 0.0266 mg/m$^3$, with EPA satisfied that the predicted emissions would be compliant with the SEPP.

To achieve NO$_x$ reductions of 60–80 per cent, higher levels of urea injection are required within the system than is otherwise used in the process. Urea converted to NH$_3$ will be emitted at the exhaust unless a wet scrubbing system is in place that can recycle some of the ammonia. The WAA proposes to use a semi-dry/dry scrubber system which causes excess NH$_3$ to be emitted and is called ‘Ammonia Slip’. The ammonia slip will depend on the addition of urea and concentration of NO$_x$ in the flue gas.

The emissions of ammonia, in a plant that is built to BAT, is expected to have an in-stack concentration of between 1 and 10 mg/m$^3$ (European Union, 2017).

Nitrous oxide (N$_2$O) is a GHG that has a long residence time in the atmosphere. The emission from the WtE facility is expected to be low.

Nitrous oxide is an unwanted by-product when introducing urea or ammonia in the upper parts of the boiler to convert NO$_x$ to N$_2$ in the flue gas. The nitrous oxide from an SNCR system is best managed through control of temperature and with managed dosing. Measuring the untreated flue gas via sampling and continuous monitoring systems will be sufficient to calculate and modify the correct dose of urea or ammonia injection in real or close to real time. Applying both pre-treatment and post-treatment measurements provides a direct measurement of the reduction levels of NO$_x$. It is recommended that AP includes this in an operating manual to have correct dosing and sufficient NO$_x$ reduction. This technique will help reduce the emissions of nitrous oxide that can occur in a system where the urea is overdosed.

HCl is identified as a Class 2 indicator in Schedule A of SEPP AQM with a design criterion of 0.25 mg/m$^3$. The modelled emissions predict concentrations of 0.053 mg/m$^3$, that is, within the SEPP limits.
HF is not listed in Schedule A of SEPP AQM, but fluoride is, and that has a design criterion of 0.0029 mg/m$^3$ (24 hours). The modelling show ground level concentrations of 0.000056 mg/m$^3$ grid maximum, that is, within the SEPP limits.

SO$\text{2}$ is identified as a Class 1 indicator in Schedule A of SEPP AQM and has a design criterion of 0.45 mg/m$^3$. The modelling shows maximum grid ground level concentrations of any one hour during the five-year modelling period of 0.2305 mg/m$^3$, that is, within the SEPP limits.

**Lime treatment**

Lime will be injected into the flue gas treatment system with various techniques depending on final design proposed by the engineer, procure and construct (EPC) contractors. The lime (burned lime or hydrated lime) is injected to reduce acid gases and halogens.

Dry system (calcium oxide)

*Reaction Equation 4*  \[ CaO + 2HCl \rightarrow CaCl_2 + H_2O \]

*Reaction Equation 5*  \[ CaO + SO_2 \rightarrow CaSO_3 \]

*Reaction Equation 6*  \[ CaO + 2HF \rightarrow CaF_2 + H_2O \]

Semi dry system (Calcium hydroxide)

*Reaction Equation 7*  \[ Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O \]

*Reaction Equation 8*  \[ Ca(OH)_2 + SO_2 \rightarrow CaSO_3 + H_2O \]

*Reaction Equation 9*  \[ Ca(OH)_2 + 2HF \rightarrow CaF_2 + 2H_2O \]

**Best practice – air emission controls**

The BREF (European Union, 2006) describes three main techniques for reducing the acid gases in the flue gas, with all three considered BAT:

1) dry system

2) semi-dry systems (also called semi-wet system)

3) wet systems.

Each system is designed to remove the acid gases entrained in the flue gas. In a dry system, lime or sodium bicarbonate is injected into the hot flue gas. Semi-dry systems use the same reagent as dry systems but it is injected into the chambers as a suspension or solution. Both dry and semi-dry systems create a dry salt that is removed in the baghouse (also known as fabric filter). Wet scrubbers remove acids with the scrubber liquid, where the pH is controlled by adding lime.

All three systems are deemed best practice for removal of the acid gases in a MSW incineration plant (European Union, 2017). The WAA identifies the inclusion of either a dry or semi-dry system at the final detailed design stage. As both techniques are considered best practice at the time of assessment, EPA considers either system representative of best practice.

Three mechanisms are responsible for the formation of dioxins and furans in incineration:

1) homogeneous (gas–gas phase) condensation of precursor molecules

2) heterogeneous (gas–solid phase) condensation of precursor molecules
3) direct formation from carbon in ash particles, which is called de novo synthesis.

(Huang & Buekens, 1995) (Altarawneh, Dlugogorski, Kennedy, & Mackie, 2009)

Homogenous/heterogenous precursor condensation (that is, mechanisms 1 and 2) take place at 400–800 °Celsius favouring the formation of PCDF rather than PCDD. The temperature window for de novo synthesis of dioxins and furans is ~200–400 °Celsius (Mukherjee, Debnath, & Ghosh, 2016). It is accepted that PCDD/Fs are destroyed in the combustion phase of modern incinerators operating at a minimum temperature of 850 °Celsius (Everaert & Baeyens, 2002).

The proposed WtE facility targets a mixed residual MSW; however, it is recognised that in so doing a proportion of hazardous material (for example, batteries and e-waste) may be present in proportionately very low concentrations. Analysis of the targeted waste stream in the WAA identified this is likely to be up to ~1.7 per cent of the total waste accepted and treated at the premises. The Victorian policy of banning e-waste from landfill has seen a $16.5 million dollar investment in e-waste collection and storage infrastructure. This investment will likely lead to a reduction in e-waste entering the residual waste stream. Concentration of hazardous waste in the residual stream may affect the amount of bromide that is in the feedstock. It is therefore crucial to understand the waste composition prior to commencing operation of the facility. (Condition WA_W1(a))

Dioxins and furans are created in combustion processes and are formed between 500 and 800 °Celsius. The creation of these pollutants is largely dependent on the sulphur, copper and chlorine content of the feedstock. The dioxins are formed from the chlorinated precursors such as chlorophenols (CP) or chlorobenzenes (CBs).

Dioxins and furans are destroyed by effective combustion temperature and residence time. A high sulphur content reduces the PCDD/PCDF formation, while a high copper content increase PCDD and PCDF formation (Thomas & McCreight, 2008).

**Formation – de novo synthesis**

Primary methods for reducing dioxins and furans include the 3 T's: Time, Temperature and Turbulence. It is generally accepted that it is sufficient to destroy the dioxins and furans when all combustion gases, after the last injection of air, are elevated to a minimum temperature of 850 °Celsius with a residence time of at least two seconds. This is under the assumption that the halogenated organic compounds, expressed as chlorine, is less than 1 per cent. Where the waste contains more than 1 per cent halogenated organic compounds, expressed as chlorine, the European IED requires that the temperature be raised to a minimum of 1,100 °Celsius for at least two seconds after the last injection of air.

The de novo synthesis can be avoided by having a rapid quench that reduces the temperature of the combustion flue gas (>850 or >1,100 °Celsius) to below 100 °Celsius. This technique is used in hazardous waste incinerators both internationally and in Victoria. At present, Victorian medical waste incinerators operated by Ace Waste Pty Ltd and Daniels Health use this technology and operate under EPA licences.

In WtE facilities a rapid quench would impair the facilities efficiency in generating energy and heat. A rapid quench is therefore an inappropriate requirement for the proposed activity and is not proposed. An alternative technique must be used instead to reduce the dioxin and furan emissions such as:

- activated carbon injected prior to the baghouse
• a fixed-bed activated carbon filter
• a SCR system.

In Victoria, the operational VISY WtE facility in Coolaroo utilises an activated carbon system with a baghouse as secondary treatment to reduce the emissions of dioxins and furans.

The WAA proposes the injection of activated carbon prior to the baghouse as secondary treatment to minimise emissions of dioxins and furans. The application does include an on-line boiler cleaning system which is described in the new draft BREF (2017). This is required to comply with MEA. EPA considers this control appropriate and representative of maximum extent achievable (MEA).

The PCDD/PCDF formation will be determined largely by the waste feedstock, primary and secondary treatment. The BREF has included a balance for these compounds from an operational WtE facility in Germany treating an MSW feedstock which shows the following distribution of the pollutant:

- estimated input with the waste: 50 ng TEQ/kg of waste
- total output to all media: 17.63 ng TEQ/kg of waste made up of:
  - flue gas – 0.08 ng/m$^3$
  - bottom ash – 7 ng/kg
  - filter dust and other residues from flue gas cleaning – 220 ng/kg.

Put in the context of the waste being incinerated, the German facility shows that the incinerator can act as a net sink for PCDD/F.

Vehlow (2012) describes dioxin and furans flows in modern incinerators from a technical and operational perspective. In line with the BREF, he also concludes that incinerators can act as a net sink of dioxins and furans:

- incoming waste between 20–70 ng/kg
- bottom ash 1–30 ng/kg
- flue gas 1–5 ng/m$^3$
- baghouse 1-5 ng/m$^3$ (<10 per cent)
- stack <0.1 ng/m$^3$ (<1 per cent).

The importance of operating the baghouse at <200 °Celsius is also highlighted to ensure the particles formed in de novo synthesis are captured in the baghouse (Vehlow, 2012).

Dioxins and furans (as TCDD I–TEQs) are identified as Class 3 indicators in the Schedule A of SEPP AQM and have a design criterion of 0.0037 ng/m$^3$. The modelling within the WAA shows a GLC of 0.000089 ng/m$^3$, with EPA satisfied that the predicted emissions would be compliant with the requirements of Victorian policy.

The IED emission limit for dioxins and furans is 0.1 ng/m$^3$ which has been set based on performance. Monitoring of modern, well-run technology, WtE facilities operating in Europe has demonstrated this criterion can be achieved consistently (European Union, 2017).

In Victoria, wastes that contain PCB levels of more than 2 mg/kg are classified as prescribed industrial waste (PIW). This WAA is not for a plant that will receive or treat PIW. Based on European MSW composition data (European Union, 2017) it is considered unlikely that the MSW
will contain high levels of PCBs. This is also indicated by a recent report published in Sweden where MSW contained less than 0.02 micrograms of PCBs. In that report, the dominant PCBs were #105, #108 and #156 (Avfall Sverige, 2009).

BAT-associated emission levels (BAT–AELs) for new facilities for PCDD/F and dioxin-like PCBs are <0.01–0.06 (European Union, 2017). To confirm that the plant is operating safely, EPA suggests that the testing for total organic halogen content will be a suitable indicator of the amount of PCBs in the waste. The EPA also requires that emissions of PCBs should be tested for during commissioning (WA_R1(e)ii). Before receiving an operational licence the facility is required to demonstrate compliance with BAT-associated levels (listed in Table 10) of <0.01 to 0.06 (ng/Nm³) for ∑PCDD + PCDF + dioxin-like PCBs. Table 10 show the most recent WHO TEF values for dioxin-like PCBs.
Table 10 IED limits (European Union, 2010), current BAT- AEL (European Union, 2006) and BAT- AEL from new draft (European Union, 2017)

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Emission Limit (mg/Nm3)</th>
<th>Emission Limit (mg/Nm3)</th>
<th>BREF 2006 mg/m3</th>
<th>New BREF draft 2017 mg/m3 (new plants)</th>
<th>Averaging time Pollutants (general)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust</td>
<td>10</td>
<td>-</td>
<td>1 to 5</td>
<td>2 to 5</td>
<td>24 hour</td>
</tr>
<tr>
<td>Total organic carbon (TOC)</td>
<td>10</td>
<td>-</td>
<td>1 to 10</td>
<td></td>
<td>24 hour</td>
</tr>
<tr>
<td>Total Volatile Organic Compounds</td>
<td>10</td>
<td>-</td>
<td>3 to 10</td>
<td></td>
<td>24 hour</td>
</tr>
<tr>
<td>Hydrogen chloride (HCl)</td>
<td>10</td>
<td>-</td>
<td>1 to 8</td>
<td>2 to 6</td>
<td>24 hour</td>
</tr>
<tr>
<td>Hydrogen fluoride (HF)</td>
<td>1</td>
<td>-</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>24 hour</td>
</tr>
<tr>
<td>Sulphur dioxide (SO2)</td>
<td>50</td>
<td>-</td>
<td>1 to 40</td>
<td>10 to 30</td>
<td>24 hour</td>
</tr>
<tr>
<td>Oxides of nitrogen (NOx) as nitrogen dioxide (NO2)</td>
<td>200</td>
<td>-</td>
<td>120 to 180</td>
<td>50 to 120</td>
<td>24 hour</td>
</tr>
<tr>
<td>Ammonia (NH3)</td>
<td>-</td>
<td>5</td>
<td>3 to 10</td>
<td>24 hour</td>
<td></td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>50</td>
<td>-</td>
<td>5 to 30</td>
<td>10 to 50</td>
<td>24 hour</td>
</tr>
<tr>
<td>Total dust</td>
<td>30</td>
<td>10</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Total organic carbon (TOC)</td>
<td>20</td>
<td>10</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Hydrogen chloride (HCl)</td>
<td>60</td>
<td>10</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Hydrogen fluoride (HF)</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>200</td>
<td>50</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Oxides of nitrogen (NOx) as nitrogen dioxide (NO2)</td>
<td>400</td>
<td>200</td>
<td></td>
<td></td>
<td>0.5 hour</td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>100</td>
<td>-</td>
<td>50 to 120</td>
<td>24 hour</td>
<td></td>
</tr>
<tr>
<td>Carbon monoxide (CO)</td>
<td>150</td>
<td>-</td>
<td></td>
<td>10-minute</td>
<td></td>
</tr>
<tr>
<td>Pollutants (heavy metals)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cd + Tl</td>
<td>0.05</td>
<td>-</td>
<td>0.005 to 0.05</td>
<td>0.01 to 0.02</td>
<td>0.5 hours</td>
</tr>
<tr>
<td>Hg</td>
<td>0.05</td>
<td>-</td>
<td>&lt;0.05</td>
<td>0.015 to 0.035</td>
<td>0.5 hours</td>
</tr>
<tr>
<td>0.05</td>
<td>-</td>
<td>&lt;0.05</td>
<td>0.005 to 0.02</td>
<td>24 hour</td>
<td></td>
</tr>
<tr>
<td>Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V</td>
<td>0.5</td>
<td>-</td>
<td>0.005 to 0.5</td>
<td>0.05 to 0.3</td>
<td>0.5 hours</td>
</tr>
<tr>
<td>Pollutants (other toxic)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCDD/F (dioxins and furans)</td>
<td>0.1 (ng/Nm3)</td>
<td>-</td>
<td>0.01 to 0.1</td>
<td>&lt;0.01 to 0.04 (ng/Nm3)</td>
<td>6 hours (or otherwise the length of sampling period)</td>
</tr>
<tr>
<td>PCDD/F + dioxin like PCBs</td>
<td>-</td>
<td>-</td>
<td></td>
<td>&lt;0.01 to 0.06 (ng/Nm3)</td>
<td>6 hours (or otherwise the length of sampling period)</td>
</tr>
<tr>
<td>Polycyclic Aromatic Hydrocarbons (PAHs) as Benzo(a)pyrene</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 11: TEF values for dioxin-like PCB’s (van der Berg, et al., 2006). Values were updated in 2005 and included some minor changes.

<table>
<thead>
<tr>
<th>Compound</th>
<th>WHO 1998 TEF</th>
<th>WHO 2005 TEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-ortho substituted PCBs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,3’,4,4’-tetrCB (PCB 77)</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>3,4,4’,5-tetrCB (PCB 81)</td>
<td>0.0001</td>
<td>0.0003</td>
</tr>
<tr>
<td>3,3’,4,4’,5-pentCB (PCB 126)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>3,3’,4,4’,5,5’-hexaCB (PCB 169)</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>mono-ortho substituted PCBs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,3,3’,4,4’-pentaCB (PCB 105)</td>
<td>0.0001</td>
<td>0.00003</td>
</tr>
<tr>
<td>2,3,4,4’,5-pentaCB (PCB 114)</td>
<td>0.0005</td>
<td>0.00003</td>
</tr>
<tr>
<td>2,3’,4,4’,5-pentaCB (PCB 118)</td>
<td>0.0001</td>
<td>0.00003</td>
</tr>
<tr>
<td>2’,3,4,4’,5-pentaCB (PCB 123)</td>
<td>0.0001</td>
<td>0.0003</td>
</tr>
<tr>
<td>2,3,3’,4,4’,5-hexaCB (PCB 156)</td>
<td>0.0005</td>
<td>0.00003</td>
</tr>
<tr>
<td>2,3,3’,4,4’,5’-hexaCB (PCB 157)</td>
<td>0.0005</td>
<td>0.00003</td>
</tr>
<tr>
<td>2,3’,4,4’,5,5’-hexaCB (PCB 167)</td>
<td>0.00001</td>
<td>0.00003</td>
</tr>
<tr>
<td>2,3,3’,4,4’,5,5’-heptaCB (PCB 189)</td>
<td>0.0001</td>
<td>0.00003</td>
</tr>
</tbody>
</table>

Any trace amounts of PCBs in flue gases are managed in the same way as dioxins and furans and can be successfully treated by combustion temperatures greater than 950 °Celsius with suitable turbulence and residence time. Secondary treatment includes injection of activated carbon and a baghouse with flue gas temperatures at less than 200 °Celsius (European Union, 2017). The conclusion is that PCBs are unlikely to be present in the waste, any reformed PCBs or trace amounts in the waste will be removed through the flue gas treatment system.

Mercury is identified as a Class 2 indicator in Schedule A of the SEPP AQM with a design criterion of 0.0033 mg/m³ for inorganic mercury and 0.00033 mg/m³ for organic mercury. The WAA modelling for mercury assumed an in-stack concentration of 50 µg/m³ and results indicate the highest GLC of 0.000044 mg/m³. EPA is satisfied that the predicted emissions would be compliant with the SEPP.

Mercury is removed through adsorption onto activated carbon and a baghouse. The BREF (2017) suggests that new plants are able of achieving reductions down to 5–15 µg/m³.

Cadmium and cadmium components are identified as Class 3 indicators in Schedule A of the SEPP AQM with a design criterion of 0.00033 mg/m³. The WAA’s worst-case scenario modelling results show highest GLC of 0.000027 mg/m³, with EPA satisfied that the predicted emissions would be compliant with the SEPP.
Hexavalent chromium (chromium VI compounds) is a Class 3 indicator in the SEPP AQM with a design criterion of 0.00017 mg/m$^3$. Modelling done as described in the WAA show the highest-level operating in Europe and multiplied this with a safety factor of 3. The EPA is satisfied that the predicted emissions would be compliant with the SEPP.

The BREF (2017) describes BAT for removal of metals and metalloids as the operation of a bag filter with activated carbon injection. The IED limits for the metal are different from the BAT AEL levels:

- Cd + Ti with IED 0.05 mg/Nm$^3$ and AEL of 0.01–0.02 mg/Nm$^3$
- Sb + As + Pb + Cr + Co + Cu+ Mn + Ni + V with IED limits at 0.5 mg/Nm$^3$ and BAT AEL of 0.05–0.3 mg/Nm$^3$

Particulate matter 2.5 (PM$_{2.5}$) was modelled at an assumed emission rate of 30 mg/m$^3$ which represents the upper limits of the IED. Modelling using the conservative emission rate results in maximum (99.9 percentiles) contributing to approximately 0.001 mg/m$^3$ of PM$_{2.5}$ at the nearest sensitive receiver. This represents 2 per cent of the ground level design criterion (0.05 mg/m$^3$).

Modelling using emission concentration of 0.02 mg/m$^3$ results in maximum (99.9 percentiles) GLC concentration ranging from 0.0015–0.001 mg/m$^3$ nearest to the site extending to 0.0007 mg/m$^3$ into Morwell and Traralgon.

The model reported exceedances in the modelled area of up to 0.155 mg/m$^3$ with the design criteria for PM$_{2.5}$ being 0.05mg/m$^3$. The emissions did not result in any exceedance at any of the sensitive receivers located in close proximity to the site. It is not uncommon for modelling to show exceedances of PM$_{2.5}$ when measured background include emissions such as bushfires.

Emissions data from the operational reference facilities (four moving grate incinerators in the UK that formed part of the WAA) estimates the maximum stack emission of PM$_{2.5}$ to 0.056 mg/m$^3$ (Newhaven), minimum of 0.003 mg/m$^3$ (Lakeside) and an average between 0.005–0.019 mg/m$^3$. These average figures show that the in-stack concentration is typically well below half of the ground level design criteria of 0.05 mg/m$^3$. In context, an emission of 30mg/m$^3$ (which is the absolute worst–case scenario) represents 1,500 times the maximum measured emission from the reference plants and can be considered conservative.

EPA assesses that the assumptions made in modelling the PM$_{2.5}$ is suitably conservative, as it accounts for emissions significantly higher than likely and covers years with background data that includes significant emission sources that are no longer present in the Latrobe Valley. Further the contribution of additional PM$_{2.5}$ emissions from the WtE facility are low and do not represent a significant increase in risk.

PM$_{2.5}$ was also modelled to include the Economiser upgrade project. With a design criterion of 0.05 mg/m$^3$ for PM$_{2.5}$, it is considered that the contribution of the WtE facility and the economiser is acceptable and that the risk has been suitably managed. The EPA has determined that the application complies with the policy through the additional risk assessment.

Polycyclic aromatic hydrocarbons (PAHs) are created during incomplete combustion of organic material (World Health Organization, 2000). PAH as B(a)P is identified as a Class 3 indicator in the SEPP AQM with a design criterion of 0.00073 mg/m$^3$. The WAA modelling shows a highest GLC of 0.00012 mg/m$^3$ in any grid during any one-hour during the five-year modelling period. The EPA is satisfied that the predicted emissions would be compliant with the SEPP.

Benzo(a)pyrene is the most studied PAH and is used as the surrogate for the total PAH that is being emitted from the WtE facility. In-stack concentration of PAH measured in MSW WtE facilities
operating in Europe is between 1e–8 mg/Nm³ to 0.01 mg/Nm³ and concentrations of BaP are 4e–9 mg/Nm³ to 0.001 mg/Nm³. Modelling was performed assuming a PAH emission as BaP of 0.0133 mg/Nm³ (maximum in BREF, 2006). This is about 1,300 times the maximum reported in the draft BREF (2017) and is considered very conservative.

The WAA has considered a detailed preliminary design with the following commitments:

- designs capable of meeting the IED requirements for air emission
- verification that emissions meet at IED levels and compliance with Victorian air policy
- commitment of building a plant that achieves the requirements of IED BAT, including maintaining capacity at the facility to adapt equipment in the future (for example, SCR)
- commitment to installation and operation of technologies that meet the requirements of BAT 2006 and 2017.

EPA has taken the following precautions in assessing that the plant is capable of achieving best practice and MEA:

- assessed the proposed technologies against current (BAT 2006) and future (BAT 2017) best practice
- required demonstration that the techniques adopted is capable of achieving BAT.

The commitment by AP to design and build the plant with capacity to modify equipment (for example, installation of SCR should it be required), demonstrates the adoption of a preventative duty and a good understanding of the future direction of best practice. That goes beyond current Victorian requirements and demonstrates that the plant will be able to meet future conditions for protection of the environment.

The APM site is located in the Latrobe Valley, with SEPP AQM identifying the Latrobe Valley Air Quality Control Region in Schedule F (see Figure 9). Schedule E of the SEPP AQM sets for new stationary sources emission limits as per Table 12.
Decisions by government that affect air quality will be informed by providing access to scientific information research to meet the needs of the stakeholders.

### Table 12: emissions limits for Air Quality Control Regions as per the SEPP AQM compared to AP maximum emission

<table>
<thead>
<tr>
<th>Wastes</th>
<th>Notes</th>
<th>mg/m³</th>
<th>AP maximum emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total particulate matter</td>
<td></td>
<td>250</td>
<td>30</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>Gaseous fuels</td>
<td>350</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Liquid or solid fuels</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td></td>
<td>2,500</td>
<td>50</td>
</tr>
<tr>
<td>Fluorine compounds</td>
<td></td>
<td>5</td>
<td>2 (as HF)</td>
</tr>
<tr>
<td>Chlorine and chlorine compounds</td>
<td></td>
<td>20</td>
<td>10 (as HCL)</td>
</tr>
<tr>
<td>Total of antimony, arsenic, cadmium, lead and mercury</td>
<td>Per metal</td>
<td>10</td>
<td>0.5–0.05</td>
</tr>
<tr>
<td>Antimony and its compounds</td>
<td></td>
<td>10</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Arsenic and its compounds</td>
<td></td>
<td>10</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Cadmium</td>
<td></td>
<td>3</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Nickel and its compounds except nickel carbonyl</td>
<td></td>
<td>20</td>
<td>&lt;&lt;0.05</td>
</tr>
</tbody>
</table>

NPI data was retrieved to understand the potential air emissions from the proposed facility and other operational sources of air emissions in the Latrobe Valley. A mass was calculated for each...
emission based on the volumetric flow rate (V), the in-stack concentration (C) and scaled up to an annual emission (t) (in accordance with Equation 1).

**Equation 1**  \( V \times C \times t = \text{mass per year} \)

Under the assumption that the plant will operate according to the WAA at BAT–AEL levels (which is an assumption based on the plant installing BAT) a comparison was able to be made (see Table 13 and Table 14).

**Table 13: Emissions in the Latrobe Valley according to NPI for the financial year 2016–2017 compared with emissions from the Australian Paper Waste to Energy plant**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Electricity generation</th>
<th>Other sources</th>
<th>AP WtE facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust</td>
<td>13,927,012</td>
<td>733,665</td>
<td>20,602</td>
</tr>
<tr>
<td>TVOC</td>
<td>901,918</td>
<td>2,544,159</td>
<td>41,205</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>24,000,000</td>
<td>100,000</td>
<td>24,723</td>
</tr>
<tr>
<td>Fluoride compounds</td>
<td>32,509</td>
<td>163</td>
<td>4,120</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>113,000,000</td>
<td>2,000,000</td>
<td>123,614</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>75,700,000</td>
<td>3,200,000</td>
<td>494,457</td>
</tr>
<tr>
<td>Ammonia (total)</td>
<td>80,418</td>
<td>51,649</td>
<td>20,602</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>24,100,000</td>
<td>2,800,000</td>
<td>123,614</td>
</tr>
<tr>
<td>Mercury and compounds</td>
<td>2,080</td>
<td>2</td>
<td>144</td>
</tr>
<tr>
<td>SUM (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V)</td>
<td>19,971</td>
<td>525</td>
<td>206</td>
</tr>
<tr>
<td>PCDD/F (TEQ)</td>
<td>(in grams per year) 4.3</td>
<td>(in grams per year) 0.4</td>
<td>(in grams per year) 0.2</td>
</tr>
<tr>
<td>PAH as B[a]P</td>
<td>41</td>
<td>125</td>
<td>55</td>
</tr>
</tbody>
</table>

Note that this assessment has not gone into detail of the reliability of the NPI data and it must only be relied upon as rough estimations. The largest contribution in the air shed from the proposed WtE facility in comparison to the other sources would be PAH as B[a]P. Australian Paper assumed that the entire PAH emission was B[a]P. The emission of PAHs is likely to be an overestimated due to:

a) PAHs are generally reported to be much lower in modern, well-run MSW WtE facility

b) B[a]P levels from WtE incinerators are generally a small portion of the emission (BaP 0.004 ng/Nm3 to 1 µg/Nm3) (European Union, 2017).

Submissions made to EPA during the consultation period and at s20B community conference highlighted community concerns with the emissions of the proposed WtE, and that emissions from the WtE facility would replace emissions from the Morwell power station and the Hazelwood power station.
In 2012–2013 Hazelwood power station was a significant contributor to total emissions in the Latrobe Valley. Table 14 shows a comparison between the pollutants emitted in the Latrobe Valley over 2012–2013 and 2016–2017 with a comparison of the predicted emissions from the proposed WtE facility.

### Table 14: NPI emissions data from 2012–2013, 2016–2017 and estimated emission from Australian Paper Waste to Energy facility

<table>
<thead>
<tr>
<th>Substance</th>
<th>NPI data from 2012–2013</th>
<th>NPI data from 2016–2017</th>
<th>AP WtE facility</th>
<th>AP WtE facility estimated emission contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total kg/year</td>
<td>Total kg/year</td>
<td>Total kg/year</td>
<td>% of 2016–17 total emissions</td>
</tr>
<tr>
<td>Total dust</td>
<td>32,395,605</td>
<td>14,660,678</td>
<td>20,602</td>
<td>0.1%</td>
</tr>
<tr>
<td>TVOC</td>
<td>97,483,116</td>
<td>3,446,077</td>
<td>41,205</td>
<td>1%</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>42,685,876</td>
<td>24,100,000</td>
<td>24,723</td>
<td>0.1%</td>
</tr>
<tr>
<td>Fluoride compounds</td>
<td>6,545,832</td>
<td>32,673</td>
<td>4,120</td>
<td>13%</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>1,241,550,820</td>
<td>115,000,000</td>
<td>123,614</td>
<td>0.1%</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>737,439,537</td>
<td>78,900,000</td>
<td>494,457</td>
<td>0.6%</td>
</tr>
<tr>
<td>Ammonia (total)</td>
<td>59,007,403</td>
<td>132,067</td>
<td>20,602</td>
<td>16%</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>650,045,999</td>
<td>26,900,000</td>
<td>123,614</td>
<td>0.5%</td>
</tr>
<tr>
<td>Mercury and compounds</td>
<td>9,769</td>
<td>2,081</td>
<td>144</td>
<td>7%</td>
</tr>
<tr>
<td>PCDD/F (TEQ)</td>
<td>(in grams per year) 55.7</td>
<td>(in grams per year) 4.6</td>
<td>(in grams per year) 0.2</td>
<td>4%</td>
</tr>
<tr>
<td>PAH as B[a]P</td>
<td>16926</td>
<td>166</td>
<td>55</td>
<td>33%</td>
</tr>
</tbody>
</table>

Based on emissions estimates from NPI reporting data for the Latrobe Valley, the proposed WtE facility is not considered to be a major source of emissions.

### Flue gas monitoring

The WAA has adopted continuous emission monitoring systems (CEMS) for flue gas monitoring within the stack consistent with the IED. The following pollutants will be monitored continuously:

- carbon monoxide
- total dust
- total organic carbon
- hydrogen chloride
- hydrogen fluoride
- sulphur dioxide
- oxides of nitrogen (NOₓ) as nitrogen dioxide (NO₂)
ammonia (best practice for SNCR/SCR systems (European Union, 2017)).

The WtE facility will also be fitted with secondary (redundant) CEMS, of the pollutants listed above, that will allow gas to be monitored during faults, calibration or maintenance.

In addition to the pollutant data, the CEMS will also be installed for:

- stack gas flow
- temperature
- pressure
- gas moisture content
- oxygen.

The final monitoring system has yet to be established and will need to be developed at the detailed design stage and approved by EPA under a suitably worded condition should a WA be issued (Condition WA_R1(e)). Subsequently, the monitoring system should be subject to tested during a commissioning approval. EPA consider that the starting point for the design of the CEMS should be against the draft BREF (2017).

<table>
<thead>
<tr>
<th>Substance/Parameter</th>
<th>Process</th>
<th>Minimum monitoring frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOX</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>NH₃</td>
<td>When SNCR and/or SCR is used</td>
<td>Continuous</td>
</tr>
<tr>
<td>N₂O</td>
<td>Incineration in fluidised bed furnaces When SNCR is operated with urea</td>
<td>Once every year</td>
</tr>
<tr>
<td>CO</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>SO₂</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>HCl</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>HF</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>Dust</td>
<td>Bottom ash treatment</td>
<td>Once every year</td>
</tr>
<tr>
<td>Metals and metalloids except mercury (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Tl, V)</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>Hg</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>TVOC</td>
<td>Incineration</td>
<td>Continuous</td>
</tr>
<tr>
<td>PCDD/F</td>
<td>Incineration</td>
<td>Once every month</td>
</tr>
</tbody>
</table>
When appropriate measurement techniques for continuous emission monitoring of dioxins, furans and heavy metals are available, the EU has committed to determining a date for implementation of those techniques.

During the assessment period, EPA formally requested (through its section 22 notice of 10 July 2018) AP to investigate if international best practice (and thus BAT) included semi-continuous monitoring of dioxins. Continuous emission monitoring of mercury is not proposed in the WAA. Based on pers. comms with European environmental regulators and its own assessment – which revealed that some WtE facilities in Europe have started preparing for this requirement, especially plants that are likely to have this requirement put on them (for example, MSW incinerators/WtE plants and hazardous waste incinerators). EPA considers that it is very likely that mercury will be required to be continuously measured and considered to be BAT. It is noted that there are exemptions to this requirement that apply to plants that are incinerating wastes with proven low and stable mercury content. The proposed WtE facility has not proven this to be the case for the proposed feedstock. Accordingly, EPA considers it appropriate to include a condition that requires continuous emission monitoring of mercury, unless the BAT conclusions in the draft 2017 BREF change prior to the commencement of construction (WA_W8(a)).

Through the new BREF it is likely that periodic or long-term sampling of mercury will be replaced by continuous monitoring (as indicated in Table 15).

Semi-continuous emission monitoring of dioxins and furans was not included in the WAA. AP responded to a question regarding this in the Response to Section 22 Notice: Australian Paper EfW Project. The response included a risk-based assessment of installing the system and costs. The conclusion of the response was that further investigations will be conducted during the detailed design of the project to determine viability of semi-continuous PCDD/PCDF monitoring.

The EPA has assessed this and accepts that this technology might not be best practice to install. This assessment was based on:

- review of the BREF draft 2017
- discussions with regulators in European Union countries.

The draft BREF 2017 does not include requirement of semi-continuous emission monitoring of dioxins and furans. It does include requirement of monthly testing of dioxins and furans during the first two years. In Europe, nations have approached this topic in differently. France and Belgium require semi-continuous monitoring of dioxins and furans to be installed at waste incinerators but not in waste co-incineration plants. When there are exceedances, plants are required to do stack testing to ensure that a more accurate sample is obtained. Scandinavian countries have approached the issue differently and do include long-term sampling when the periodic sampling detect exceedances. Considering this, EPA have decided to accept Australian Paper’s proposal to conduct further investigation to determine if semi-continuous monitoring of dioxins and furans is considered best practice.

**Public reporting of emission data**
The WAA commits to making all CEMS data publicly available on a quarterly basis. Recent works approval decisions have determined that it is appropriate to make similar data available on a daily basis (that is, Works Approval 155546 issued to Department of Economic Development, Jobs, Transport and Resources (DEDJTR)). More broadly than this application, it has been common for EPA to hear the community’s desire that monitoring information from companies be made publicly available and in close to real-time as possible. This was the subject of recommendation 16.2 in the Independent Inquiry Into The EPA – which recommended that EPA licensees be required to make emissions monitoring information available to the public. It has also been heard in consultation on the current power station licence reviews as well as other recent emergency discharge approvals.

It is further noted that submissions from the public and views expressed at the s20B community conference have indicated that they would like to have this data published more frequently than quarterly. This would then allow interested and particularly vulnerable members of the community to make informed decisions on day-to-day activities that may be affected by localised air pollutant levels. This could work as a traffic light system where Australian Paper would report daily status of pollutants measured in the continuous emission monitoring system. The EPA considers that it is appropriate to report this data daily and consistent with the purpose of the Act.

**Other air pollutants**

Incineration can create a large variety of different compounds. Ollson et al. (2014) created an extensive list identified as Contaminants of Potential Concern for a new WtE facility in Ontario, Canada. Ollson et al. used stack emission data from the Emerald WtE facility located in Brampton Ontario, existing Canadian guidelines and Canadian National Pollutant Release Inventory for waste incinerators. The comprehensive list was populated and is recreated in Table 16.

Table 16: Potential pollutants that can be emitted from a WtE facility (Ollson, Knopper, Whitfield Aslund, & Jayasinghe, 2014).

<table>
<thead>
<tr>
<th>Criteria air contaminants</th>
<th>Sulphur dioxide (SO₂), hydrogen chloride (HCl), hydrogen fluoride (HF), nitrogen dioxide (NO₂), particulate matter (PM₁₀), particulate matter (PM₂.₅), total particulate matter (TSP), ammonia (Slip at Stack)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorinated polycyclic aromatics</td>
<td>Dioxins and furans as toxic equivalents (TEQ), total PCBs (as Aroclor 1254)</td>
</tr>
<tr>
<td>metals</td>
<td>Antimony, arsenic, barium, beryllium, boron, cadmium, chromium (hexavalent), total chromium (and compounds), cobalt, lead, mercury, nickel, phosphorus, silver, selenium, thallium, tin, vanadium, zinc</td>
</tr>
<tr>
<td>Chlorinated monocyclic aromatics</td>
<td>1,2-dichlorobenzene, 1,2,4,5-tetrachlorobenzene, 1,2,4-trichlorobenzene, pentachlorophenol, hexachlorobenzene, pentachlorobenzene, 2,3,4,6-tetrachlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol</td>
</tr>
</tbody>
</table>
Criteria air contaminants were identified in the WAA as compounds that needed to be included in modelling and demonstrated through the air quality assessment and health impact assessment to be compliant with Victorian Policy.

The metals modelled in the air quality assessment were determined through risk assessment and by using conservative emissions. The health impact assessment submitted by AP (and described further in section 6.9) included the remaining metals and determined that the impacts on health were negative, but negligible.

Chlorinated polycyclic aromatics were modelled as PCDD/F and at levels which included conservatism and a buffer for dioxin-like PCBs. Chlorinated monocyclic aromatics are reduced in a similar way to PCDD/F and is not risk-appropriate to model.

Poly aromatic hydrocarbons were modelled as benzo(a)pyrene which is a conservative surrogate for the total PAH emission.

Most VOCs are destroyed in the incineration process through the appropriate temperature, residence time and turbulence. EPA guideline 929 states that VOCs need to be managed in accordance with SEPP AQM (which has been addressed) and that where it is difficult to determine the individual compounds of VOC, it is appropriate to try and categorise these emissions. AP advised that the emissions that were modelled were based on a risk assessment that concluded VOC to be emitted in trace amounts. This is consistent with the draft BREF (2017) and accepted by EPA. Through the assessment of this WAA, EPA has determined it to be appropriate to perform stack testing of individual species of VOC at the point of commissioning.

It is the opinion of EPA that the pollutant risk assessment and modelling of the contaminants are appropriate and will protect beneficial uses of air.

**Combustion chamber optimisation through computational fluid dynamics**

The turbulence and flow in a combustion chamber is a complex process determined by several different parameters and is a critical component of ensuring optimal combustion conditions that may affect the generation and destruction of combustion products.
Understanding the inputs (secondary and primary air) and outputs (exhaust) are important to understand the flow patterns in the combustion chamber and to identify inactive zones. Computational fluid dynamics (CFD) is used to predict mixing, heat generated temperature and flow within an incinerator. This type of modelling can also predict particle trajectories which is useful in understanding the flow of pollutants within the flue gas. The modelling can predict the elementary volumes, create flow patterns and temperature fields (Buekens, 2012). In the BREF (2017) CFD modelling is identified to be successful at:

- optimising boiler and furnace
  - this optimisation will help with reducing the reformation of most notable PCDD/F, TOC and NO\textsubscript{x}
- position of flue gas recirculation
- injection of NO\textsubscript{x} reagent (in this case, urea).

Studies in 2009 and 2015 showed how CFD modelling should be used to prove that the requirements stipulated in the IED can be achieved in a combustion chamber (Costa, Dell’Isola, & Massarotti, 2009) (Costa, Indrizzi, Massarotti, & Mauro, 2015).

In CFD modelling, the fuel that is combusted consists of water, volatile matter, char and ashes. The chemical composition will vary for MSW. An example of waste composition for the purpose of CFD modelling is:

- carbon (68.7 per cent)
- hydrogen (3.2 per cent)
- oxygen (27 per cent)
- nitrogen (0.2 per cent)
- sulphur (0.2 per cent)
- other (0.7 per cent).

(Costa, Indrizzi, Massarotti, & Mauro, 2015).

Solid matter is converted to a gaseous phase through: drying, pyrolysis, volatile matter combustion and char gasification. Each of these processes converts a fraction of the weight into gaseous phase (Costa, Indrizzi, Massarotti, & Mauro, 2015).

The WAA identifies a commitment to perform CFD flow modelling as part of the finalisation of detailed designs (Section 5.4.3 of the supplementary information provided 25 May 2018). A focus of that modelling will be to refine the injection point of urea to maximise NO\textsubscript{x} reduction.

In addition, EPA requires the CFD modelling to be performed to demonstrate final detailed designs that show sufficient residence time, temperature and turbulence can be achieved in compliance with the requirement of all combustion gases, after the last injection of air, are elevated to a minimum temperature of 850 °Celsius with a residence time of at least two seconds as prescribed in EPA guideline 1559. AP must use this as an opportunity to optimise the position of the flue gas recirculation point. As per the WAA, de novo synthesis will be avoided by a short residence time in the boiler in the temperature window 450–250 °Celsius. In the 2017 draft BREF, this is considered BAT if the temperature at the outlet of the boiler is less than 200 °Celsius. Through CFD modelling AP is required to demonstrate compliance with this (WA_W1(d)).
6.3.4 Conclusion

The conclusions of the review of potential air effects on the environment are that:

- the plant complies with best practice and maximum extent achievable
- the plant will not adversely affect beneficial uses
- the WAA provides reasonable justifications for determining which pollutants to include in the modelling – EPA has determined that this needs to be tested at the commissioning phase of the plant (WA_R1(e)).

6.4 Noise

6.4.1 Relevant documents

*Noise From Industry in Regional Victoria* (EPA publication 1411) (NIRV)

*SEPP N–1 and NIRV Explanatory Notes* (EPA publication 1412)

*Applying NIRV to Proposed and Existing Industry* (EPA publication 1413)

*Recommended Separation Distances for Industrial Residual Air Emissions* (EPA publication 1518)

6.4.2 Application

Ferrybridge Multifuel 2, Stranglands Lane, West Yorkshire, UK, were used as reference facilities for the assessment of noise in the WAA.

The WtE facility is in an area where EPA’s guideline *Noise in Regional Victoria* (NIRV) applies.

Noise-sensitive areas were identified and distance to the WtE facility calculated as being: North – Sawyers lane ~3,100 metres, East – Scrubby Lane ~3,200 metres, South – Maryvale Road 1,700 metres and West Derhams Lane 2,600 metres.

Computational noise modelling was completed to determine the potential noise impacts from the plant. Recommended maximum noise levels (RMNLs) were calculated in accordance with methodology described in part 3 of NIRV. The EPA and AP agreed to set a noise criteria 3 dB lower than the RMNL across all noise-sensitive areas to account for noise from multiple industrial sites.

Noise sources from the proposed WtE identified in the WAA were: water-cooled condensers; induced draft fans; ash extraction fans; lime pack blowers; stack; compressors; high-pressure steam lines; transformers; and truck movements.

It is noted that the following components of the WtE facility will be located in enclosed structures: tipping hall; waste bunker; baghouse; and turbine hall.

AP used CONCAWE noise propagation model and SoundPLAN to determine the estimated noise impact on the surrounding environment including noise-sensitive areas.

The noise emissions derived from the noise modelling were under the RMNLs (as seen in Table 17).

**Table 17**: RMNLs against predicted sound pressure level
Further noise mitigation will be incorporated during design through a hazard and operability study (HAZOP) and Hazard Identification (HAZID). Significant sources of noise such as the cooling towers will be fitted with best-practice low-noise fans.

### 6.4.3 Assessment

This proposal is for an industrial plant located in regional Victoria and NIRV is used to set recommended maximum noise emissions.

Background noise was taken from the works approval associated with the De-Inking Plant (2015). Noise is not considered to have significantly changed since that time.

The modelling methodology applied standard industry techniques for estimating noise emissions from the plant. The relevant criteria to assess against comes from the *Noise from Industry in Regional Victoria* (NIRV). The NIRV is a guideline and does not have the same power as a policy (see [Hierarchy of legislation and guidance](#)).

Design targets for the facility were set to be 10 dB below ‘Effective Recommended Maximum Noise Levels’ (ERMNFL). This will ensure that the WtE facility does not result in a net increase of noise emitted from the existing Paper Mill. To achieve this ERMNL the applicant used a limit 3 dB below the NIRV recommended maximum noise levels. The rationale behind this goes to the fact that the plant is located in an industrial area. By using 3dB below, another industrial plant could be built and emit the same level of noise without exceeding NIRV. This is not part of the NIRV but is considered a reasonable approach based on the area in which the facility is located.

Chapter 8 of the WAA details estimated noise emissions based on the detailed preliminary design and is consistent with the application of NIRV for:

- changes to existing premises
situations where multiple premises impact on noise-sensitive areas. The predicted noise levels meet the design targets and comply with the day, evening and night periods within the guideline. The proponent has committed to undertaking an update once the design has been finalised to confirm that the requirements of the NIRV are met (WA_W1(c)).

During the final detailed design, AP must complete an updated noise assessment, including:

a) final acoustic design details of all buildings as part of works
b) noise predictions based on the final equipment schedule including reference equipment noise data
c) considerations of noise character (tonality, impulsiveness, or intermittency) with adjustments to be applied for the determination of the effective noise levels and details of any new or proposed noise mitigation measures designed to address the potential audible character
d) assessment of the risk for intrusive low frequency noise, and detail of potential mitigation measures
e) evidence of the implementation of best practice to minimise noise emissions (refer EPA publications 1412, 1413, 1517.1).

EPA considers that the WtE facility is an ‘advanced resource recovery technology facility’ for the purpose of EPA publication 1518. Accordingly, the appropriate separation distance for noise emissions is determined on case by case basis. EPA considers that the current separation distance (the nearest sensitive receptor is 1700m from the proposed facility) is appropriate as demonstrated through compliance with the NIRV.

6.4.4 Conclusion

The conclusions of the review of potential noise effects on the environment are that:

- the proposal will not cause an exceedance of the noise criteria for day, evening or night
- the sources of noise emissions have been accurately identified and accounted for in the modelling
- appropriate noise mitigation measures have been incorporated in to the WAA and the WAA is consistent with the NIRV subject to conditions (WA_W1(c)).

6.5 Wastewater

6.5.1 Relevant documents

State Environment Protection Policy (Waters of Victoria) (SEPP (WoV))
Bunding Guidelines (EPA publication 347.1)
Guidelines for Environmental Management: Use of Reclaimed Water (EPA publication 464.2)
State Environment Protection Policy (Water) (SEPP (Waters))

6.5.2 Application

The wastewater that is produced at the paper mill is diverted to trade waste and to the existing wastewater treatment system (WWTS). Wastewater sent under trade waste agreement is sent to
Gippsland Water Factory. Water that is treated on the site is discharged to the Latrobe river under an EPA licence.

Stormwater generated at the paper mill is separated from the WWTS. Stormwater generated by the WtE proposal will be diverted to existing stormwater collection and discharge system.

Wastewater from the WtE facility is generated from: filter backwash; biocides from cooling tower blowdown; and total dissolved solids from cooling tower blowdown.

Wastewater generated by the filter backwash will have between 285 and 335 mg/L of TDS and up to 20.1 kg/day TDS that will go into existing WWTS.

Wastewater generated by the cooling tower blowdown biocides will have ~ 0.5 ppm chlorine with a maximum of 1 ppm. Most of the chlorine will be consumed prior to the wastewater being fed into the WWTS.

Wastewater generated by the cooling tower blowdown is expected to have an TDS of up to 350 mg/L. This is well under the existing licence limit for TDS which is set at 1,000 mg/L.

6.5.3 Assessment

The WAA has been assessed against the State Environment Protection Policy (Waters of Victoria) and is considered to comply with the requirements of the policy, subject to conditions.

The State Environment Protection Policy (Waters) was gazetted on 19 October 2018 replacing the SEPP (Waters of Victoria). While EPA expects all applicants and duty holders to recognise the requirements and expectations set out in the policy, it is recognised by EPA that the WAA under consideration has been significantly advanced and submitted prior to the change in policy. The reliance on and assessment against SEPP Waters of Victoria is particularly appropriate and justified in the present case because the wastewater from the WtE facility can be managed within the current licence discharge limits. The EPA will review licenced water discharges for compliance with the SEPP (Waters) through its period licence review process.

The current APM operation generates wastewater which is separated into two individual WWTSs:

- More highly contaminated (high BOD, sulphur, colour, TDS) wastewater from pulp mills, bleach plant, wood yard and other sources are directed to the trade waste system. After passing through an onsite pre-treatment (screening, clarification, pH adjustment), this stream is directed to Gippsland Water Factory treatment facility and finally discharged from Dutson Downs to Bass Strait.
- The less contaminated streams from APM’s activities, potentially contaminated stormwater systems and streams from other sources are directed to the APM wastewater treatment plant.

Key features of the existing wastewater treatment plant at the premises are seen in Figure 10 and consist of:

- coarse screening
- wastewater clarifier No.1
- wastewater clarifier No. 2
- aerated pond No. 1A
- secondary clarifier
• aerobic polishing pond No. 2.

Figure 10. The existing Maryvale mill wastewater treatment process

The treated effluent from the WWTP is discharged into Latrobe River under EPA licence 46547. Wastewater will be generated from the WtE facility process water and ancillary water uses. The volume of wastewater generated is considered insignificant and capable of being treated within the existing WWTP. It is estimated that the proposed facility will typically discharge approximately 0.4 ML/day of water (depending on the load and operating mode of the facility) to the existing trade waste and WWTS. The water discharged to the trade waste and WWTS may be up to 1.2 ML/day if the demineralisation plant and polishing plant are regenerating and if higher process steam flows are required by the mill.

Approximately 60 per cent of waste water will be generated from cooling towers, boilers and raw water filter backwash and will be directed to the existing WWTP prior to being discharged into the Latrobe River under EPA licence conditions.

Approximately 40 per cent of wastewater will originate from the demineralisation effluent and will be directed to the existing WWTP prior to discharge to Gippsland Water (Gippsland Water Factory) under a trade waste agreement.

It is proposed that the WtE facility will be integrated into this existing process and stormwater system to treat additional wastewater generated by the process.

Wastewater produced by the WtE facility under a worst-case scenario is estimated as 1.2 ML/day. Capacity within the existing WWTP is considered sufficient to accept and treat this volume of wastewater.

The sources of wastewater from the proposed WtE facility, and the key issues associated with the wastewater discharge, are considered to include:

• filter backwash and concentration of total suspended solids (TSS)
• concentration of biocides (toxicity) within cooling tower blowdown
• cooling tower blowdown with increased concentration of total dissolved solids (TDS).
The increase of biological oxygen demand (BOD) load from the proposed WtE facility is considered insignificant.

The chemical composition of any backwash is expected to be identical to that of the raw incoming water, as the proposed gravity-type sand filter does not introduce any additional contaminants. The backwash stream should thus only consist of a concentrated native stream of the particles inherent in the raw water supply from the Moondarra Reservoir.

The impact of the WtE facility backwash discharges is negligible in the context of the existing backwashing processes on the mill wastewater clarification system (WWC#2) and the feed flow into the clarifier (currently 28 ML/day). In this context, the backwash from the WtE (sand) filter would be hundreds of times lower in volume and of a chemical composition comparable to existing APM backwash. It is expected the impact of additional filter backwash from the proposed facility (being 0.03–0.5 ML/day) with a mass of 8.5 kg/day TSS on the APM clarifiers and settling ponds will be insignificant.

The frequency of filter backwash will be dependent on the final design of the filter and the incoming quality of water from the Moondarra Reservoir, with particular consideration for the concentrations of suspended solids in water (sand/dirt, organic debris, etc), seasonal variation and/or significant rainfall events. It is expected that the frequency of backwash will typically be once per day (for example, every 24 hours).

The current discharge licence limit for the wastewater treatment system to the Latrobe River for TSS on an average discharge flow rate of 55 ML/day is:

- annual median of 30 mg/L, approximately 1,600 kg/day
- maximum basis of 60 mg/L, approximately 3,200 kg/day.

The contribution from the proposed facility is estimated at 8.5 kg/day TSS which is considered insignificant and can be managed under the existing WWTP operational licence conditions.

Under the standard operating conditions, the proposed WtE facility will generate approximately 0.31–0.5 ML/day of blowdown water which will be directed to the primary clarifiers. Cooling tower blowdown from the existing APM operation is approximately 55 ML/day which is directed to the primary clarifiers.

The risk of legionella growth requires management through biocidal dosing in the towers. Standard industry practice uses a chlorine biocide as is proposed for the proposed WtE facility, this entails targeting regular ‘slug’ doses of chlorine to maintain a minimum free residual concentration of approximately 0.5 ppm and a maximum of around 1 ppm immediately after a dosing period. This is a common approach to ‘shock’ biological growth within the tower and cooling water circuit on a regular basis (for example, once for a few hours per day). Actual frequency will be determined during operations supported by free chlorine testing and microbiological cell count monitoring. Blowdown from the cooling towers will contain residuals amounts from the biological (likely to be chlorine) and scale (likely to be sulphate) control systems. Chlorine has a short effective lifespan as a biocide and the residual-free chlorine levels in the cooling water circuit will dissipate relatively quickly after exposure of the chlorine to biological matter and exposure to air, such as during the drop from spray nozzles to cooling water pond or within an aeration or open pond. The mixing with 55 ML/day of wastewater from the APM operations and the portion of chlorine added to the system from the proposed WtE facility can be determined as carrying an insignificant impact on the performance of the existing WWTP system. It is in the interest of the WtE operation to minimise free chlorine in the cooling water system, as it will increase corrosion rates of pipes and condenser tubes if not tightly controlled.
For comparative purposes, Melbourne’s drinking water has average free chlorine levels of between 0.05 and 0.1 ppm. For public swimming pools in Victoria, the Victorian Department of Human Services requires a free chlorine level of between 1 ppm and 8 ppm.

The APM WWTP currently has biological control systems on existing cooling towers as required for legionella protection. Other APM water systems have been progressively closed or upgraded to improve water re-use, consequently most of the water systems have managed biological treatment programmes. The Bleach Plant at the APM has two chlorine dioxide addition stages, resulting in small chlorine residuals in the bleached pulp. The chlorine residuals are minimised by the control systems and rapidly consumed when the waters are ultimately purged into the wastewater feed drains, which are biologically treated in the aeration pond after the primary clarifiers.

The free chlorine from the WtE cooling tower blowdown would be consumed prior to or when it is mixed with the other process streams being fed to the primary clarifiers (Waste Water Clarifier #2 in this case) and is therefore expected to have no impact on the biological performance of the aeration pond (No.1A). Consequently, it is expected that there will be no change to the quality of wastewater discharged to the Latrobe River.

During the detailed design stage of the development, AP must include a report outlining the predicted discharge of sulphates and chlorine and compare this to the Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (WA_W1 (e)).

TDS concentration in the blowdown water is approximately 210 mg/L due to the high water evaporation rates and recycling within cooling towers. The proposed WtE facility will discharge approximately 0.5 ML/day (max) of blowdown wastewater, with approximately 110 kg/day of TDS discharged to the WWTP.

Where there are a number of chemical ions present in varying concentrations in a water stream, such as will be the case for the WtE blowdown system, the direct conductivity meter that will be used to monitor cooling tower blowdown on a continuous basis will need to be calibrated in service against laboratory test results for TDS before it can be considered an accurate control and monitoring device for the plant. This calibration process must be performed during the plant commissioning phase to ensure the cooling water cycle chemistry regime can be informed and controlled effectively.

Table 18 below shows the estimated total dissolved solids (TDSs) in the raw water from the Moondarra Reservoir and EPA licence limit for discharge to the Latrobe River. It also shows what the estimated TDS would be for the cooling tower blowdown stream based on a cycle concentration of 5.

Table 18: Total dissolved solid (TDSs) estimates (Table 9.3 of the WAA)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>ALS Lab</th>
<th>Gippsland Water test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS – Incoming raw water</td>
<td>mg/L</td>
<td>42</td>
<td>45</td>
</tr>
<tr>
<td>TDS – Cooling tower blowdown (based on a cycle of concentration of 5)</td>
<td>mg/L</td>
<td>210</td>
<td>225</td>
</tr>
</tbody>
</table>
In terms of TDS concentrations, the present estimates of TDS for the WtE facility cooling water blowdown is likely to be lower than those typically observed in the APM wastewater discharge to the Latrobe River, assuming a cooling tower concentration factor of around 8 or less. As such, the net impact of TDS concentration (and electrical conductivity) from the WtE facility is expected to be a small reduction in the overall TDS concentration from the existing APM discharge.

The TDS is not expected to exceed the current licence limits of 1,000 mg/L and therefore the discharge to the Latrobe River will not be significantly different to the current discharge, other than a small reduction in the TDS concentration.

The current Paper Australia Pty Ltd Licence 46547 permits discharge of effluent from the WWTP plant to the Latrobe River. The licence-permitted annual median TDS is 850 mg/L, and TDS maximum concentration is 1,000 mg/L. The reported TDS maximum concentration in effluent was 654 mg/L and the annual median concentration was 611 mg/L. These reported TDS concentrations are within licence limits. The reported SS concentrations in the WTP effluent complied with licence limits (median 30 mg/L and max 60 mg/L).

During the last five years, the annual flow rate has been reported to be between 16,627 and 20,684 ML/year, with one-year exceeding licence limits by 554 ML.

In its annual report, AP proposed projects which aim to ensure compliance of wastewater flow rates with the permitted licence limit. These proposed projects are:

- diverting effluent to sewer, or
- segregation of clean and contaminated stormwater and reinstating stormwater flows to the offsite billabong.

The EPA has determined that at the finalisation of the detailed design, AP must submit a report which outlines how the wastewater generated from the WtE facility will be treated under the existing licence, without an increase to the current licence conditions limiting discharge to the Latrobe river (WA_W1 (e)).

The Maryvale Mill currently performs wastewater monitoring and testing in part to satisfy the conditions of EPA licence 46547 and in part to effectively manage the APM water systems. AP will continue with its current monitoring programme and update the programme as needed to accommodate the WtE facility and any new licence requirements and/or conditions.

Within the proposed WtE facility there are potential individual areas which may be contaminated by chemicals, such as bunded areas around fuel and chemical storage. Water captured within these areas will be designated as trade waste and pass through a suitably designed treatment system prior to being discharged into the existing APM trade waste drains and treatment system. This drainage system ultimately discharges to the Gippsland Water Factory for final treatment.
6.5.4 Conclusion

The conclusions of the review of potential wastewater effects on the environment are that:

- the WAA will not adversely impact any beneficial uses
- existing WWTS is capable of treating the wastewater generated by the WtE facility during worst-case scenario
- prior to commencing any construction AP must submit (WA_W1(e)):
  - wastewater report based on the final detailed designs that:
    - quantifies the wastewater generated and confirms compliance with licence conditions
    - specifies the predicted wastewater discharge of sulphates and chlorine with a comparison to the ANZECC guidelines.

6.6 Odour

6.6.1 Relevant documents

State Environment Protection Policy (Air Quality Management) (SEPP (AQM))


6.6.2 Application

Odour sources have been identified to be tipping hall and waste bunker. To ensure the control of odour and dust the waste will be received in a tipping hall which is fully enclosed and maintained under negative pressure whenever one or more of the combustion lines is in operation. In the event that all boilers are offline, odorous air would be contained within the enclosed tipping hall building with any odour release only occurring for short periods to maintain safe working conditions until the boilers are brought back online. For times when maintenance is conducted on the WtE facility and both boilers are offline, contingency measures will be put in place to manage the storage of waste within the bunker. A deodorising system could be operated where an industrial deodorant is sprayed into the tipping hall and bunker areas.

In the event that plant maintenance or an unexpected event requires a shutdown period of longer than 10 days, AP will ensure alternative arrangements are made, and are part of waste agreements with collection contractors, so that waste loads are diverted from the facility during this time.

Ingress and egress for waste vehicles to the tipping hall shall be through automated fast acting (such as plastic or fabric types) roller doors which open when a vehicle approaches, and close when a vehicle has passed through. An automated traffic control system shall be provided notifying vehicles regarding which bay(s) to unload into, with manual intervention possible from the central control room or by the tipping hall operations supervisor. The tipping hall design shall also allow operation of a front-end loader for cleaning up waste spillages from the tipping floor into the bunker. The building shall be designed to eliminate the need for pedestrians to enter the fuel reception area during normal operations. All traffic will flow through the tipping hall be on a one-way circuit.
6.6.3 Assessment

Odour is an unclassified indicator in Schedule A of the SEPP AQM. Odour is a mixture of different odorous substances which for this facility is mostly generated through the degradation of organic material and volatilisation of liquids from the waste.

The main sources of odour from the proposed facility will be within the tipping hall and waste bunker. Outside air will be drawn into the building and air inside the building will be used as combustion air in the boiler where odorous molecules and hydrocarbons/VOCs will be destroyed via combustion. The experience of AP and EPA from site visits, compliance inspections and discussions with operators and regulators across European facilities is there are negligible fugitive odour emissions from the premises.

After assessing the potential emissions of odour and the management controls from this facility, EPA has determined that the WAA will achieve the policy design criterion of less than 1 odour unit at the boundary of the premises. The EPA note that the existing facility does not achieve 1 odour unit at the boundary.

Odour management and treatment system is best practice for WtE (European Union, 2006) when the main features are:

- indoor receival
- air-lock system
- receival hall under negative pressure
- odour capture
- odour destruction via the energy plant.

The separation distance adopted for the WAA is based on the existing AP site Urban Amenity Buffer (UAB) set in the Latrobe City Planning Scheme gazetted 2017. There is a limited number of sensitive receptors (farm residences) within this existing 2–3 kilometres UAB buffer. The risk for offsite impact is considered acceptable.

EPA operational licence conditions will consider the maximum volume and residence time waste is permitted to be stored within the bunker during standard operations, upsets and periods of shutdown/maintenance.

The risk assessment, in the WAA, provides additional detail on odour management:

- tipping hall maintained under negative pressure to prevent odour escape
- tipping hall automated roller doors for vehicle entry
- odorous air captured and combusted through boilers
- high temperature and residence time in boiler eliminates most VOCs and odours
- odour monitoring (olfactometry measurements) outside the tipping hall if required
- application of deodorisers if required
- waste delivery containers enclosed
- back-up power system to provide emergency power during non-routine events
- multiple boilers
- operational fuel management plan (including fuel waste contingency).
During planned facility maintenance, it is common practice in Europe to have at least one line operating to treat waste. This ensures waste is not left in the bunker for extended periods and a negative pressure in the receipt hall and in the waste bunker is sustained mitigating risk of odour problems. A cross-over between start-up and shutdown of individual lines occurs to ensure operational capacity is maintained.

If all lines require maintenance (this event is considered unlikely given maintenance protocols), shutdown of all lines and boilers would occur. If plant maintenance or an unexpected event requires a shutdown period of all lines for greater than 10 days, AP must ensure alternative arrangements are made, and are part of waste agreements with collection contractors, so that waste loads are suitably diverted from the facility during this time. An operational licence condition will stipulate this requirement.

The WAA is considered to be an ‘advanced resource recovery technology facility’ as per EPA publication 1518. Separation distance is determined case by case with regard for odour management. The conclusion is that the plant will manage the odour emissions on the site and that the separation distance is appropriate.

6.6.4 Conclusion

The conclusions of the review of potential odour effects on the environment are that:

- the WAA includes appropriate odour emission design controls and proposes installation of best practice odour management solutions
- the odour emissions will be managed in accordance with best practice to ensure the odour is mitigated during planned and unplanned shutdowns.

6.7 Land and groundwater

6.7.1 Relevant documents

State Environment Protection Policy (Prevention and Management of Contaminated Land) (SEPP (PMCL))

State Environment Protection Policy (Groundwaters of Victoria) (SEPP (PMCL))

Hydrogeological Assessment (Groundwater Quality) Guidelines (EPA publication 668)

State Environment Protection Policy (Water) (SEPP (Waters))

6.7.2 Application

AP used Visualising Victoria’s Groundwater to determine depth and groundwater segment underneath the proposed WtE facility. During construction, there might be small quantities of groundwater extracted in accordance with EPA requirements. During operation of the project, groundwater will only be extracted for sampling and testing.

AP conducted a land assessment and has identified areas that have been contaminated in the past. During the contaminated land assessment (as described in WAA Appendix G.3) the land underneath the plant was not identified as being contaminated. The land will be further tested and analysed during the detailed design phase. AP will manage the material in accordance with EPA requirements.
6.7.3 Assessment

The APM is co-located with a landfill which was audited (as per section 53V of the EP Act) in 2017 (Barber, 2017) which shows the groundwater Segment as A2 with a TDS between 500 mg/L to 1,000 mg/L. In addition to the auditor’s report, EPA reviewed information provided in the WAA and conducted a search of Visualising Victoria’s Groundwater.

Groundwater segments underlying the proposed location for the WtE facility are considered representative of Segment A2 and Segment B (Visualising Victoria’s Groundwater). As per Table 2 of the State Environment Protection Policy (Groundwaters of Victoria) the following beneficial uses needs protection for A2 (highest level of protection) are:

- maintenance of ecosystems, potable water supply – acceptable, potable mineral water supply, agriculture, parks, gardens, stock watering, industrial water use, primary recreation (for example, bathing, swimming), building and structures.

The WtE facility and associated activities will be located on an impermeable layer protecting the underlying soil and water. Chemicals will be stored in bunded areas and must be in compliance with the requirements under the Dangerous Goods Act.

The premises is underlain by a shallow groundwater table (Visualising Victoria’s Groundwater); however, there is no data suggesting the facility is within an area subject to riverine inundation during a 1 per cent Annual Exceedance Probability, known as a 1 in 100-year flood (see Appendix 3).

The EPA has determined that the WAA complies with the requirements of the policy and beneficial uses of the groundwater will be protected, subject to conditions.

Based on current land use, the following beneficial uses of land must to be protected:

- maintenance of highly modified ecosystems
- human health
- building and structures.

A report published on 22 March 2017 (Barber, 2017) and submitted to EPA under section 53V of the EP Act provided an assessment of risk caused by industrial process for the period 2014–2016. The report takes into consideration the risk of any possible harm or detriment to a segment of the environment caused by the onsite industrial processes or activity. Based on the proposed design of the WtE facility detailed in the WAA the prevention and management of contamination of land is considered suitable by EPA. AP has committed preforming additional investigation to establish the level of existing contamination prior to commencing construction. Data gathered during this assessment will also establish a baseline for the existing environment and assist in understanding any potential impact from emissions caused by the WtE facility (WA_R1(b)).

The State Environment Protection Policy (Waters) was gazetted on 19 October 2018 replacing the SEPP (Groundwaters of Victoria). For completeness, the EPA decided to assess the WAA against the new policy (SEPP(Waters)).

This assessment has incorporated the new policy as well as the old policy: SEPP groundwater segments have been changed and with that the beneficial use that needs to be protected. The new beneficial use that needs to be protected and the TDS expressed as mg/L can be seen in Schedule 2, Table 2 of the State Environment Protection Policy (Waters). The location of the waste to energy plant indicates that the segments would be in A2, B or C according to
Visualising Victoria’s Groundwater with a TDS of between 1,000 and 3,500 mg/L. Through Visualising Victoria’s Groundwater, EPA have found that part of the WtE facility is located on Segment A2 and has taken a conservative approach where the whole plant can be assessed against the beneficial uses for this segment.

The new beneficial uses that needs to be protected for A2 are:

- water dependent ecosystems and species
- potable water supply (acceptable)
- potable mineral water supply
- agriculture and irrigation (irrigation)
- agriculture and irrigation (stock watering)
- industrial and commercial
- water-based recreation (primary contact recreation)
- Traditional Owner cultural values
- cultural and spiritual values
- buildings and structures
- geothermal properties.

The site does not have a discharge to groundwater; will not impact existing quality of the groundwater; and is located on a site that has had a paper mill operating for the last 80 years. Accordingly, EPA has determined that the beneficial uses of the new policy will be protected.

6.7.4 Conclusion

The conclusions of the review of potential effects on the land and groundwater use are that:

- the beneficial uses will be protected and the impact of this proposal will be understood subject to conditions (WA_R1(b))
- the plant will be built on an impermeable layer to prevent contamination of land and groundwater.

6.8 Waste

6.8.1 Relevant documents

Waste generation (industrial and prescribed industrial waste)

Variation of an Order Relating to Notifiable Chemicals Victoria Government Gazette
Feb 2000
IWRG621
IWRG631
IWRG643
Waste handling and treatment premises

EPA publication 347
EPA publication 1517
EPA publication 1518
IWRG621
IWRG631
IWRG643
IWRG811
IWRG822
AS1940 Storage and Handling of Dangerous Goods
AS3833 Storage and Handling of Mixed Classes of Dangerous Goods

6.8.2 Application

Incoming waste feedstock and waste acceptance criteria

The waste that will be received and incinerated at the WtE facility has been described in paragraphs section 4.3 of this WAAAR.

Waste handling and treatment

Waste will be transported to the site via a combination of rail and road networks, as described in Section 4.6.2 of the WAA. The final volume of waste transported by either rail or road will be determined by the source of the waste and the methods of aggregation or sorting prior to transport.

Rail transport will involve a locomotive pulling up to 80, 40-foot (12m) fully enclosed containers of waste to the premises. At the premises, prime movers will move containers from the rolling stock to the tipping hall where waste will be discharged into the waste bunker. Empty containers will be moved to the container cleaning area (figure 8). Cleaned containers will be stored in the clean container storage area (figure 7). Wastewater generated by container washing will be fed into the incinerator and combusted.

Waste trucks will arrive at the premises via the existing road network, drive into the tipping hall and discharge waste into the waste bunker.

The method of transport to the premises is not within the powers of EPA to consider as part of the works approval assessment process.

If waste is delivered to the site on a truck, the vehicle will go through security gatehouse and weighbridge. Waste will be inspected and if passed, be directed to the tipping hall where the waste is tipped into the waste bunker.

Inside the bunker the waste will be screened and homogenised. Oversized items will be removed from the bunker and placed in a reject area. Homogenising is done through operation of the grab
crane which has a secondary purpose of preventing the waste from getting packed inside the bunker. Waste is fed into a hopper that pushes the waste into the grate.

The waste bunker has a designed maximum capacity of 10 days of storage; based on estimated waste volumes accepted at the premises, storage capacity equates to ~22,000 tonnes. As a contingency, AP proposes to have alternative solutions for waste transport and storage in the event the WtE facility is inoperable for an extended time (WA_R1(g)). This will be determined through a combination of waste procurement contracts and the conditions of the waste market at the time of operation.

Waste generated during construction will be managed in accordance with EPA requirements. Chemicals will be stored on the site and will be in an bunded areas (built in accordance with EPA publication 347.1) and comply with requirements under the Dangerous Goods Act.

**Waste generation (industrial and prescribed industrial waste)**

Waste generated by the process is classified in accordance with EPA publication 631. Section 10.3.4.2 of the WAA outlines the procedure for sample and analysis of waste generated by the WtE facility. Transport of waste will be in accordance with Victorian policy. Waste codes generated are N150 (fly ash) and waste code N210 (APCr).

The energy efficiency of the plant (R1) is reported to be between 0.72 and 0.87 calculated in accordance with EPA publication 1559.1.

The WtE facility will create bottom ash (IBA), boiler ash and air pollution control residue (APCr). The exact amount of each fraction will ultimately depend on the feedstock. The WAA estimates the outputs to be (weight of input waste expressed as per cent) IBA 12–25 per cent, boiler ash 1 per cent and APCr 3–6 per cent. Ferrous non-ferrous metals will be removed post combustion (2–3 per cent of weight incoming waste) prior to bottom ash being transported and stored in an ash bunker. The IBA bunker will have seven days storage (~2,700 tonnes). Boiler ash and APCr will be transported into a silo(s) with a storage of seven days (~500 tonnes). Annual output of IBA will be between 130,000 and 165,000 tonnes. APCr is expected to be 22,750 tonnes at a generation of 3.5 per cent of waste input. Boiler ash is expected to be 6,500 tonnes based on 1 per cent of waste input.

An international literature study was done as part of the WAA, which outlined the characterisation of waste created by the operation. Based on this review, the bottom ash is likely to be industrial waste. In Table 10.9 of the WAA there is further information on the elemental composition of the IBA. The expected waste composition is based on existing information. Proof of performance will be performed to demonstrate the waste composition. It is important to note that a change in the waste composition will influence the composition of the bottom ash and will need to be tested during the lifetime of the plant. Australian Paper will follow existing waste framework to test the IBA and develop a framework together with EPA.

Reuse and recovery is higher in the waste hierarchy than treatment, containment and disposal. The waste generated by the proposal has been described and how they fit into the waste hierarchy. IBA can potentially be reused as done elsewhere in the world. Treatment prior to re-use includes quenching and screening the IBA into different fraction sizes. Wetting and turning during a 4 to 20–week period is done reduce both leachability and stabilise metals. Approximately 10 per cent of the total IBA generated is unsuitable for re-use and will be sent to landfill.

The boiler ash and APCr is likely to be PIW and likely to be Category C or Category B (as per IWR 631). This is not certain and APCr could contain levels of antimony and lead that would classify the waste as Category A PIW. Management of APC residue (drawn from UK experience) include:
Neutralisation; landfill disposal (SUEZ Taylors road hazardous waste landfill); deposit in long-term storage (for example, salt mines); accelerated carbonation technology producing an aggregate suitable to be reused; and plasma vitrification. The WAA determined neutralisation as the most feasible option with treated ash suitable of being disposed in a landfill.

Contaminants present in boiler ash and APCr will rely largely on the input feedstock. Like the IBA, proof of performance will be conducted. Common compounds in APCr include: excess lime; reaction products (salts); dioxin sorbents; sludge; gypsum; and chloride salts. A range of elemental composition has been provided in Table 10.12 of the WAA. Testing will be conducted during the lifetime of the WtE facility. Australian Paper will follow existing waste framework to test the waste and develop a framework together with EPA.

6.8.3 Assessment

Incoming waste feedstock and waste acceptance criteria

Victorian regulations differentiate between industrial waste, municipal waste and prescribed industrial waste (PIW). Municipal waste is associated with day-to-day activities of households and the maintenance of a clean municipality including general rubbish, domestic household waste and residential kerbside collections. The targeted waste composition defined in the WAA is proposed to be 80 per cent MSW and 20 per cent C&I waste. MSW is considered as municipal waste (described on page 4 of Industrial Waste Resource Guideline (IWR) 600.2) when associated with day-to-day activities of households and maintenance of a clean municipality. The facility will specifically not accept PIW (Section 10.4.2 of the WAA).

The waste described in Section 10.5.2.1 of the WAA is accepted by EPA as a suitably robust description and can be relied upon as representative of the targeted waste feedstock, based on the information that is currently available. In the document labelled supplementary information, AP has further outlined the waste composition, fire diagram and design waste proximate analysis range for the WtE facility.

As per the WAA, the targeted feedstock is defined as 80 per cent residual MSW and 20 per cent C&I waste. Recycling material is not targeted as a feedstock for the WtE facility. The WAA recognises a proportion of the residual MSW stream can contain a proportion of recyclable materials. However, this is no different to what is currently being disposed of to landfills. The EPA accepts the WAA identifies that the environmental or economic costs of further separating and cleaning the residual waste to recover recyclable materials is currently greater than any potential benefit of doing so.

The EPA considers the WAA has suitably outlined the predicted variability in the feedstock and has demonstrated the capability of the proposed WtE facility to process a heterogenous feedstock. To further understand the targeted waste feedstock and verify the selected designs, AP has also committed to performing a 12-month feedstock analysis to describe the waste both physically and chemically(WA_W1(a)). This work commenced prior to the submission of the WAA and will be used to verify and complete the final detailed designs. As waste will continue to evolve over time, the waste will need to be retested during the lifetime of the plant to ensure that the waste is within the design parameters both for physical and chemical composition.

An operational licence condition will be able to provide the required governance for ongoing waste composition monitoring.

The term halogens refers to the second-last column of the periodic table and focuses on the four most common halogen elements: fluorine (F), chlorine (Cl), bromide (Br) and iodine (I). Based on European MSW analysis (European Union, 2006) and the analysis of MSW submitted as part of
the WAA, waste accepted at the facility is expected to contain low levels of iodine (found in medicines or treated metal surfaces) and bromide (found in hazardous materials or e-waste). However, to further understand the occurrences of organic halogens, AP must perform additional analysis of targeted feedstock to verify the chemical and physical composition (WA_W1(a)).

If the incoming waste has a chemical content of more than 1 per cent halogenated organic substances (expressed as chlorine) the temperature of the flue gas (after the last injection of air) must be elevated to greater than 1,100 °Celsius with a residence time of at least two seconds (European Union, 2006). The proposed WtE facility has committed to ensure all combustion gases, after the last injection of air, are elevated to a minimum temperature of 850 °Celsius with a residence time of at least two seconds based on a feedstock of <1 per cent organic halogenated compounds. The EPA considers this operating temperature and residence time is suitable for a feedstock <1 per cent organic halogenated compounds.

Halogenes are reduced in the flue gas treatment system as follows:

- **F** – reduced in the flue gas through injection of calcium oxide (CaO)
- **Cl** – is emitted through various pollutants;
- hydrogen chloride (HCl), which is the principal chlorine based pollutant, is reduced in the flue gas through injection of CaO
- **PCDD/PCDF** is reduced in the flue gas through injection of activated carbon which is captured in the baghouse
- **Br** – is typically found in low levels in MSW based on experience across the European Union. It is reduced in the flue gas in the same way as PCDD/F
- **I** – is typically found in low levels in MSW. It is reduced in the flue gas in the same way as PCDD/F.

Organic halogens (also known as halocarbon) can produce dioxins and furans in the combustion process. Dioxins and furans are the collective name for brominated (PBDD/F), chlorinated (PCDD/F) and mixed dioxins and furans (PXDD/F). PCDD/F is constituted of a total of 210 compounds of which 75 are PCDD, and 135 are PCDF.

Annex VI of the EU IED Part 2, describes the equivalence factor for dibenzo-p-dioxins and dibenzofurans.

Due to the large number of compounds, a toxic equivalency (TEQ) is calculated to combine the effects of each compound into a single value. This is calculated through each compound’s individual concentration and individual toxic equivalency factors (TEFs). $TEQ = \sum [C_i \times TEF_i]$

PBDD/Fs currently do not have a TEF and thus are not accounted for in the TEQ, but have been identified as future compounds that require additional academic investigation (van der Berg, et al., 2006)

The World Health Organization (WHO) has established a list for dioxin and dioxin-like compounds and has investigated the toxicity of dioxins, furans and PCBs. There is also an expectation that mixed polyhalogenated dibenzo-p-dioxins and dibenzofurans, polyhalogenated naphthalenes and polybrominated biphenyls will be investigated further by the WHO in the future to understand how populations are exposed to these compounds and the toxicity of these compounds (van der Berg, et al., 2006).
Based on European data (European Union, 2006), MSW contains low concentrations of halogens and the focus of assessment has been on Cl and Br. Until such a point that PBDD/PBDD is further understood, EPA has decided to use the values in Table 19 to understand if the measurement complies with EU IED (best practice).

Table 19: TEF used by WHO, NATO (Kalogirou, 2018) and EU (European Union, 2010) for various species. The differences for the calculation of TEQ is for 1,2,3,7,8-PCDD, 1,2,3,7,8-PCDF and 2,3,4,7,8-PCDF

<table>
<thead>
<tr>
<th>Formula</th>
<th>WHO – TEF</th>
<th>NATO – TEF</th>
<th>EU IED – TEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCDDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1,2,3,7,8-PCDD</td>
<td>1</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDD</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>1,2,3,6,7,8-HxCDD</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>1,2,3,7,8,9-HxCDD</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>OCCD</td>
<td>0.0003</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>PCDFs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>1,2,3,7,8-PCDF</td>
<td>0.03</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>2,3,4,7,8-PCDF</td>
<td>0.3</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDF</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>1,2,3,6,7,8-HxCDF</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>
The concentration of acids, caustics and corrosive substances could include substances which, when incinerated, contribute significantly to the generation of acid gases. For example, the inclusion of gypsum significantly contributes to creation of $\text{SO}_x$. Waste compositional analysis (both physical and chemical) will be used to verify that the level of organic halogens present in the targeted waste is <1 per cent (expressed as chlorine).

Residual municipal, commercial and industrial waste has chemical and physical properties that change with time. International experience proves that change in policy and economic steering instruments have a significant influence on the waste composition of residual waste (Avfall Sverige, 2018). To account for this, AP used the naus model to understand the expected future residual waste stream and incorporated the findings into the facility design. In addition, the commitment to perform ongoing physical and chemical analysis of the targeted waste stream will provide an understating of temporal and seasonal variations. The EPA considers the WAA has suitably demonstrated an understanding of the targeted waste, and how the proposed WtE facility will be capable of treating that waste in accordance with the requirements of the relevant Acts, legislation and policies.

Table 20 shows the design parameters, including calorific value, under which the WtE facility proposed in the WAA can operate. The facility is capable of operating within this range and it must be demonstrated that the targeted waste feedstock remains within these design parameters. At the submission of detailed final design the verification of waste composition (physical and chemical) must be provided to EPA (WA_W1(b)).

### Table 20: Design parameters as specified in the WAA

<table>
<thead>
<tr>
<th>Design Parameter</th>
<th>Unit</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustibles</td>
<td>wt%</td>
<td>18 to 85</td>
</tr>
<tr>
<td>Moisture</td>
<td>wt%</td>
<td>10 to 50</td>
</tr>
<tr>
<td>Inert</td>
<td>wt%</td>
<td>5 to 32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>WHO – TEF</th>
<th>NATO – TEF</th>
<th>EU IED – TEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,2,3,7,8,9$-HxCDF</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>$2,3,4,6,7,8$-HxCDF</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>$1,2,3,4,6,7,8$-HpCDF</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>$1,2,3,4,7,8,9$-HpCDF</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>OCDF</td>
<td>0.0001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
</tbody>
</table>
In the supplementary information provided on 25 May 2018, AP included the chemical analysis of the MSW combusted at the Suffolk WtE reference facility. This was used to further strengthen the argument that the waste is likely to contain less than 1 per cent halogenated organic compounds expressed as chlorine.
Table 5: MSW chemical compositional data collected at the Suffolk reference plant

<table>
<thead>
<tr>
<th>Chemical component</th>
<th>Percentage of waste (wt% as received)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash</td>
<td>23.56</td>
</tr>
<tr>
<td>Water</td>
<td>27.39</td>
</tr>
<tr>
<td>Carbon</td>
<td>25.71</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>3.68</td>
</tr>
<tr>
<td>Oxygen</td>
<td>18.48</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>0.61</td>
</tr>
<tr>
<td>Sulphur</td>
<td>0.16</td>
</tr>
<tr>
<td>Chlorine</td>
<td>0.41</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 21 presents a comparison between the WAA and waste collected and incinerated in Suffolk, United Kingdom. The composition difference will be further established prior to detailed design (condition WA_W(a)).

Table 21: Comparison between MSW accepted by Suffolk Waste WtE facility (Suffolk Waste Partnership, 2016) and targeted MSW and C&I waste (combined Gippsland and Melbourne)

<table>
<thead>
<tr>
<th>Suffolk waste MSW composition</th>
<th>Australian Paper (MSW and C&amp;I from Melbourne and Gippsland)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>-</td>
</tr>
<tr>
<td>Cardboard</td>
<td>-</td>
</tr>
<tr>
<td>Total cardboard and paper</td>
<td>Paper 15.37%</td>
</tr>
<tr>
<td>Plastic film</td>
<td>-</td>
</tr>
<tr>
<td>Dense plastic</td>
<td>-</td>
</tr>
<tr>
<td>Total plastics</td>
<td>Plastics 12.63%</td>
</tr>
<tr>
<td>Textiles</td>
<td>-</td>
</tr>
<tr>
<td>Misc combustibles</td>
<td>Miscellaneous 7.71%</td>
</tr>
<tr>
<td>Misc non-combustibles</td>
<td>-</td>
</tr>
<tr>
<td>Glass</td>
<td>Glass 2.64%</td>
</tr>
<tr>
<td>Ferrous metal</td>
<td>Ferrous 1.36%</td>
</tr>
<tr>
<td>Non-ferrous metals</td>
<td>Non-ferrous 0.53%</td>
</tr>
<tr>
<td>Garden waste</td>
<td>organics 46.65%</td>
</tr>
<tr>
<td>Putrescibles</td>
<td>Other organics 2.11%</td>
</tr>
<tr>
<td>Suffolk waste MSW composition</td>
<td>Australian Paper (MSW and C&amp;I from Melbourne and Gippsland)</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Total organics</td>
<td>Earth-based</td>
</tr>
<tr>
<td>43.80%</td>
<td>3.55%</td>
</tr>
<tr>
<td>Fines</td>
<td>Total organics</td>
</tr>
<tr>
<td>1.58%</td>
<td>52.31%</td>
</tr>
<tr>
<td>Household hazardous waste</td>
<td>Fines</td>
</tr>
<tr>
<td>0.57%</td>
<td>5.21%</td>
</tr>
<tr>
<td>Waste from electrical and electronic equipment (WEEE)</td>
<td>Hazardous</td>
</tr>
<tr>
<td>0.69%</td>
<td>1.73%</td>
</tr>
<tr>
<td></td>
<td>Waste electronics</td>
</tr>
<tr>
<td></td>
<td>1.23%</td>
</tr>
</tbody>
</table>
Verification that the facility can treat the waste in a safe manner must be undertaken as part of the commissioning. Once the feedstock analysis has been completed, Australian Paper must provide this information to EPA and confirm it meets the parameters of the proposed feedstock composition, design waste proximate and ultimate analysis estimation, fire diagram and ensuring if the waste (feedstock) is suitable to be treated in the WtE facility (WA_W1(a)).

Australian Paper must clearly describe the waste streams that will be accepted at the premises including a description of the waste categories, volume and source of waste to be received at the premises. The scale of this plant warrants a detailed description of each category. The European IED outlines in Article 45 (1)(a) that a plant should list the wastes that may be treated by categorising it in accordance with the European Waste List. This is an appropriate measure to categorise the wastes combusted and also allows Australian Paper to demonstrate that the waste that is being targeted is not hazardous or PIW. (Condition WA_W1(a))

Waste handling and treatment

Incinerator bottom ash is the material remaining following successful combustion. Successful combustion is determined as bottom ash with an organic carbon content <3 per cent total organic carbon (TOC) and loss on ignition <5 per cent of the dry weight. The EPA considers this best practice, as per Article 50 (1) of the Industrial Emission Directive, and representative of successful combustion. The reference facilities demonstrate the chosen technology, under standard operating conditions, is capable of treating waste feedstock to meet this standard(WA_W1(b)). The WAA commits to this standard under Section 4.8.1 and verification during commissioning will be performed as part of the conditions of the works approval as well as under an operating licence (Condition WA_R1).

The WAA outlines the intention to reuse IBA in the construction industry. To assess the potential re-use of IBA EPA requires AP to submit a re-use plan. Under the current Victorian legislation, the Industrial Waste and Resources Guideline (EPA publication 631) this possibility is feasible and it is most likely this would be best done as an application for a classification in accordance with Part 2, clause 11 of the Environment Protection (Industrial Waste Resource) Regulations 2009.

Globally, it is common for IBA from WtE facilities to be reused as aggregate for various construction applications, such as road making. This was observed during the study tour to Europe with nations approaching this issue differently. EPA cannot approve the re-use of this product through the works approval process as it requires specific analysis of the IBA ash stream produced by the plant. However, EPA is satisfied that the IBA can be managed either by re-use (through application in the future for waste classification) or disposed of in landfill. A re-use application for a waste classification must identify the risks associated with reusing the material.

Comprehensive analysis of waste collected from metropolitan Melbourne and the Gippsland region indicates boiler ash and air pollution control residue are likely to have concentrations of metals and pollutants (some not listed in Table 2 of IWRG 631) in quantities large enough to be considered hazardous. The treatment option available for this waste has been outlined in Section 10.6.4.2 of the WAA. The WAA also presents options for disposal of outputs under a worst-case scenario, where all APC residues and boiler ash are categorised as PIW Category A. In this instance, APC residues and boiler ash will be treated to reduce leachability and an application for a classification to dispose of the material will be made. Subject to the issue of a reclassification, the outputs will be disposed of at a facility licensed to accept them, such as SUEZ’s Lyndhurst Landfill. This facility is considered suitable for receiving and disposal of this hazardous material after treatment.
As with IBA, EPA is satisfied that the boiler ash and air pollution control residue can be managed appropriately, either through disposal, treatment then disposal or reuse. Specific approvals would need to be obtained for reuse.

Figure 11 Flow diagram for the wastes generated by the WtE facility based on current Victorian regulations

Transport of waste generated at the premises must comply with the Environment Protection (Industrial Waste Resource) Regulations (2009). EPA offers guidance for how industrial waste should be transported to remain compliant with these regulations. For the purposes of transporting waste generated at the premises, boiler ash and APC residue can be considered under waste code N150. EPA guideline Vehicle Guidance: Non-tanker Vehicles/Trailers describes the transportation requirements for the waste codes outlined in the WAA.

During commissioning of the WtE facility, AP has committed to performing Proof of Performance (POP) testing to confirm the level of contamination found in solid wastes generated by the facility. POP testing must consider any additional contaminants that might be in the waste and confirm any treatment requirements prior to reusing or disposing the waste. Testing and analysis must take into consideration relevant EPA legislation, international standards and be performed according to an evidenced and risk-based approach.
Section 10.5.2.3 of the WAA describes the commitment to perform a waste inspection by an independent auditor throughout the first three years of operation to verify if waste feedstock complies with the nominated waste acceptance criteria. The EPA has considered this approach and determined that the risk requires additional audits based on:

- if waste treated is significantly different from the waste acceptance criteria specified in the WAA, the potential risk to the environment is high
- the WtE facility needs to be verified to the detailed design to minimise the risk to the environment.

**Waste generation (industrial and prescribed industrial waste)**

The proposed WtE facility has three principle outputs separated into individual solid waste streams: incinerator bottom ash (IBA); boiler ash (separately collected from flue gas in the boiler and economiser) and air pollution control (APCr) residue (separated from the flue gas in the baghouse). Of these ash streams, APCr residue and boiler ash are more likely to present greater risk to the environment, due to their likely contaminant levels, and thus may be more limited in how it can be managed.

AP has explored moving waste generated by the WtE facility up in the waste hierarchy. There might be a possibility to reuse the IBA, as described in the WAA, pending testing and procedures in place to ensure a consistent quality and that the re-use will not cause harm to human health and the environment.

Waste will be handled in accordance with Victorian regulations pending testing results and treatment. Ash will be removed from the premises via vehicles that comply with Victorian regulations and guidelines for transporting waste.

**6.8.4 Conclusion**

The EPA will require AP to submit a detailed waste management plan and waste management contingency plan four months prior to commencing commissioning, which must include, but will not be limited to, the following:

- a waste management acceptance plan that considers (as a minimum):
  
  (a) waste acceptance procedures including processes and systems, by which waste unsuitable for incineration at the facility will be identified and managed
  
  (b) contingency for waste that consists of pre-sorted recyclable material or is contaminated with hazardous material or PIW
  
  (c) regular review identifying options available for improving material recovery from the waste feedstock prior to incineration, at a minimum of five-yearly intervals and to the satisfaction of EPA

- waste management contingency plan for planned and unplanned shutdowns expected to exceed 72 hours, that as a minimum considers:
  
  (a) alternative waste management options
  
  (b) alternative waste odour control contingency measures
  
  (c) arrangements or systems to inform relevant stakeholders about any shutdown (including, but not limited to, energy off take companies, EPA, community and local councils).
The conclusions of the review of potential effects of waste generation and handling are that:

- the WAA complies with the waste policy
- there is sufficient evidence provided by the WAA, verified by EPA assessment, to successfully understand waste generated by this process and how it will comply with Victorian waste regulations.

6.9 Health

6.9.1 Relevant documents

State Environment Protection Policy (Air Quality Management) (SEPP (AQM))

State Environment Protection Policy (Prevention and Management of Contaminated Land) (SEPP) (PMCL))

State Environment Protection Policy (Groundwaters of Victoria) (SEPP (GoV))

State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N–1 (SEPP N–1);

Noise From Industry in Regional Victoria (EPA publication 1411) (NIRV);

Applying NIRV to Proposed and Existing Industry (EPA publication 1413)


6.9.2 Application

Subsection 11.1 of the 25 May 2018 WAA considers potential key aspects around ‘public health’ with regard to dust, noise, odour, air emissions and water quality, noting that preceding sections of the WAA also incorporate and describe impacts on human health.

As reported in section 3.2.3, on the 27 September 2018, AP submitted a Human Impact Assessment (HIA) to assess and quantify the impact of emissions on human health. The HIA investigated the current health status of the local community and the potential impacts for each health issue.

The community profile was taken from both Morwell and Traralgon, located ~7 kilometres proposed WtE facility and compared with Victoria and Australia.

The health impacts were summarised as:

- Air quality inhalation – negligible risk
  That is, the exposure through gas or particulates through inhalation. The HIA concludes that the predicted PM$_{2.5}$ emissions at the receptor contribute less than 0.1 per cent of the background concentration. Background levels of PM$_{2.5}$ relevant to the local area are significantly influenced by regional activities other than the proposal (e.g. power stations) and bushfire/back burning events. The individual pollutants were investigated for chronic exposures and acute risk with results demonstrating both emissions and subsequent air quality as not adversely impacting ambient air quality and therefore acceptable.

- Multiple pathway exposures – negligible risk
Multiple pathway exposures accounts for pollutants that might bioaccumulate in animals or humans. The multiple exposures included: Incidental ingestion and dermal contact with soil; ingestion of homegrown fruit and vegetables (including deposition and plant uptake); and ingestion of eggs, meat and milk (including pasture/feed uptake ingestion).

- Odour – negligible risk
  Odour emissions related to the operation are generated in the tipping hall and waste bunker. These emissions will be combusted and will not cause an impact on community health.

- Noise – negligible risk
  Noise could cause impacts to human health as described in Section 6.3 of the HIA. The values from the noise modelling are below the World Health Organization guideline values.

- Economic environment – positive improvements in health and wellbeing
  The project will generate more than 1,600 jobs during the construction phase and 440 jobs direct or indirect during operation. The region has a higher unemployment rate at the local community and creating the jobs will improve health and wellbeing.

- Traffic and transport – minimal disruption
  The project will increase the number of vehicles by ~800 during the construction and ~100 vehicles per day during operation. Increased traffic can cause stress and anxiety. Based on current information the health impacts caused by traffic is minimal.

- Discovery and disposal of hazardous waste – minimal impacts
  AP will have waste acceptance procedures, an audit process and opportunities to reject waste arrived at the site. It is expected that these procedures will minimise the risk to health.

- Community and social – positive (for example, sustainability) and negative outcomes (perceived risk)
  Benefits to the community have been listed as: diversion of waste going to landfill; a net reduction of greenhouse gases; and improved energy security. There will be minimal changes to air quality. The development can cause distress to the community for the perceived risk with the proposal.

The HIA identified the nearest residential receptor as being approximately 2 kilometres to the south-west and north-west. In addition, there are large tracts of associated agricultural (livestock) land within 2 kilometres to the north, including a beef stock breeding facility to the north-west, and sections of the Tyers and Latrobe River valleys within 1 kilometres to the north of the site.

The HIA characterises the health profile of the local community surrounding the site as, ‘likely to be more susceptible to health-related impacts associated with the project, than the general population of Victoria’. This is based on the health indicator data in Table 3.2 of the HIA.

The WAA summarises the extensive community engagement programme conducted between January 2017 and June 2018. This information was included in the HIA. Key issues identified during community engagement activities that relate to community health (either directly or indirectly) for this proposal were as follows:
Air emissions have been quantified in the HIA based on the modelling in the original WAA with additional modelling for metals and dispersion modelling conducted by Jacobs using the AERMOD air dispersion model (Figure 5–1 in the HIA supplied by Australian Paper).

**6.9.3 Assessment**

As described in section 3.2.4 this proposal is not considered a significant works approval as defined under section 19B (9) of the EP Act, with no formal referral to DHHS required.

The EPA has considered the HIA conducted by the proponent in its assessment.

The contribution from the proposed activity poses a negligible risk to human health and the proposed controls and techniques of the WAA design are capable of providing protection of human health.

EPA engaged a consultant to prepare a scientific literature review on potential health effects in local communities associated with air emissions form Waste to Energy Facilities. The literature review was finalised 8 October 2018 after being peer-reviewed by Dr Brian Priestly. The health review found that:

- old WtE plants have shown associations with some adverse health effects
- some studies of WtE facilities presumed to comply with the IED or equal standard have shown health effects but the evidence is very limited
- all studies had methodological issues

The review also concluded that there is a need to understand:

- waste composition
- scale of the plant
- local meteorology
- local topography
- emissions profiles
- nature and land use surrounding the site.

Through the assessment of the waste composition, the air modelling and the health impact assessment, the EPA came to the conclusion that the WtE facility will not have any measurable impact on human health.

The EPA has specifically assessed the impacts on human health from this WAA are low and any risks identified can be managed.
6.9.4 Conclusion

Overall, the conclusions of the review of the Health Impact Assessment are that:

- the methodology of the health risk assessment uses assumptions which are conservative and protective of human health.
- the risk to human health is negligible for most health issues
- economic health impacts may result in a positive impact
- community and social health impacts are both positive and negative
- the overall health risk is acceptable.
7. RECOMMENDATIONS

In consideration of the assessment of key issues in Section 5-6 above EPA recommends that a WA be issued.

Conditions attached to this approval have been considered with the policy and under section 21 of the EP Act and are considered necessary to protect the environment and human health. The authorisation of issuing a works approval is made under section 19B 7(b) of the EP Act.

The EPA has determined that the scale of this plant (650,000 tonnes of waste per annum (+/- 10 per cent) being incinerated), risk of the activity (combustion of a heterogenous feedstock with its air emissions) and the impact of the plant warrants audits of the WtE facility (WA_W1(b) and WA_R4).

The EPA has determined that these audits should be performed by an EPA-appointed industrial facilities auditor (or alternative expert approved by EPA) at the following development points:

- Final detailed design – the final detailed design needs to be verified by an EPA-appointed industry facilities auditor (or alternative expert approved by EPA) to provide assurance.
- Commissioning stage – the plant should be verified by an EPA-appointed industry facilities auditor to confirm that the facility has been constructed and is operating (in the commissioning stage), in accordance with the WAA and conditions of the works approval and commissioning approval from EPA.
- Licence – ongoing 53V audits of the facility operation. Licence conditions will require ongoing environmental audits. The auditor will need to consider, for example, licence compliance, management plans and procedures. A scope for these operational audits should be developed between EPA-appointed auditor and EPA.
- Waste – EPA accepts that AP engages with an independent auditor during the first three years to verify that the material received onsite is compliant with the WA and operating licence. The EPA suggest that the frequency of audits should be agreed between Australian Paper, EPA and the independent auditor.

7.1 General works approval conditions

WA_G1 Subject to the following conditions, this approval allows the construction of the following works and associated equipment – Waste to Energy facility (moving grate) capable of thermally treating 650,000 (+/-10 per cent) tonnes per annum of residual Municipal Solid Waste (MSW) and Commercial and Industrial (C&I) waste, consisting of the following key components:

(a) a fully enclosed negatively pressured waste tipping hall with a bunker that has a minimum capacity of storing 8,000 tonnes of residual waste;
(b) a flue gas treatment system including: selective non-catalytic reduction (SNCR) of NOx with injection of urea; dry/semi-dry lime injection; activated carbon injection; baghouse; and provision for future incorporation of additional pollution controls which meet Best Available Techniques (defined by Article 3(10) of Directive 2010/75/EU of the European Parliament and of
the Council of 24 November 2010 on industrial emissions) without resulting in significant efficiency impacts of the initial design;
(c) a Continuous Emissions Monitoring System capable of measuring pollutants, including: carbon monoxide, total dust, total organic carbon, hydrogen chloride, hydrogen fluoride, sulphur dioxide, oxides of nitrogen expressed as NO₂ and ammonia;
(d) continuous measurement of: temperature; stack gas flow; pressure; gas moisture content; oxygen;
(e) combined heat and power plant which recovers heat generated from the process as far as practicable and is designed to a minimum R1 energy efficiency of 0.72 (calculated in accordance with EPA guideline 1559); and
(f) provision for future incorporation of options to improve material recovery from the waste feedstock prior to incineration, if this becomes viable.

WA_G2 The works must be constructed in accordance with the application accepted on 25 May 2018 with additional information provided on 23 July 2018, 27 September 2018, 9 October 2018, 29 October 2018, 1 November 2018, 12 November 2018 and 22 November 2018 (‘the application’) except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

WA_G3 This approval will not take effect until any permit which is required under the Planning and Environment Act 1987 has been served on the Authority by the applicant.

WAG4.1.1 This approval expires on 28 November 2022 unless the works have been commenced by that date to the satisfaction of EPA.

7.2 Works conditions

WA_W1 Before commencing construction of any works, you must provide to EPA the following report or reports with accompanying plans and specifications including:
(a) waste composition data report, including:
   I. at least 12 months of chemical, physical and calorific value analysis results representative of waste feedstocks;
   II. a list of types of wastes within the waste feedstocks including information on the quantity of each waste type;
   III. a comparison between the waste feedstock and the waste composition described in the works approval application; and
   IV. details of the methodology used for collecting the waste composition data.
(b) the final detailed designs and schematics of the works optimised to treat the intended feedstocks specified in WA_W1(a) and an updated chemical mass balance of the waste, approved in writing by an EPA-appointed environmental auditor (or alternative expert approved by the EPA in writing);
(c) an updated noise assessment, including:
   I. final acoustic design details of all buildings as part of works;
II. noise predictions based on the final equipment schedule including reference equipment noise data;

III. considerations of noise character (tonality, impulsiveness, or intermittency) with adjustments to be applied for the determination of the effective noise levels and details of any new or proposed noise mitigation measures designed to address the potential audible character;

IV. assessment of the risk for intrusive low frequency noise, and detail of mitigation measures; and

V. evidence of the implementation of best practice to minimise noise emissions.

(d) computational fluid dynamics (CFD) modelling demonstrating that:
   I. all combustion gases, after the last injection of air, are elevated to a minimum temperature of 850 °Celsius with a residence time of at least two seconds;
   II. the injection point of urea and the injection point of recirculated flue gas maximises NO\textsubscript{x} reduction; and
   III. all combustion gases are reduced to 200 °Celsius, or below, at the outlet of the boiler.

(e) a wastewater report based on the final detailed designs that:
   I. quantifies the wastewater generated and confirms compliance with your current licence conditions; and
   II. specifies the predicted wastewater discharge of sulphates and chlorine with a comparison to the ANZECC guidelines;

(f) an updated premises plan with location of discharge points; and

(g) a Construction Environment Management Plan.

WA_W2 You must not commence construction of the works for which reports are required by condition WA_W1 until written EPA approval of those reports has been received.

WA_W3 Where any reports specified in condition WA_W1 and approved by EPA differ from the application, the works must be constructed in accordance with those approved reports.

WA_W4 You must notify EPA when the construction of the works covered by this approval has been commenced.

WA_W5 You must notify EPA when the construction of the works covered by this approval has been completed.

WA_W8 You must install:
   (a) a continuous emission monitoring system for mercury when it is formally required as part of Best Available Techniques (BAT) Reference Document on Waste Incineration;
   (b) for each combustion chamber, at least one auxiliary burner that is automatically switched on when the temperature of the combustion gases after the last injection of air fall below 850 °Celsius.
   (c) a system to prevent waste feed if:
      I. temperature (at least 850 °Celsius with a residence time of at least 2 seconds) at start-up has not been reached;
      II. combustion temperature (at least 850 °Celsius with a residence time of at least two seconds) is not maintained; or
III. continuous Emissions Monitoring Systems show that any emission limit value is exceeded due to disturbance or failure of the waste gas cleaning devices.

WA_W12 You must install all stacks and sampling platforms to allow for testing of exhaust gases in accordance with Australian Standard 4323.1/1995 revised 2014.

WA_W13 You must install the chemical storage and ash storage in a bunded area or areas, each of which is constructed in accordance with EPA Publication 347 Bunding Guidelines, as amended from time to time.

WA_W14 You must install all wastewater discharge points so that provisions for sampling are included in accordance with EPA publication 441 “Guide to the Sampling and Analysis of Waters, Wastewaters, Soils and Wastes”, as amended from time to time.

WA_W15 During construction, unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.

WA_W17 All construction activities must be undertaken in accordance with EPA publication 480 Environmental Guidelines for Major Construction Sites, as amended from time to time.

WA_W19 During construction, you must ensure that all activities are carried out in accordance with the information provided in the works approval application.

7.3 Reporting conditions

WA_R1 At least four months before the commencement of any commissioning, you must provide to EPA a plan and plans that include(s):
(a) a report detailing provisions for publicly reporting of monitoring results on a website related to the project, or through a website agreed to by EPA, that must include:
   I. periodic reporting of monitoring results at a minimum frequency of quarterly;
   II. reporting of continuous emission monitoring results at a minimum frequency of monthly; and
   III. reporting of compliance status of air emissions against licence limits at a minimum frequency of daily.
(b) a report describing baseline conditions of soil, surface and groundwater at the premises and its boundary;
(c) a summary report of the site Environmental Management System (EMS) and make available for inspection all documents and procedures which form part of the EMS
(d) a detailed commissioning plan for the works;
(e) an air emissions monitoring and assessment plan that must include, as a minimum:
   I. commissioning monitoring methodology for demonstrating compliance with State Environment Protection Policy (Air Quality Management) and Directive 2010/75/EU of the European
Parliament and of the Council, dated 24 November 2010, of the treated flue gas by the completion of commissioning;

II. monitoring of individual species of the following indicators:
- Polycyclic Aromatic Hydrocarbons,
- Polychlorinated biphenyls,
- Volatile Organic Compounds,
- Polyhalogenated dibenzo-dioxins/furans,
- Chlorinated polycyclic aromatics, and
- Chlorinated monocyclic aromatics;

III. an accompanying commissioning monitoring and sample plan, prepared in accordance with EPA publication no. 440.1 *A Guide to the Sampling and Analysis of Air Emissions and Air Quality*, dated 2002, including, but not limited to, sampling and measurement procedures and frequencies;

(f) a noise emission monitoring and assessment plan include commissioning monitoring methodology for verifying compliance the noise assessment in WA_W1;

(g) a waste management acceptance plan that considers (as a minimum):
- waste acceptance procedures including processes and systems, by which waste unsuitable for incineration at the facility will be identified and managed;
- contingency for waste that consists of pre-sorted recyclable material or is contaminated with hazardous material or prescribed industrial waste; and
- regular review identifying options available for improving material recovery from the waste feedstock prior to incineration, at a minimum of five-yearly intervals and to the satisfaction of EPA;

(h) waste management contingency plan for extended planned and unplanned shutdowns expected to exceed 72 hours, that as a minimum considers:
- alternative waste management options;
- alternative waste odour control contingency measures; and
- arrangements or systems to inform relevant stakeholders (including, but not limited to, energy offtake companies, the EPA and local councils).

**WA_R4** Before the commencement of any commissioning, you must provide, to the satisfaction of EPA, a report that includes: (a) all plans specified in condition WA_R1 of the works approval; and (b) construction verification report prepared by an EPA-appointed auditor demonstrating that the facility has been built in accordance with the works approval; and (c) confirmation that the recommendations of a hazard and operability study (HAZOP) have been implemented.

**WA_R5** You must not commence operation of the works until written EPA approval of the plans and reports required by condition(s) WA_R1 and WA_R4 has been received.

### 7.4 Commissioning approval

This works approval has been granted on the information that was provided in the WAA. This includes impacts to the environment (for example, air and noise emissions) and performance of the plant (for example, energy efficiency). The commissioning of the plant will need to demonstrate that the plant is capable of achieving the performance as per the WAA including that the plant is built to meet the IED. During the commissioning, EPA will impose conditions that need to be met. The EPA will review monitoring results to ensure that the plant operates to best practice.
The performance of the WtE facility will be verified through the commissioning of the plant. The WAA has divided this up into cold and hot commissioning.

Cold commissioning includes:

- cleaning
- testing electrical systems
- preparations for hot commissioning
- filling up storage of reagents (urea, activated carbon and lime).

Once the plant has been constructed and cold commissioning completed, the facility must be inspected by an EPA-appointed auditor to confirm that the facility has been built in accordance with the requirements of the works approval. The EPA will perform a site visit (or series of site visits) to verify that the requirements of the works approval have been fulfilled.

Prior to commencing hot commissioning, AP will need to obtain a commissioning approval which will allow for the various stages of the hot commissioning, leading up to introducing waste into the moving grate. AP must demonstrate that the facility is capable of achieving the emission standards relied on in the WAA. This will include rigorous testing of the emissions from the facility. An operating licence will be issued once the commissioning demonstrates the plant is compliant with the works approval issued (including that it meets the IED).

### 7.5 Operation of the WtE facility

Provided the plant can demonstrate performance (including POP trials) in accordance with the works approval the next step would be to transition into an EPA licence. Once the works have been constructed and commissioning has been completed AP may apply for a licence to operate the facility. If EPA is satisfied that the works have been satisfactorily completed in accordance with the works approval, it will issue the licence.

The construction and operation of the proposed facility will likely occur under an altered environmental legislative framework that is centred on a general preventative duty. The EPA has considered the WAA and operational best practice as if the facility were operating under the current legislative framework.

There is a need for licence conditions that ensure the operator of a WtE facility identifies and manages the environmental and human health risks, routinely reviews the operational processes used, and prevents environmental hazards.

The operator of the plant should not continue to operate the plant in the situation that there is a disturbance or failure of flue gas treatment pollution control systems. malfunction, or breakdown, of abatement equipment flue gas treatment.

Air emissions limits should be performance based and displayed in the licence as in-stack concentrations and/or mass emissions. The air modelling of this WAA has been based on IED in-stack concentration limits. These in-stack concentrations are performance based and indicate in real time that the equipment is operating to the standards associated with best practice. The emission limits should be confirmed as part of the commissioning and account for the margin of error of the measuring equipment. The IED limits are a starting point, but emission limits should be reduced to levels associated with Best Available Techniques as demonstrated during commissioning. The maximum value should not be greater than the upper limits of the IED. The emissions should be standardised for 11 per cent oxygen as part of the reporting requirement.
The licence will require public reporting of monitoring results on a daily/quarterly frequency. When the facility is issued an operating licence, this would need to include the maximum annual waste throughput of the facility, a detailed description of the waste that is received for thermal treatment (including categories for all residual waste and quantities based on waste composition), and an audit programme that is risk appropriate, examining how the plant maintains operations to world’s best practice and according to waste acceptance criteria.

Further the plant needs to be operated to ensure that:

- complete burnout is achieved and if this is not achieved, a strategy is in place to get complete combustion (bottom ash should not contain more than 3 per cent TOC or loss on ignition is less than 5 per cent dry weight of the material)
- the waste acceptance criteria is documented and adhered to by the operators of the plant, and that these documents are reviewed at a suitable interval
- the temperature of all combustion gases, after the last injection of air, are elevated to a minimum temperature of 850 °Celsius with a residence time of at least two seconds
- each combustion chamber must be equipped with at least one auxiliary burner that will be switched on automatically if temperature falls below 850 °Celsius. These auxiliary burners must be operated during start-up and shutdown to make sure that the temperature requirement is achieved as long as waste is being combusted in the chamber
- waste arriving to the site must be transported to the tipping hall and emptied in waste bunker as soon as practicable
- during planned and unplanned shutdown, the waste stored onsite must never be more than the EPA licence.

The WAA is approved based on the existing market in Victoria. The EPA considers that the recovery of additional material from the waste feedstock prior to combustion is currently unfeasible and is an unreasonable economic burden. However, given the waste market can be expected to evolve an investigation of the viability of recovering additional material should be undertaken at a minimum frequency of every five years, or appropriate to changing market conditions. Climate Change Adaptation Management Plan (CCAMP) needs to be submitted and updated during the lifetime of the plant, as part of the operational licence.

It is recommended an operational licence condition be included to any future licence that requires that only residual waste stream that has been sourced separated to remove recyclables is accepted and incinerated within the proposed WtE.

The EPA will require through licensing, the management of emissions such as odour, dust and noise that are not controlled by emission limits in such a manner that they do not cause pollution.

The operator should manage the premises so that pests and vermin are unlikely to cause a pollution hazard or annoyance beyond the boundary of the premises.

The facility can produce process steam and electricity that can either be used in the APM or exported. The licence holder should be required to submit annual reports declaring their:

- annual throughput and properties of the waste
- annual production of steam and electricity
• annual energy efficiency of the plant (calculated in accordance with equation:
  \[ R1 = \frac{(E_p - (E_f + E_i))}{(0.097 \times (E_w + E_f))} \]
8. REPORT DATE

Date: 28 November 2018
APPENDIX 1: LIST OF WORKS APPROVAL APPLICATION DOCUMENTS


2. Supplementary information to works approval application: Australian Paper: energy from waste project – supplementary information, 25 May 2018.

3. Further information provided by Australian Paper, 23 July 2018 in response to section 22 notice of 10 July 2018, compromising:
   - response to section 22 notice: Australian Paper EfW project
   - individual responses to public submissions.

4. Further information provided to support the works approval application: Maryvale energy from waste plant: health impact assessment, 27 September 2018.

5. Further information provided to support the works approval application: response to EPA questions on fit and proper person stat dec, dated 1 November 2018.

6. Further information provided to support the works approval application: letter of response to EPA (dated 12 November 2018) including 3 attachments.

7. Clarification emails between EPA Victoria and Australian Paper between 9 October and 22 November 2018.
# APPENDIX 2: S20b INDEPENDENT CHAIR REPORT

## RECOMMENDATIONS

<table>
<thead>
<tr>
<th>To be considered (timing)</th>
<th>Recommendations</th>
<th>Chair’s observations supporting the recommendation</th>
<th>How EPA might deliver the recommendation</th>
<th>Action/response</th>
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<tr>
<td>Prior to works approval determination</td>
<td>EPA to continue raising awareness about where works approval applications sit in the overall approvals and licensing process, that it is concept approval vs detailed design approval (including approved design for construction and commissioning).</td>
<td>Some participants appeared to lack a good understanding of: • EPA’s role in relation to approvals and licensing of scheduled premises • WAA and assessment processes.</td>
<td>EPA to consider: • adding EPA Works Approval Application Guidelines (publication 1307) to the Engage Victoria website with emphasis on Section 2, assessment considerations for each environmental segment • adding EPA Powers Table (Appendix 3A of the S20B conference report) outlining the areas (‘issues’) that EPA can consider within a WA.</td>
<td>The EPA sent out information in an email dated 26/09/2018 with links and information to EPA publications 1657,1658 and 1517. The powers table was attached to the WAAAR.</td>
</tr>
</tbody>
</table>

| Prior to works approval determination | EPA to facilitate the provision of responses to the collated list of questions at Section 2.7 of the S20B conference report. | Section 2.7 of the S20B conference report consolidates all the outstanding questions related to the EfW proposal – some of which are for EPA to answer and some for AP to answer. Responses to many of the matters raised have been provided by AP immediately before the s20B conference and immediately after the s20B conference. | • Review the responses provided by AP to ensure they accurately and adequately address the outstanding questions arising from the conference (as reflected in this report), seeking further information as required from AP using statutory powers under Section 22 of the EP Act as appropriate. • Consult with other relevant areas of EPA to provide responses. | The responses to submissions and the WAA have been assessed to ensure community concerns have been addressed in this assessment based on the powers of EPA. |

| Prior to works approval determination | Re: Topic 1 – Air emission monitoring and control technology to prevent health impacts: EPA Approvals Unit to seek advice from its Chief Scientist / Public Health Unit about: • AP’s statement that ‘By complying with particular clauses in SEPPs (e.g. SEPP Air Quality Management – ‘SEPP AQM’), compliance with human health exposure is also achieved’ | AP refer in their response to an air quality impact assessment being undertaken for the proposed EfW facility in accordance with the SEPP(AQM), European Union Industrial Emissions Directive 2010/75/EU (IED) and EPA guidelines for the use of the regulatory model, AERMOD (EPAV, 2014a; EPAV, 2014b) stating that details of the assessment methodology were discussed and agreed with EPA prior to commencing the assessment. | Some submitters referred to lack of engagement with DHHS in relation to the proposal. Seeking advice from the Chief Scientist is an appropriate equivalent. It is possible that submitters were not aware that as of 14 December 2016, EPA Victoria is responsible for delivering environmental public health functions as they relate to human health impacts from past, present and potential future waste and pollution. | The EPA has covered this under section regulatory compliance assessment of the WAAAR. |
Prior to works approval determination | EPA Approvals Unit to seek advice from its Chief Scientist / Public Health Unit about: • when a health risk assessment might be a relevant consideration in the works approvals assessment process. | Conference participants made several references to the need for a health risk assessment. Refer to S20B conference report: Table 2–2 #3, #4 and #7 Table 2–4 #1 Table 2–5 #4 Table 2–12 #5 The speaker representing the Health Assembly also made a specific reference to the long-term health impacts being of concern. | As above, some submitters referred to lack of engagement with DHHS in relation to the proposal. Seeking advice from the Chief Scientist is an appropriate equivalent. It is possible that submitters were not aware that as of 14 December 2016, EPA Victoria is responsible for delivering environmental public health functions as they relate to human health impacts from past, present and potential future waste and pollution. | EPA has published a position statement on our website that clarifies when a health risk assessment is required |

Prior to works approval determination | Topic 2 – Best practice handling of waste and European Standards: EPA to consider: • obtaining further information from AP about proposed pre-treatment options if in their detailed assessment of the proposal this is not sufficiently addressed. | There was a frequent theme during group discussions about securing feedstock source and the potential impacts of poor-quality feedstock. This often translated into specific concerns about waste composition and what ‘best practice’ pre-treatment was. Refer to S20B conference report: Table 2–2 #2 Table 2–4 #2, #3 and #4 Table 2–5 #1 Table 2–8 #1 Table 2–9 #8 Table 2–11 #1 Table 2–13 #6 and #7 Similar concerns were raised by the speaker on behalf of the Wilderness Society. In group discussions there seemed to be a general lack of awareness about how best practice is defined by EPA. | Seeking further information as required from AP using statutory powers under Section 22 of the EP Act as appropriate. Raising community awareness of EPA guideline: Energy from Waste by adding EPA publication 1559.1 to the Engage Victoria website (Guideline: Energy from waste). Consider drawing attention to page 4 where it outlines that EPA considers thermal treatment technology as best practice if: • emissions of Class 3 indicators are reduced to the maximum extent achievable • emissions discharges meet the EU Industrial Emissions Directive 2010/75/EU (IED) • there is continuous emissions monitoring of TPM, SO\(_2\), NO\(_x\), HCl, CO, TOC, HF, with periodic monitoring of heavy metals, dioxins and furans • combustion gases maintain a temperature of at 850°C for at least two seconds) Consider highlighting also that at page 5 of that guideline is a reference to health – health protection must be an inherent feature during the design, approval process and | This has been addressed in the WAAAR.
If a works approval is granted

| Topic 1 – Air emission monitoring and control technology to prevent health impacts. EPA to consider: • supporting AP to undertake specific community consultation in relation to establishing an appropriate monitoring, evaluation and reporting regime as part of considering potential future licence conditions. | Conference participants raised numerous concerns about emissions monitoring and reporting, including access to real-time data. Refer to S20B conference report: • Table 2–2 #3, #6 and #9 • Table 2–5 # 3 and #4 • Table 2–10 #1, #2, #3 and #6 AP’s response to submissions indicates it has an existing site Monitoring and Reporting Programme relevant to EPA licence #46567. This programme was developed to enable both AP and EPA to determine compliance against the site licence and includes details of monitoring undertaken and reporting to EPA. Monitoring environmental performance of the project will be conducted through online monitoring and regular sampling (air, water, noise and waste) Refer AP to EPA’s communications and engagement group for advice on participatory processes | Refer AP to EPA’s communications and engagement group for advice on participatory processes |
and details of compliance with EPA licence will be reported annually via the Annual Performance Statements (which are published on EPA’s website). There are likely to be changes to air quality, waste management and waste acceptance monitoring which will be discussed with EPA close to issue of the amended EPA licence. However, there is unlikely to be any changes in groundwater or surface water monitoring and reporting.’

The EU Industrial Emissions Directive 2010/75/EU IED referred to by AP in its WAA also ensures that the public has a right to participate in the decision-making process, and to be informed of its consequences, by having access to permit applications, permits and the results of the monitoring of releases.

If a works approval is granted

<table>
<thead>
<tr>
<th>Topic 3 – Waste Hierarchy and waste composition. EPA to consider:</th>
<th>Conference participants raised numerous concerns about:</th>
<th>In addition to appropriate licence controls:</th>
<th>Covered under:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• outlining in its detailed assessment report for this works approval application (or some other appropriate communication channel) how it expects AP to manage each of these issues through environmental management plans and the types of licence conditions that it might consider imposing.</td>
<td>• waste composition and contaminant control (refer to S20B conference report Table 2–4 # 4 and # 6)</td>
<td>• consider referring AP to EPA’s Communications and Engagement Group for advice about closely working with waste and resource recovery groups (WRRGs) and relevant local councils regarding waste education – including emphasis on sorting at source.</td>
<td>Consultation and referrals; principles of the Act; waste to be incinerated; and waste assessment.</td>
</tr>
</tbody>
</table>

| S20B conference. EPA invited members of the Latrobe Health Assembly and the Latrobe Health advocate to attend the conference, which they did, and have committed to keeping them informed of the outcomes of the works approval process. |

If a works approval is granted

<table>
<thead>
<tr>
<th>Topic 4 – Management of incoming waste and residual waste EPA to consider:</th>
<th>Conference participants raised numerous concerns about:</th>
<th>As above, in addition to appropriate licence controls:</th>
<th>Covered under:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• outlining in its detailed assessment report for this works approval</td>
<td>• waste stockpiles • waste management and transport.</td>
<td>• consider referring AP to EPA’s Communications and Engagement Group for advice about working</td>
<td>Consultation and referrals; principles of the Act; waste to be incinerated; and waste assessment.</td>
</tr>
</tbody>
</table>
### WORKS APPROVAL ASSESSMENT REPORT

| If a works approval is granted | Topic 6 – Track record and public consultation | EPA to consider:  
| | | ▪ the benefits and appropriateness of providing access to engagement advice (from EPA’s Communications and Engagement Group) to AP to support their continued engagement approaches.  
| | Conference speakers, participants (refer to S20B conference report Table 2–12) and submitters all raised concerns that residents who live near the AP site have not been well informed about possible effects.  
| | Refer AP to EPA’s Communications and Engagement Group for advice on participatory processes.  
| | An AP post-conference was emailed (27/7/18) and Eliza Ryan who is our Community Engagement Officer, hand-delivered approximately 40 invitations to the S20B conference to properties within the buffer zone. We weren’t able to reach all residents in this area; however, we are confident that this was a solid start in terms of direct engagement with our nearest neighbours. Subsequently, we had several residents attend our EW Information Centre in Morwell.  
| | Refer AP to EPA’s Communications and Engagement Group for advice on participatory processes.  
| | Australian Paper is responsible of engaging with the community. This is done through the Maryvale Community Consultation Committee which is attended by EPA.  
| If a works approval is granted | Topic 5 – Greenhouse Gas Emissions and odour from the site.  
| | EPA to consider:  
| | ▪ the need for expert review of any emissions and odour modelling information relied upon in its detailed assessment.  
| | Concerns about accuracy of modelling and calculation of greenhouse gas (GHG) reductions were raised by submitters and an individual conference speaker whose point was that, ‘Greenhouse gas data has been misrepresented: the positive (net greenhouse gas) balance has been achieved by Scopes 2 and 3 offsets vs its own Scope 1 emissions’.  
| | Addressing specific concerns about the calculation of GHG emissions in its detailed works approval assessment report.  
| | See section 5.4 and 6.1 compliance assessment – climate change act and consideration of key issues – energy use and greenhouse gas emissions.  
| If a works approval is granted | EPA to consider:  
| | Two conference speakers raised concerns that the Latrobe Valley Health Use EPA CEO membership on the Health Assembly to provide updates about  
| | Subsequent to the 20B process AP submitted a health impact assessment to
| **Future actions**  
Future actions regardless of whether a works approval is granted | **EPA to consider its role in improved external communications and access to information.** | **In the fine detail of some submissions are allegations of poor operational performance and behavioural conduct by AP and lack of compliance monitoring by EPA.** | **EPA and AP have a dual role in:**  
- building community trust  
- equipping public participation.  
Both should consider how they can:  
- enable well-informed participation in engagement activities. A specific example from the conference includes providing links to the Engage Victoria website and to other information resources referred to such as Minister for Planning’s Reasons for Decision in relation to an EES for this project  
- provide timely public information about compliance activities and outcomes of future licence compliance monitoring programmes. | **EPA is committed to continually improving our communications and access to information.** As an example, EPA has made the complete WAAAR available for this WA decision.  
EPA is also requiring in this works approval that real-time monitoring is to be made publicly available. This will help further improve the public access to information.  
Through this WAAAR, EPA added additional information to the Engage Victoria website as was suggested. |
APPENDIX 3: REFERRAL RESPONSES RECEIVED IN RESPONSE TO CONSULTATION

a. EES ministerial referral
Mr Nial Finegan  
Chief Executive Officer  
Environment Protection Authority  
GPO BOX 4395  
Melbourne VIC 3001

Dear Mr Finegan

AUSTRALIAN PAPER ENERGY FROM WASTE PROJECT

Paper Australia Ltd recently sought my advice on the need for an Environment Effects Statement (EES) under the Environment Effects Act 1978 for the Australian Paper Energy from Waste Project.

I have determined, under section 8B(3)(c) of the Environment Effects Act that an EES is not required for the reasons set out in the attachment.

If you would like further information, please contact Jane Homewood, Executive Director, Statutory Planning Services, Department of Environment, Land Water and Planning, on (04) 8683 0975 or email jane.homewood@delwp.vic.gov.au.

Yours sincerely

[Signature]

HON RICHARD WYNNE MP  
Minister for Planning

2/5/18

Encl.
b. Country Fire Authority
30th August 2018

Andreas Elvin
Project Manager
Development Assessments
Environment Protection Authority Victoria
200 Victoria Street,
Carlton VIC 3053

Dear Andreas,

Letter of Advice on Works Approval Applications
Australian Paper - Maryvale Mill, Maryvale Road MORWELL 3840

CFA received an email dated 15th June 2018 regarding a works Approval Applications for the above premises.

The following documentation provided with the email was reviewed by an Officer of this Authority:

- Works Approval Applications

CFA wish to advise that following review of the above documentation CFA provides the following comment:

- CFA requests that Australian Paper complies with the EPA guideline - Management and storage of combustible recyclable and waste materials - guideline (publication 1667) dated November 2017.
- CFA requests that the works within the work plan are assessed to ensure that there is no impact on the sites MHF Safety Case. If there is impact, CFA request that a full review of the Safety Case is undertaken.

For clarification on any matter within this letter or if any further information is required, please contact Matt Allen State Infrastructure and Dangerous Goods Unit Leader on 0438 370 542.

Yours faithfully

Matt Allen
State Infrastructure & Dangerous Goods Team Leader
Fire and Emergency Management
CFA Headquarters
c. Latrobe City Council
5 July 2018

Development Assessments
EPA Victoria
GPO Box 4395
MELBOURNE VIC 3001

Attn: Andreas Elvin

Dear Mr Elvin,

APPLICATION FOR WORKS APPROVAL 1003013
PAPER AUSTRALIA PTY LTD, TRARALGON WEST RD, MARYVALE VIC 3840.

I refer to your letter dated 15 June 2018 regarding application for Works Approval for the above mentioned property.

i. Following a review of the documentation submitted with the above application, Council can provide the following comments:

ii. The site is located in Industrial 2 Zone (IN2Z) and is subject to the Bushfire Management Overlay (BMO). The proposed works are permitted by the Latrobe Planning Scheme subject to a planning permit.

iii. As stated above, a planning permit is required by the Latrobe Planning Scheme for the proposed works.

iv. A planning permit has not been issued under the Planning and Environment Act 1987 for the proposal.

v. Council has received an application for a planning permit for this site which seeks permission for the development of land with building and works associated with Industry (Recycling and Resource Recovery), reduction of car parking requirements and waiver of bicycle facilities. Planning permit 2018/91 is currently being considered by Council.

vi. The proposal is not prohibited by the Planning Scheme.

Council is currently assessing Planning Permit Application 2018/91 in relation to this matter. It is noted that, without prejudicing Council’s decision, Council have no objection to the issuing of the works approved provided that all works and development associated with the facility are designed and implemented to the best possible standards to manage the environmental risks associated with the proposal and any negative impact to our community.
If you have any further enquiries or require additional information, please do not hesitate to contact me on 5128 5469.

Yours sincerely

[Signature]

KAREN EGAN

Coordinator Statutory Planning
d. WorkSafe
Reference: MH/CO/18/387

6 September 2018

Mr Andreas Elvin
Assessing Officer
EPA Victoria
200 Victoria Street
CARLTON VIC 3053

Dear Mr Elvin,

EPA Works Approval No. 0001003013, Paper Australia Pty Ltd, Traralgon West Road, Maryvale, VIC, 3840.

Thank you for your letter of 9 July 2018 referring the above works approval application to WorkSafe Victoria for our comment.

The referral concerns an application for processing waste into energy at the above site. The scope of WorkSafe Victoria's review of the referral information is limited to potential incidents involving risks from Dangerous Goods.

On the basis of the information provided with the referral, WorkSafe Victoria has not identified any reason that the control of risks from Dangerous Goods introduced by the proposal is unlikely to be achieved and offers no objection to the granting of a works approval on condition that:

- The proposed development must comply with the relevant requirements of the Dangerous Goods Act and its subordinate legislation, particularly the Dangerous Goods (Storage and Handling) Regulations 2012, with specific regard to preparing for emergencies and fire protection.
- A Risk Assessment (RA) should be completed. It is expected that the RA will demonstrate that the development does not increase the risk of a Major Incident on site. The RA will need to also consider any possible knock-on effects from this development to other Dangerous Goods held elsewhere on site. The RA will need to demonstrate how any risks are reduced so far as is reasonable practicable.
- A traffic management plan should be developed to ensure that any hazards are controlled, to reduce risks so far as is reasonably practicable (SFARP).

As the proposed development is on an existing Major Hazard Facility (MHF), WorkSafe Victoria will continue to liaise with Paper Australia Pty Ltd representatives to ensure that appropriate controls are adopted, to reduce risks, so far as is reasonably practicable (SFARP).

If you have any questions, please contact Albert Chemali on (03) 9641 1883 or via email albert.chemali@worksafe.vic.gov.au
Yours sincerely

Michel Coffey
Head
Hazardous Industries & Industry Practice
WorkSafe Victoria
Phone: (03) 8663 5002
Email: michael_coffey@worksafe.vic.gov.au
e. Sustainability Victoria
26 June 2018

Environment Protection Authority Victoria
Development Assessment Unit
200 Victoria Street
CARLTON VIC 3053
Attention: Mr A Elvin

Dear Mr Elvin

FORMAL WORKS APPROVAL ON EXHIBITION – WASTE TO ENERGY FACILITY – AUSTRALIAN PAPER, MARYVALE SITE TRARALGON WEST ROAD MORWELL, VICTORIA (PROPOSAL)

Thank you for your correspondence dated 30 May 2018 in relation to the above Proposal, currently on exhibition.

Further to our previous comments dated 11 May 2018 we have considered the updated Proposal in light of section 50C of the Environment Protection Act 1970 (Vic) which provides:

(1) The Authority may refuse to consider an application for a works approval or an application for the issue or amendment of a licence in relation to a waste management facility if—

(a) the operations of the facility could be inconsistent with the State-Wide Waste and Resource Recovery Infrastructure Plan or a relevant Regional Waste and Resource Recovery Implementation Plan; or…

In summary, our view is that the proposal is in line with the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP), provided that materials which can be viably recovered, have been pre-sorted and removed from chosen feedstocks. We note that the feed stock has now been amended to include a percentage of Commercial and Industrial (C & I) as well as Municipal Solid Waste (MSW). Please note that if the energy generation is in accord with the EPA’s Waste to Energy guidelines, it is consistent with the SWRRIP in that it recovers value from the material to a greater extent than landfill. However, should the generation capacity be increased, this should be considered separately and take into account the need for residual waste treatment identified in the Metropolitan and Gippsland Waste and Resource Recovery Implementation Plans.

We note that existing waste and resource recovery hubs of state importance are to be utilised to aggregate materials for use, where the material is to be compacted and transported via rail or truck to the Maryvale site. This is consistent with the SWRRIP approach to utilise waste and resource recovery hubs. We acknowledge that the exact nature of the movement of waste has not yet been finalised.
It is further acknowledged that additional hubs or Waste Transfer Stations (WTS) may need to be built to service the facility, but these sites have not yet been ascertained.

With this in mind, we note that the Dynon area in Melbourne (which contains a waste and resource recovery hub) has been listed in the City of Melbourne Planning Scheme as a 'Potential urban renewal area'. Should rail be further explored, we would recommend that consultation with Melbourne City Council occur to determine if there are any implications in this regard, as well as possible time frames for any urban renewal, given the proposed WtE facility is to operate for 25 years and beyond.

SV recently commissioned a Transport and Economic Analysis of an amended SWRRIP, where it was identified that although rail can be an efficient transport mode generally, the amount of materials required by rail authorities to include a regular MSW or recyclables service would unlikely be sustained by one council alone, and further logistics into how the rail transportation might work may need to be further considered.

These items will likely have a bearing on potential impacts that might be experienced from transporting large volumes of waste as is proposed; and in line with SWRRIP strategic directions, the proposal should aim to ensure the development results in a positive environmental and community outcome that minimises any environment and public health impacts.

It is also important to consider the waste hierarchy in the assessment of WtE, which is lower in the wastes hierarchy than recovery. As such, the benefits from WtE are best realised when the feedstock is a material stream or waste that cannot viably be recovered for higher order recovery, that is, for reuse or recycling. SV notes that the proposal represents a better alternative than sending residual waste to landfill; however, in accord with the SWRRIP, it is important to ensure that processes remove materials which could be viably recovered for higher order processing.

It is understood that residue materials and bottom ash are to be recovered where possible. However, it has also been indicated that further investigations into markets and technology would need to occur before this could be achieved.

It is proposed that feedstocks will be pre-sorted prior to arriving at the facility as there is limited capacity for pre-sorting at the site to remove any materials that could otherwise be recovered. SV would support any condition attached to the works approval which aim to reduce contamination and the presence of recyclable materials in the feedstock, ensuring appropriate resource recovery. However, it is worth noting the difficulties in enforcing such practices, particularly where they are to be carried out at several other sites. The EPA may want to consider the logistics in enforcing such operations.

Below is an excerpt from a table in the SWRRIP which lists opportunities to increase recovery of materials from the residual waste stream. The table acknowledges WtE as an opportunity to further recover residual waste.
Table 5-16 Opportunities to increase recovery of materials from the residual waste stream

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treat residual waste to make products such as energy, heat, biogas, biofuels and soil conditioners</td>
<td>&gt; Capture resources including nutrients and energy</td>
</tr>
<tr>
<td></td>
<td>&gt; Able to use mixed contaminated feedstocks that are difficult to sort</td>
</tr>
<tr>
<td></td>
<td>&gt; Consistent feedstocks (quantity available, contamination levels and calorific value) will assist viability</td>
</tr>
<tr>
<td></td>
<td>&gt; Potential risk involved in committing feedstock for long term WtE contracts which contain materials that may become viable for higher order recovery during the term of the contract</td>
</tr>
<tr>
<td></td>
<td>&gt; Most technologies will have a concentrated residual waste that will still require landfilling – in some instances, contaminations levels may result in the residual becoming a prescribed waste</td>
</tr>
<tr>
<td></td>
<td>&gt; Technologies and management practices will need to meet community expectations and regulatory requirements including emissions capture</td>
</tr>
</tbody>
</table>

The viability of large-scale WtE plants is likely to depend on large amounts of feedstocks committed for long periods of time. While it may not be viable to recover some of these materials now, over the life of the SWRRIP, or WtE facility, this may change.

In the SWRRIP, Strategic Direction 1 states:

*Resource recovery will be undertaken by local government and industry to maximise the diversion of recoverable materials from landfills where:
  - it is economically viable
  - there is a viable market for end products
  - it results in better community, environment and public health outcomes.*

Strategic Direction 3...

[as per SWRRIP] *To achieve quantities for reprocessing consolidation and aggregation of material streams, around a hubs and spokes network, will be undertaken if:
- there is a market for the feedstock
- there is a viable business case
- potential community, environment and public health impacts are minimised.*

With consideration to the above strategic directions it is important to highlight that not only is it important to establish a viable business case, the Proposal should aim to ensure the development results in a positive environmental and community outcome that minimises any environment and public health impacts. It is understood that these items will be assessed by the EPA.

In summary, the Proposal represents a more positive option to manage residual MSW and C & I than sending it to landfill. We acknowledge that the facility aims to recover ferrous and non-ferrous metals, which is a positive aspect, and the facility represents an overall reduction
in greenhouse gas emissions than compared to sending the materials to landfill. However, maximising pre-sorting opportunities with the processes identified presents challenges. The transport modes to be utilised and hub use is also not yet finalised, and SV considers that it would be worthwhile finalising these items prior to finalising the works approval.

If you need additional information or assistance, please contact Sam Trowse on 8626 8853, or sam.trowse@sustainability.vic.gov.au.

Yours sincerely

Karen Wilson
Manager | Waste & Resource Recovery Planning
f. MWRGG
21 June 2018

Mr Andreas Elvin
Project Manager - Approvals
Development Assessments
EPA Victoria
P.O. Box 4395
MELBOURNE 3001

Dear Andreas,

Australian Paper Mill Waste to Energy Works Approval Application

Thank you for your correspondence of the 26 April 2018 seeking the Metropolitan Waste and Resource Recovery Group’s (MWRGG) comment on the consistency of the works approval application to the Metropolitan Waste and Resource Recovery Implementation Plan.

As previously advised in our correspondence of the 28 March 2018 and 10 May 2018 while the Maryvale site is outside of the Metropolitan Region it proposes to rely on 85% of its waste stream from the Metropolitan area. The site is currently listed in the infrastructure schedule in the Gippsland Waste and Resource Recovery Region and its compliance under Section 50 C of the EP act is best discussed with Gippsland Waste and Resource Recovery Group (GWRRG).

MWRGG has considered the works approval application and the additional confidential waste supply and logistics report prepared by the applicants. MWRGG comments address whether the proposed works approval is consistent with the Metropolitan Waste and Resource Recovery Implementation Plan 2016 (Metropolitan Implementation Plan).

The Metropolitan Implementation Plan objectives and actions support reducing waste sent to landfill and maximising the diversion of recoverable materials from landfill. Strategic Objective 1 is to reduce waste sent to landfill. Four actions are detailed to achieve this objective including Action 1 which is to facilitate and establish new infrastructure that can recover resources from residual municipal waste through retendering of MWRGG’s landfill service contracts through group procurement.

Metropolitan Implementation Plan Chapter 15 Residual Waste Processing envisages a process of developing and implementing a procurement strategy for local government to engage service providers to receive and manage residual waste from MSW sector. It also envisages the deployment of these facilities as part of an integrated waste and resource recovery network. The Metropolitan Implementation Plan acknowledges there are a broad range of technologies that could expect to be successfully established. Any MWRGG procurement is expected to be technology neutral and any residual processing technology that is deployed within the metropolitan network will need to achieve outcomes that are outlined in Chapter 15 (15.2.1) of the plan.

The Works Approval appears to align to the strategic intent of the Metropolitan Implementation Plan as outlined above. However this does not in any way imply that this Works Approval application would meet the needs, expectations and requirements of any future procurement for residual waste processing solutions.

MWRGG has reviewed the waste supply and logistics report and notes there is still a lack of clarity around the specific nature of the transfer and bulk haul network proposed to support the Maryvale EfW facility. The report lists a number of Councils and waste volumes potentially
available that are yet to be confirmed. The assumptions of how the waste is to be transferred from existing council transfer stations to the facility through rail and road bulk haul facilities is also undefined. New works and development at both the Dynon Road facility and future Dandenong South facilities will need planning and other approvals and at this stage the works application does not provide the level of detail needed to properly assess these components of the application and potential impacts on the metropolitan waste and resource recovery network.

The Victorian Government is supporting the development of a waste to energy sector in Victoria and is preparing a Waste to Energy Policy that will detail the role of waste to energy in Victoria. Waste to energy can play an important role in an integrated waste management system. It is an important alternative to the disposal of residual waste in landfill. MWRRG municipal residual waste processing procurement processes will take into consideration the waste to energy policy and its goals and objectives once it is finalised.

MWRRG is currently working with councils in metropolitan Melbourne to prepare a series of business cases to inform local government’s decision about joining a group procurement for municipal residual waste processing solutions later in 2018.

It is through the development of the metropolitan regional business case and procurement strategy (draft and final versions) and cluster specific business case that councils will consider and develop their expectations of any procurement. These expectations will include the environmental, financial, social outcomes expected of the processing solution, outlining the tonnage and composition of the waste that will be made available and a range of other factors that will influence the choice of technology, its size, performance, and location.

These expectations will be documented into procurement specifications and reflected in evaluation criteria. Industry bids for processing solutions will be evaluated against these criteria.

MWRRG is aiming to secure support from councils to begin a procurement later in 2018, which is likely to focus on meeting the long-term residual waste processing needs of councils in the south and east of Melbourne.

Solution providers will need to participate in this process and their bids will need to demonstrate alignment to the procurement specifications. MWRRG cannot make any comment on the consistency of this works approval application to the yet to be developed or approved, procurement specifications.

If you have any queries in relation to MWRRG’s comments please do not hesitate to contact MWRRG Principal Planner Michelle Lee 86989821 or email michelle.lee@mwrrg.vic.gov.au.

Yours sincerely

[Signature]

Robert Millard
Chief Executive Officer
g. GWRRG
Ref No: 173:MP

19 June 2018

Andreas Elvin
Project Manager, Development Assessments
Environment Protection Authority
GPO Box 4395
MELBOURNE  VIC  3001

Dear Andreas

EPA REFERRAL DRAFT WORKS APPROVAL:
PROPOSED WASTE TO ENERGY PLANT, MARYVALE PULP AND PAPER MILL

Thank you for your correspondence received on 26 April 2018. The Gippsland Waste and Resource Recovery Group (GWRG) has reviewed the works approval to consider the proposals consistency with the Gippsland Waste and Resource Recovery Implementation Plan.

The current relevant Priority Actions contained within the Gippsland Implementation Plan are:

1. Achieving greater material recovery through development of appropriate, well-sited infrastructure

    Continue to reduce reliance on landfill by actively planning and promoting the transition to greater resource recovery by developing infrastructure to maximise the value of materials collected.

2. Driving innovative services and infrastructure provision

    Stimulate the introduction of innovative waste and resource recovery services, and infrastructure by driving collaboration between local government, the waste industry and community to meet the diverse needs of Gippsland.

4. Facilitating continuous improvement and enhanced performance

    Assist the waste industry and local government to continuously improve the performance of Gippsland’s waste and resource recovery infrastructure and systems through improved compliance and efficiency to deliver better public health outcomes.
The Victorian Government is yet to release a policy that will detail the role waste to energy infrastructure will play in the waste and resource recovery sector. As a consequence, GWRGG is not able to assume the appropriateness of the proposal against the specific policy outcomes.

However, section 3 of the Gippsland Implementation Plan indentifies the following opportunities that directly align with waste to energy proposals including;

- *supplementary energy for manufacturing businesses,*
- *possible co-location in heavy industrial zones,*
- *collaborative procurement option for councils and private industry to stimulate economic development and investment.*

Section 6 of the Gippsland Implementation Plan supports the establishment of waste to energy infrastructure for treatment of residual waste sourced from Municipal and Commercial and Industrial sectors as proposed by the works approval. Therefore, we consider this constitutes compliance with Section 50C of the *Environment Protection Act 1970.*

The Maryvale Pulp and Paper Mill site is considered an appropriately zoned location with established buffers surrounding the current operations.

As detailed in our previous review of the draft works approval, whilst the proposal, aside from scale, appears to meet the strategic intent of the Gippsland Implementation Plan, there are a number of issues that we raise in consideration of the proposal.

**Appropriateness of Technology and Securing the Feedstock**

Section 3 of the Gippsland Implementation Plan highlights the following challenges to successfully establishing a facility proposed by Australian Paper as follows;

- *Sourcing of large capital necessary for investment in infrastructure and equipment.*
- *The ability to attract sufficient material volumes to reach viable economies of scale will determine the financial success of these ventures.*

GWRGG is currently preparing a provisioning and procurement strategy to bring Gippsland Councils together to offer the region’s residual waste to the market through collective tender. The criteria agreed to by the participating Councils is yet to be finalised, however will include the social, economic and environmental outcomes they wish to achieve. All bids from industry will be assessed against these criteria and that will influence the ultimate decision to award the tender. It is envisaged that the process to invite tenders will be in the last quarter of 2018.
Without pre-determining the outcomes of the planned procurement activity with the six Gippsland councils, GWRGG remains neutral in respect to the appropriateness or preference of the technology type described in the proposal. It is noted that the relatively small amounts of waste generated in the Gippsland region mean that the success of this proposal is largely dependent on Australian Paper being successful in securing significant amounts of municipal waste from the metropolitan region for the life of the proposed plant.

Waste Characteristics and Composition

Waste audits carried out by GWRGG indicate a high proportion of food and organic waste in the residual waste (garbage) collected at kerbside. The recovery and recycling of this material is considered preferential when applying the waste hierarchy (Environnement Protection Act 1970).

This hierarchy recognises that the benefits of a Waste to Energy facility are best realised when material that can be viably recycled has been removed. It can therefore be expected the material volumes and composition will progressively change over the life of the proposed plant.

Improvements to source separation systems as implemented in Bass Coast Shire Council (Food Organics and Garden Organics) are proven in reducing the weight of residual waste by approximately 50% and providing a suitable feedstock for composting.

A change to material composition if these systems were to be applied to all Gippsland Councils would result in a reduction of around 25,000 tonnes per annum. The removal of food will also change the physical properties of the waste, in particular reducing the moisture content.

It is believed population increases in Gippsland will not account for this reduction in waste mass over the life of the proposed Energy from Waste project.

Contingency Planning

It is noted that the waste bunker has a nominal capacity of 7 days and further 3 days (total 10 days) to cater for non-routine operational conditions preventing the plant from operating.

It is assumed that available landfill airspace would provide the back stop for any inability for the plant to take material. The current process of ensuring adequate landfill airspace is available may be contingent on a number of factors including;

- Number of operating landfills (Type 2 landfills licensed for putrescible waste) to accept the material.
- Airspace available at those facilities able to accommodate the forecast volume (approx. 1,700 tonnes per day) above the regular deposits for the time the plant is inoperable.
- The location of those facilities able to meet both these requirements.

It is envisaged that if the proposal is successfully delivered, the significant reduction in the volume of material entering local Gippsland landfills would further reduce the economic viability of operating these facilities, ultimately resulting in closure, or at the very least an amendment of their license to Type 3 landfills accepting only solid inert wastes.

The currently available landfill airspace in Gippsland is supplied on a needs basis which in effect limits the capacity to accept non-routine deposits through unforeseen events. The timeframes for the renewal of airspace are in the order of 2 to 4 years. Accelerating the availability of airspace is difficult due to issues relating to landfill construction imperatives and the approvals process.

GWRRG considers that contingency planning should the proposed plant be inoperable beyond 10 days be addressed in more detail.

Post Process Residual Waste

Clearly, it is not possible at this stage to confidently categorise waste bi-products that will result from the proposed plant. It is therefore difficult to assess the full impact to the waste system arising from this bi-product as this requires an understanding of disposal options, that may vary, over the life of the project. For example, the anticipated removal of food and other materials from the kerbside collection waste stream over the 20 to 30 year timeframe can be expected to change the nature of the bi-product over this time, thereby potentially altering its value as a product.

As a consequence, greater assurance of bi-product options, in addition to “establishing a new market” would provide greater confidence that the proposal is not creating a waste management issue, albeit for a smaller volume of material, for the region to manage.

While GWRRG fully supports the intention to establish new markets from this material there is little information in the works approval to indicate that the required ‘market pull’ is achievable and that a market could be established within a reasonable time after the proposed plant commences operation. Evidence from other initiatives, such as composting of garden organics derived from the waste stream, indicates that establishing a viable market is likely to take considerable time and entail commercial risk.

Greater clarity is required by the GWRRG regarding the impacts on existing infrastructure should marketing of generated bi-product prove unviable.
Community Consultation

From a total of 650,000 tonnes, it is noted that the proposed plant will require 550,000 to be sourced from outside Gippsland. As this will require substantial use of community assets not only in the Latrobe Valley but across a large portion of the metropolitan area and greater Gippsland, particular effort across whole area will be required to establish the ‘social licence’ to operate. While engagement has been initiated in the Latrobe Valley, evidence suggests that, to date, this issue is largely untested with wider segments of the community.

In summary, GWRRG recognises the proposal presents a better alternative to landfilling material and the proposal is broadly aligned to the Gippsland Implementation Plan. Project proponents need to consider an expected change in the volume and composition of source material over the proposed life of the plant and develop a more robust approach to contingency planning to manage material if the plant cannot operate for a period and to manage bi-product arising from normal operation. It is recognised that the success of the project requires securing sufficient volumes of input material and achieving a ‘social licence’ to operate.

Should you have any queries, please do not hesitate to contact me directly on 0419 172 889 or by email matthew.peake@gwrrg.vic.gov.au.

Yours sincerely

MATTHEW PEAKE
Executive Officer
h. WGCMA
Dear Andreas,

Application Number (CMA Ref): WGCMA-F-2018-00339

Property: Street: Traralgon West Road, Maryvale VIC 3840
Cadastral: Lot 2, Plan PS609453, Parish of Maryvale

Thank you for your referral, received at the West Gippsland Catchment Management Authority ('the Authority') on 15 June 2018 in relation to Works Approval application from Paper Australia Pty Ltd for the proposed Energy from Waste (EfW) Plant.

The Authority does not have any official record of flooding for the proposed development site. Information available to the Authority indicates that the proposed development site is not likely to be subject to riverine inundation during a 1% Annual Exceedance Probability (AEP) flood event (commonly known as the 1 in 100 year flood). Additionally, the proposed development site is more than 200 metres from the nearest designated waterway, and over 1200 metres south of the Latrobe River.

The Energy from Waste Project Summary (page 11) supplied with the Works Approval Application states that “the EfW plant would not discharge process water or contaminated stormwater to any surface waters, it has been determined that the project complies with the State Environment Protection Policy (Waters of Victoria) 2003 (SEPP (WoV)) requirements for surface water.”

The Authority also notes that the Energy from Waste Project Summary (page 11) states that the “existing treatment system would cope adequately with the wastewater flows so that there will be no impact on the existing (under EPA license) discharge to the Latrobe River”. The Authority recommends that existing treatment system is assessed to ensure capacity and confirm that no additional discharge will be released to the Latrobe River.

Considering this, the Authority is satisfied that the proposed control measures and management of the wastewater treatment facility will adequately ensure no adverse impacts to the catchment.
Should you have any queries, please do not hesitate to contact myself or Catherine Couling on 1300 094 262. To assist the Authority in handling any enquiries please quote WGCMA-F-2018-00339 in your correspondence with us.

Yours sincerely,

[Signature]

Linda Tubnor
Acting Statutory Planning Manager

The information contained in this correspondence is subject to the disclaimers and definitions attached.

Definitions and Disclaimers
1. The area referred to in this letter as the ‘proposed development location’ is the land parcel(s) that, according to the Authority's assessment, most closely represent(s) the location identified by the applicant. The identification of the ‘proposed development location’ on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or the local government authority.

2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.

3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).

   Please note that the 1% probability flood is not the probable maximum flood (PMF). There is always a possibility that a flood larger in height and extent than the 1% probability flood may occur in the future.

4. **AHD** as Australian Height Datum - is the adopted national height datum that generally relates to height above mean sea level. Elevation is in metres.

5. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100 year ARI flood will occur on average once every 100 years.

6. No warranty is made as to the accuracy or liability of any studies, estimates, calculations, opinions, conclusions, recommendations (which may change without notice) or other information contained in this letter and, to the maximum extent permitted by law, the Authority disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any recipient or other person through relying on anything contained in or omitted from this letter.

7. This letter has been prepared for the sole use by the party to whom it is addressed and no responsibility is accepted by the Authority with regard to any third party use of the whole or of any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority’s written approval of the form and context in which it would appear.

8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
i. Gippsland water
Andreas,  

Thank you for the referral of Australian Paper’s Waste to Energy Works Approval Application (0001003013) dated 15/06/2018.  

Gippsland Water has reviewed the information provided and engaged directly with Australian Paper to seek further information on expected quantity and quality of any additional trade waste discharge from the Maryvale site as a result of the proposed development. The works approval application contains no information on expected volumes and/or quality of wastewater requiring offsite trade waste discharge.  

Australian paper have indicated to Gippsland Water that additional trade waste requirements may be between 0.5-1.1ML/day and quality may vary and will include discharge from a demineralised water plant, return condensate polishing plant and some dirty drain discharges after oil water separation.  

At this stage, Gippsland Water do not have sufficient information to determine if the Gippsland Water Factory is capable of accepting and treating this additional volume and quality of effluent generated by the waste to energy facility. Therefore, we have concerns that need to be considered in the detailed design phase of the project.  

We note that we have a current trade waste agreement in place with Australian Paper and are committed to continuing to service our major customer’s needs. The current management of change terms in the existing agreement may trigger Gippsland Waters involvement, planning and implementation of any new requirements, however we believe it would be very beneficial for the trade waste discharge to be considered by EPA as part of the Works Approval Application.  

We look forward to continuing to work with EPA and Australian Paper to ensure that the needs of the Waste to Energy Project can be serviced by Gippsland Water. Please feel free to contact me of any further information.  

Thanks

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Andreas Elvin

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From: Chris.Wendt@gippswater.com.au
Sent: Friday, 6 July 2018 1:03 PM
To: Andreas Elvin
Cc: Jenine.Smith@gippswater.com.au; Adrian.Harper@gippswater.com.au; Peter.Skeels@gippswater.com.au
Subject: RE: Australian Paper Works Approval Application referral

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Thanks

Chris Wendt
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From: Andreas Elvin <Andreas.Elvin@epa.vic.gov.au>
Sent: Friday, 6 July 2018 12:59 PM
To: Chris Wendt <Chris.Wendt@gippswater.com.au>
Subject: RE: Australian Paper Works Approval Application referral
REFERENCES


