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Consulting Engineers Limited

Fortum Carlisle Limited

Environmental Risk Assessment

ENGINEERING CONSULTING

Document approval

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Contents

1 Introduction

Fortum Carlisle Limited (Fortum) are proposing to construct and operate the Kingmoor Energy Recovery Facility (the Facility). The Facility will be located on Kingmoor Park Industrial Estate in Carlisle, and will incinerate waste fuels.

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

Within the application, Fortum 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 document 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Agency Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been withdrawn, it is understood that the requirements of the guidance are still applicable under Environment Agency Guidance *'Risk assessments for specific activities: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 guidance in February 2016.

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 Facility 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

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 at the installation.	Immediate area. The nearest residential receptors to the installation are located approximately 700 – 800 m from the Installation Boundary.	Air – winds generally blow from a south-westerly direction.	All wastes received at the installation 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 to the bunker area will be taken from the reception hall to minimize the odorous emissions and to retain 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 receptors to the installation are located approximately 700 – 800 m from 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. The odour abatement system utilising carbon filters will be used if required.	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 receptors to the installation are located approximately 700 – 800 m from 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 will be undertaken. Roads will be maintained to minimise rattle of loads during transport of materials.	Minimal.	Annoyance.	Not significant. Refer to Appendix C – Noise Assessment for further information on the impact of noise from the operation of the Facility.
Noise from vehicle movements.	Immediate area. The nearest residential receptors to the installation are located approximately 700 – 800 m from the Installation Boundary.	Sound propagation through air and the ground.	The majority of waste deliveries to the Facility will be via road during set delivery 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

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**
						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 area will be held under negative pressure.	Low.	Nuisance, dust on clothing and cars.	Insignificant.
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.	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**
Dust 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 held under negative pressure. Good housekeeping will be employed to minimise the build-up of dust.	Low.	Nuisance and dust.	Insignificant.
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 a 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.	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**
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.	Low.	Nuisance, release of hazardous dust.	Insignificant.
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	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**
			hardstanding with contained drainage.			
Lime leak during injection into APC system.	Immediate area – air.	Air, surface runoff, direct contact.	Systems will be enclosed, and regular inspections and maintenance will be carried out. Lime will be injected via a completely enclosed dosing and conveying system. Process areas will have contained drainage.	Low.	Nuisance.	Insignificant.
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.

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**
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 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.	Low.	Liquid or vapour release.	Insignificant.
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	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**
			undertaken in areas of hard standing with contained drainage. Chemical containers will be stored 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 enclosed building.	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 enclosed building. Bottom ash will be transferred off-site in covered road vehicles. The bottom ash will be maintained dust-free by quenching.	Low.	Nuisance, dust on cars and road.	Insignificant.
Re-suspension of dust from road surface, when site vehicles arrive/leave.	Immediate area – air, land, water.	Air, surface runoff.	Control speeds, maintain the condition of the road, and take due care and attention of trafficking conditions. A good standard of	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**
			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.	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 bunker. The bunker will be	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**
			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 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. 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.			
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 from 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	Back-up generation system to provide a safe shutdown of the Facility.	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**
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, back-up diesel pump to provide feedwater to the boiler.	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, inert gas 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 boiler.	Immediate area – air.	Direct contact.	In case of over pressure, the pressure will be released through waste hopper and ash quench preventing the risk of an explosion within the boiler.	Low.	Pollution of air.	Not significant.
Fires in all waste reception storage and handling areas.	Immediate area – air.	Direct contact.	Fire detection and suppression systems.	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.	Low.	Visual.	Not significant.
Contaminated fire water.	Immediate area – water, land.	Surface runoff, leaching.	Site drainage for external areas will be fitted with a shut-off alarm, linked to the fire detection systems. Additional storage will be available from kerbing and roadways. The primary source of firewater containment will be the	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**
			waste bunker, which is designed as a water-retaining structure.			
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 to water.	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 Dispersion Modelling Assessment (refer to Appendix E of the Application) 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 Dispersion Modelling Assessment is presented in Appendix E of the Application. The assessment concludes that emissions from the Facility would not have a significant impact on local air quality, the general population or the local community, either alone or in-combination with other plans and projects.

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)
Solway Firth/Upper Solway Flats and Marshes (SAC/SPA/Ramsar)
River Eden & Tributaries (SAC)
UK designated sites (SSSI, NNR) (within 2 km)
River Eden & Tributaries (SSSI)
Locally designated sites (LNR) (within 2 km)
Kingmoor Sidings (LNR)
Kingmoor South (LNR)
Harker Moss (LWS)
Rockliffe Moss (LWS)

The dispersion modelling assessment concludes that the impact on these features can be described as follows:

1. At all identified European and UK designated ecological sites, the impact of process emissions can be screened out as 'not significant', with the exception of impacts at the River Eden and Tributaries designated site. Further assessment of the impact has been undertaken and is presented in Appendix D of the Air Quality Assessment.
2. For the locally-designated sites, the PCs would be <100% of the relevant EALs. Therefore, there is no need to calculate the PECs, and it can be concluded that the impact on ecological sites would be 'not significant'.

6.3 Emissions to sewer and water

There are no emissions of process effluents to water from the Facility. It is proposed to obtain a sewer connection for both foul (domestic) sewage and excess trade (process) effluent. No formal agreements with the Sewerage Undertaker are currently in place, however these will be confirmed during further development of the Facility.

Emissions of clean surface water run-off will be discharged to the Cargo Beck watercourse via a surface water storage tank and an on-site attenuation pond.

6.4 Noise

The impact of noise from the Installation is considered in the noise assessment contained in Appendix C of the Application.

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 2.4.7 of the supporting information.

6.7 Photochemical ozone creation

Releases of CO, NO_2, SO_2 and benzene 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. NO2 ..... 2.8
c. SO2 ..... 4.8
d. 1,3-Butadiene 85.1

The total POCP for the Installation is calculated in the H1 Software Tool as 2,799 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 Installation 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 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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