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Consulting Engineers Limited

Alton Advanced Energy Recovery Facility

Veolia ES Hampshire Ltd

Environmental Risk Assessment

ENGINEERING CONSULTING

Document approval

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Contents

1 Introduction

Veolia ES Hampshire Ltd (Veolia) is applying to the Environment Agency (EA) under the Environmental Permitting Regulations (EPR's) for an Environmental Permit (EP) to operate the Alton Advanced Energy Recovery Centre (the 'Facility'). The Facility will be located at the site of the existing Veolia Alton Materials Recycling Facility (MRF) and Waste Transfer Station (WTS) in Hampshire.

The aim of this report is to assess the environmental risks associated with the activities proposed to be undertaken at the Facility and demonstrate that the necessary measures will be in place to protect the environment ensuring that the operation of the Facility, throughout its life, will not pose an unacceptable risk to the environment.

This report will:

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Agency (EA) Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been withdrawn, it is understood that the requirements of the guidance are still applicable under Environment Agency Guidance *'Risk assessments for specific activities: environmental permits',* which replaced H1 and H2 with alternate (albeit not as prescriptive) guidance in February 2016.

1.1 Risk assessment process

The EA Guidance promotes the following key steps:

1. identify and consider risks from your site/the activity and the sources of those risks;
2. identify the receptors at risk from your site;
3. identify the possible pathways from the sources of the risks to the receptors;
4. assess the risks relevant to your specific activity and check they are acceptable/can be screened out;
5. justify appropriate measures to control the risks if they are high; and
6. submit/present the assessment with the permit application.

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 Facility, including:

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

1.3 Step 2 – Step 4: Assessment of receptors, pathways and risks

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

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

The risks relevant to the activities to be carried out on site will be checked to see if they are acceptable/can be screened out.

1.4 Step 5 – justify appropriate measures

This report will demonstrate that the risks associated with the operation of the Facility have been considered and will identify the proposed control measures to demonstrate that the risks will be appropriately managed.

1.5 Step 6 – present the assessment

The report 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 EA's previous H1 criteria, defined as:

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

2 Table A1 – Odour risk assessment and management

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 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 processing within the Facility.	Immediate area. The nearest residential receptor to the Facility is located approximately 400 m to the northwest of the Installation Boundary.	Air – winds generally blow from a south-westerly direction.	All wastes received at the Facility will be unloaded inside an enclosed waste reception hall. The waste bunker area will be retained at negative pressure. Air from waste bunker area will be combusted within the Facility, as detailed in the supporting information. Replacement air will be taken from the reception hall and bunker area, minimising odorous emissions and retaining negative pressure as far as reasonably possible.	Minimal.	Odour annoyance. This will have more impact in the summer, when temperatures are higher and people are outdoors.	Not significant if managed well.

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 remains? The balance and probability and consequence.**
Odorous emissions may occur during periods of shutdown	Immediate area. The nearest residential receptor to the Facility is located approximately 400 m to the northwest of the Installation Boundary.	Air – winds generally blow from a south-westerly direction.	Measures will be in place to minimise odorous emissions during periods of shutdown, as part of the Environmental Management System (EMS) for the Facility. Doors to the waste reception hall will be kept shut. Regular olfactory checks will be undertaken. Waste will be run-down prior to periods of planned shutdown. In the event of an extended unplanned shutdown, waste may be back-loaded from the bunker and transferred off-site to a suitably licensed waste management facility.	Minimal	Odour annoyance, which will have greater 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.

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 remains? The balance and probability and consequence**
Noise from plant items such as the waste treatment processes, heat recovery boiler, exhaust air fans, stack exhaust, steam turbine, cooling condensers and noise radiation from the building envelope itself, etc.	Immediate area. The nearest residential receptor to the Facility is located approximately 400 m to the northwest 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 installed with appropriate noise attenuation measures. The Facility will be designed to reduce noise and tonal components. Regular maintenance of plant items will be undertaken. Roads will be maintained in a good condition, minimising noise from the movement of lorries/HGVs/waste delivery vehicles within the Installation Boundary.	Minimal.	Annoyance.	Not significant. Refer to Appendix C – Noise Assessment 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 remains? The balance and probability and consequence**
Noise from vehicle movements.	Immediate area. The nearest residential receptor to the Facility is located approximately 400 m to the northwest of the Installation Boundary.	Sound propagation through air and the ground.	Waste will typically be delivered to the Facility by road during daytime hours. This will minimise the impacts of noise associated with the delivery of waste to the Facility.	Minimal.	Annoyance.	Not significant. Refer to Appendix C – Noise Assessment for further information on the impact of noise from the operation of the Facility.

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 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.	All waste handling activities will be undertaken within enclosed buildings. The waste bunker and waste reception areas will be held under negative pressure. Fast-acting roller shutter doors or similar will be installed.	Low.	Nuisance, dust on clothing and cars.	Insignificant.
Fugitive emissions during periods of shutdown.	Immediate area – air.	Air, direct contact.	Doors to the waste reception hall will be kept shut. Waste will be run-down prior to periods of planned shutdown to reduce the risk of odour emissions during periods of shutdown. In the event of an extended unplanned shutdown, waste may be back-loaded from the bunker and transferred off-site to a	Low.	Nuisance, annoyance.	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 remains? The balance and probability and consequence**
			suitably licensed waste management facility.			
Spillage of waste during delivery and offloading.	Immediate area – air, land, water.	Air, surface runoff.	All waste unloading activities will be undertaken within enclosed buildings. The waste bunker area will be held under negative pressure. Spillages would be cleaned up in accordance with documented management systems for the Facility. Waste unloading areas will have contained drainage to minimise the risk of emissions of contaminated water. Good housekeeping practices will be employed to reduce the build-up of litter at the site.	Low.	Nuisance and dust.	Insignificant.
Dust/litter from waste deliveries being blown off-site.	Immediate area – air, land.	Air, surface runoff.	All waste unloading activities will be undertaken within enclosed buildings. The waste bunker area will be	Low.	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 remains? The balance and probability and consequence**
			held under negative pressure. Good housekeeping will be employed to minimise the build-up of dust or litter.			
Bottom ash discharge from the Facility.	Immediate area – air.	Air, surface runoff, direct contact.	Once removed from the combustion chamber by the bottom ash extractors, the bottom ash is then discharged to an ash quench system, prior to storage in an enclosed bottom ash storage area. The use of a quench will minimise the potential of fugitive dust emissions. Ash handling will be undertaken in areas with contained drainage that link to the process water drainage system. Therefore, there is minimal risk of bottom ash leachate being discharged to surface water drainage systems. Loading of bottom	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 remains? The balance and probability and consequence**
			ash into vehicles will take place within the enclosed IBA building. The ash will be transferred off-site in covered vehicles, minimising the risk of fugitive emissions.			
Discharge of Air Pollution Control residues (APCr) when emptying the APCr silo.	Immediate area – air, land.	Air, surface runoff, direct contact.	When unloading the APCr silo, the displaced air from the tanker will be recirculated into the silo to prevent releases into the atmosphere. A fabric filter will minimise the risk of fugitive emissions of dust. APCr unloading activities will be undertaken by trained personnel and in accordance with documented management procedures for the Facility. APCr unloading activities will be supervised by sufficiently trained personnel.	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 remains? The balance and probability and consequence**
Reagent and chemical discharges when filling silos.	Immediate area – air.	Air, surface runoff, direct contact.	Reagents will be delivered in sealed tankers and off-loaded via a standard hose connection. Air displaced from the silo will be discharged through fabric filters on the top of the silo in the case of solid reagents. Regular inspections and maintenance will be undertaken of abatement equipment. Unloading activities will only be undertaken in areas of hardstanding with contained drainage. Unloading activities will be supervised by suitably trained personnel.	Low.	Nuisance.	Insignificant.
Lime leak during injection into APC system.	Immediate area – air.	Air, surface runoff, direct contact.	Systems will be enclosed, and regular inspections and preventative maintenance will be carried out. Lime will be injected via a completely	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 remains? The balance and probability and consequence**
			enclosed dosing and conveying system. Process areas will have contained drainage. Control systems will be in place to detect leaks.			
Spillage of air pollution control reagents when capping or changing filter bags.	Immediate area – air, land.	Air, surface runoff, direct contact.	Enclosed system located inside building. 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. This allows any faulty or damaged cells to be isolated easily. Process areas will have contained drainage.	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. Spillage will be prevented by good operating	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 remains? The balance and probability and consequence**
			procedures, high tank level alarm/trips etc. Tanks will be located within suitably designed secondary containment. Unloading of liquid chemicals will be undertaken on areas of contained drainage in order to prevent the release of contaminated effluent off-site through any spillages.			
Spillage/leak when unloading from delivery vehicles and chemical containers (IBCs, FIBCs, 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	Low.	Hazardous 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 remains? The balance and probability and consequence**
			within suitably designed secondary containment.			
Release off-site of litter.	Immediate area – air, land.	Air, direct contact.	Loading/unloading of all waste vehicles will be within an enclosed building under negative pressure. Fast-acting roller shutter doors or similar will ensure an enclosed environment.	Low.	Nuisance, dust on cars and road.	Insignificant.
Release of dusts from the transfer off-site of bottom ash.	Immediate area – air, land.	Air, direct contact.	Loading of bottom ash into vehicles will be undertaken within an enclosed building with contained drainage. Bottom ash will be transferred off-site in covered road vehicles. The bottom ash will be maintained dust-free by water quenching.	Low.	Nuisance, dust on cars and road.	Insignificant.
Re-suspension of dust from road surface,	Immediate area – air, land, water.	Air, surface runoff.	Control of vehicle speeds, roads maintained in good condition, personnel taking	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 remains? The balance and probability and consequence**
when site vehicles arrive/leave.			due care. A good standard of 'housekeeping' will be maintained on the roads.			

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 remains? The balance and probability and consequence**
Spill during unloading of chemicals.	Immediate area – air, land, water.	Direct contact.	Training in unloading practices. Under manual control, continual observation. Impervious surfaces outdoors. Containment of drainage from chemical handling areas. Management procedures in place to deal with spillages.	Unlikely.	Low.	Not significant.
Overfilling of vessels.	Local environment air, land, water.	Surface runoff, wind.	Training in unloading practices. Under manual control, continual observation. Impervious surfaces outdoors. High level alarms. Secondary containment for storage vessels. Management procedures in place to deal with spillages.	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 remains? The balance and probability and consequence**
Leak of water from treatment plant, and leak of boiler water treatment chemicals.	Immediate area – water.	Surface runoff	Secondary containment for storage of water treatment chemicals such as bunding. Routine inspection and maintenance. Impervious surface indoors, separate drains for process water. Regular preventative maintenance of storage vessels to confirm the integrity of the storage vessel.	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. Emissions monitoring systems to detect exceedances. Robust systems.	Very unlikely.	Pollution of atmosphere, health impacts.	Not significant.
Fuel storage failure.	Immediate area – litter.	Direct contact.	Storage of waste in a dedicated waste storage	Unlikely.	Litter.	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 remains? The balance and probability and consequence**
			bunker. The bunker will be constructed of reinforced concrete, with integrity checks undertaken during construction.			
Control failure leading to combustion control upset.	Local environment – air.	Air - Winds generally blow from a south westerly direction.	Good/robust 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 critical equipment or spares on stock.	Unlikely.	Pollution of atmosphere, human health impacts.	Not significant.
Failure of emission monitoring systems.	Immediate area – air.	Air - Winds generally blow from a south westerly direction.	Regular maintenance, inspections. A back-up CEMS system will be available in the event of a failure of the CEMS.	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. Preventative maintenance will be employed through a	Unlikely.	Pollution of surface water.	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 remains? The balance and probability and consequence**
			documented management system.			
Leaks from process water tank/pit	Immediate area – water, land.	Leaching/infiltration	Underground structures will be designed in accordance with the relevant standards and will be impermeable to prevent the release of liquid pollutants into the ground/groundwater. Quality assurance checks will be undertaken during construction to test/inspect the integrity of structures. Structures will be subject to regular inspection and preventative maintenance. In the event of the integrity of the structure being compromised, remedial maintenance will be undertaken in a timely manner and investigations	Unlikely.	Pollution of ground/groundwater	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 remains? The balance and probability and consequence**
			of any potential contamination will be undertaken (such as water testing). Remediation will be undertaken if required.			
Making the wrong connections to drains.	Local environment – water.	Direct contact, leaching.	Detailed site drainage plan, which will be available to all staff. Drains will be labelled accordingly.	Low.	Pollution of surface water.	Not significant.
Incompatible substances coming into contact.	Immediate area.	Surface runoff, wind, direct contact.	Due care and attention. Retention of Material Safety Data Sheets (MSDS) to identify hazards of substances to be used 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. Retention of MSDS to identify hazards of substances to be used on site.	Unlikely.	Low.	Not significant.
Loss of power.	None.	N/A	A back-up generation system to provide safe shutdown of	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 remains? The balance and probability and consequence**
			the Facility in the event of loss of power.			
Loss of compressed air.	None.	N/A	Multiple compressors.	Low.	None.	Not significant.
Loss of boiler water.	None.	N/A	Automatic shutdown of the Facility.	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 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 and level control in filter hopper, fire-fighting 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 remains? The balance and probability and consequence**
Fire in furnace feed system.	Immediate area – air.	Air.	Furnace charging procedures / training. Level indicator in chute. Fire-fighting system.	Low.	Pollution of air.	Not significant.
Over pressurisation of the steam boiler.	Immediate area – air.	Direct contact.	In case of over pressure, the pressure will be released through the pressure relief valve, preventing the risk of an explosion within the steam boiler.	Low.	Pollution of air.	Not significant.
Fires in waste reception storage and handling areas.	Immediate area – air.	Direct contact.	Fire detection and suppression systems. Refer to the Fire Prevention Plan (Appendix H of the Supporting Information).	Low.	Visual impact, pollution of air.	Not significant.
Fire from ignition of lube oil leak.	Immediate area – air.	Wind, direct contact.	Fire detection and protection systems. Refer to the Fire Prevention Plan (Appendix H of the Supporting Information).	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 valve which is	Low.	Pollution of surface water.	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 remains? The balance and probability and consequence**
			interfaced with the fire protection systems. The primary source of firewater containment will be the waste bunker, which is designed as a water-retaining structure. Additional firewater storage will be available from kerbing and roadways.			
Failure to contain firewater.	Land.	Land, water, groundwater.	Maintenance of the shut-off valve and/or pumping system within the drainage system. Inspection and maintenance of roadways and areas of hardstanding.	Unlikely.	Release of chemicals/ contamination to water/land.	Not significant.
Vandalism	Immediate area.	Land, air, water.	Security fences, controlled entrance to the site.	Low.	Release of substances to any environment.	Not significant.

6 Detailed assessment

The environmental impact of the Facility has been evaluated using the H1 software tool as described in Part 2 of Technical Guidance Note EPR-H1, presented in Appendix A. This assessment has been expanded by a more comprehensive Air Quality Assessment (refer to Appendix E of the Supporting Information) and a full Noise Assessment (refer to 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. The detailed Air Quality Assessment is presented in Appendix E of the Application.

6.2 Habitats assessment

There are a number of habitat sites present within the appropriate screening distances from the stack. The following habitat features presented in Table 6-1 have been considered within the Air Quality Assessment:

Table 6-1: Sensitive Ecological Receptors

European designated sites (Ramsar, SPA, SAC) (within 10 km)
East Hampshire Hangers (SAC)
Shortheath Common (SAC)
Woolmer Forest (SAC)
Wealden Heaths Phase II (SPA)
Thursley, Ash, Pirbright and Chobham/ Thursley, Hankley and Frensham Commons (SAC/SPA)
UK designated sites (SSSI, NNR) (within 2 km)
None identified
Locally designated sites (LNR, LWS, Ancient Woodland) (within 2 km)
Spollycombe Copse (AW/SINC)
Shrub Croft Copse (AW)
Hawkins Wood & Stowell (AW/SINC)
Forty Acres (AW)
Neatham Farm Manor Copse (AW/SINC)
Fielders & Shrub Croft Copses/Ham Wood (SINC)
Round Wood (SINC)
Quarry Bottom (SINC)
Froyle Mill Meadow 7 (SINC)
Forty Acres Wood (SINC)
Chestnut Copse (SINC)
Stirvill's Copse (SINC)

The Air Quality Assessment concludes that the impact on these features as a result of atmospheric emissions is as follows:

- The Process Contribution (PC) is less than 1% of the annual mean Critical Levels and less than 10% of the short-term Critical Levels at all European and UK designated sites and less than 100% of the Critical Levels at all local nature sites. Therefore, the impact can be screened out as 'insignificant'.

The Air Quality Assessment concludes that the impact on these features as a result of the deposition of emissions is as follows:

- The PC at each local nature site is less than 100% of the relevant Critical Load and can be screened out as 'insignificant'.
- The PC at each European and UK Designated Site is less than 1% of the Critical Load and can be screened out as 'insignificant', with the exception of acid deposition on bog woodland habitats at Shortheath Common.
  - The PC only exceeds the 1% screening criterion for two of the five years of weather data assessed, and there is only one year (2017) where the PC exceeds the 1% screening criterion over a substantial area of the receptor. The average PC over the 5 years of weather data used in the dispersion model is less than 1% of the Critical Load.
  - The significance of effect of acid deposition at Shortheath Common SAC has been assessed in further detail in the Ecological Interpretation of AQA – refer to Appendix E of the Air Quality Assessment. This has concluded that there will be no adverse effect on the integrity of the site resulting from emissions from the Facility, and therefore the effect is 'not significant'.

6.3 Emissions to sewer and water

There are no emissions of process effluents during normal operation of the Facility. In the event that excess process effluents are generated, for example during periods of boiler emptying, it is intended to tanker these off-site for treatment at a suitably licensed waste management facility.

Uncontaminated surface water will be discharged, via the surface water drainage system and SUDS attenuation, to groundwater by infiltration.

Foul water from welfare facilities will be treated in an on-site package treatment plant prior to discharge to groundwater by infiltration.

6.4 Noise

The impact of noise from the Facility is considered in the noise assessment contained in Appendix C of the Application. The assessment concludes that there would be no significant impacts during the construction or operation of the Facility following the implementation of appropriate mitigation.

6.5 Visual impact

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

6.6 Odour

The proposed measures for the containment, prevention and mitigation of odour are detailed in section 2.4.7 of the Supporting Information.

6.7 Photochemical ozone creation

Releases of CO, NO_2, SO_2, PAHs and VOCs contribute to the generation of excess tropospheric ozone, while releases of NO remove ozone from the atmosphere. The annual releases of these substances can be ascribed a photochemical ozone creation potential (POCP). Values for the POCP are stated in Annex (f) of Horizontal Guidance Note EPR-H1, for the pollutants included within the air quality assessment, as:

a. CO 2.7
b. NO_2.....2.8
c. SO_2 .....4.8
d. 1,3-Butadiene 85.1
e. Benzene 21.8
f. Benzo-a-pyrene.....323

The total POCP for the Facility is calculated in the H1 Software Tool as approximately 3,870 tonnes. This assessment is based on the assumption that all NO_x is released as NO_2.

6.8 Global warming

The assessment of the contribution of the Facility to global warming is complex. On the one hand, the Facility releases carbon dioxide to the atmosphere by the combustion of waste and auxiliary fuel. On the other hand, the Facility generates electricity, which displaces other electricity generation, which would release carbon dioxide from the combustion of fossil fuels.

In accordance with the Environment Agency requirements a Greenhouse Gas Assessment, which considers the direct and indirect emissions from the incineration of waste within the Facility and compares this with the emissions produced if the electricity were produced by conventional fossil fuel power station, has been produced. This is presented in Appendix E of the Supporting Information.

6.9 Disposal of waste

Methods for reducing the impact from waste disposal are considered in Section 2.9 of the Supporting Information.

7 Assessment of Dioxins and Dioxin-like PCBs

7.1 Introduction

The assessment criteria set for dioxins and dioxins like PCBs is as the sum of the intake from ingestion and inhalation. Therefore, in order to compare against the assessment level a pathway intake assessment is needed. This is provided in Appendix E of the Application. The information presented within this section should be read in conjunction with this Dioxin Pathway Intake Assessment (DPIA).

7.2 Literature review

The Health Protection Agency (HPA), whose role has now been taken over by Public Health England (PHE), published a note RCE-13 "The Impact on Health of Emissions to Air from Municipal Waste Incinerators", in 2009[1]. The summary states:

> *"While it is not possible to rule out adverse health effects from modern, well-regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable"*

PHE commissioned further research in 2012, while continuing to state that the conclusions of RCE-13 remain applicable. These studies were commissioned from the Small Area Health Statistics Unit, which is based at Imperial College London and Kings College London. The methodology and results of the studies have been published in a series of papers in scientific journals. The three most recent papers, known as Ghosh et al (2018)[2], Freni-Sterrantino et al (2019)[3] and Parkes et al (2019)[4], are the most relevant.

These studies considered whether living near a municipal waste incinerator (MWI) is linked with adverse reproductive and infant health outcomes. These outcomes were studied as they are considered more sensitive to the accumulation of pollutants in the environment than other potential markers such as lifetime cancer rates.

Ghosh et al (2018) concluded that:

> "*This large national study found no evidence for increased risk of a range of birth outcomes, including birth weight, preterm delivery and infant mortality, in relation to either MWI emissions or living near an MWI operating to the current EU waste incinerator regulations in Great Britain."*

Freni-Sterrantino et al (2019) concluded that:

[1] https://www.gov.uk/government/publications/municipal-waste-incinerators-emissions-impact-on-health

[2] Ghosh RE, Freni Sterrantino A, Douglas P, Parkes B, Fecht D, de Hoogh K, Fuller G, Gulliver J, Font A, Smith RB, Blangiardo M, Elliott P, Toledano MB, Hansell AL. (2018) Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population based cohort and case-control study. Environment International.

[3] Freni-Sterrantino, A; Ghosh, RE; Fecht, D; Toledano, MB; Elliott, P; Hansell, AL; Blangiardo, M. (2019) Bayesian spatial modelling for quasi-experimental designs: An interrupted time series study of the opening of Municipal Waste Incinerators in relation to infant mortality and sex ratio. Environment International. 128 106-115

[4] Parkes B, Hansell A.L., Ghosh R.E, Douglas P., Fecht D., Wellesley D., Kurinczuk J.J., Rankin J., de Hoogh K., Fuller G.W, Elliot P., and Toledano M.B. "Risk of congenital anomalies near municipal waste incinerators in England and Scotland: Retrospective population-based cohort study". Environment International (Parkes et al).

> *"we did not find an association between the opening of a new MWI and changes in infant mortality trends or sex ratio at birth for 10 and 4 km buffers, using distance as proxy of exposure, after taking into account temporal trends in comparator areas and potential confounding factors."*

The objective of Parkes et al (2019) was as follows: *"To conduct a national investigation into the risk of congenital anomalies in babies born to mothers living within 10 km of an MWI associated with: i) modelled concentrations of PM_{10} as a proxy for MWI emissions more generally and; ii) proximity of residential postcode to nearest MWI, in areas in England and Scotland that are covered by a congenital anomaly register."* Under objective (i), which related congenital anomalies to modelled concentrations and so would be considered the more representative approach, the study found no association with congenital abnormalities. Under objective (ii), there was a small excess risk, but the paper's authors note that this may be due to residual confounding.

The Imperial College website includes Frequently Asked Questions on this study. One of these is "Does the study show that MWIs are causing increased congenital anomalies in populations living nearby?" The answer is as follows.

> *"No. The study does not say that the small excess risks associated with congenital heart disease and genital anomalies in proximity to MWIs are caused by those MWIs, as these results may be explained by residual confounding factors i.e. other influences which it was not possible to take into account in the study. This possible explanation is supported further by the fact that the study found no increased risk in congenital anomalies due to exposure to emissions from incinerators."*

These three recent papers consider facilities in the UK, operating under the same regulatory regime which would apply to the Facility and operating to the current standards of the IED. The papers found no conclusive evidence of an association of waste incineration facilities with the health outcomes considered. Given that the Facility would actually operate to tighter standards, as it would be subject to the reduced emissions limits from the Waste Incineration BREF, the conclusions are directly relevant and support PHE's position statement that "*any potential damage to the health of those living close-by is likely to be very small, if detectable".*

Therefore, it can be concluded that the effect of emissions from the Facility of pollutants that accumulate in the environment would not be significant.

7.3 Assessment against TWI

7.3.1 Background

The DPIA assessed the intake of dioxins and dioxin-like PCBs against the Tolerable Daily Intake (TDI) of 2 pg WHO-TEQ/kg bw/day. It is understood that the EA require an assessment is undertaken against a Tolerable Weekly Intake (TWI) of 2 pg WHO-TEQ/kg bw/week, which is equivalent to 0.286 pg WHO-TEQ/kg bw/day.

The TDI for dioxins and dioxin-like PCBs of 2 pg WHO-TEQ/kg bw/day was set by the Committee on Toxicity (CoT) and has been taken from the 2009 EA Science Report "Human health toxicological assessment of contaminants in soil[5]". The TDI of 2 pg WHO-TEQ/kg bw/day has subsequently been used as the assessment criteria in DPIAs in the UK.

[5] Human health toxicological assessment of contaminants in soil - dioxins, Science Report - Final SC050021/SR2, Environment Agency, 2009

7.3.1.1 Derivation of TWI

The European Food Standards Agency (EFSA)'s expert panel on Contaminants in the Food Chain (CONTAM) carried out a review of the risk to human and animal health from dioxins and furans in food and feed, publishing a Scientific Opinion in June 2018 which was published in the European Journal on 18 November 2018. CONTAM recommended a tolerable weekly intake of 2 pg TEQ/kg bw/week.

The justification for this TWI is that this is protective against effects on semen quality, based on a single scientific study – the Russian Children's Study[6]. This study enrolled 516 boys aged 8-9 years. Ten years later, when the participants were aged 18-19, semen samples were obtained and analysed. A total of 133 of the 516 boys originally enrolled completed the study. The study concluded that *"Higher peripubertal serum TCDD concentrations and PCDD TEQs were associated with poorer semen parameters"*, but that *"Serum PCBs, furans, and total TEQs were not associated with semen parameters."* Based on the study, the EFSA concluded that exposure to dioxins at the levels found in the study can affect reproductive development. The EFSA derived the TWI from the critical level in this study by modelling the build-up and decline of dioxins in children through their life, assuming (amongst other assumptions) 12 months of breastfeeding and an intake of 800 ml per day of breast milk.

7.3.1.2 Applicability of TWI

The Scientific Opinion recommending the TWI was discussed at an Information Session on 13 November 2018. UK representatives participated in this session and submitted comments in advance which had been prepared by the CoT following a meeting on 23 October 2018. The CoT made a number of criticisms of the EFSA approach, including:

- the study did not contain a discussion on the possible explanation for the observed effect;
- while human data should be used to establish an HBGV (health-based guidance value), the CoT was unable to conclude that basing the HBGV on a single study was robust; and
- the applicability of the TWI to the whole population was questioned by the CoT.

Furthermore, the commentary on the Russian Children's Study from German representatives at the Information Session stated that the study was undertaken *"in the vicinity of a chemical manufacturing plant which has led to an extensive contamination of the environment with special pattern of dioxins, but also with organochlorine pesticides, lead and probably other compounds with shorter half-lives not detected in the study."* This has implications for the validity of applying the results of the study to the wider population.

The CoT discussed the Opinion again in its meeting on 17 September 2019. The discussion paper for the meeting stated *"A significant reduction in the TWI for dioxins and dioxin-like PCBs would mean that a significant portion of the population would exceed the safe exposure levels and some may therefore be experiencing adverse effects related to these compounds. Significant efforts would be required in order to reduce current exposures."* The CoT was asked *"Do the Committee agree that the TWI established by EFSA is justified given the available data?"* The minutes of the meeting state that the Committee neither endorsed nor dismissed the Opinion.

The EFSA's statement on the Opinion concludes *"The European Commission and EU Member States will discuss risk management measures following EFSA's scientific advice to ensure a high level of consumer protection."* Fichtner is not aware of any records which confirm that these discussions

[6] A Longitudinal Study of Peripubertal Serum Organochlorine Concentrations and Semen Parameters in Young Men: The Russian Children's Study, Minguez-Alarcon et al, 2017, Environmental Health Perspectives

have taken place. Furthermore, the UK government has not published guidance on whether this standard should be applied.

Based on the above, the TWI remains a recommendation by the EFSA's CONTAM and has not been adopted as an assessment criterion for the protection of human health by either the EU or the UK government. As such, the most recent published guidance on the tolerable intake of dioxins and dioxin-like PCBs remains the EA Science Report published in 2009.

However, an assessment of the impact of the Facility against the TWI has been undertaken.

7.4 Assessment

7.4.1 Assessment methodology

As the TWI is the same as the current TDI but on a weekly rather than daily basis, assessing the results of the DPIA against the TWI will increase the predicted impacts sevenfold as a percentage of the assessment criterion.

The DPIA considered the impact of emissions from the Facility at 19 sensitive receptor locations which were categorised as either 'residential' or 'agricultural'. Residential receptors represent a known place of residence that is occupied within the study area. Agricultural receptors represent a farm holding or area land of horticultural interest. In addition, a receptor has been assessed at the point of maximum impact to assess the theoretical maximum impact of the Facility.

As a conservative assessment, it has been assumed that agricultural receptors ingest dioxins and dioxin-like PCBs from home-grown produce, eggs, poultry, pork, beef, and milk, regardless of whether the farm is arable, pastoral or mixed.

The assessment has added the contribution from the Facility to the Mean Daily Intake (MDI). If the overall intake is below the TDI or TWI (as applicable), then no significant health effects are expected and the impact of emissions from the Facility can be described as not significant.

7.4.2 Results – at the point of maximum impact

The results of the assessment at the point of maximum impact using the TDI and the TWI are presented in Table 7-1. Any exceedances of the TDI/TWI are highlighted.

Table 7-1: Intake of Dioxins and Dioxin-like PCBs - Point of maximum impact

Receptor Type	MDI		Process Contribution		Overall	
	% of TDI	% of TWI	% of TDI	% of TWI	% of TDI	% of TWI
Adult						
Agricultural	35.00%	**245.00%**	3.67%	25.71%	38.67%	**265.52%**
Residential	35.00%	**245.00%**	0.08%	0.59%	35.08%	**245.57%**
Child						
Agricultural	90.65%	**634.55%**	5.19%	36.30%	95.84%	**662.97%**
Residential	90.65%	**634.55%**	0.26%	1.83%	90.91%	**636.68%**

As shown, the MDI (i.e. existing intake) is significantly in excess of the TWI for both adult and child receptors. In all cases, the contribution from the Facility is well below the TWI, so the exceedance of the TWI is due to the existing intake of dioxins and dioxin-like PCBs in typical diets.

In addition to the above, the ingestion of dioxins and dioxin-like PCBs by an infant resulting from emissions from the Facility, considering the breast milk pathway and based on an adult agricultural receptor at the point of maximum impact of emissions from the Facility feeding an infant, is 0.623 pg TEQ/kg bw/day which is 31.16% of the TDI and 218.13% of the TWI.

As shown, the intake by an infant resulting from emissions from the Facility is less than the TDI but greater than the TWI, based on an adult agricultural receptor at the point of maximum impact feeding an infant. This is a very worst-case assessment. However, for completeness, further assessment of the likely impact of emissions from the Facility has also been given to the maximum impact at an identified receptor location.

7.4.3 Results – maximum impact at a receptor

The following table outlines the impact of emissions from the Facility at the most affected receptor (i.e. the receptor with the greatest impact from ingestion and inhalation of emissions from the Facility) (R2 – West End). This receptor has been classified as an agricultural receptor, which is conservative as it assumes that a significant proportion of the diet of the receptor is sourced from the receptor point assessed, including meat and milk products. In reality, people in the UK tend to source their diet from a wide geographical area.

Table 7-2: Intake of dioxins and dioxin-like PCBs - Maximum Impacted Receptor

Receptor Type	MDI		Process Contribution		Overall	
	% of TDI	% of TWI	% of TDI	% of TWI	% of TDI	% of TWI
Adult						
Agricultural	35.00%	**245.00%**	3.56%	24.89%	38.56%	**269.89%**
Child						
Agricultural	90.65%	**634.55%**	5.02%	35.14%	95.67%	**669.69%**

As shown, the contribution from the Facility at the maximum impacted Facility is slightly lower than at the theoretical maximum impacted receptor for an agricultural receptor presented in Section 7.4.2. The contribution from the Facility is well below the TWI, so the exceedance of the TWI is due to the existing intake of dioxins and dioxin-like PCBs in typical diets.

The ingestion of dioxins and dioxin-like PCBs by an infant, resulting from emissions from the Facility, considering the breast milk pathway and based on an adult agricultural receptor at the maximum impacted receptor feeding an infant, is 0.603 pg TEQ/kg bw/day which is 30.17% of the TDI and 211.16% of the TWI.

The greatest contributor to the intake of dioxins resulting from emissions from the Facility is via the ingestion of cows' milk and beef. A review of satellite imagery of the land surrounding West End Farm indicates that the farming undertaken is predominantly arable, and a review of the UK Government's list of registered dairy establishments[7] shows that the closest registered dairy establishment is approximately 7.5 km west of the Facility, in Lasham. Therefore, this assessment is highly conservative, and the intake is likely to be much lower. Table 7-3 presents the effect of excluding locally-sourced beef and cows' milk from the assessment of the impact at West End Farm.

[7] https://data.gov.uk/dataset/61ce0cbc-3c0e-4311-8021-ff439138eaee/registered-dairy-establishments

Table 7-3: Breast Milk Intake of Dioxins and Dioxin-Like PCBs – Maximum Impacted Receptor

Scenario	Infant breast milk intake of dioxins and dioxins-like PCBs	
	As % of TDI	As % of TWI
Fully agricultural	30.17%	211.16%
Excluding beef	23.24%	162.65%
Excluding cows' milk	8.65%	60.54%
Excluding cows' milk and beef	1.72%	12.03%

As shown, the exclusion of the cows' milk ingestion pathway has by far the largest effect on the intake of dioxins and dioxin-like PCBs by a breastmilk-fed infant receptor. When cows' milk and beef sourced from the receptor point are excluded, the contribution from the Facility is just 12.03% of the TWI at West End. This is much more likely to be representative of the actual impact of the Facility, but still retains the conservative assumption that the Facility continually operates at the maximum permitted emission limit for dioxins and dioxin-like PCBs.

Furthermore, the intake of dioxins and dioxin-like PCBs in infants is elevated due to the low bodyweight and relatively high concentrations in breast milk. However, the duration of exposure is short and does not significantly affect average lifetime exposure.

7.4.4 Summary

A review of published literature regarding the health effects of Municipal Waste Incinerators has shown that "*any potential damage to the health of those living close-by is likely to be very small, if detectable".* Nonetheless, an assessment of the impact of emissions of all pollutants released has been undertaken and the results presented in the Air Quality Assessment. The assessment criteria set for dioxins and dioxins like PCBs is as the sum of the intake from ingestion and inhalation. Therefore, in order to compare against the assessment level a pathway intake assessment is needed. The results of this are presented in the DPIA. This assessment considered the impact against the TDI set by the CoT.

The EA has requested that an assessment of the impact of dioxins is carried out against the TWI. However, following a review of the background and applicability of the TWI it is considered that the evidence underpinning the TWI is not conclusive, and neither the EU nor the UK government has adopted the TWI as an assessment criterion. Nonetheless, an assessment of the likely maximum impact of emissions of dioxins and dioxin-like PCBs from the Facility against the TWI has been undertaken. This has shown that, at the maximum impacted receptor, the contribution from the Facility to the intake of dioxins and dioxin-like PCBs is well below the TWI for child and adult receptors, at 35.14% and 24.89% of the TWI respectively. The reported exceedance of the TWI is due to the existing intake exceeding the TWI.

The contribution from the Facility to the intake of dioxins by an infant being fed by an adult at the maximum impacted receptor (agricultural receptor) is 211.16% of the TWI when all intake pathways are considered. However, the beef and cows' milk ingestion pathways are not relevant as there is no beef or dairy farming in close proximity to the Facility. When these pathways are excluded, the contribution from the Facility to the intake of dioxins via breast milk is only 12.03% of the TWI at the maximum impacted receptor.

In conclusion, the results of the assessment shows that the Facility will not have a significant effect on human health due to the intake of dioxins and dioxin-like PCBs even when considering the TWI.

8 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.

Appendices

A H1 Assessment Tool

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