H1 Tool v2.78 11/01/2017
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The following changes were made in this release:

1) The import function invoked from Form_Import.cmdSource_Click was amended to use the Application.FileDialog instead of the Windows common dialog. This was because the Windows common dialog would not open when the tool was run on 64bit version of MS Office despite using conditional compilation statements in the 32 bit api function declarations. You can now, if necessary, type or paste the path and filename of the source file into the textbox on the import form.

2) The long term process contribution calculation for emissions to air which is invoked from query recInventoryTotalsAir10 was modified to take into account the operating mode. This was because changing the % Operating mode on Air Emissions inventory page was not having any effect on the the long term PC value on the Air Impacts page. It should be being reduced proportionately according to the % Operating mode.

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FICHTNER

Consulting Engineers Limited

Thornton Energy Recovery Centre

Sesona Hill House Ltd

Environmental Risk Assessment

ENGINEERING CONSULTING

Document approval

	Name	Signature	Position	Date
Prepared by:	Katie Hampton		Environmental Consultant	16/01/2022
Checked by:	James Sturman		Lead Consultant	16/01/2022

Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
00	12/12/2022	For Client	KLH	JRS
01	21/12/2022	Updated following Client comments	KLH	JRS
02	16/01/2022	Update Applicant name	KLH	JRS

Contents

1 Introduction

Sesona Hill House Ltd (Sesona) is applying to the Environment Agency (EA) under the Environmental Permitting Regulations (EPRs) for an Environmental Permit (EP) to operate the Thornton Energy Recovery Centre (the Facility).

The Facility will comprise a twin-line waste incineration plant to incinerate pre-processed refuse derived fuel (RDF).

The Facility will be located at the Hillhouse Business Park, Thornton-Cleveleys, Lancashire, approximately 2.6km east of Cleveleys, 2.9km west of Stalmine, 3.9km south of Fleetwood and 8.2km northeast of Blackpool.

An assessment of the environmental risks associated with the activities proposed to be undertaken at the Facility is provided within this report. It demonstrates that the necessary measures will be in place to protect the environment ensuring that the operation of the Facility, throughout its lifetime, 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 EA Guidance Notes H1 Annexes A, C, H and F. While it is acknowledged that these guidance documents have been withdrawn, it is understood that the requirements of the guidance are still applicable under EA Guidance *'Risk assessments for specific activities: environmental permits',* which replaced H1 and H2 with alternate (albeit not as prescriptive) guidance in February 2016.

1.1 Risk assessment process

The EA Guidance promotes the following key steps:

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

1.2 Step 1 – identify risks

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

a. odour;
b. noise;
c. fugitive emissions;

d. accidents; and
e. flooding.

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 at the Facility 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 RDF, reception of RDF and the storage and handling of RDF prior to processing within the Facility.	Immediate area. The nearest residential receptor is located approximately 360 m to the southwest of the Installation Boundary.	Air – winds generally blow from a south-westerly direction.	All RDF received at the Facility will be unloaded inside an enclosed tipping hall. Primary combustion air will be drawn from the RDF deposit areas using an induced draft (ID) fan to maintain negative pressure in this area. Therefore, potentially odorous air will be extracted from RDF handling and storage areas, maintaining these areas at negative pressure and minimising potential fugitive emissions of odour.	Unlikely	Odour annoyance. This will have more impact in the summer, when temperatures are higher and people are outdoors.	Not significant if managed well.
Odorous emissions may occur as a result of RDF present in the	Immediate area. The nearest residential receptor	Air – winds generally blow from a south-westerly direction.	Measures will be in place to minimise odorous emissions during periods of shutdown,	Unlikely	Odour annoyance, which will have greater impact in the	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.**
RDF deposit areas/stockpile bays during periods of shutdown of the Facility	is located approximately 360 m to the southwest of the Installation Boundary.		as part of the Environmental Management System (EMS). Doors to the tipping hall will be kept shut. Regular olfactory checks will be undertaken during periods of shutdown. Prior to periods of planned shutdown, the quantities of RDF stored in the Facility will be run-down to minimise potential fugitive odour emissions. In the event of an extended unplanned shutdown requiring RDF to be removed from the RDF deposit areas/stockpile bays, facilities will be provided to enable the RDF to be back-loaded from the RDF deposit areas/stockpile bays and transferred off-site to a		summer when temperatures are higher and people are outdoors and more 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.**
			suitably licensed waste management facility.			

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 vehicle movements at the Facility.	Immediate area. The nearest residential receptor is located approximately 360 m to the southwest of the Installation Boundary.	Sound propagation through air and the ground.	RDF and other materials will typically be delivered to the Facility by road during daytime hours. This will minimise the impacts of noise associated with delivery vehicles at the Facility. Roads will be maintained in a good condition, minimising noise from the movement of lorries/HGVs/RDF delivery vehicles within the Installation Boundary.	Unlikely (due to the industrial location of the site).	Annoyance.	Not significant.
Noise from plant items such as the waste reception and handling infrastructure, heat recovery boiler, exhaust air fans, stack exhaust,	Immediate area. The nearest residential receptor is located approximately 360 m to the southwest of the Installation Boundary.	Sound propagation through air and the ground.	Noisy plant items, where practicable, will be installed within process buildings rather than outside and, where appropriate, they will be installed with appropriate noise attenuation measures. The Facility will be designed to	Unlikely (due to the industrial location of the site).	Annoyance.	Not significant. The noise assessment (presented in Appendix C of the Supporting Information) concludes that there would be no

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**
turbine, cooling condensers and noise radiation from the building envelope itself, etc.			reduce noise and tonal components. Regular maintenance of plant items will be undertaken in accordance with documented maintenance procedures. The design layout has taken into account the most significant noise sources and positioned these to have minimum impact on noise sensitive receptors. The ACC unit located at the southern end of the facility will include an extension to the western side wall of the turbine building to provide an acoustic screen. Ventilation fans within Facility buildings are located on the eastern side of the plant, and there are appropriate mitigation measures to ventilation openings, to maximise			exceedance above relevant noise limits determined from standards and guidance for daytime and night-time periods at nearest sensitive receptor locations. Predicted noise levels would produce a low impact magnitude in accordance with BS4142: 2014+A1:2019.

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**
			acoustic screening to the west. Further detail on mitigation measures is presented within section 4.1 of the noise assessment (refer to Appendix C of the Supporting Information).			

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**
Re-suspension of dust from road surface, when site vehicles arrive/leave.	Immediate area – air, land, water.	Air, surface runoff.	Control of vehicle speeds, roads maintained in good condition, personnel taking due care. A good standard of 'housekeeping' will be maintained on the roads.	Not likely.	Nuisance, dust on cars and road.	Not significant due to mitigation measures in place.
'Unacceptable' wastes/RDF being accepted at the site.	Immediate area – air, land, water.	Air, surface runoff, direct contact.	Robust waste pre acceptance and acceptance procedures will be in place to minimise the risk of 'unacceptable' RDF being accepted at the Facility. Dedicated quarantine areas will be available for the temporary storage of 'unacceptable' RDF after unloading, prior to transfer off-site.	Unlikely.	Contact with hazardous wastes, dust, fugitive emissions of contaminants.	Insignificant.
Emission releases from the tipping hall	Immediate area – air.	Air, surface runoff, direct contact.	All RDF handling activities will be undertaken within enclosed buildings. The RDF	Unlikely.	Nuisance, dust on clothing and cars.	Insignificant.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Possibility of exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that remains? The balance and probability and consequence**
when opening and closing doors.			deposit areas/stockpile bays area will be held under negative pressure. 'Rapid closing' vertical folding doors doors (or equivalent) will be installed at the ingress/egress to the tipping hall.			
Dust/litter from RDF deliveries being blown off-site.	Immediate area – air, land.	Air, surface runoff.	RDF will be delivered in enclosed vehicles. All RDF unloading activities will be undertaken within the enclosed tipping hall. The RDF deposit areas/stockpile bays area will be held under negative pressure. Housekeeping procedures will be employed to minimise the build-up of dust or litter.	Unlikely.	Nuisance and dust.	Insignificant.
Fugitive emissions during periods of shutdown.	Immediate area – air.	Air, direct contact.	Doors to the tipping hall will be kept shut.	Unlikely.	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**
			Prior to periods of planned shutdown, the quantities of RDF store within the RDF deposit areas/stockpile bays will be run-down, with incoming RDF deliveries halted. In the event of an extended unplanned shutdown requiring RDF to be removed from the RDF deposit areas/stockpile bays, it will be back-loaded from the RDF deposit areas/stockpile bays and transferred off-site to a suitably licensed waste management facility.			
Spillage of RDF and materials during delivery and offloading.	Immediate area – air, land, water.	Air, surface runoff.	RDF unloading activities will be undertaken within an enclosed building. The RDF deposit areas/stockpile bays area will be held under negative pressure.	Unlikely.	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**
			Spillages would be cleaned up in accordance with documented management systems. RDF unloading areas will have contained drainage systems which discharge into the process drainage system to minimise the risk of emissions of contaminated water. Housekeeping procedures will be employed to reduce the build-up of litter at the site.			
Bottom ash discharge at 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 transfer to storage skips using conveyors. The ash quench will minimise the potential 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**
			fugitive dust emissions. Ash handling/storage areas will have contained drainage which links into the process water drainage system. Therefore, there is minimal risk of bottom ash leachate being discharged to surface water drainage systems.			
Discharge of Air Pollution Control residues (APCr) when emptying APCr storage facilities.	Immediate area – air, land.	Air, surface runoff, direct contact.	Storage facilities will be an enclosed design to prevent fugitive emissions. Drainage in these areas will be contained process drainage. APCr unloading activities will be undertaken by trained personnel and in accordance with documented management procedures. APCr unloading activities will be supervised by sufficiently trained personnel.	Unlikely.	Nuisance, release of hazardous dust.	Insignificant.

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Possibility of exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that remains? The balance and probability and consequence**
Reagent and chemical discharges when filling silos/tanks.	Immediate area – air.	Air, surface runoff, direct contact.	Reagents will be delivered in sealed tankers and off-loaded via a standard hose connection. For solid reagents, air displaced from the silo will be discharged through fabric filters. Regular inspections and maintenance will be undertaken of abatement equipment. Unloading activities will only be undertaken in areas of hardstanding with contained drainage. Unloading activities will be supervised by suitably trained personnel.	Unlikely.	Nuisance.	Insignificant.
Sodium bicarbonate/ activated carbon leak during injection into APC system.	Immediate area – air.	Air, surface runoff, direct contact.	Sodium bicarbonate/activated carbon handling systems will be enclosed, and regular inspections and preventative	Unlikely.	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**
			maintenance will be carried out. Sodium bicarbonate/ activated carbon will be injected via an enclosed dosing and conveying system. Process areas will have contained drainage. Automated control systems will be in place to detect leaks from sodium bicarbonate/ activated carbon handing and dosing systems.			
Spillage of air pollution control reagents when undertaking maintenance on flue gas treatment systems (e.g., the ceramic filters).	Immediate area – air, land.	Air, surface runoff, direct contact.	Enclosed system located inside building. Process areas will have contained drainage.	Unlikely.	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 of liquid chemicals will be from sealed tankers and off-loaded via dedicated hoses. Spillages 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 to prevent the release of contaminated effluent off-site through any spillages.	Unlikely.	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	Unlikely.	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**
			activities will only be undertaken in areas of hard standing with contained drainage. Chemical containers will be stored within suitably designed secondary containment.			
Release of dusts from the transfer off-site of bottom ash.	Immediate area – air, land.	Air, direct contact.	Loading of bottom ash skips onto vehicles will be undertaken by experienced operators and on areas with contained process drainage. Skips will be 'roll on, roll off' skips and will be enclosed to prevent fugitive emissions during transport. The bottom ash will be maintained dust-free by water quenching.	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**
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.	Unlikely.	Pollution of surface water.	Insignificant.
Incompatible substances coming into contact.	Immediate area.	Surface runoff, wind, direct contact.	Due care and attention. Retention of Material Safety Data Sheets (MSDS) to identify hazards of substances to be used on site.	Unlikely.	Pollution of surface water, human health impacts.	Insignificant.
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.	Insignificant.
Fires in RDF reception storage and handling areas	Immediate area – air.	Direct contact.	Fire detection and suppression systems. Refer to the Fire Prevention Plan, refer to Appendix H of the Application Pack.	Unlikely.	Visual impact, pollution of air, harm to staff, damage to infrastructure.	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**
Contaminated fire water.	Immediate area – water, land.	Surface runoff, leaching.	Site drainage for external areas will be fitted with an isolation valve to prevent the discharge off-site of potentially contaminated firewater. Sufficient firewater containment capacity will be provided at the site – further detail is provided in the Fire Prevention Plan, refer to Appendix H of the Application Pack.	Unlikely.	Pollution of surface water.	Insignificant.
Failure to contain firewater.	Land.	Land, water, groundwater.	Maintenance of the isolation valve and firewater containment facilities. Inspection and maintenance of roadways and areas of hardstanding.	Unlikely.	Release of chemicals/ contamination to water/land.	Insignificant.
Vandalism	Immediate area.	Land, air, water.	Controlled entrance to the site, CCTV.	Unlikely.	Release of substances to any environment.	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**
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 (links to the process drainage system and/or bunds). Documented procedures will be developed identifying actions in the event of spills. Spill kits will be readily available at the Facility.	Unlikely.	Release of hazardous substances to the environment.	Insignificant.
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. Documented procedures will be	Unlikely.	Release of hazardous substances to the environment.	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**
			developed identifying actions in the event of spills. Spill kits will be readily available at the Facility.			
Flue gas leak.	Local environment – air.	Air.	Design standards. Inspection and maintenance programme. Controls and alarms. Emissions monitoring systems will detect exceedances of Emission Limit Values (ELVs). Robust design of control systems.	Very unlikely.	Pollution of atmosphere, health impacts.	Insignificant.
Fuel storage failure.	Immediate area – litter.	Direct contact.	Storage of RDF in dedicated RDF deposit areas/stockpile bays. The RDF deposit areas/stockpile bays will be constructed of reinforced concrete. Construction quality assurance checks will be undertaken during construction to ensure the integrity of the infrastructure.	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**
			Regular preventative maintenance and visual inspections will be undertaken on the RDF deposit areas/stockpile bays throughout the lifetime of the Facility.			
Control failure leading to combustion control upset.	Local environment – air.	Air - Winds generally blow from a south westerly direction.	Good/robust design of control system. Monitoring of combustion conditions. Maintenance of combustion air systems.	Unlikely.	Pollution of atmosphere (short term), human health impacts.	Insignificant.
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.	Insignificant.
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 duty CEMS.	Unlikely.	Lack of data, public concern.	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**
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.	Insignificant.
Leaks from intermediate process water storage (tank/pit).	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 inspection and preventative maintenance. In the event of the integrity of the structure being compromised, remedial	Unlikely.	Pollution of ground/ groundwater.	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**
			maintenance will be undertaken in a timely manner and investigations of any potential contamination will be undertaken (such as water testing). Remediation will be undertaken if required.			
Loss of power.	None.	N/A	A back-up generator will provide safe shutdown of the Facility in the event of loss of power.	Not likely.	None.	Not significant.
Loss of compressed air.	None.	N/A	Multiple compressors.	Unlikely.	None.	Insignificant.
Loss of organic working medium feed to boiler.	None.	N/A	Automatic shutdown of the Facility.	Unlikely.	None.	Insignificant.
Organic working medium leak to plant building/atmosphere.	Immediate area – air, land, water.	Air	Statutory design, fabrication and inspection standards for boiler systems. Controls and alarms for pressure. Routine operator checks.	Unlikely.	Pollution of air/land/water.	Insignificant due to control measures.

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**
Residues handling failure.	Immediate area – air, land, water.	Direct contact.	Training in residue handling practices. Impervious surfaces in residue handling areas with designated drainage systems in areas where residues are stored.	Unlikely.	Pollution of surface waters.	Insignificant.
Fire in furnace feed system.	Immediate area – air.	Air.	Furnace charging procedures / training. Level indicator in chute. Fire-fighting system.	Unlikely.	Pollution of air.	Insignificant.
Over pressurisation of the boiler.	Immediate area – air.	Direct contact.	Pressure monitoring and emergency procedures in place to deal with over-pressurisation.	Unlikely.	Pollution of air.	Insignificant.
Fire from ignition of lube oil leak.	Immediate area – air.	Wind, direct contact.	Fire detection and protection systems in place at the site. Refer to the Fire Prevention Plan, refer to Appendix H of the Supporting Information.	Unlikely.	Visual.	Insignificant.
Significant fugitive release of APCr due to fire at the site.	Immediate area – air, land, water.	Air, land, surface runoff, groundwater infiltration.	Impervious surfaces in residue handling areas with designated drainage systems in areas where residues are stored.	Unlikely.	Release of hazardous substances within APCr to the environment.	Insignificant due to mitigation and containment measures 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**
			Storage of APCr inside enclosed storage facilities which will be subject to regular inspections/preventative maintenance. Spillages would be cleaned up in accordance with documented management systems for the Facility.			
Significant fugitive release of other chemicals and reagents (such as fuel oil) due to fire at the site.	Immediate area – air, land, water.	Air, land, surface runoff, groundwater infiltration.	Fire detection and suppression systems. Provisions for containment of contaminated firewater. Refer to the Fire Prevention Plan, refer to Appendix H of the Supporting Information. Local fuel oil supply isolation valve will be closed in the case of a fire. Impervious surfaces in fuel oil areas with designated	Unlikely.	Release of hazardous substances within fuel oil to the environment.	Insignificant due to mitigation and containment measures 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**
			drainage systems in areas where fuel oil is stored. Spillages would be cleaned up in accordance with documented management systems.			

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, RDF and residue storage facilities 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. A Flood Warning and Evacuation plan is expected to be developed in consultation with the local council. The Facility is located within Flood Zone 1; therefore, it is at a low risk of flooding. Attenuation storage will be provided, and will be sized to store the 1 in 100 AEP rainfall event including a 40% increase in rainfall intensity to account for climate change. An existing 'confluence chamber' provides adequate storage	Unlikely.	Pollution of surface water with a wide range of contaminants.	Insignificant.
Emissions to groundwater due to damage of raw material, RDF and residue storage facilities as a result of flooding.	Immediate and wider area – groundwater.	Infiltration.		Unlikely.	Pollution of groundwater with a wide range of contaminants.	Insignificant.
Emissions to land due to damage of raw material, RDF and residue storage facilities as a result of flooding.	Immediate and wider area – land.	Surface runoff and infiltration.		Unlikely.	Pollution of land with a wide range 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**
Electrical faults and damage to equipment due to flooding.	Immediate area – equipment.	Surface runoff.	for any surcharge events when the existing flap is closed due to tide locking. The finished floor level of the main building will be set based on expected worst-case flood levels. In addition to the above, there are flood defence measures in place in the surrounding area. Tidal flood defences are present to the north and southeast of the site, comprising embankments which provide a 1 in 200 AEP standard of protection. Royles Brook, located approximately 280 m to the south/south-east of the site, outfalls to Hillylaid Pool approximately 930 m to the south-east of the site. Hillylaid Pool discharges to the River Wyre at Stanah via	Unlikely.	Harm to equipment.	Insignificant.
Risk of harm to staff due to flooding.	Health and safety of staff.	Surface runoff.		Unlikely.	Harm to staff.	Insignificant.
Damage to structure of buildings.	Immediate area – buildings.	Surface runoff.		Unlikely.	Harm to buildings.	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**
			flapped valves. Stanah pumping station was installed in the 1970s following significant flooding to several low-lying areas. The pumping station automatically activates when levels rise in Hillylaid Pool to contain floodwater within the channel and is operated and maintained by the Environment Agency.			

7 Detailed assessment

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

7.1 Emissions to air

The assessment, using the Environment Agency's H1 tool, is presented in Appendix A of this report. The detailed Air Quality Assessment is presented in Appendix E of the Supporting Information. The Air Quality Assessment concludes that the Facility will not give rise to significant environmental effects on air quality.

7.1.1 Habitats assessment

There are a number of habitat sites present within the appropriate screening distances from the Facility stack. The following habitat features presented in Table 7-1 have been considered within the Air Quality Assessment:

Table 7-1: Sensitive Ecological Receptors

European and UK designated sites (Ramsar, SPA, SAC, SSSI)
Wyre Estuary (SSSI)
Morecambe Bay and Duddon Estuary (SPA/Ramsar)
Morecambe Bay (SAC)
Liverpool Bay (SPA)
Local nature sites
ICI Hillhouse Estuary Banks (BHS)(1)
Fleetwood Railway Branch Line Trunnah to Burn Naze (BHS)(1)
Burglars Alley Field (BHS)(1)
Jameson Road Saltmarsh (BHS)(1)
ICI Hillhouse International Pool (BHS)(1)
Rossall Lane Wood and Pasture (BHS)(1)
Fleetwood Farm Fields (BHS)(1)
Fleetwood Marsh Industrial lands (BHS) (1)
Note: *(1) BHS = Biological Habitat Site.*

The Air Quality Assessment concludes that, as a result of emissions from the Facility, the impact on the sensitive ecological features cannot be screened out as 'insignificant' for certain pollutants at a number of designated habitats sites. The significance of effect has been assessed by Argus Ecology, and an Ecological Interpretation of AQA, is provided in Appendix E of the Application Pack. The report from Argus Ecology concludes that the residual effect will be 'not significant'. Therefore, it is concluded that the operation of the Facility will not result in unacceptable impacts on sensitive ecological receptors.

In addition to the habitats listed in Table 7-1, there is a Marine Conservation Zone (MCZ), Wyre Lune MCZ, in the vicinity of the site. This is designated for the protection of smelt. As described in the ecological interpretation of the AQA (refer to Appendix E of the Supporting Information), the habitat is not regarded as sensitive to atmospheric emissions, and emissions to the water environment are of much greater significance. There is little risk of pollution to the water environment resulting from the operation of the Facility – refer to section 7.2.

7.2 Emissions to water and sewer

The Facility is designed for 'zero-discharge' to water and sewer. Process areas have been designed to have contained drainage, with process effluents re-used within the ash quench. Process drainage may include grated drains in process areas to collect process effluents prior to re-use. Therefore, there will be no discharge off-site of process effluents.

Uncontaminated surface water will be discharged to the existing surface water drainage system which links to the adjacent Wyre Estuary. Attenuation will be provided by holding chambers controlled with tidal flap valves.

Foul water from domestic facilities will be treated in an on-site package treatment plant prior to discharge to surface water.

As justified in sections 4 – 6, there is little risk of pollution to the water environment resulting from the operation of the Facility.

7.3 Noise

There is little risk of noise pollution as a result of the operation of the Facility – as justified in section 3. The impact of noise from the Facility is considered further in the noise assessment contained in Appendix C of the Application Pack.

7.4 Visual impact

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

7.5 Odour

As justified in section 2, the risk of odour is considered not significant due to the management systems in place at the Facility. Additional details on the proposed measures for the containment, prevention and mitigation of odour are detailed in section 2.4.5 of the Supporting Information.

7.6 Photochemical ozone creation

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

a. CO 2.7
b. NO_2.....2.8

c. SO_2 .....4.8
d. 1,3-Butadiene 85.1
e. Benzene 21.8
f. Benzo-a-pyrene.....323

The total POCP for the Facility is calculated in the H1 Software Tool as approximately 720.6 tonnes. This assessment is based on the assumption that all NO_x is released as NO_2.

7.7 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 RDF 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 EA requirements, a Greenhouse Gas Assessment has been produced, which considers the direct and indirect emissions from the incineration of RDF within the Facility and compares this with the emissions produced if the electricity were produced by conventional fossil fuel power station. This is presented in Appendix E of the Application Pack.

7.8 Disposal of waste

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

8 Conclusions

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

Appendices

A H1 Assessment Tool

ENGINEERING + CONSULTING

FICHTNER

Consulting Engineers Limited

Kingsgate (Floor 3), Wellington Road North,
Stockport, Cheshire, SK4 1LW,
United Kingdom

t: +44 (0)161 476 0032
f: +44 (0)161 474 0618

www.fichtner.co.uk