FICHTNER

Consulting Engineers Limited

# Ford Circular Technology Park

## Ford Energy from Waste Limited

Environmental Risk Assessment

ENGINEERING CONSULTING

# Document approval

| | Name | Signature | Position | Date |
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# Document revision record

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# Contents

# 1 Introduction

Ford Energy from Waste Limited (Ford EfW Ltd) is proposing to construct and operate an Energy Recovery Facility (ERF) (the Facility) at the Ford Circular Technology Park in Ford, Arundel.

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

Within the application, Ford EfW Ltd 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Agency Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been withdrawn, it is understood that the requirements of the guidance are still applicable under Environment Agency Guidance *'Risk assessments for specific activities: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 within the ERF. | Immediate area.<br>The nearest residential receptors to the ERF are currently located approximately 200m from the Installation Boundary to the northeast (residential properties on Ford Lane). | Air – winds generally blow from a south-westerly direction. | All wastes received at the ERF will be unloaded inside an enclosed waste reception hall.<br>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 minimise the odorous emissions and to retain negative pressure as far as reasonably possible.<br>The Facility will be monitored for odours by | 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.** |
| | | | personnel throughout each shift. If odours are detected, investigations will be undertaken to determine the cause and appropriate mitigation measures implemented. | | | |
| Odorous emissions may occur during periods of planned shutdown | Immediate area.<br>The nearest residential receptors to the ERF are currently located approximately 200m from the Installation Boundary to the northeast (residential properties on Ford Lane). | Air – winds generally blow from a south-westerly direction. | Deliveries of waste leading up to the planned shutdown will be reduced to ensure that the quantities of waste within the bunker during the shutdown are minimal.<br>Doors to the waste reception hall will be kept shut.<br>Regular olfactory checks will be undertaken. | 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. |
| Odorous emissions may occur during periods of unplanned shutdown | Immediate area.<br>The nearest residential receptors to the ERF are currently located | Air – winds generally blow from a south-westerly direction. | It is very unlikely that both steams will be subject to an unplanned shutdown at the same time. Therefore, potentially odorous air | Minimal | Odour annoyance, which will have greater impact in the summer when temperatures are | Not significant due to management systems in place. |

| What do you do that can harm and what could be harmed? | | | Managing the risk | Assessing the risk | | |
|---|---|---|---|---|---|---|
| **Hazard** | **Receptor** | **Pathway** | **Risk management** | **Possibility of exposure** | **Consequence** | **What is the overall risk?** |
| **What has the potential to cause harm?** | **What is at risk? What do I wish to protect?** | **How can the hazard get to the receptor?** | **What measures will you take to reduce the risk? If it occurs who is responsible for what?** | **How likely is this contact?** | **What is the harm that can be caused?** | **What is the risk that remains? The balance and probability and consequence.** |
| | approximately 200m from the Installation Boundary to the northeast (residential properties on Ford Lane). | | within the waste bunker will continue to be used as combustion air providing negative pressure within the waste reception area. However, in the unlikely event that odour is detected beyond the site boundary, a backloading facility will enable it to be unloaded from the bunker for transfer off-site to a suitably licensed waste management facility. | | higher and people are outdoors and more likely to be exposed to odour. | |

# 3 Table A2 – Noise and vibration risk assessment and management plan

| What do you do that can harm and what could be harmed? | | | Managing the risk | Assessing the risk | | |
|---|---|---|---|---|---|---|
| **Hazard** | **Receptor** | **Pathway** | **Risk management** | **Possibility of exposure** | **Consequence** | **What is the overall risk?** |
| **What has the potential to cause harm?** | **What is at risk? What do I wish to protect?** | **How can the hazard get to the receptor?** | **What measures will you take to reduce the risk? If it occurs who is responsible for what?** | **How likely is this contact?** | **What is the harm that can be caused?** | **What is the risk that remains? The balance and probability and consequence** |
| Noise from plant items such as the waste treatment processes, heat recovery boilers, exhaust air fans, stack exhaust, steam turbine, cooling condensers and noise radiation from the building envelope itself, etc. | Immediate area.<br>The nearest residential receptors to the ERF are currently located approximately 200m from the Installation Boundary to the northeast (residential properties on Ford Lane). | 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.<br>Plant will be selected and operated to minimise noise.<br>Regular maintenance of plant items will be undertaken.<br>Roads will be maintained to minimise rattle of loads during transport of materials. | Minimal. | Annoyance. | Not significant.<br>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.<br>The nearest residential receptors to the ERF are currently located approximately 200m | 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 | Minimal. | Annoyance. | Not significant. Refer to Appendix C – Noise Assessment for further information on the impact of |

| 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** |
| | from the Installation Boundary to the northeast (residential properties on Ford Lane). | | with the delivery of waste to the Facility.<br>Vehicles using the site will have to observe speed limits and traffic calming measures will be implemented to enforce speed limits. | | | 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 area will be held under negative pressure. | Low. | Nuisance, dust on clothing and cars. | Insignificant. |
| Fugitive emissions during periods of shutdown. | Immediate area – air. | Air, direct contact. | Should odorous emissions be detected beyond the installation boundary during periods of extended shutdown, waste would be back-loaded from the bunker for transfer off-site. | Low. | Nuisance, annoyance. | Insignificant. |
| Attraction of birds/pests by litter and fugitive odour emissions | Immediate area – land. | Direct contact. | Fugitive emissions of odour and litter will be minimised to reduce the attraction of birds and pests. All waste handling activities will be undertaken within enclosed buildings. The waste bunker area will be held under | 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** |
| | | | negative pressure to minimise odour emissions. Good housekeeping practices will prevent the build-up of litter. | | | |
| 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. |
| 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 | 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** |
| | | | pressure. Good housekeeping will be employed to minimise the build-up of dust.<br>Site surfacing will be maintained in a good condition to minimise the generation of dust. | | | |
| 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 a sealed 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. | 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. The unloading of APCr will be undertaken in an enclosed building. 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. | 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** |
| | | | Unloading activities will only be undertaken in areas of hardstanding with contained drainage.<br>Spillages will not be washed but will be collected in a dry form. | | | |
| 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 | 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** |
| | | | enable the dust to settle. This allows any faulty or damaged cells to be isolated easily. Process areas will have contained drainage. | | | |
| 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 sealed drainage in order to prevent the release of contaminated effluent off-site through any spillages. High risk areas will not be connected to the surface water management system. | 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** |
| 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 within suitably designed secondary containment. | Low. | Hazardous liquid or vapour release. | Insignificant. |
| Release off-site of litter. | Immediate area – air, land. | Air, direct contact. | Loading/unloading of all waste vehicles will be within enclosed buildings.<br>All delivery vehicles will be enclosed / sheeted. | 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. | 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** |
| | | | Bottom ash will be transferred off-site in covered road vehicles. The bottom ash will be maintained dust-free by quenching.<br>Regular cleaning of the IBA collection area will be undertaken to minimise dust and debris carryover to the road. | | | |
| 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 housekeeping will be maintained on the roads. | Low. | Nuisance, dust on cars and road. | Insignificant. |

# 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** |
| Unauthorised waste acceptance | Immediate area – air, land. | Air, direct contact | Waste pre-acceptance and acceptance procedures will be in place to reduce the likelihood of accepting unauthorised waste. A quarantine area will allow the safe segregation of waste identified as unacceptable prior to transport off-site. The crane maintenance arrangement will allow for back-loading of waste identified as unacceptable within the bunker. Documented management procedures will be in place to cover unauthorised waste acceptance. | Unlikely. | Low. | Not significant. |
| Spill and leakage of fuel and chemicals. | Immediate area – air, land, water. | Direct contact. | Training in unloading practices. Under manual | 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** |
| | | | control, continual observation. Impervious surfaces outdoors. Containment of drainage from chemical handling areas. Management procedures in place to deal with spillages. | | | |
| Overfilling of vessels. | Local environment air, land, water. | Surface runoff, wind. | Training in unloading practices. No unauthorised offloading until it is confirmed that adequate capacity is available to receive the delivery. Under manual control, continual observation. Impervious surfaces outdoors and indoors (with contained process drainage systems). High level alarms. Secondary containment for storage vessels with suitable segregation measures. | 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** |
| | | | Management procedures in place to deal with spillages. | | | |
| 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. |

| 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 – litter. | Direct contact. | Storage of waste in a dedicated waste storage bunker. The bunker will be constructed of reinforced concrete, with integrity checks undertaken during construction and during annual maintenance periods. | Unlikely. | Litter. | Insignificant. |
| 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. 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. |

| 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** |
| 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 documented management system. | Unlikely. | Pollution of surface water. | Not significant. |
| 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.<br>High risk areas will not be connected to the surface water management system. | Low. | Pollution of surface water. | Not significant. |
| Incompatible substances from coming into contact (such as raw materials/reagents) causing unintentional chemical reactions. | 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.<br>Suitable segregation measures to be employed. | 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 | 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** |
| | | | identify hazards of substances to be used on site. | | | |
| Loss of power. | None. | N/A | A back-up generation system to provide safe shutdown of the Facility in the event of loss of power. | Low. | None. | Not significant. |
| Loss of compressed air. | None. | N/A | Maintenance scheduled as per manufacturers specification.<br>Critical spares stored on site. | 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 boilers. | 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 | Unlikely. | Pollution of surface waters. | 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** |
| | | | systems. Impervious surfaces in residue handling areas with designated drainage systems in areas where residues are stored. | | | |
| Fire 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. The FGT bag filter will be located within the FGT building; therefore, any dusts/smokes/fumes would be contained. | Low. | Dust, pollution of air. | Not significant. |
| 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 boilers. | 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 boilers. | Low. | 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 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 an isolation valve which is activated by the fire detection systems. Additional storage will be available from kerbing and roadways. The primary source of firewater containment will be the waste bunker, which is designed as a water-retaining structure. | Low. | Pollution of surface water. | Not significant. |
| Failure to contain firewater. | Land. | Land, water, groundwater. | Maintenance of the shut-off valve and/or pumping system within the drainage system. | Unlikely. | Release of chemicals to 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** |
| | | | Inspection and maintenance of roadways and areas of hardstanding. | | | |
| Vandalism. | Immediate area. | Land, air, water. | Security fences, controlled entrance to the site. 24 hour presence on site with CCTV monitoring.<br>Security infrastructure will be inspected regularly to identify defects and the need for timely repairs to be undertaken. | 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 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 Dispersion Modelling Assessment is presented in Appendix E of the Application.

A Human Health Risk Assessment has also been undertaken for the Facility – refer to 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)** |
|---|
| Duncton to Bignor Escarpment (SAC) |
| **UK designated sites (SSSI, NNR) (within 2 km)** |
| Duncton to Bignor Escarpment (SSSI) |
| **Locally designated sites (LNR) (within 2 km)** |
| Ford Ancient Woodland |

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

1. At the identified European and UK designated ecological sites, the impact of process emissions can be screened out as 'insignificant'.
2. For the locally-designated site (Ford Ancient Woodland), the impact of annual mean oxides of nitrogen and ammonia cannot be screened out. Further detail of these impacts is provided within the Air Quality Assessment – refer to Appendix E of the Supporting information. The AQA concludes that no adverse impacts are expected on this habitat as a result of increased emissions ammonia and oxides of nitrogen.
3. In addition, the effect of nitrogen deposition on broadleaved deciduous woodland habitats at the Ford Ancient Woodland cannot be screened out – refer to the Air Quality Assessment (Appendix E of the Supporting Information) for further detail. The AQA concludes that small additions of nitrogen are unlikely to lead to any significant changes.

In addition to the habitats identified above, the EA's habitats screening tool (completed during enhanced pre-application discussions for the Facility) identified two further habitats – the Solent and Dorset Coast pSPA and the Kingmere Marine Conservation Zone (MCZ).

It is understood that the recently designated Solent and Dorset Coast pSPA has been classified to protect the foraging areas of breeding terns from colonies with the terrestrial SPAs of Poole

Harbour, Solent and Southampton Water and Chichester and Langstone Harbours SPA. The foraging areas of terns from the closest terrestrial SPA with breeding terns to the site, Pagham Harbour, were not included when defining the boundaries of the Solent and Dorset Coast SPA; although it is acknowledged that the foraging areas of little tern from the Pagham colony are encompassed by the designated area. The data that underpins the designation indicates that it is only sandwich tern from the Chichester and Langstone Harbour SPA that is likely to be using the coastal waters east of Selsey Bill.

The eastern extremity of the SPA is approximately 3.7km to the south-west of the site. It is not anticipated that deposition levels from the Facility will significantly impact the marine ecosystem or affect the fish populations which sandwich tern feed on (mainly sand eels and clupeids). In addition, there is no publicly available data on critical loads available for the Solent and Dorset Coast SPA. APIS (the Air Pollution Information System) does not provide critical levels or loads for marine habitats for terrestrial SPAs where breeding terns are an interest feature (such as Poole Harbour, North Norfolk Coast) or those where other birds that feed in the marine environment are the features of interest (such as Flamborough Head and Bempton Cliffs). Therefore, the Solent and Dorset Coast SPA has been excluded from the scope of detailed analysis within the air quality assessment.

The Kingmere MCZ is a subtidal site which encompasses three protected features:

1. moderate energy infralittoral rock and thin mixed sediments;
2. subtidal chalk; and
3. black bream.

The MCZ is located to the south of the Facility, in the English Channel. Due to the nature of this habitat, it is not anticipated that there will be any impacts as a result of the operation of the Facility. Therefore, this has been excluded from further analysis.

## 6.3 Emissions to sewer and water

There are no emissions of process effluents to water from the Facility. Uncontaminated surface water will be discharged, via a land drain, to the River Arun.

In the event that excess process effluents are generated, for example during periods of boiler emptying, these will either be discharged to sewer in accordance with a trade effluent consent (Ford EfW Ltd are looking into obtaining a trade effluent connection with the adjacent wastewater treatment works) or tankered off-site for treatment – to be confirmed during detailed design.

Foul water from welfare facilities will be discharged to foul sewer.

## 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 measures for the containment, prevention and mitigation odour are detailed in section 2.4.8 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 3,296.1 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. In addition, a climate change risk assessment worksheet is presented with the application forms for the EP application, as required by the EA for new bespoke installation permits.

## 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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