

CORBLY ENERGY FROM WASTE FACILITY

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Appendix C– Environmental Risk Assessment

Encyclis Limited

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Environmental Risk
Assessment
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1 INTRODUCTION

- 1.1.1 This Environmental Risk Assessment (ERA) has been carried out to support an application by Encyclis Limited (Encyclis), for an environmental permit for the Corby Energy from Waste (EfW) facility. It includes an assessment of the risk to the environment and human health from the activities carried out on site, from operation of the EfW facility. The Environment Agency's Risk Assessments for your environmental permit covers a range of environmental risks. Those aspects relevant to the operation of the proposed Corby EFW facility are covered within the following sections.
- 1.1.2 Section 2 identifies sensitive receptors in proximity to the EfW facility. Section 3 provides the environmental risk assessment of Amenity and Accident hazards associated with the Corby EfW facility. Point source emissions to air and the global warming potential associated with the proposed facility have been assessed using the H1 assessment software tool, which can be found in Appendix A to this ERA. A summary of the H1 assessment of point source emissions to air and GWP is provided in Section 4.

2 SENSITIVE RECEPTORS

- 2.1.1 The EfW facility site is located at this address:
Shelton Road,
Willowbrook East Industrial Estate,
Corby
NN17 5XH.
- 2.1.2 The National Grid reference for the site is SP 90910 90860.
- 2.1.3 The EfW facility site is located c 2.2 km north-east of Corby town centre in a light industrial setting. The closest residential property lies approximately 750 m from the site boundary.
- 2.1.4 The site is a largely rectangular plot measuring c.2.4 hectares. The site is bound to the north by the Northern Stream, green space and woodlands, to the east by Shelton Road, to the south by industrial units and to the west by car/vehicle storage.
- 2.1.5 The site is a brownfield site, which comprises of Made Ground. The site has a heavy industrial history, which is associated with steelworks. In 2000 . 2001 the site was remediated and is currently used for car storage. Access to the site is granted from the southeast.
- 2.1.6 A habitats screening assessment was provided by the EA out as part of the pre-application advice. The screening report confirmed that there are no SSSIs within 2 km of the facility and no SACs, SPAs or Ramsar sites within 10 km of the facility. The following Local Wildlife Sites are located within 2 km:
- Brookfield Plantation
 - Brookfield Plantation Cutting
 - Corby Old Quarry Gullet
 - Corby Old Quarry Ponds
 - Corby Tunnel Quarries
- 2.1.7 Code 2 protected species are present within 500m of the facility within the Northern Stream which runs adjacent to the site.

3 AMENITY AND ACCIDENTS

3.1.1 The assessment of risks to environmental amenity and from accidents has been completed in accordance with the EA's Risk Assessments for your environmental permit.

3.1.2 The scope of the assessment has covered the following aspects:

- odour;
- noise and vibration;
- fugitive emissions;
- visible emissions; and
- accidents.

3.1.3 For each of the above, the approach to the assessment has followed the following four stage process:

1. identify the hazards;
2. assess the risks (assuming that any control measures proposed are in place);
3. choose appropriate further measures to control these risks (if required); and
4. present the assessment of overall risk.

3.1.4 Results of the assessment are provided in the following tables.

Table 3.2 Assessment of odour risks

Table 3.3 Assessment of noise and vibration risks

Table 3.4 Assessment of fugitive emission risks

Table 3.5 Visible emissions

Table 3.6 Accidents risk assessment and management plan

3.1.5 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- the likelihood of the hazard occurring; and
- the consequence of the hazard to the environment or human health.

3.1.6 Scores are assigned as low, medium or high.

3.1.7 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

3.1.8 In completing the assessment, prevention and control measures proposed by Encyclis assumed to be in place. Where relevant, details of these measures are identified within the assessment.

Table 3-1: Risk Matrix

Consequence	Probability			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

Table 3.2: Odour risk assessment and management plan

Hazard	Receptor	Pathway	Risk Management	Probability 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 still remains? The balance of probability and consequence.
Odour emissions from waste storage and delivery vehicles	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	<p>Whilst the EfW facility is operational the tipping hall building will operate under a slight negative pressure and air from above the bunker will be drawn into the furnace and provide air supply to for combustion of the waste. The high temperature combustion will destroy any potentially odorous compounds.</p> <p>Crane operators will be trained to ensure that the waste materials in the bunker are well mixed and that as far as practicable incoming waste is not being left within the bunker for excessive periods. The capacity of the bunker will allow for up to 5 days storage, avoiding prolonged storage of waste.</p> <p>High standards of housekeeping will be maintained to ensure that the waste materials are kept within the bunker area and that any material which is accidentally deposited outside of the bunker is cleared up immediately.</p> <p>In the event of a planned shutdown, waste volumes in the bunker will have been run down prior to the shutdown to minimise the amounts of material remaining. Where possible, the shutdown will be timed to coincide with periods where deliveries can be minimised. Doors to the waste reception hall will remain closed at all times other than for access. Where access is required, fast-acting roller shutters will minimise the duration that doors are open.</p> <p>An activated carbon filtration system will be operated during shutdown to extract air from above the waste bunker and provide odour abatement prior to release to atmosphere. A dedicated release point will be associated with the odour abatement unit.</p> <p>Full details of odour management controls are included in the odour management plan, see Appendix L.</p> <p>In the event of an odour complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.</p>	Low	Low Minor odour annoyance (at worst)	Low

Table 3.3: Noise and vibration risk assessment and management plan

Hazard	Receptor	Pathway	Risk Management	Probability 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 still remains? The balance of probability and consequence.
Noise from vehicle movements onsite and offloading	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	<p>All deliveries and collection of feedstock (RDF, residual waste), and collections of operational wastes are restricted to be between the hours of 06.00 and 23.00 Monday Friday and 08.00 hours to 16.00 hours Saturday and Sunday with no deliveries on Public Holidays.</p> <p>The noise assessment included vehicle movements on site and concluded that there would be no significant impacts at noise sensitive receptors (see Appendix J of the main application for details).</p> <p>Speed restrictions will be in place at the site and all vehicles will be required to comply with these limits.</p> <p>All vehicles will be subject to routine maintenance to ensure they remain in good working order.</p> <p>Vehicles delivering waste and materials by third party will be contractually required to ensure vehicles accessing the site are subject to routine maintenance.</p> <p>A noise management plan will be in place at the site to ensure noise is effectively managed.</p> <p>In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.</p>	Medium Noise would be intermittent.	Low	Low
Noise from main plant and turbine hall	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	<p>Significant items of plant would be located within buildings which would be designed to reduce noise levels, as required. The air cooled condensers are located externally.</p> <p>The noise assessment concluded that there would be no significant impacts at noise sensitive receptors (see Appendix J of the main application for details).</p> <p>A noise management plan will be in place at the site to ensure noise is effectively managed.</p> <p>In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.</p>	Low	Low Noise modelling undertaken demonstrates that the noise effects of plant operation are not significant	Low
Vibration from the plant	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in	Land	<p>Significant vibration effects are not anticipated for the plant. Any vibration issues associated with the plant will be resolved during commissioning.</p> <p>In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.</p>	Low	Low Noise assessment considered that significant vibration effects from the EfW	Low

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
	the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging				facility during its operation were unlikely.	

Table 3.4: Fugitive emissions risk assessment and management plan

Hazard	Receptor	Pathway	Risk Management	Probability 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 still remains? The balance of probability and consequence.
To Air						
Dust from waste deliveries and handling	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	The waste fuels to be accepted at the site will not include loads purely containing dusty materials. Wastes will generally be managed as received, with only large bulky items being subject to size reduction in a shredder. Shredding will be carried out within the tipping hall building. Forced draught fans are located above the bunker to create a slight negative pressure to prevent dust leaving the building. Roller shutter doors will be in place which will remain shut other than during tipping of the waste. Fuel delivery vehicles/containers will be fully contained to minimise dust emissions during transportation to the tipping hall. All handling will take place within a building and doors will remain shut other than for access. Housekeeping procedures will be implemented to prevent excessive build of dust within plant areas. Visual dust monitoring procedures will be developed prior to operation.	Very Low	Low nuisance, dust on windows, cars etc.	Very Low
Ammonia fumes from storage and handling of ammonium hydroxide	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	Deliveries will be made using an enclosed road tanker with hose connection to the storage vessel. The storage vessel will be fitted with a scrubber or vent system. The scrubber will reduce odour emissions by contacting the vapour with water which will subsequently be collected in the storage tank. Level detection will be provided for the storage tank which will be linked via a switch to prevent overfilling. Any spillage of material during a delivery, for example during disconnection of the hose, would be contained & cleared immediately. Transfer of material for use within flue gas treatment plant will be fully enclosed.	Low	Medium	Low
Dust from hydrated lime deliveries and handling	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	Deliveries are made using a sealed connection system between the road vehicle and storage tank. Level monitoring will be included and will be linked to a switch to prevent overfilling. Any spillage of material during a delivery, for example during disconnection of the hose, would be cleared immediately. Storage vessels will be fitted with a filter to minimise emissions of dust during filling operations. Transfer of material for use within the flue gas treatment plant will be fully enclosed.	Very Low	Low Nuisance, dust on windows, cars etc.	Very Low
Dust from powdered activated carbon deliveries and handling	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	Deliveries are made using an enclosed road tanker with hose connection to the storage vessel. Level detection will be provided for the storage tank which will be linked via a switch to prevent over filling. Any spillage of material during a delivery, for example during disconnection of the hose, would be cleared immediately. Storage vessels will be fitted with a filter to minimise fugitive emissions of dust during filling operations. Transfer of material for use within the flue gas treatment plant will be fully enclosed.	Very Low	Low Nuisance, dust on windows, cars etc.	Very Low
APC dust from residue handling and storage	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	APC residues are handled in an enclosed system prior to storage in two silos. Residues will be discharged via a sealed connection to a road tanker. Filter on the silos vent is fitted with a differential pressure alarm and automatic cleaning. Tanker loading of APC residues to be removed off site for disposal will be monitored by site personnel.	Very Low The APC system is fully contained. During routine plant walkovers, any leakage would be identified.	Medium Material is hazardous and fine.	Very Low

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
VOCs from deliveries and storage of fuel oil/diesel	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	Delivery vehicles will offload using a sealed connection. The storage vessel will have a vent to permit tank breathing. Emissions from this source are not considered to be significant since the material being stored will be relatively non-volatile. The integrity of storage tanks will be subject to routine checks as part of daily site inspections.	Low	Low	Low
To Water						
Run-off from waste reception and storage areas	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Ground / surface drains	The waste storage bunker will be designed to be watertight and will be constructed of thick concrete walls and base. Any moisture within the incoming waste will be fully contained and will pass through the combustion stage with the waste. During shutdown periods, the bunker will be visually inspected as far as possible, to ensure that it is in a good state of repair. During a shutdown, the frequency of facility walkdowns+ (checks) will increase and a checklist utilised to ensure a record of issues and comments is maintained that may require further action. The bunker will form part of the firewater containment system and therefore will be designed to contain firewater run-off.	Low	Medium Surface water/ groundwater contamination	Low
Run-off from bottom ash storage	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Ground / surface drains	The bottom ash discharged from the quench system will be deposited in a bunker. The bunker is designed to be watertight and will be constructed of thick concrete walls and base. Run off from the conveyor and water that collects in the bottom ash storage area will be collected and returned to the bottom ash quench water system. Process areas will be appropriately surfaced and drains will collect waters for re-use.	Low	Medium Run off volume are expected to be low.	Low
Run-off from transfer of bottom ash from plant to offsite ash processing plant	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Ground / surface drains	Bottom ash will be out loaded into an enclosed vehicle to prevent loss of material. Vehicles will be sheeted prior to leaving the site. During loading vehicles will be parked within an enclosed building which will be suitably surfaced Any spillage of bottom ash would be cleaned up immediately.	Low	Low Any aqueous release would be small	Low
Leak from ammonium hydroxide solution tank	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Ground / surface drains	Deliveries will be overseen by a trained member of staff, who will ensure that there is sufficient capacity within the storage vessel for the delivery prior to filling. The storage tank will be within a bund to contain any spillage and a drip tray will be provided to contain any minor spillage during connection / disconnection of the delivery hose. Spill kits will be available to contain and clean up any spills. Regular inspections will be carried out to detect for any signs of deterioration and repairs made as necessary.	Very Low.	Medium	Very Low
Leak of white diesel/ oil from storage area	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Ground / surface drains	Deliveries will be overseen by a trained member of staff, who will ensure that there is sufficient capacity within the storage vessel for the delivery prior to filling. The storage tank will be within a bund to contain any spillage and a drip tray will be provided to contain any minor spillage during connection / disconnection of the delivery hose. Diesel/fuel oil storage area will be appropriately banded in accordance with oil storage regulations. A hard, impermeable surface will underlie all chemical and oil storage areas to prevent fugitive emissions to groundwater should spills / leaks occur and drainage will be contained with interception. Spill kits will be available to contain and clean up any spills. Regular inspections will be carried out to detect for any signs of deterioration and repairs made as necessary.	Very Low. A significant release would only occur in the event of an accident/incident and would require failure of both primary and secondary containment. Operational management procedures will prevent this from happening.	High Contamination of local water course	Low
Run-off/spillage from maintenance oils storage	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Surface water drainage system to foul sewer	A hard, impermeable surface will underlie and the maintenance oil storage area to prevent fugitive emissions to groundwater should spills / leaks occur. The oil storage area will be appropriately banded. Regular visual inspections of the maintenance oil storage area will be completed to allow for early detection of any sign of damage/leaks and trigger immediate remedial action. Spill kits will be available to contain and clean up any spills. A procedure will be implemented to ensure that any damaged or leaking containers are dealt with and to allow regular inspections for any signs of deterioration	Very Low A release would only occur in the event of an accident/incident and would require failure of both primary and secondary containment. Operational management procedures will prevent this from happening.	Medium Small volumes of maintenance oils will be stored on site	Very Low

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
Litter						
Release of waste from waste reception hall and/or delivery vehicles	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Windblown to air	All waste will be transported to the facility in enclosed vehicles. Doors to the reception hall will remain closed at all times other than for access. Where access is required, fast-acting roller shutters will minimise the duration that doors are open. The waste will be delivered to and deposited in the bunker which has been designed to hold the maximum quantities of waste required to ensure effective operation of the facility, whilst avoiding prolonged storage of the material. Good housekeeping procedures will be developed to ensure all waste is removed from vehicles before leaving the site. Any unexpected spillage would be cleaned up immediately.	Low Good site management procedures should minimise the potential for this occurring.	Low Nuisance to local receptors	Low
Pests						
Flies and other pests or vermin in waste storage area	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air	The waste bunker will be within an enclosed building. Pest control measures will be applied and maintained in accordance with recommendations from a specialist pest control advisor. In the unlikely event of a planned prolonged shutdown of both lines, material will have been run down prior to the event. During a shutdown, the frequency of facility walkdowns+ (checks) will increase and a record of issues and with required further action will be made.	Low	Low Nuisance	Low

Table 3.5: Visible emissions risk assessment and management plan

Hazard	Receptor	Pathway	Risk Management	Probability 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 still remains? The balance of probability and consequence.
Plume from exhaust stack	Local residents (nearest receptors approx. 750 m from the installation) Industrial unit (nearest are various adjacent sites in the Willowbrook Industrial Estate including iFoods UK and Chilled Packaging)	Air - visual	Visible plumes are not anticipated to occur for the majority of operational time due to the temperature at which the treated flue gas exits the stack.	Low	Low Minor visual disturbance	Low

Table 3.6: Accidents risk assessment and management plan

Hazard	Receptor	Pathway	Risk Management	Probability 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 still remains? The balance of probability and consequence.
Operator error	Air/ Water (North Stream including Code 2 protected species)/ Land	Variable - dependent on nature of the error	All operational staff will be fully trained against the site operating procedures which cover normal, abnormal and emergency operating conditions. Training will include raising awareness of key plant parameters and the potential implications of failure to control operations as designed and the associated potential impact on the environment. The EfW Facility will be automatically controlled under normal and transient operation, thereby minimising the potential for operator error. The automatic control system will include alarms to alert the Operator of potential operational problems and where relevant will be triggered with sufficient safety margin to permit operator intervention to prevent an actual problem occurring.	Low	Variable depending upon nature of incident	Low
Loss of power	Air	Air	In the event of a loss of power during normal operation, the plant will not be affected as it generates its own power. In the event of a loss of the turbine during normal operation either electricity will be imported from the grid or the plant may use the emergency diesel generator to safely shut down. The rated output of the emergency generator is sufficient to safely shutdown the plant.	n/a	n/a	n/a

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
			<p>In the event of a loss of power during start-up a mobile emergency generator will be temporarily brought to the site and operated to complete start-up and normal operation is achieved.</p> <p>The use of the emergency generator will release exhaust gases to air, albeit these will be temporary and impacts short-term..</p>			
Loss of containment during storage or transfer of reagents, chemicals, fuels and oil (transformer and lubricating oil)	Air/ Water (North Stream including Code 2 protected species)/ Land	Site drainage system or direct contact with land	<p>All bunds will be visually checked each day to ensure that they are empty. There will be limited liquids stored on site, primarily fuel oil, maintenance oils, ammonium hydroxide solution and small amounts of boiler water treatment chemicals. All process storage tanks will be built of suitable materials which are resistant to the vessel content. A maintenance programme will be established for the inspection of all storage tanks and bunds. Bunds will be sized to contain 110% of the tank content and will be constructed to appropriate standards.</p> <p>Potential release to ground or surface/groundwater would require simultaneous failure of the storage tank and secondary containment.</p> <p>Bulk deliveries will be overseen by a trained member of staff who will be responsible for checking that there is sufficient capacity in the storage vessel to receive the delivery prior to commencing offloading.</p> <p>A site spill procedure will be developed and followed in the event of a spillage. Spill kits will be available to contain and clean up the spill.</p> <p>Solid raw materials (including activated carbon and hydrated lime) will be cleaned using dry techniques.</p> <p>Incidents will be recorded and investigated appropriately according to the site incident procedure. Significant incidents will be investigated and reported to the EA in accordance with the requirements of the permit.</p>	Very Low Requires multiple failure events	Medium/High Contamination of local water course - dependent on quantity and material released	Very Low/Low
Fire in waste bunker causing emissions to air	Air	Direct release of combustion gases to air	<p>The plant has been designed such that the waste storage is physically separate from ignition sources.</p> <p>The waste feed hopper will prevent backflow of material and will include a level alarm to alert the Operator that a low level of waste is present in the hopper.</p> <p>Fire protection systems will be in place in accordance with those set out in the fire prevention plan (FPP) in Appendix D. These will include waste bunker sprinklers, two automatic waste bunker water cannons are proposed. The quantity selected will be confirmed during the detailed design stage. A dedicated water spray system over the feed chute opening will be provided. The tipping hall will be provided with automatic sprinkler protection throughout.</p> <p>In the event of fire that requires a plant shut down consideration will be given whether waste deliveries can continue. This could include consideration of diverting waste to other facilities until normal operations can recommence.</p>	Low	Low / Medium Uncontrolled release of combustion gases to air . impacts likely to be short term	Low
Flue gas treatment equipment failure	Air	Stack	<p>All abatement plant will be continuously monitored (including reagent flow, bag filter pressure drop) to ensure that it is operating as designed and that the reagent feed systems (were relevant) are working.</p> <p>Emissions to air from the process will be continuously monitored for key pollutants which would identify any potential increases in pollutant concentrations. All of these systems will include appropriate alarms to alert the Operator to a potential problem and permit appropriate action to be taken.</p> <p>Equipment spares will be kept on site in the event of a failure or breakage.</p> <p>The plant will be operated in accordance with IED requirements for abnormal operation. The plant will not incinerate waste for a period of more than 4 hours uninterrupted where emission limit values are exceeded and for a total of 60 hours per annum.</p> <p>Operational staff will be trained in the actions to take in the event of control system alarms being triggered.</p> <p>Plant maintenance routines will be in place for abatement systems.</p>	Low	Low/ Medium	Low
Failure of chemical/fuel delivery vehicle	Ground, groundwater, North Stream including code 2 protected species	Direct release to ground via flaws in hard surfacing or discharged via drainage system.	<p>All deliveries are met by train staff who oversees the connection. The driver is in attendance for the duration of the offloading.</p> <p>Chemical spillage kits are available to contain and clean up spillages.</p> <p>Accident management procedures will be in place and staff will be trained in actions to take in the event of an incident. All incidents would be investigated, and improvements identified and incorporated, if appropriate, to prevent reoccurrence.</p> <p>Delivery areas will be surfaced with a suitable impermeable material. Site surfacing will be routinely inspected and repairs arranged where required. Drainage at the site can be isolated using drain covers.</p>	Low	High	Low
Wrong connection of chemical deliveries	Dependant on nature of any reactions	Vent on tanks to air	<p>All deliveries are met by trained staff. This person will check paperwork and oversee connection. Fill points are all locked and need to be unlocked by a trained member of staff.</p>	Low	Medium	Low

Hazard	Receptor	Pathway	Risk Management	Probability of exposure	Consequence	What is the overall risk?
			Accident management procedures will be in place and staff will be trained in actions to take in the event of an incident. All incidents would be investigated, and improvements identified and incorporated, if appropriate, to prevent reoccurrence.			
Vandalism	Air/water/land	Various	Security fencing will be installed around the entire site perimeter to minimise the risk of break-ins, vandalism and theft. This fencing will be at least 2 m high and have anti-climb devices on the top of the fence, such as anti-climb rotator spikes. CCTV cameras will be in operation and will be present throughout the site. Access will be controlled via the weighbridge and the plant will be manned 24/7.	Low Security measures in place	Low - High -depending on nature of the event. Potential contamination of local water course/air/land and/or local nuisance depending on nature of event.	Low
Flooding	Northern Stream (adjacent to the northwest boundary) including Code 2 protected species.	Surface water drainage system	Flood risk has been addressed in a Flood Risk Assessment which was prepared to support the planning application (Chapter 12 Water Quality and Hydrology) and concluded that there is a low risk of flooding from all sources as the site is in Flood Risk Zone 1. The drainage system will ensure that overland flow generated on-site is retained on-site and can store excess surface water volumes. The plant layout and storage facilities for reagents and fuels will be designed to ensure all materials are contained and in the event of a flood, materials would not be released. As part of the site's emergency procedures, the appropriate procedures for responding to, reporting and investigation in the event of a flood will be assessed. In the event of flooding that requires a plant shut down consideration will be given whether waste deliveries can continue. This could include consideration of diverting waste to other facilities until normal operations can recommence.	Very Low	Medium Potential contamination of flood waters.	Very low

4 EMISSIONS TO AIR

- 4.1.1 This section provides the relevant screening assessments of point source emissions to air that could arise from operation of the EfW facility. The assessment has been completed in accordance with the EA's *Risk Assessments for your environmental permit*¹.
- 4.1.2 The scope of the assessment has covered the following aspects:
- Release point characteristics;
 - Air emissions inventory and mass flows;
 - Emissions screening for further assessment;
 - Photochemical Ozone Creation Potential (POCP).
- 4.1.3 Air emissions screening using the H1 software has identified a subset of emissions whose significance warrants further modelling. The results of that modelling for these and a range of other emissions are presented in the air quality report in Appendix E to the main application document.

4.2 Release point

- 4.2.1 Point-source emissions to air from the Corby EfW facility will be from a single 75 m stack, at an efflux velocity of c 15.82 ms⁻¹ and a normalised volumetric flow rate of up to 227,592 m³/hr at 11% O₂.
- 4.2.2 The H1 screening assessment has considered both long-term emissions at the upper end of the Best Available Technique (BAT) associated emission limit ranges (BAT AELs), with the exception of NO_x which has been assessed at the EA limit for new EfWs (100 mg/Nm³). Polycyclic aromatic hydrocarbons (PAHs) do not specifically have a BAT-AEL; the assessment considers the emissions of PAH as benzo-a-pyrene at a concentration of 0.00005 mg.Nm⁻³.
- 4.2.3 Short term emissions have been assessed at IED limits where they exist.

4.3 Emissions screening

- 4.3.1 Estimated emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Modelled concentrations have been included based on the data presented in the air quality assessment (Appendix E).
- 4.3.2 Process contributions (PCs) which are lower than 1% of the relevant EAL for long-term exposure and lower than 10% of the relevant EAL for short-term exposure are screened out as insignificant. Figure 4-1 below shows the output of the H1 emissions screening of process contributions. Sulphur dioxide, nitrogen dioxide, cadmium, manganese, nickel, , arsenic and lead are all potentially significant.

Air Impact Screening Stage One

Screen out Insignificant Emissions to Air

This page displays the Process Contribution as a proportion of the EAL or EQS. Emissions with PCs that are less than the criteria indicated may be screened from further assessment as they are likely to have an insignificant impact.

Number	Substance	Long Term	Short Term	Long Term			Short Term		
		EAL	EAL	PC	% PC of EAL	> 1% of EAL?	PC	% PC of EAL	> 10% of EAL?
		µg/m ³	µg/m ³	µg/m ³	%		µg/m ³	%	
1	Hydrogen chloride	-	750	0.350	-		17.9	2.39	No
2	Sulphur Dioxide (24 h)	-	125	1.75	-		17.3	13.8	Yes
3	Nitrogen Dioxide	40.0	200	0.671	1.68	Yes	19.6	9.79	No
4	Carbon monoxide	-	10,000	2.92	-		14.5	0.145	No
6	Polychlorinated biphe	0.201	6.00	0.00000000	0.00000039	No	0.00000002	0.00000040	No
7	Cadmium and its comp	0.00500	-	0.000201	4.00	Yes	0.159	-	
8	Mercury and compou	0.251	7.51	0.000201	0.0801	No	0.0151	0.201	No
9	Antimony and compo	5.00	150	0.00301	0.0601	No	0.150	0.0994	No
10	Manganese and com	0.151	1,500	0.00301	2.00	Yes	0.150	0.00994	No
11	Chromium, chromium	5.00	150	0.00301	0.0601	No	0.150	0.0994	No
12	Nickel (total Ni comp	0.0201	-	0.00301	15.0	Yes	1.59	-	
13	Vanadium	5.00	1,000	0.0175	0.350	No	0.0611	6.11	No
14	Copper dusts and mis	10.00	200	0.00301	0.0301	No	0.150	0.0746	No
15	Particulates (PM10) (40.0	-	0.0501	0.126	No	0	-	
17	Ammonia (human he	180	2,500	0.0965	0.0536	No	2.99	0.120	No
18	Hydrogen fluoride (as	16.0	160	0.01001	0.0626	No	1.20	0.744	No
21	Particulates (PM10) (-	50.0	-	-		1.07	2.13	No
22	Arsenic updated EAL	0.00601	-	0.00301	50.0	Yes	1.59	-	
23	Sulphur Dioxide (15 h)	-	266	-	-		32.2	12.1	Yes
24	Sulphur Dioxide (1 h)	-	350	-	-		27.7	7.91	No
25	Lead New EAL	0.251	-	0.00301	1.21	Yes	1.59	-	
26	Benzo-a-pyrene	0.000251	-	0.00000048	0.193	No	0.000159	-	

Figure 4-1 Air Impact Screening Stage One

4.3.3 The second stage of screening assesses the predicted environmental concentration (PEC) against EALs. Assumed background concentrations are taken from air quality assessment (see Appendix E to the main application). PECs which are lower than 70% of the relevant long-term EAL and lower than 20% of the relevant short-term EAL minus 2 * the background concentration are screened out as insignificant, as shown in Figure 4-2 below. All emissions screened out at stage two. Detailed modelling has, been carried out for all expected emissions, and the results are given in Appendix E.

Air Impact Modelling Stage Two Screening										
Identify need for Detailed Modelling of Emissions to Air										
This page displays the Process Contributions in relation to the background pollutant levels and the EAL or EQS. You should use this information to decide whether to conduct detailed modelling. Note that releases that are insignificant are not shown as they are screened from further assessment. Also complete this page if you have already done detailed modelling.										
Number	Substance	Long Term					Short Term			
		Air Bkgmd Conc. µg/m ³	PC µg/m ³	% PC of headroom (EAL - Bkgmd)	PEC mg/m ³	% PEC of EAL	% PEC of EAL >=70?	PC µg/m ³	% PC of headroom (EAL - Bkgmd)	% PC of headroom >=20?
	e.g.	12								
2	Sulphur Dioxide (24 Hour Mean)	2.2	1.75	-	0	-		17.3	14.3	No
3	Nitrogen Dioxide	18.4	0.671	3.11	19.1	47.7	No	19.6	12.0	No
7	Cadmium and its compounds (as Cd)	0.0001	0.000201	4.09	0.000301	6.00	No	0.159	-	
10	Manganese and compounds (as Mn)	0.0026	0.00301	2.04	0.00561	3.74	No	0.150	0.00994	No
12	Nickel (total Ni compounds in the PM10 fraction)	0.0006	0.00301	15.5	0.00361	18.0	No	1.59	-	
22	Arsenic updated EAL	0.0008	0.00301	57.7	0.00381	63.4	No	1.59	-	
23	Sulphur Dioxide (15 Min Mean)	2.2	-	-	0	-		32.2	12.3	No
25	Lead New EAL	0.0052	0.00301	1.23	0.00820	3.28	No	1.59	-	

Figure 4-2 Air Impact Screening Stage Two

4.4 Photochemical ozone creation potential

- 4.4.1 The photochemical ozone creation potential (POCP) has been calculated using the H1 software. Three substances emitted to air by the facility are identified as having the potential to form ozone: nitrogen dioxide, sulphur dioxide and carbon monoxide. The total POCP score for the facility is calculated as 1018.
- 4.4.1 The facility will be controlled to ensure that BAT AELs or better for the POCP pollutants are met; section 4 of the main application details the proposed measures for preventing and minimising the release of these pollutants and Appendix H concludes that the proposed measures are BAT.

4.5 Global Warming Potential

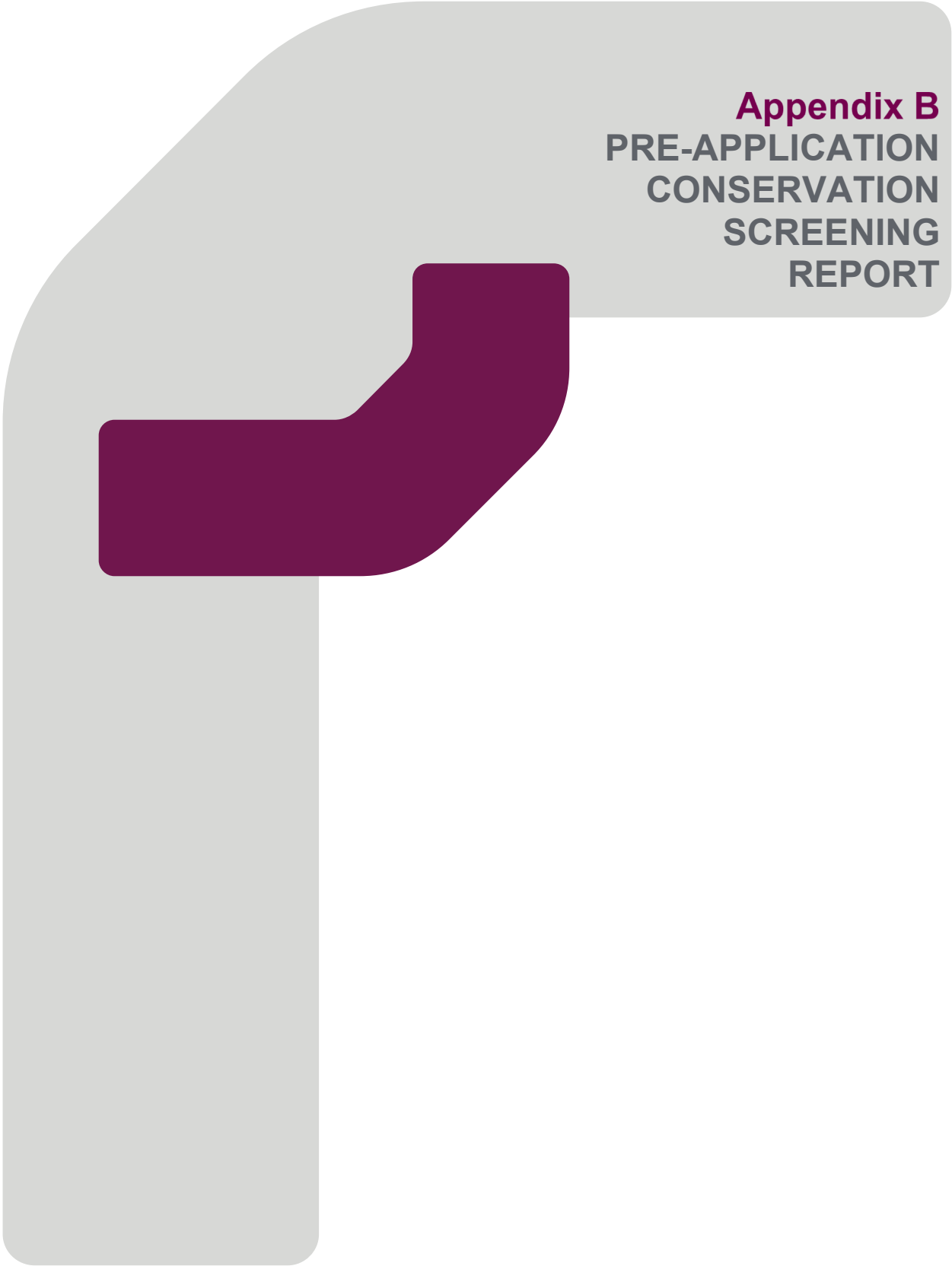
- 4.5.1 The global warming potential (GWP) has been calculated in accordance with the H1 guidance. The total GWP score of 143,631 comprised the following main sources carbon dioxide process (direct), including CO₂ emissions from the combustion of wastes and emissions associated with nitrous oxides from operation of the SNCR system for NO_x control.
- 4.5.2 Carbon dioxide emissions from the combustion of waste account for 96% of the total GWP score calculated.
- 4.5.3 The direct releases from the burning waste are consistent with BAT, which promotes maximising efficient burnout of the material and the conversion of its carbon content to carbon dioxide. These releases are therefore determined by the carbon content of the incoming waste and the desire to achieve BAT.

5 CONCLUSIONS

- 5.1.1 The environmental risk assessment (ERA) report has been undertaken to assess the likelihood of risk from amenity and accidents, air emissions and global warming potential associated with the proposed EfW Facility.
- 5.1.2 The results of the ERA have shown that the risk of odour, noise and vibration, fugitive emissions, visible plumes, and accidents range from not significant to low.
- 5.1.3 Stack emissions to air for relevant air pollutants have been screened out to be insignificant. Detailed dispersion modelling has been completed and is included within the air quality assessment attached as Appendix E to the main application, which covers all pollutants including those which have screened out as insignificant in H1.
- 5.1.4 The POCP for the facility is calculated as 1018. The use of BAT minimises the POCP from the facility.
- 5.1.5 The total GWP score of 143,631 is contributed predominantly by carbon dioxide emissions from the combustion of waste.



Appendix A
H1 SOFTWARE



Appendix B
PRE-APPLICATION
CONSERVATION
SCREENING
REPORT

CORBY ENERGY FROM WASTE FACILITY

Environmental Risk Assessment

EPR/
Client
20/01/23

JER9407

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