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Consulting Engineers Limited

Grundon Waste Management Ltd

Environmental Risk Assessment – HTI Facility

ENGINEERING CONSULTING

Document approval

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1 Introduction

Grundon Waste Management Limited (Grundon) (the Applicant) is proposing to construct and operate a High Temperature Incinerator (HTI) Facility (the Facility) at Zinc Road, Avonmouth, which will process clinical and hazardous waste. Grundon is proposing to develop the Facility at the site of an existing, but mothballed EfW plant. The existing EfW technology will be stripped out of the building, and the facility reconfigured for the new HTI. The new HTI will take up approximately a third of the building, with the remaining area being used for the handling, storage, and pretreatment of the waste streams received at the plant.

The aim of this report is to assess the environmental risks associated with the activities undertaken at the Facility.

Within the Environmental Permit (EP) application, Grundon is required to demonstrate that the necessary measures are in place to protect the environment and ensure that the Facility, throughout its life, will not pose an unacceptable risk to the environment.

The aim of this report is to:

a. identify potential risks that the activity may present to the environment;
b. screen out those that are insignificant and don't require detailed assessment;
c. identify potentially significant risks, where appropriate;
d. choose the right control measures, where appropriate; and
e. report the findings of the assessment.

This document has been developed to consider the requirements of Environment Agency Guidance Notes H1 Annexes A, C, H and F. It is acknowledged that these guidance documents have been withdrawn; however, it is understood that the requirements of the guidance are still applicable.

1.1 Risk Assessment Process

This assessment has been developed in accordance with the Environment Agency Guidance Note H1. This guidance promotes four key steps:

1. identify risks from the activity;
2. assess the risks and check that they are acceptable;
3. justify appropriate measures to control the risks; and
4. present the assessment.

1.2 Step 1 – Identify Risks

The following report will identify the activities that present different types of risk to the environment associated with the operation of the Installation, including:

a. odour;
b. noise;
c. fugitive emissions; and
d. accidents.

1.3 Step 2 – Assess the Risk

The report will include an assessment of risks associated with the operation of the Installation, and will identify the:

a. hazard;
b. receptor; and
c. pathway.

1.4 Step 3 – Justify Appropriate Measures

This report will demonstrate that the risks associated with the operation of the Installation have been considered and identify the control measures which will be in place to demonstrate that the risks are being appropriately managed.

1.5 Step 4 – Present the Assessment

The assessment will conclude by presenting the following:

a. possibility of exposure;
b. consequence; and
c. the overall risk.

The report will present the overall risk applying the Environment Agency's H1 criteria, defined as:

a. insignificant;
b. not significant; and
c. significant.

2 Table A1 – Odour Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Odorous emissions may occur during the delivery of waste, reception of waste and the storage and handling of waste prior to thermal treatment	Immediate area. The nearest residential receptors (properties on McLaren Road) are located approximately 1 km southwest of the installation boundary.	Air- Winds generally blow from a south westerly direction.	Containers of potentially odorous wastes will only be opened within the HTI building. Waste handling and storage will be undertaken inside the enclosed HTI building under negative pressure. Air from within the building will be used as primary combustion air.	Minimal.	Odour annoyance will have more impact in the summer, when temperatures are higher and people are outdoors and more likely to be exposed to odour.	Not significant due to management systems in place.
Odorous emissions may occur during periods of shutdown	Immediate area. The nearest residential receptors (properties on McLaren Road) are located approximately 1 km southwest of the	Air- Winds generally blow from a south westerly direction.	Potentially odorous wastes will be stored within the enclosed waste reception area. Regular olfactory checks will be undertaken around the installation boundary.	Minimal	Odour annoyance, which will have greater impact in the summer, when temperatures are higher and people are outdoors and	Not significant due to management systems in place.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
	installation boundary.				more likely to be exposed to odour.	

3 Table A2 – Noise and Vibration Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Noise from waste treatment processes, including the waste shredding and pumping system and rotary kiln. Noise from ancillary plant items, including the heat recovery boiler, steam turbine, air cooled condenser, exhaust air fans, stack exhaust and compressed air cleaning systems. Noise radiation from the building envelope itself.	Immediate area. The nearest residential receptors (properties on McLaren Road) are located approximately 1 km southwest of the installation boundary.	Sound propagation through air and the ground.	Noisy plant items, where practicable, will be installed inside buildings rather than outside and, where appropriate, they will be fitted with noise insulation. The installation will be designed to reduce noise and tonal components. Regular maintenance of plant items. Noise level checks will be carried out regularly in operational areas, with early warning of increasing noise levels resulting in reduction or mitigation.	Minimal.	Annoyance.	Not significant. Refer to Appendix B of the Application Pack for further information on the impact of noise from the operation of the Facility.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Noise from vehicle movements.	Immediate area. The nearest residential receptors (properties on McLaren Road) are located approximately 1 km southwest of the installation boundary.	Sound propagation through air and the ground.	Waste deliveries will typically occur during day-time periods. Waste vehicle movements at night will be limited. Noise level checks will be carried out regularly in operational areas, with early warning of increasing noise levels resulting in reduction or mitigation.	Minimal.	Annoyance.	Not significant. Refer to Appendix B of the Application Pack for further information on noise impacts.

4 Table A3 – Fugitive Emissions Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Emission releases from the main building when opening and closing doors.	Immediate area – air.	Air, surface runoff, direct contact.	The majority of waste and residue handling activities will be undertaken within an enclosed building. Therefore, there will be minimal potential for dust arisings due to the nature of the waste.	Low.	Nuisance, dust on clothing and cars.	Insignificant.
Spillage of waste during delivery and offloading.	Immediate area – air, land, water.	Air, surface runoff.	Waste will be delivered in enclosed vehicles. All waste unloading activities will be undertaken under an enclosed/covered area.	Minimal.	Nuisance and dust.	Insignificant.
Dust from waste deliveries being blown off-site.	Immediate area – air, land.	Air, surface runoff.	Waste will be delivered in enclosed vehicles. All waste unloading activities will be undertaken under an enclosed/covered area.	Minimal.	Nuisance and dust.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			The nature of the waste is such that there is minimal potential for dust arisings.			
Bottom ash discharge from the Facility.	Immediate area – air.	Air, surface runoff, direct contact.	Dust from bottom ash will be contained within a fully enclosed system. The ash will fall into the ash chamber underneath the rotary kiln and from there automatically discharged using dedicated screw conveyors to a tipper skip equipped with a hood. All ash leaves the process dry. Once the ash container is full it will wetted, and transferred to a RORO skip for storage prior to transfer off-site.	Low.	Nuisance.	Insignificant.
Discharge of Air Pollution Control	Immediate area – air, land.	Air, surface runoff, direct contact.	APCr will be collected in sealed 1m^3 'Big Bags'. The Big Bags will be stored in	Low.	Nuisance, release of hazardous dust.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
residues (APCr) from the Facility.			secure transport containers prior to removal off-site.			
Reagent and chemical discharges when filling silos.	Immediate area – air.	Air, surface runoff, direct contact.	Reagents such as lime will be delivered in sealed tankers and off-loaded via a standard pneumatic hose connection. Air displaced from the silo will be discharged through fabric filters on the top of the silo where reagents are of a solid/powdered form. Regular inspections and maintenance of abatement equipment. Unloading activities will only be undertaken by suitably trained personnel in areas of hard standing with contained drainage.	Low.	Nuisance.	Insignificant.
Lime leak during injection into APCr system.	Immediate area – air.	Air, surface runoff, direct contact.	Systems are enclosed, and regular inspections & maintenance will be carried	Low.	Nuisance.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			out. Reagent will be injected via an enclosed dosing and conveying system.			
Spillage of APC reagents when capping or changing filter bags.	Immediate area – air, land.	Air, surface runoff, direct contact.	Enclosed system. Kept under suction by the ID fan. The fabric filter will have a number of cells. When capping or changing bags, the relevant cell will be shut down for a sufficient time to enable the dust to settle.	Low.	Nuisance, release of hazardous dust.	Insignificant.
Spillage/leak of liquid chemicals when tanker off-loading.	Immediate area – air, land.	Air, direct contact.	Deliveries will be from sealed tankers and off-loaded via a hose by suitably trained personnel. Spillage will be prevented by good operating procedures, high tank level alarm/trips etc. Tanks will be located within suitably designed secondary containment with sealed drainage systems.	Low.	Liquid or vapour release.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Spillage/leak when unloading from delivery vehicles chemical containers (IBC's, FIBC's, drums, etc).	Immediate area – air, land.	Air, direct contact.	Deliveries will be from road vehicles and off-loaded via mobile plant. Potential leaks/spills will be prevented by experienced mobile equipment operators undertaking unloading activities. Unloading activities will only be undertaken in areas of hard standing with contained drainage. Chemical containers will be stored within suitably designed secondary containment with sealed drainage systems.	Low.	Hazardous liquid or vapour release.	Insignificant.
Release off-site of litter.	Immediate area – air, land.	Air, direct contact.	Waste will be delivered in enclosed vehicles and unloading of all waste bins will be within an enclosed building.	Low.	Nuisance, dust on cars and road.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			The nature of the waste will ensure that the risk of dust emissions is low.			
Release of dusts from the transfer off-site of bottom ash.	Immediate area – air, land.	Air, direct contact.	Dust from bottom ash will be contained within a fully enclosed system. The ash will fall into the ash chamber underneath the rotary kiln and from there automatically discharged using dedicated screw conveyors to a tipper skip equipped with a hood. All ash leaves the process dry. Once the ash container is full it will wetted, and transferred to a RORO skip for storage prior to transfer off-site.	Low.	Nuisance, dust on cars and road.	Insignificant.
Re-suspension of dust from road	Immediate area – air, land, water.	Air, surface runoff.	Control speeds, maintain the condition of the road, and take due care and attention	Low.	Nuisance, dust on cars and road.	Insignificant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
surface, when site vehicles arrive/leave.			of trafficking conditions. Regular road cleaning.			

5 Table A4 – Accidents Risk Assessment and Management Plan

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Spill during unloading of chemicals.	Immediate area – air, land, water.	Direct contact.	Training in unloading practices including accident/spill procedures. Under manual control, continual observation. Impervious surfaces outdoors (hardstanding). Contained and sealed drainage for chemical handling areas. Spill kits easily available.	Unlikely.	Low.	Not significant.
Overfilling of vessels.	Local environment air, land, water.	Surface runoff, wind.	Training in unloading practices including accident/spill procedures. Under manual control, continual observation. Impervious surfaces outdoors. Contained drainage. High level alarms.	Unlikely.	Low.	Not significant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			Secondary containment for storage vessels.			
Leak of water from treatment plant, and leak of boiler water treatment chemicals.	Immediate area – water.	Surface runoff	Secondary containment for storage vessels. Routine inspection and maintenance. Impervious surface indoors, separate drains for process water.	Unlikely.	Pollution of surface water.	Not significant.
Flue gas leak.	Local environment – air.	Air.	Design standards. Inspection and maintenance programme. Controls and alarms for pressure. Most of the systems are retained at negative pressure.	Very unlikely.	Pollution of atmosphere, health impacts.	Not significant.
Control failure leading to combustion control upset.	Local environment – air.	Air - Winds generally blow from a south westerly direction.	Fuel inspection. Design of control system. Monitoring of combustion conditions. Maintenance of combustion air systems.	Unlikely.	Pollution of atmosphere (short term), human health impacts.	Not significant.
Failure of emission abatement equipment.	Local environment – air.	Air - Winds generally blow from a south westerly direction.	Regular maintenance, inspections. Redundancy of	Unlikely.	Pollution of atmosphere, human health impacts.	Not significant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			critical equipment or spares in stock.			
Failure of emission monitoring systems.	Immediate area – air.	Air - Winds generally blow from a south westerly direction.	Regular maintenance, inspections. Back-up CEMS system will be available.	Unlikely.	Lack of data, public concern.	Not significant.
Failure of containment (e.g. bund).	Immediate area – water, land.	Surface runoff, wind, leaching.	Regular inspections of bunds. Contained drainage. Hardstanding.	Unlikely.	Pollution of surface water.	Not significant.
Making the wrong connections to drains.	Local environment – water.	Direct contact, leaching.	Detailed site drainage plan, available to all staff. Isolation valves where appropriate to prevent release of contaminated water off-site.	Low.	Pollution of surface water.	Not significant.
Preventing incompatible substances from coming into contact.	Immediate area.	Surface runoff, wind, direct contact.	Due care and attention. MSDS easily available for chemicals on site.	Low.	Pollution of surface water, human health impacts.	Not significant.
Unwanted reactions.	Immediate area.	Surface runoff, wind, direct contact.	Due care and attention.	Unlikely.	Low.	Not significant.
Loss of power.	None.	N/A	Back-up generation for combustion control systems.	Low.	None.	Not significant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
			Controlled shutdown of the water treatment plant.			
Loss of compressed air.	None.	N/A	Multiple compressors, backup power supplies.	Low.	None.	Not significant.
Loss of boiler water.	None.	N/A	Failsafe shutdown.	Low.	None.	Not significant.
Steam leak to plant building/atmosphere.	Noise, visual impact.	Air	Statutory design, fabrication and inspection standards for steam systems. Controls and alarms for pressure. Routine operator checks.	Low.	Nuisance from noise and visual impact.	Not significant.
Residues handling failure.	Immediate area – air, land, water.	Direct contact.	Training in residue handling practices. Contained transfer systems. Impervious surfaces in residue handling areas with designated sealed drainage systems in areas where residues are stored.	Unlikely.	Pollution of surface waters.	Not significant.
Fires in FGT bag filter.	Local environment.	Air - Winds generally blow from a south westerly direction.	Temperature measurement in filter, fire-fighting systems and detection systems.	Low.	Dust, pollution of air.	Not significant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Fire in furnace / waste feed system.	Immediate area – air.	Air.	Furnace charging procedures / training. Fire detection and fire-fighting systems. The backward flow of combustion gases and the premature ignition of waste will be prevented by keeping the furnace under negative pressure. The solid waste elevator and hopper system is isolated from the furnace through a pair of slide valves, where one is always closed.	Low.	Pollution of air.	Not significant.
Over pressurisation of the boiler.	Immediate area – air.	Direct contact.	The boiler will be fitted with a pressure release valve which will open to prevent over pressurisation / explosion of the boiler.	Low.	Pollution of air.	Not significant.
Fires in all waste reception storage and handling areas.	Immediate area – air.	Direct contact.	Fire detection systems, water sprinklers and fire hoses. Fire marshals.	Low.	Visual impact, pollution of air.	Not significant.

What Do You Do That Can Harm and What Could Be Harmed?			Managing The Risk	Assessing The Risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Possibility of Exposure**	**Consequence**	**What is the Overall Risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance and probability and consequence.**
Fire from ignition of lube oil leak.	Immediate area – air.	Wind, direct contact.	Use of fire-proof lube oil. Fire detection and protection systems.	Low.	Visual.	Not significant.
Contaminated fire water.	Immediate area – water, land.	Surface runoff, leaching.	Site drainage for external areas will be fitted with an isolation system, linked to the fire detection systems to contain any firefighting water from external areas.	Low.	Pollution of surface water.	Not significant.
Failure to contain firewater.	Land.	Land, water, groundwater.	Maintenance of the shut-off valve/isolation system within the drainage system. Inspection and maintenance of roadways and areas of hardstanding.	Unlikely.	Release of chemicals to water.	Not significant.
Vandalism.	Immediate area.	Land, air, water.	Security fences, controlled entrance to the site, CCTV.	Low.	Release of substances to any environment.	Not significant.

6 Detailed Assessment

This assessment has been expanded by a more comprehensive Air Quality Assessment (see Appendix E of the supporting information) and a full Noise Assessment (see Appendix C of the supporting information.).

6.1 Emissions to Air

The assessment using the Environment Agency's H1 tool is presented in Appendix A of this report. Where appropriate, the H1 assessment draws in information contained in the Air Quality Assessment (presented in Appendix D of the Application Pack).

The detailed Air Quality Assessment presented in Appendix E concludes:

> *"from detailed modelling of emissions from the proposed waste treatment and transfer facility on the Avonmouth industrial estate, is that the potential impact on local air quality is likely to be small and is unlikely to have a significant impact on the health of people living and working nearby, or on the surrounding environment as a whole."*

6.2 Habitats Assessment

Habitats present within the appropriate screening distances from the stack were assessed in the Air Quality Assessment – refer to Appendix D of the Application Pack. At all local, European and UK statutory designated sites, the impact of the proposed development can be screened out as insignificant. Furthermore, where the impact of Local Wildlife Sites cannot be screened out as insignificant, taking into consideration the background concentrations of pollutants the impact can be described as not significant.

6.3 Emissions to water and sewer

This is not expected to change from the currently permitted arrangements. There will be no emissions of process effluent from the Facility discharged to water under normal operation. Surface water run-off from building roofs and areas of hardstanding will be collected in the existing surface water drainage system, prior to discharge.

Under 'normal operation', there will not be any discharges of process effluent from the Facility. Where practicable, process effluents from boiler blowdown and other processes will be re-used within the Facility. Process effluent will either be discharged to sewer, or will be collected in a tank/sump for transfer off-site to a suitably licenced waste management facility.

Domestic effluents will be discharged to sewer, as per the existing arrangements for the Facility.

6.4 Noise

The impact of noise from the Installation is considered in the noise assessment contained in Appendix C of the supporting information. The assessment indicates a low impact [than those from the existing EP] according to BS 4142 for the residential receptors. There will also be no impact at any commercial receptors although it is possible that noise from the facility will be heard at the nearest location.

6.5 Visual Impact

The visual impact of the Installation has not been considered in the EP application, since this is primarily a matter for the planning authorities.

6.6 Odour

The mitigation measures for odour are presented in Section 3.4.7 of the supporting information.

If these measures are not effective and there are complaints of odour which can be attributed to the Facility, Grundon will develop and implement an odour management in consultation with the Environment Agency.

6.7 Global Warming

The assessment of the contribution of the Installation to Global Warming is complex. On the one hand, the Facility releases carbon dioxide to the atmosphere by the incineration of clinical and hazardous waste, as well as an auxiliary fuel (low sulphur oil). On the other hand, the Installation generates electricity, which displaces other electricity generation, which would release carbon dioxide from the combustion of fossil fuels. In addition, the primary aim of the Facility is to safely dispose of clinical and hazardous waste, regardless of any climate change impacts.

6.8 Disposal of Waste

Methods for residue recovery and disposal are considered in section 3.9 of the supporting information.

7 Conclusions

As presented in this report, the Facility is considered to contain appropriate control measures and management systems to ensure that the Facility does not have any significant impacts upon the local environment.

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