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Severn Road Resource Recovery Centre – Energy from Waste Facility



Viridor Avonmouth Waste Services Limited

Supporting Information – EP Variation

ENGINEERING CONSULTING

Document approval

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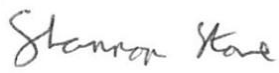
Prepared by:	Shannon Stone		Senior Consultant	26/10/2026
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Non-technical Summary

Viridor Avonmouth Waste Services Limited (Viridor) operates the Severn Road Resource Recovery Centre – Energy from Waste Facility (the Facility). An Environmental Permit (EP) for the operation of the Facility was originally granted on 27 September 2010. The Facility consists of a two-line energy from waste plant which is used to recover energy from the combustion of non-hazardous municipal, commercial and industrial waste, and a back-up generator for provision of emergency electrical power.

Viridor is proposing to vary the EP to allow for an increase from 48.8 tonnes per hour (tph) to 61.4 tph, equivalent to an increase of 12.6 tph across the Facility, i.e. an increase of 6.3 tph per line. The proposed annual permitted throughput will increase from 427,050 to 538,000 tonnes per annum (tpa). Viridor is also proposing to add the waste codes 19 02 06 'sludges from physico/chemical treatment other than those mentioned in 19 02 05'; 19 08 05 'sludges from treatment of urban waste water'; and 20 01 99 'municipal waste not otherwise specified'.

To facilitate the proposed increase in the capacity, Viridor is proposing to make a number of upgrades to the combustion controls systems and associated equipment.

This application is supported by a Dispersion Modelling Assessment; Dioxin Pathway Intake Assessment; and Abnormal Emissions Assessment which are produced to quantify the impact of the proposals on air quality, human health and ecology.

As demonstrated within the environmental assessments completed to support the application, the proposed changes will not have a significant impact on human health or the environment.

As the proposed increase in capacity is more than 3 tph, this application is being submitted as a substantial variation to the EP.

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1 Introduction

1.1 Background

Viridor Avonmouth Waste Services Limited (Viridor) operates the Severn Road Resource Recovery Centre – Energy from Waste Facility (the Facility). An Environmental Permit (EP) for the operation of the Facility was originally granted on 27 September 2010.

The Facility consists of a two-line energy from waste plant which is used to recover energy from the combustion of non-hazardous municipal, commercial and industrial waste, and a back-up generator for provision of emergency electrical power.

Section 1 of this document provides a brief overview of the application, including the proposed changes and type of variation, whilst section 2 describe the proposed changes in further detail. Section 3 considers additional information for the application, including the environmental impacts associated with the proposed changes.

1.2 Proposed changes

As explained within this application, Viridor is proposing to:

- increase the hourly throughput from 24.4 tonnes per hour (tph) per line to 30.7 tph per line, equivalent to an increase of 6.3 tph per line, or 12.6 tph across the Facility. The proposed annual permitted throughput will increase from 427,050 tonnes per annum (tpa) to 538,000 tpa; and
- add waste codes:
  - 19 02 06 ‘sludges from physico/chemical treatment other than those mentioned in 19 02 05’;
  - 19 08 05 ‘sludges from treatment of urban waste water’; and
  - 20 01 99 ‘municipal waste not otherwise specified’.

1.3 Type of variation

The Environment Agency’s online guidance titled ‘*Environmental permits: when and how you are charged*’ dated 1 April 2026, defines four types of variations – administrative, minor technical, normal and substantial.

A substantial variation is defined as “*where the Environment Agency has to carry out significant assessment*”. For installation permits, the following criteria must be met to meet the application type:

1. Increase in capacity is greater than 3 tph; or
2. The environmental impact may have significant negative effects on human health or the environment.

An assessment for the proposed increase in plant capacity on air quality has been undertaken. A summary of the assessment is presented in section 3.2. As can be seen from the conclusions of the dispersion modelling assessment, the air quality impacts will not have a significant impact on local air quality, the general population or the local community.

Furthermore, as explained in section 2 of this document, the proposed increase in plant capacity is equivalent to 6.3 tph (tph) per line. The Facility is of a two-line design. Therefore, the overall

increase in processing capacity is 12.6 tph, i.e. an increase of 6.3 tph per line. The proposed increase in capacity is explained in further detail in section 2.2.

The threshold for a non-hazardous waste incineration plant within Part 2, Schedule 1, section 5.1 (b) of the EPRs is 3 tph. Therefore, the proposed increase in capacity is more than the threshold in 'Part 2 of Schedule 1 EPRs'.

To conclude, Viridor considers that this application should be determined as a substantial variation.

2 Proposed changes to capacity

The proposed increase in the permitted capacity of the Facility is to reflect the long-term trend for a lower net calorific value (NCV) of the waste received at the Facility; and upgrades to the combustion controls systems and associated equipment to increase the operational capacity planned to be completed post planned outage in May/June 2028.

To understand the proposed increase in capacity, it is important to understand how the capacity is calculated. The annual capacity (annual fuel throughput) is calculated as follows:

Annual Fuel Throughput = Hourly Throughput x Operational Period x Number of Lines

The design basis for the capacity as permitted is set out within section 2.1 and as proposed within section 2.2.

The proposed changes do not change the site layout, the Installation Boundary, or the location of the emissions points.

2.1 Permitted capacity

For reference purposes the firing diagram for the permitted capacity, as per the variation granted in 2024 (the 2024 variation), is presented in Figure 1.

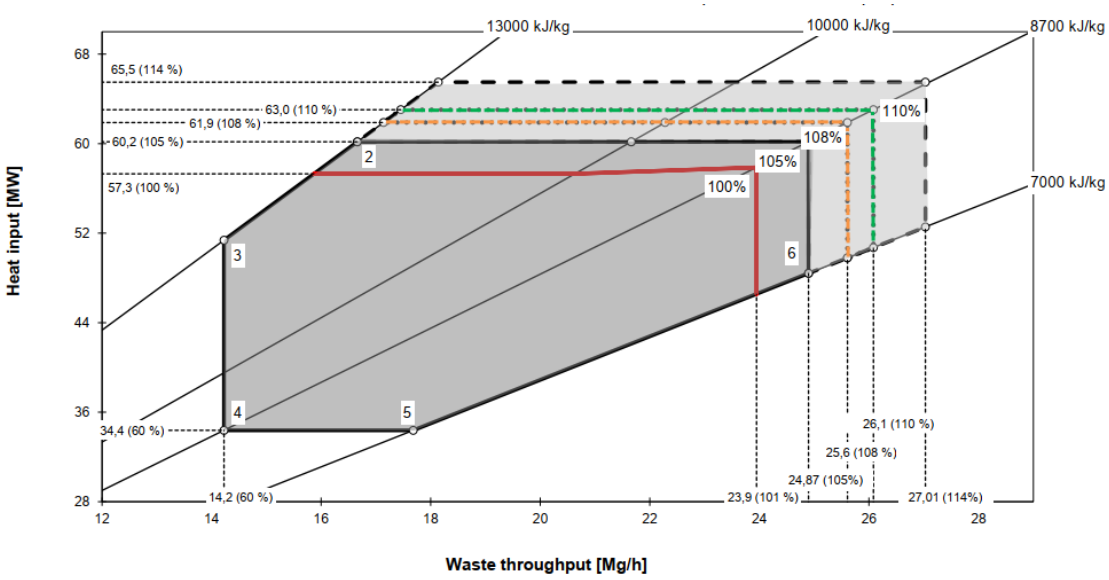

Figure 1: Firing diagram

The Facility is designed for the combustion of wastes with a NCV of 7 – 13 MJ/kg. Based on the Maximum Continuous Rating (point MCR) for 110%, the Facility is capable of processing 24.4 tph per line (48.8 tph in total) of waste with a net calorific value (NCV) of 9.3 MJ/kg.

Based on continual operation (8,760 hours per annum) this equates to an annual throughput of 427,050 tpa.

2.2 Proposed capacity

Viridor is proposing to implement upgrades to the combustion controls systems and associated equipment, which will enable the firing diagram to be revised to a nominal load point of 126% of

the thermal capacity of the boiler. This is equivalent to a thermal capacity of 72.2 MWth per line (144.4 MWth aggregated).

The updated firing diagram to facilitate the proposed upgrades is provided in Figure 2. A larger copy is provided in Appendix A.

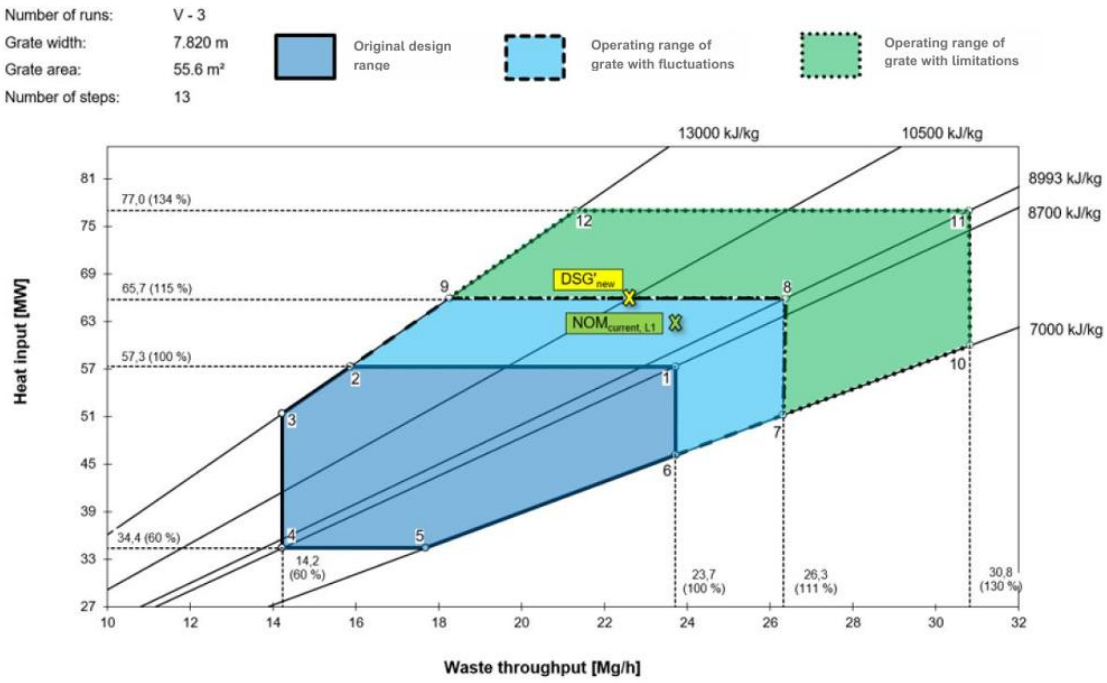

Figure 2 – Revised firing diagram

With the lower NCV of the waste (8.45 MJ/kg) and the maximum thermal input of the boiler (72.2 MWth per line (126% of the thermal capacity)), each line will process up to 30.7 tph. Across two lines, this equates to 61.4 tph and 538,000 tpa, based on continuous operation.

Table 1 provides a summary of the changes to the design parameters that are proposed through the upgrades to the combustion controls systems and associated equipment.

Table 1: Comparison of design parameters – permitted vs proposed

Parameter	Unit	Permitted Capacity	Proposed Capacity
Maximum hourly throughput (per line)	tph	24.4 (1)	30.7 (2)
Maximum thermal capacity (per line)	MWth	63	72.2
Notes: (1) Design NCV of 9.3 MJ/kg (2) Minimum NCV of 8.45 MJ/kg			

2.2.1 Proposed upgrades for the increase in throughput

To facilitate the proposed changes to the capacity, Viridor is proposing to make the following upgrades to the combustion controls systems and associated equipment:

- Decrease refractory coverage in the furnace to enable more heat to be extracted.
- Replace refractory with Inconel overlay to preserve resilience to the flue gases.

- Upgrade induced draft (ID) fans which draw flue gas to the stack upgraded to support the increased flue gas flow rate.
- Upgrade the boiler drum, feed water, and steam systems to ensure compliance is maintained with the Pressure System Safety Regulations.
- Install additional air-cooling condenser (ACC) fan cells.
- Upgrade other items at the Facility, such as control valves and instrumentation, to manage the increased steam flows.

The overall operating pressure and temperature of the boiler will be unchanged. Overall, the intention of the proposed upgrades is to minimise the 'wear and tear' of the plant as a consequence of the increases in flue gas temperatures from the increase in hourly throughput of waste and to ensure that the flue gases are abated effectively within the flue gas treatment systems.

As required by the Industrial Emissions Directive (IED), the exhaust gases are heated to a minimum temperature of 850°C and maintained at or above this temperature for at least two seconds (T2S) to ensure the effective destruction of dioxins, furans, polycyclic aromatic hydrocarbons (PAHs), and other organic compounds. An assessment of the potential impact to the T2S requirement is provided in Appendix B, which concludes the proposed increase in hourly throughput will not affect compliance with this IED requirement. Viridor is not proposing changes to the operating pressure and temperature of the boiler. Within the upper furnace region, temperature and effective flue gas residence time are maintained through controlled air injection, gas mixing, and furnace geometry, which together create a stable high-temperature environment that supports complete combustion.

The proposed increase in capacity will not result in any changes to the infrastructure for the storage and handling of raw materials and residues. However, there will be a small increase in the frequency of deliveries of raw materials and collection of residues to ensure the storage capacities of raw materials and residues facilities are not exceeded.

2.3 Additional waste code

To accommodate some of the additional 107,950 tpa of waste, Viridor is requesting to include three additional waste (EWC) codes which are not currently present within the EP (Table 2).

The EP already allows for similar waste types of waste from wastewater processes, including EWC codes – 19 02 06 sludges from physico/chemical treatment other than those mentioned in 19 02 05 (limited to those from waste water treatment plants) and 19 08 05 sludges from treatment of urban waste water. Acceptance of wastes under codes 19 02 06 and 19 08 05 will be limited to non-hazardous, sludges that are suitable for reception and blending through the existing enclosed waste bunker. Liquid or pumpable wastes will not be accepted. Waste characterisation and pre-acceptance procedures will confirm composition, moisture content, hazardous properties, contamination risks and compatibility with the combustion and flue-gas treatment systems.

Viridor is requesting for 20 01 99 to be included in the EP to accommodate offensive waste from non-healthcare sources. The EP allows for EWC 18 01 04 'wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)'. EWC 18 01 04 refers to waste which is collected from healthcare facilities such as hospitals.

The inclusion of these three additional waste codes will not alter the nature or composition of the wastes accepted at the Facility.

Table 2: Proposed additional waste code

EWC Code	Description
19	**Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 02	**Wastes from physico/chemical treatment of waste (including dechromatation, decyanidation, neutralisation)**
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05 (limited to those from waste water treatment plants)
19 08	**Wastes from waste water treatment plants not otherwise specified**
19 08 05	sludges from treatment of urban waste water
20	**Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions**
20 01	**separately collected fractions (except 15 01)**
20 01 99	municipal waste not otherwise specified

3 Additional Information

The following section provides the additional information requested within the EP application forms.

3.1 Management system

Viridor has an Environment Management System (EMS) accredited to ISO 14001. The EMS is not proposed to be amended because the arrangements and controls for the storage and handling of raw materials and waste will not be changing due to the proposed upgrades.

3.2 Environmental risk assessment

A Dispersion Modelling Assessment, Dioxin Pathway Intake Assessment and Abnormal Emissions Assessment has been carried out to support this application.

The Dispersion Modelling Assessment is provided in Appendix C. This has been undertaken to quantify the impact of emissions from the Facility and compare these to the impacts previously consented by the EA.

The impacts have been compared to the air quality assessment levels (AQALs) for the protection of human health, and the Critical Levels and Critical Loads for the protection of ecosystems.

In relation to impacts on human health, it is concluded within the Dispersion Modelling Assessment that:

- Emissions from the operation of the Proposed Facility will not cause a breach of any AQAL.
- For all pollutants the change in impact as a result of the EP variation can be screened out as 'insignificant'.
- For all pollutants the overall impact of the Proposed Facility can either be screened out as 'insignificant' or is 'not significant' when the total concentration is taken into consideration.

In relation to impacts on ecology, it is concluded within the Dispersion Modelling Assessment that:

- At all identified European and UK designated ecological receptors, the change in impact can be screened out as 'insignificant' as it is less than 1% of the long-term Critical Levels and Critical Loads and less than 10% of the short-term Critical Levels.
- The impact of the Proposed Facility cannot be screened out as 'insignificant' at the Severn Estuary and River Wye designated sites. However, as the change in impact from the Operational Facility is extremely small and would be imperceptible, it is considered that there would be no significant effects on the integrity of these designated sites.
- As a screening assessment it has been assumed that a local nature site is present at the overall point of maximum impact. The change in impact and the overall impact of the Proposed Facility at the point of maximum impact are both less than 100% of the Critical Levels and Loads and can be screened out as 'insignificant'.

In summary, the Dispersion Modelling Assessment concludes the change in impact from the Facility is not significant.

A Dioxin Pathway Intake Assessment is provided in Appendix D. The results of the assessment show that, for the hypothetical maximum impacted receptor, the combined intake from the Facility and the existing Mean Daily Intake of dioxins and dioxin-like polychlorinated biphenyls (PCBs) via inhalation and ingestion is below the Tolerable Daily Intake (TDI). In addition, the ingestion of dioxins by an infant being breast fed by an agricultural receptor at the point of maximum impact of

emissions from the Facility is less than the TDI. The impact at identified receptor locations is lower. On this basis, there would not be an appreciable health risk based on the emission of dioxins and dioxin-like PCBs.

In conclusion, the impact of emissions of dioxins and dioxin-like PCBs on human health from the Facility following the proposed increase in capacity is predicted to be not significant.

An Abnormal Emissions Assessment is provided in Appendix E. There are no predicted exceedances of any of the short term or long-term air quality limits associated with abnormal operations. Abnormal emissions from the Facility will not cause any exceedances of any Air Quality Assessment Level. In addition, there will not be any exceedances of the TDI for dioxins.

It is concluded in the Abnormal Emissions Assessment that during periods of abnormal operation as permissible under the IED (Article 46) is not predicted to give rise to an unacceptable impact on air quality or the environment.

3.3 Fugitive emissions

The arrangements associated with the receipt of waste and management within the waste bunker will remain unchanged following implementation of the upgrades to the combustion controls systems and associated equipment. Waste will continue to be unloaded within the enclosed reception hall, maintained under negative pressure and will not introduce new release points. Therefore, the proposed variation will not introduce new storage areas or increase the waste inventory at the Facility and will not change the existing fugitive emissions or introduce any new/additional fugitive emission sources.

3.4 Emissions to water and sewer

The proposed upgrades to the combustion controls systems and associated equipment, refer to section 2.2, will not result in any changes to emissions to the water and/or sewer from the Facility.

3.5 Odour

The proposed upgrades to the combustion controls systems and associated equipment, will not result in any changes to the operating techniques for the handling and storage of waste and residues at the Facility. Therefore, it will not result in any changes to the types and amounts of odour generated at the Facility.

Waste reception will remain enclosed and under negative pressure to control fugitive emissions and odour from waste handling activities. The proposed variation will not increase bunker capacity or the maximum quantity of waste stored on site, and waste will continue to be managed within the existing storage arrangements. The existing operational procedures will remain in place, which will maintain the current approach to containment, waste handling and odour control.

The proposed waste types are not expected to have a greater odour potential than the wastes currently accepted at the Facility and will not introduce a new or materially different odour source. The wastes will be received, unloaded and managed within the enclosed reception hall and waste bunker, which are maintained under negative pressure, with extracted bunker air used as combustion air. Acceptance will remain subject to the existing waste pre-acceptance and acceptance procedures, including confirmation that each load is suitable for receipt and management within the existing infrastructure. Existing stock management and operational controls will continue to minimise storage duration and prevent the accumulation of odorous waste. The variation does not increase the maximum waste inventory or create any new point or

fugitive emission sources. On this basis, the existing containment and management measures represent appropriate measures for the prevention and, where that is not practicable, minimisation of odour emissions. The proposed acceptance of the additional waste types is therefore not expected to alter the existing odour risk or cause pollution or significant amenity impacts beyond the Installation boundary.

3.6 Noise

The proposed works include replacement and upgrade of existing equipment, and potential for additional ACC fan cells. The replacement and upgrades works are not expected to materially alter the existing noise profile of the Facility because they relate to plant items already present and operating within the current operational envelope of the Installation.

In respect of the potential additional ACC fan cells, any increase in noise emissions is not expected to give rise to a materially greater impact at sensitive receptors. The Facility is located within an established industrial area, and the nearest sensitive receptor (Severn Way footpath, to the east of the Facility) is located more than 600 metres from the Installation boundary – any additional ACCs would be located further away.

The proposed changes are not considered likely to result in a significant change in noise impact, and an updated noise assessment is not required to be submitted in support of this application.

There are no changes to the modes of transport or expected time of waste deliveries – the only change is possibly a small increase in the number of deliveries per day and is not a consideration for the permitting regime. However, these are not expected to result in any significant increases in noise levels.

3.7 Fire

Through implementation of this variation, there are no changes to the quantity or arrangements for the storage of waste within the Facility. Furthermore, it is understood that:

- there is no increase in the potential risk of fire at the Facility, including the volumes or types of wastes which will be held at the Facility in the bunker; and,
- there are no changes to the proposed management techniques to prevent or mitigate fire associated with this variation.

Taking this into consideration, a Fire Prevention Plan (FPP) is not required to be submitted or updated in support of this application.

3.8 Raw material consumption

The proposed increase in capacity results in the consumption of additional quantities of the raw materials currently consumed during the operation of the Facility.

A summary of proposed changes to raw material consumption is presented in Table 3.

Table 3: Raw material consumption

Raw material	Unit	2025 consumption [1]	Proposed annual consumption rate
Auxiliary fuel	L	502,348	502,348 [2]
Activated Carbon	t	112	171 [3]

Raw material	Unit	2025 consumption [1]	Proposed annual consumption rate
Hydrated Lime Usage	t	3,516	5,363[3]
Urea Usage	t	234	357[3]

Notes:

1) Source: Annual Performance Report 2025, submitted in accordance with reporting requirements of the EP, when 352,676 tonnes of waste was treated.
2) Auxiliary fuel is used as a start-up (and shutdown fuel). It is not proposed to change the number of these events as a result of the proposed increase in capacity and as such this is not changed.
3) Scaled from the 2025 consumption in in accordance with the proposed increase in capacity of the Facility.

The proposed increase in capacity will not result in any changes to the arrangements for the storage and handling of raw materials or any additional types of raw materials to be consumed at the Facility.

3.9 Residue generation

The proposed increase in capacity of the Facility results in the generation of additional residues, as presented in Table 4.

Table 4: Residues generated

Residues	Unit	2025 generation [1]	Proposed generation
Bottom ash (excluding metals)	tpa	75,238	114,775
Fly ash / Air Pollution Control Residues (APCr)	tpa	7,511	11,458

Note:

1) Source: Annual Performance Report 2025, submitted in accordance with reporting requirements of the EP, when 352,676 tonnes of waste was treated.

The residues generated quoted are based on the maximum generation in 2025 as reported in the Annual Performance Report 2025 and are scaled proportionally to the proposed increase in capacity of the Facility. The proposed increase in capacity will not result in any changes to the arrangements for the storage and handling of residues generated by the Facility with adequate storage capacity being provided by the existing infrastructure.

Compliance with the IED total organic and loss on ignition (LOI) content limits for bottom ash will be maintained.

3.10 Energy efficiency

Assuming an availability of 8,760 hours per annum (100%) the Facility is capable of exporting up to 411,720 MWh per annum.

The proposed increase in capacity has been considered against the relevant energy efficiency requirements of the waste incineration sector guidance (EPR5.01) and the Waste Incineration BREF

(referred to as the WI BREF). As can be seen from the findings presented in Table 5, the maximum capacity of the plant compares favourably with the relevant benchmarks.

Table 5: Energy efficiency

Parameter	Unit	Proposed	Benchmark
Gross power generation, nominal design	MWh/t waste	0.77	0.415 - 0.644
Net power generation, nominal design	MWh/t waste	0.68	0.279 - 0.458
Internal power consumption, nominal design	MWh/t waste	0.08(1)	0.15
Power generation (assumed gross) for 100,000 tpa of waste	MWe	8.7	4.00 - 9.00
Note: 1) Parasitic load of 5 MW.			

3.11 Other assessments

The proposed increase in capacity and associated upgrades remain in accordance with the previous assessments against the Waste Incineration BREF and accompanying Best Available Techniques conclusions (BATc), as presented in Table 6.

Table 6: Best Available Techniques conclusions related to the proposed changes

#	BAT Conclusion	How it is met
1	In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the features as listed in BAT 1 of the BREF.	The proposed changes will not require any changes to the EMS which continues to deliver the features listed in WI BAT 1.
2	BAT is to determine either the gross electrical efficiency, the gross energy efficiency, or the combined boiler efficiency of the incineration plant as a whole or of all the relevant parts of the incineration plant.	No changes proposed for the determination of the efficiency. The energy efficiency of the Facility is further described in section 3.10.
3	BAT is to monitor key process parameters relevant for emissions to air and water including those given in BAT 3 of the BREF.	The proposed changes will not change the monitoring requirements for key process parameters.
4	BAT is to monitor channelled emissions to air with at least the frequency given in BAT 4 of the BREF and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	The proposed changes will not require any additional monitoring equipment to be installed at the Facility.
5	BAT is to appropriately monitor channelled emissions to air from the incineration plant during Other Than Normal Operating Conditions (OTNOC).	The proposed changes will not require any updates to the OTNOC Management Plan.
6	BAT is to monitor emissions to water from Flue Gas Cleaning (FGC) and/or bottom ash treatment with at least the frequencies set out in BAT 6 of the BREF and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international	No changes proposed to the monitoring of emissions.

#	BAT Conclusion	How it is met
	standards that ensure the provision of data of an equivalent scientific quality.	
7	BAT is to monitor the content of unburnt substances in slags and bottom ashes at the incineration plant with at least the frequency as given in BAT 7 of the BREF (at least once every 3 months) and in accordance with EN standards.	No changes proposed to the monitoring of the content of unburnt substances in slags and bottom ashes. The expected increase in residues is discussed in 3.9.
8	For the incineration of hazardous waste containing POPs, BAT is to determine the POP content in the output streams (e.g. slags and bottom ashes, flue-gas, wastewater) after the commissioning of the incineration plant and after each change that may significantly affect the POP content in the output streams.	Not applicable to the Facility as it does not accept hazardous waste.
9	In order to improve the overall environmental performance of the incineration plant by waste stream management (see BAT 1), BAT is to use all of the techniques (a) to (c) as listed in BAT 9 of the BREF, and, where relevant, also techniques (d), (e) and (f).	The proposed changes will not require any changes to waste pre-acceptance and acceptance procedures.
10	In order to improve overall environmental performance of the bottom ash treatment plant, BAT is to set up and implement an output quality management system (see BAT 1).	The proposed changes will not require any changes to monitoring systems for the quality of ash generated by the Facility.
11	In order to improve the overall environmental performance of the incineration plant, BAT is to monitor the waste deliveries as part of the waste acceptance procedures (see BAT 9c) including, depending on the risk posed by the waste, the elements as listed in BAT 11 of the BREF.	No changes proposed to the waste acceptance procedures.

#	BAT Conclusion	How it is met
12	In order to reduce the environmental risks associated with the reception, handling and storage of waste, BAT is to use both of the following techniques: • Use impermeable surfaces with an adequate drainage infrastructure; and • Have adequate waste storage capacity.	No changes proposed to the reception, handling and storage of waste.
13	In order to reduce the environmental risk associated with the storage and handling of clinical waste, BAT is to use a combination of the techniques as listed in BAT 13 of the BREF.	Not applicable, the Facility does not receive or process clinical waste.
14	In order to improve the overall environmental performance of the incineration of waste, to reduce the content of unburnt substances in slags and bottom ashes, and to reduce emissions to air from the incineration of waste, BAT is to use an appropriate combination of the techniques given below:	Controls currently employed to maintain combustion efficiency and meet environmental standards continue to be applied. These procedures ensure the waste is consistently and fully incinerated, minimising organic residues in the bottom ash and maintaining compliance with BAT 14. The design and modelling for the increased throughput has been undertaken with an assumption of 3% Total Organic Carbon (TOC) in bottom ash. This conservative assumption is within the acceptable levels outlined under BAT 14, ensuring sufficient operational margin to comply with the requirements under all operating conditions. Emissions modelling confirms that existing limits for pollutants continue to be met with the proposed capacity change (Appendix C).
15	In order to improve the overall environmental performance of the incineration plant and to reduce emissions to air, BAT is to set up and implement procedures for the adjustment of the plant's settings e.g. through the advanced control system, as and when needed and practicable, based on the characterisation and control of the waste.	The proposed changes will not require any adjustments to the set points or combustion control systems.
16	In order to improve the overall environmental performance of the incineration plant and to reduce	No changes proposed to operational procedures.

#	BAT Conclusion	How it is met
	emissions to air, BAT is to set up and implement operational procedures (e.g. organisation of the supply chain, continuous rather than batch operation) to limit as far as practicable shutdown and start-up operations.	
17	In order to reduce emissions to air and, where relevant, to water from the incineration plant, BAT is to ensure that the FGC system and the wastewater treatment plant are appropriately designed (e.g. considering the maximum flow rate and pollutant concentration), operated within their design range, and maintained so as to ensure optimal availability.	No changes to wastewater treatment are required for the change in hourly throughput. An increase in load to 126% results in an increase in flue gas temperatures. The flue gas will be cooled prior to passing to the FGC system to allow the system to maintain efficiency. The FGC system is sufficient to accommodate an increase in flow and volume. The upgrades are described in section 2.2.1 to address the changes needed to ensure emissions to air are compliant.
18	In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions to air and, where relevant, to water from the incineration plant during OTNOC, BAT is to set up and implement a risk-based OTNOC management plan as part of the EMS that includes the elements as identified in BAT 18 of the BREF.	The proposed changes will not require any updates to the OTNOC Management Plan.
19	In order to increase resource efficiency of the incineration plant, BAT is to use a heat recovery boiler.	Viridor is not proposing changes to the operating pressure and temperature of the boiler.
20	In order to increase energy efficiency of the incineration plant, BAT is to use an appropriate combination of techniques as listed in BAT 20 of the BREF.	The energy efficiency of the Facility is further described in section 3.10.
21	In order to prevent or reduce diffuse emissions from the incineration plant, including odour emissions, BAT is to use the methods as stated in BAT 21 of the BREF.	As this variation is not proposed to result in any changes to the operating techniques for the handling and storage of waste and residues at the Facility, it is not anticipated that there are any changes to the types and amounts of odour generated at the Facility. See section 3.5.
22	In order to prevent diffuse emissions of volatile compounds from the handling of gaseous and liquid wastes that are odorous and/or prone to releasing volatile	No changes proposed for the handling of wastes.

#	BAT Conclusion	How it is met
	substances at incineration plants, BAT is to feed them to the furnace by direct feeding.	
23	In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to include in the EMS the diffuse dust emission management features listed for BAT 23.	Not applicable to the Facility, it does not treat slags or bottom ashes.
24	In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques as given in BAT 24 of the BREF.	Not applicable to the Facility, it does not treat slags or bottom ashes.
25	In order to reduce channelled emission to air of dust, metals and metalloids from the incineration of waste, BAT is to use one or a combination of the techniques as listed in BAT 25 of the BREF.	The proposed changes will not require any upgrades to the flue gas treatment systems for the abatement of metals and metalloids.
26	In order to reduce channelled dust emissions to air from the enclosed treatment of slags and bottom ashes with extraction of air, BAT is to treat the extracted air with a bag filter.	Not applicable to the Facility, it does not treat slags or bottom ashes.
27	In order to reduce channelled emissions of HCl, HF and SO2 to air from the incineration of waste, BAT is to use one or a combination of the techniques as listed in BAT 27 of the BREF.	The proposed changes will not require any upgrades to the flue gas treatment systems for the abatement of acid gases.
28	In order to reduce channelled peak emissions of HCl, HF and SO2 to air from the incineration of waste while limiting the consumption of reagents and the amount of residues generated from dry sorbent injection and semi-wet absorbers, BAT is to use optimised and automated reagent dosage, or both the previous technique and the recirculation of reagents.	The proposed changes will not require any upgrades to the flue gas treatment systems.

#	BAT Conclusion	How it is met
29	In order to reduce channelled NOx emissions to air while limiting emissions of CO and N2O from the incineration of waste, and the emissions of NH3 from the use of SNCR and/or SCR, BAT is to use an appropriate combination of the techniques as listed in BAT 29 of the BREF.	The proposed changes will not require any upgrades to the flue gas treatment systems for the abatement of oxides of nitrogen and carbon dioxide.
30	In order to reduce channelled emissions to air of organic compounds including PCDD/F and PCBs from the incineration of waste, BAT is to use techniques (a), (b), (c), (d), and one or a combination of techniques (e) to (i) given below to reduce channelled emissions to air of organic compounds: • Optimisation of the incineration process; • Control of the waste feed; • On-line and off-line boiler cleaning; • Rapid flue-gas cooling; • Dry sorbent injection; • Fixed-or-moving bed adsorption; • SCR; • Catalytic filter bags; and • Carbon sorbent in a wet scrubber.	The proposed changes will not require any upgrades to the flue gas treatment systems for the abatement of organic compounds.
31	In order to reduce channelled mercury emissions to air (including mercury emission peaks) from the incineration of waste, BAT is to use one or a combination of the techniques as listed in BAT 31 of the BREF.	The proposed changes will not require any upgrades to the flue gas treatment systems for the abatement of emissions of mercury.
32	In order to prevent the contamination of uncontaminated water, to reduce emissions to water, and to increase resource efficiency, BAT is to segregate waste water	No changes proposed to waste water management.

#	BAT Conclusion	How it is met
	streams and to treat them separately, depending on their characteristics.	
33	In order to reduce water usage and to prevent or reduce the generation of wastewater from the incineration plant, BAT is to use one or a combination of the techniques as listed in BAT 33 of the BREF.	No changes proposed to water use and waste water management.
34	In order to reduce emissions to water from FGC and/or from the storage and treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques as listed in BAT 34 of the BREF, and to use secondary techniques as close as possible to the source in order to avoid dilution.	The proposed changes will not result in changes to the arrangements for the storage of ashes and slags generated by the Facility.
35	In order to increase resource efficiency, BAT is to handle and treat bottom ashes separately from FGC residues.	No changes proposed to the management of residues.
36	In order to increase resource efficiency for the treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques as listed in BAT 36 of the BREF, based on a risk assessment depending on the hazardous properties of the slags and bottom ashes.	Not applicable to the Facility, it does not treat slags or bottom ashes.
37	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques as listed in BAT 37 of the BREF.	The proposed works include replacement and upgrade of existing equipment. These changes are not expected to materially alter the noise profile of the Facility because they replace or enhance existing plant items within the current operational envelope. Refer to section 0.

3.12 Letter of authorisation

The letter of authorisation for the declaration of the EP variation application is provided in Appendix F.

Appendices

A Revised Firing Diagram

B T2S assessment

C Dispersion Modelling Assessment

D Dioxin Pathway Assessment

E Abnormal Emissions Assessments

F Letter of authorisation

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