

# FICHTNER

Consulting Engineers Limited



## Port of Tilbury IWMTS



### Cory Environmental Holdings Ltd

Environmental Risk Assessment

## Document approval

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# 1 Introduction

Cory Environmental Holdings Limited (Cory) is applying to the Environment Agency (EA) for an Environmental Permit (EP) to construct and operate an Integrated Waste Management Transfer Station (IWMTS) (the 'Facility') at the Port of Tilbury. The Facility will process up to 450,000 tonnes of waste per annum.

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Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been subsequently withdrawn, it is understood that the requirements of the guidance are still applicable under Environment Agency Guidance '*Risk assessments for specific activities: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 H1 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;
- d. accidents; and
- e. flood risk.

### 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 processing of waste.	Immediate area. The nearest residential receptor to the Facility is located approximately 575 m to the northeast of the site boundary.	Air – winds generally blow from a south-westerly direction.	All wastes received at the Facility will be unloaded inside an enclosed building fitted with roller shutter doors.  1. Incoming waste will be unloaded inside the main building prior to processing. A small amount of loose waste will be stored within the main building as a redundancy measure. Loose waste will typically only be stored for 24 hours, with a maximum retention time of 72 hours.  2. Processed waste will be stored within enclosed	Minimal.	Odour annoyance. This will have more impact in the summer, when temperatures are higher and people are outdoors.	Not significant due to the management systems proposed, refer to Appendix E of the Supporting Information.

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.
			<p>metal waste containers at the quayside.</p> <p>Waste pre-acceptance and acceptance procedures in place will 'screen out' any unacceptable wastes.</p> <p>A documented odour management plan has been developed which will be implemented throughout the operational phase of the Facility to mitigate the impacts of odour during operations, refer to Appendix E of the Supporting Information.</p>			
Odorous emissions may occur during periods of shutdown	Immediate area.  The nearest residential receptor to the Facility is located approximately 575 m	Air – winds generally blow from a south-westerly direction.	Regular olfactory checks will be undertaken for odour at waste storage areas, with the frequency of checks extended during shutdown. Doors to the main building would be kept shut.	Minimal	Odour annoyance, which will have greater impact in the summer when temperatures are higher and people are outdoors and more	Not significant due to management systems proposed, refer to Appendix E of the Supporting Information.

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.
	to the northeast of the site boundary.		<p>Prior to a planned shutdown, incoming waste would be run down and diverted to another suitably licenced waste management facility during the shutdown.</p> <p>In the event on an extended unplanned shutdown, incoming would be diverted to another suitably licenced waste management facility, and any waste already at the Facility will be transferred off-site to another suitably licensed waste management facility until operations were able to be recommenced.</p> <p>A documented odour management plan has been developed which will be implemented throughout the operational phase of the Facility to mitigate the</p>		likely to be exposed to odour.	



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.
			impacts of odour during operations, refer to Appendix E of the Supporting Information.			

### 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 compactors and noise radiation from the building envelope itself, etc.	Immediate area. The nearest residential receptor to the Facility is located approximately 575 m to the northeast of the site boundary.	Sound propagation through air and the ground.	All waste processing activities will be undertaken within the enclosed main building.  Roller shutter doors or similar will be installed. These will be kept closed at all times, except for during when deliveries are occurring.  Regular maintenance of plant items will be undertaken.  Any mobile plant (should this be required to be used on-site) will be operated and maintained in accordance with the manufacturer's instructions whilst complying with the latest standards on noise emissions.  Noise level checks will be carried out regularly in	Minimal.	Annoyance.	Not significant.  Refer to Appendix F of the Supporting Information – 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
			operational areas where high noise levels may be present, with early warning of increasing noise levels resulting in the implementation of a noise reduction or mitigation program.			
Noise from vehicle movements.	Immediate area. The nearest residential receptor to the Facility is located approximately 400 m to the northwest of the site boundary.	Sound propagation through air and the ground.	Waste will typically be delivered to the Facility by road during daytime hours. The peak period for waste deliveries is expected to be between 0900 and 1500 Monday to Friday. Weekends will have reduced operations for approximately 6 hours on Saturdays and Sundays, expected to be between 09:00 – 15:00. This will minimise the impacts of noise associated with the delivery of waste to the Facility.	Minimal.	Annoyance.	Refer to Appendix F (Noise Assessment) of the Supporting Information for an assessment of noise impacts associated with 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
			The surfacing of vehicle movement areas will be maintained in a good condition, minimising noise from the movement of vehicles within the site boundary.			

## 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 processing will be undertaken within the enclosed main building.  Roller shutter doors or similar will be installed. These will be kept closed at all times, except for during when deliveries are occurring.	Low.	Nuisance, dust on clothing and cars.	Insignificant.
Fugitive emissions during periods of shutdown.	Immediate area – air.	Air, direct contact.	Roller shutter doors or similar will be installed. These will be kept closed at all times, except for during when deliveries are occurring.  1. Incoming waste will be unloaded inside the main building prior to processing. A small amount of loose waste will be stored within the main building as 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
			<p>redundancy measure. Loose waste will typically only be stored for 24 hours, with a maximum retention time of 72 hours.</p> <p>2. Processed waste will be stored within enclosed metal waste containers at the quayside.</p>			
Spillage of waste during delivery and offloading.	Immediate area – air, land, water.	Air, surface runoff.	<p>Waste will be delivered to the site in enclosed vehicles.</p> <p>All waste unloading activities will be undertaken within the enclosed main building.</p> <p>Spillages will be cleaned up in accordance with documented management systems for the Facility.</p> <p>The main building will have contained drainage to</p>	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
			<p>minimise the risk of emissions of contaminated water.</p> <p>Good housekeeping practices will be employed (including washdown of the main process areas) to reduce the build-up of litter at the site.</p>			
Dust/litter from waste deliveries being blown off-site.	Immediate area – air, land.	Air, surface runoff.	<p>All waste unloading activities will be undertaken within the enclosed main building.</p> <p>Good housekeeping will be employed to minimise the build-up of dust or litter.</p>	Low.	Nuisance and dust.	Insignificant.
'Unacceptable' waste being accepted at the site.	Immediate area – air, land, water.	Air, surface runoff, direct contact.	<p>Robust waste pre-acceptance and acceptance procedures will be in place to minimise the risk of 'unacceptable' wastes being accepted at the site.</p> <p>A dedicated quarantine area will be available for the</p>	Low.	Contact with hazardous wastes, dust, fugitive emissions of contaminants.	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
			temporary storage of 'unacceptable' wastes after unloading, prior to transfer off-site.			
Raw material and chemical discharges upon delivery of maintenance materials to the Facility.	Immediate area – air.	Air, surface runoff, direct contact.	Delivery/unloading activities for maintenance materials (such as oils and lubricants) will only be undertaken in areas of hardstanding.  Unloading activities will be supervised by suitably trained personnel. Documented spillage procedures will be implemented as part of the management systems for the Facility.	Low.	Nuisance.	Insignificant.
Re-suspension of dust from road surface, when site vehicles arrive/leave.	Immediate area – air, land, water.	Air, surface runoff.	Control of vehicle speeds.  Vehicle movement areas will be maintained in good condition.	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
			A good standard of 'housekeeping' will be maintained in all vehicle movement areas.			

## 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
Waste storage failure.	Immediate area – water, land, air.	Surface runoff, wind, leaching, direct contact.	Storage of waste externally will be in sealed metal containers. Stacking operations will be undertaken by suitably trained staff to ensure safe storage. The containers will be checked regularly and inspected prior to re-use at the Facility to ensure their integrity, with any defect reported. The containers will also be subject to statutory inspection in line with the Approved Container Examination Programme (ACEP) and Periodic Examination Scheme (PES). Containers will be stored on a bunded area with contained drainage.	Unlikely.	Litter, pollution.	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
Breakdown of waste processing equipment (compactors, conveyors, cranes)	Immediate area – water, land, air.	Surface runoff, wind, leaching, direct contact.	Regular preventative maintenance undertaken on equipment. Equipment operated by trained staff. Spare parts kept on site where appropriate.	Unlikely.	Litter, pollution.	Not significant.
Blockages on conveyor system	Immediate area – land, air (fires).	Direct contact.	Procedures will be in place as part of the accident management plan to deal with blockages. Trained staff will deal with any incidents in a timely manner. Regular preventative maintenance undertaken on equipment. Equipment operated by trained staff.  Blockages on conveyors, particularly in respect to build up on the rotating shafts/bearings/under-belly pans has potential to cause fires. Regular inspection of conveyor system will be	Unlikely.	Litter, pollution.	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
			undertaken and staff will be trained in fire detection and mitigation. Further details on fire prevention/detection/suppression is provided in the Fire Prevention Plan – refer to Appendix D of the supporting information.			
Incorrect operation of waste processing equipment (e.g. cranes leading to damage of waste containers during stacking operations).	Immediate area – water, land, air.	Surface runoff, wind, leaching, direct contact.	Suitably trained staff will operate plant and equipment. Written procedures in place to deal with any accidents.	Unlikely.	Litter, pollution.	Not significant.
Running out of waste containers leading to waste build-up.	Immediate area – litter.	Wind, direct contact.	Contingency measures in place to deal with any incidents. Sufficient empty container capacity as a redundancy measure. Monitoring of available capacity and early shutdown	Unlikely.	Litter, pollution.	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 the Facility with incoming waste diverted to an alternative waste management facility if insufficient container capacity was identified. In an extreme event, backloading of waste from the Facility could be undertaken for transfer off-site to a suitably licensed waste management facility.			
Failure of containment (e.g. bunds) for chemicals or maintenance materials stored at the Facility.	Immediate area – water, land, air.	Surface runoff, wind, leaching, direct contact.	Regular inspections of bunds. Preventative maintenance will be employed through a documented management system.  Spill kits will be easily available with spill procedures set out within the accident management plan. Operational staff will be	Unlikely.	Litter, pollution.	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
			trained in spill response procedures.			
Leaks from process water drainage systems	Immediate area – water, land.	Leaching/infiltration	Any 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 visual 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 of any potential contamination	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
			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. Site drains will be labelled to identify the process and surface water drainage systems. .	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) for maintenance materials 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 for maintenance materials to identify hazards of substances to be used on site.	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
Loss of power.	None.	N/A	Documented management systems will include for procedures to deal with power losses.	Low.	None.	Not significant.
Fires in waste reception, storage and handling areas.	Immediate area – air.	Direct contact.	Procedures in place for fire detection and suppression. Refer to the Fire Prevention Plan (Appendix H of the Supporting Information).	Low.	Visual impact, pollution of air.	Not significant.
Contaminated fire water.	Immediate area – water, land.	Surface runoff, leaching.	Contingency measures in place to deal with contaminated firewater – refer to the Fire Prevention Plan (Appendix H of the Supporting Information).	Low.	Pollution of surface water.	Not significant.
Vandalism	Immediate area.	Land, air, water.	CCTV, controlled entrance to the site, security personnel.	Low.	Release of substances to any environment.	Not significant.



## 6 Table A5 – Flood 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
Emissions to surface waters due to damage of raw material, waste and residue storage containers as a result of flooding.	Immediate and wider area – water.	Surface runoff.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood risk map indicating site to be at very low risk of flooding.	Low.	Pollution of surface water with a wide range of contaminants.	Not significant.
Emissions to groundwater due to damage of raw material, waste and residue storage containers as a result of flooding.	Immediate and wider area – groundwater.	Infiltration.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood risk map indicating site to be at very low risk of flooding.	Low.	Pollution of groundwater with a wide range of contaminants.	Not significant.
Emissions to land due to damage of raw material, waste and residue storage containers as a result of flooding.	Immediate and wider area – land.	Surface runoff and infiltration.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood	Low.	Pollution of land with a wide range of contaminants.	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
			risk map indicating site to be at very low risk of flooding.			
Electrical faults and damage to equipment due to flooding.	Immediate area – equipment.	Surface runoff.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood risk map indicating site to be at very low risk of flooding.	Low.	Harm to equipment.	Not significant.
Risk of harm to staff due to flooding.	Health and safety of staff.	Surface runoff.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood risk map indicating site to be at very low risk of flooding.	Low.	Harm to staff.	Not significant.
Damage to structure of buildings.	Immediate area – buildings.	Surface runoff.	Monitoring of flood warnings. Site shutdown in the event of severe flood warnings.  Area already benefits from flood defences, with EA's flood	Low.	Harm to buildings.	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
			risk map indicating site to be at very low risk of flooding.			

## 7 Detailed assessment

### 7.1 Emissions to air

There are no point source emission points which will result in emissions to air from the operation of the Facility.

### 7.2 Emissions to sewer and water

Uncontaminated surface water runoff from building roofs and external areas of hardstanding will be discharged, via a surface water drainage system, to the dock and subsequently the River Thames.

Any process effluents, such as washdown from within the main building, will be discharged via a process drainage system to sewer in accordance with a Trade Effluent Consent to be obtained from the Sewerage Undertaker.

Foul effluents from welfare facilities will also be discharged to sewer via a separate connection.

### 7.3 Noise

The impact of noise from the Facility is considered in the noise assessment contained in Appendix F of the Application.

### 7.4 Odour

An Odour Management Plan is presented within Appendix E of the Supporting Information.

### 7.5 Flood risk

An assessment of the risks to the environment, staff, buildings and equipment as a result of flooding has been undertaken and is presented within section 6 above.

The site lies within Flood Zone 3. However, the site benefits from flood defences, resulting in a very low risk of fluvial or tidal flooding. Notwithstanding this, the Site Condition Report (refer to Appendix B of the Supporting Information) indicates the site to be at high risk of groundwater flooding and a small portion of the site to be at high risk of surface water flooding. However, the EA's flood risk map indicates that the site is considered to be at very low risk of flooding.

Taking the above into consideration, and the fact that the site benefits from flood defences, it is considered that the site is at a low risk of flooding overall. A detailed climate change risk assessment in accordance with EA guidance '*Adapting to climate change: risk assessment for your environmental permit*' has been undertaken and is submitted with the application, which presents further detail on flood risk at the site.

## 8 Conclusions

As explained within this report, the design of the Facility is considered to include appropriate control measures and management systems to ensure that its operation will not result in any significant impacts upon the local environment.

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