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TABLES

4.0 THE PROPOSED DEVELOPMENT

4.1 Introduction

4.1.1 The Proposed Development is an energy from waste power station with a maximum gross electrical output of 49.9 MW.

4.1.2 The nominal design capacity of the facility is 616,500 tonnes per annum of Refuse Derived Fuel (RDF) based on a design net calorific value (NCV) of 11 MJ/kg and the expected plant annual running hours. The plant is capable of maintaining the maximum electrical output while combusting fuel in a range of NCVs between 9 and 14 MJ/kg. The maximum fuel throughput of the Proposed Development is theoretically 753,500 tonnes per annum if fuel with a NCV of 9 MJ/kg were only to be used based on the expected plant annual running hours.

4.1.3 The design of the Proposed Development incorporates a degree of flexibility in the dimensions and configurations of buildings to allow for the selection of the preferred technology and contractor, although the stack positions are fixed to a defined area of the Site.

4.1.4 In order to ensure a robust assessment of the likely significant environmental effects of the Proposed Development, the Environmental Impact Assessment (EIA) has been undertaken adopting the principles of the 'Rochdale Envelope' approach where appropriate. This involves assessing the maximum (or where relevant, minimum) parameters for the elements where flexibility needs to be retained (building dimensions for example). Where this approach is applied to the specific aspects of the EIA, this has been confirmed within the relevant chapters of this Environmental Statement (ES). Justification for the need to retain flexibility in certain parameters is also outlined in this chapter and in Chapter 6: Alternatives and Design Evolution.

4.1.5 Timescales for the construction and operation of the Proposed Development that have been assumed for the purposes of the EIA are as follows:

- work on site will commence in 2019, subject to planning permission being granted and an investment decision being made;
- construction of the Proposed Development is expected to take approximately three years; and
- the Proposed Development is expected to commence operation in 2022.

4.1.6 Construction of the Proposed Development is detailed in Chapter 5: Construction Programme and Management. At this stage a detailed construction programme is not available as this is normally determined by the Engineering Procurement and Construction (EPC) contractor; however an indicative programme is presented within Chapter 5.

4.1.7 It is envisaged that the Proposed Development will have a design and operational life of at least 30 years. At the end of the design life, the Proposed Development would either be decommissioned as outlined in Section 4.8 below or potentially the lifetime extended by upgrading the plant in line with the legislative requirements at that time. Decommissioning will therefore commence at some point after 2052.

4.1.8 This chapter is supported by Figure 4.1 in ES Volume II, which shows the Proposed Development layout.

4.2 Components of the Proposed Development

4.2.1 The purpose of this chapter is to provide further detail on the various components of the Proposed Development, both internal and external, including buildings, infrastructure and access. All of the various components which make up the Proposed Development are contained within the Planning Application boundary (the Site).

4.2.2 As outlined in Chapter 2: Assessment Methodology there are several scenarios being considered for the construction and subsequent operation of the Proposed Development at this stage. These can be summarised as follows:

- **Scenario 1** - construction and operation of a two stream plant;
- **Scenario 2** - construction and operation of a single stream plant; or
- **Scenario 3** - a phased approach to construction:
  - construction and operation of a single stream plant, which would be Phase 1, followed by;
  - construction and operation of a second single stream plant, which would be Phase 2.

4.2.3 In all scenarios a steam (and associated equipment such as generator, transformers and cooling systems) may or may not be constructed.

4.2.4 The components of the Proposed Development described below would be the same for any of these scenarios, although the size of buildings and structures would be different, and a single stream plant would have a single emissions stack.

4.2.5 The Proposed Development is anticipated to comprise the following main buildings:

- fuel reception hall including storage bunker;
- boiler house (which contains the main elements of the combustion process);
- flue gas treatment (FGT) hall;
- turbine hall; and
- administration block including control room, workshops and stores.

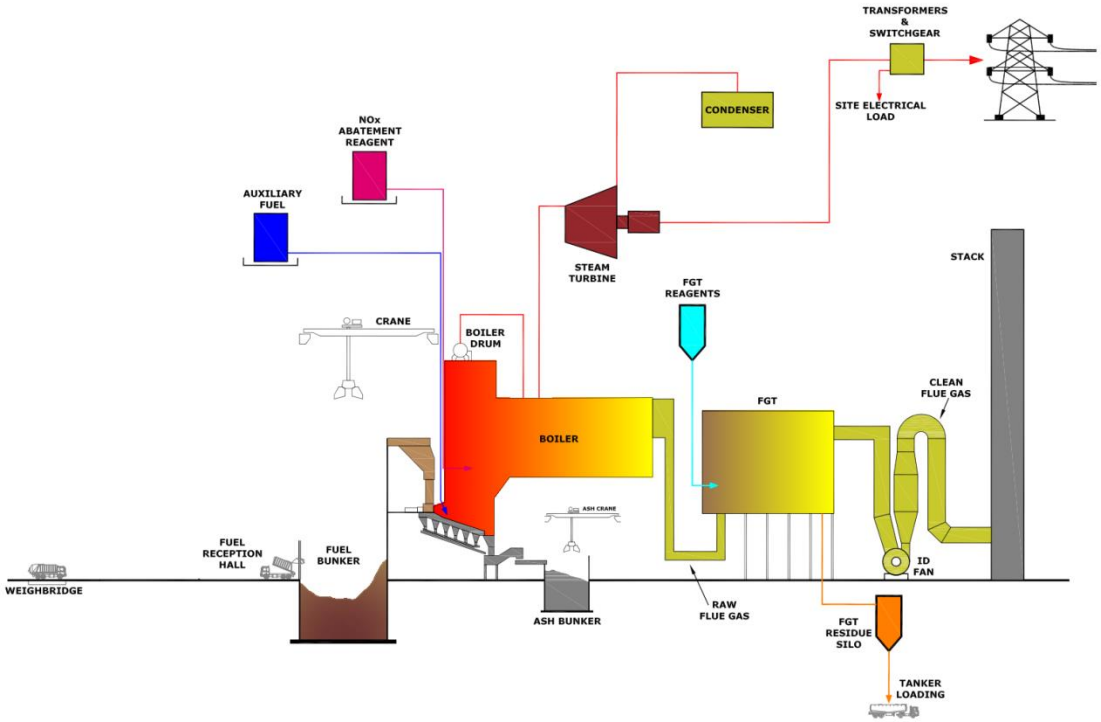
4.2.6 In addition, the Proposed Development is likely to include:

- an air cooled condenser (ACC) adjacent to the turbine hall;
- up to two emissions stacks adjacent to the FGT hall;
- by-product handling and disposal facilities;
- a hot water or steam pipeline, a condensate return pipeline and control cables to connect the Proposed Development with the adjacent South Humber Bank Power Station (SHBPS);
- access from South Marsh Road;
- weighbridges, gatehouse, internal access roads and footways, barriers, enclosures and parking facilities for staff and visitors;
- substation and associated electrical connections;
- gas connection;
- storage tanks and silos;

- auxiliary generator(s);
- drainage and water connections and surface water attenuation;
- heavy goods vehicle (HGV) holding area and driver welfare facilities; and
- landscaping and biodiversity enhancement measures.

4.2.7 Each part of the Proposed Development is described in further detail below, and the process is graphically illustrated in Plate 4.1 below. The maximum dimensions of each component are provided in Section 4.3 Design Parameters.

Plate 4.1: Process diagram



Fuel Reception and Storage

4.2.8 The fuel reception area will incorporate tipping bays to allow multiple vehicles to discharge to the concrete fuel bunker at the same time. The entry and exit doors to the tipping hall will be equipped with automated vertical folding or roller doors, which will be kept closed except for times of vehicle access and egress.

4.2.9 The bunker will be large enough to provide for up to four days storage of the fuel to provide a supply sufficient for periods when there are no fuel deliveries. The base of the bunker will be approximately 10 m below the tipping hall floor. Cranes will span the bunker.

4.2.10 Fuel delivered to the Site is not expected to require further pre-treatment. However, the fuel will need mixing prior to combustion to improve homogeneity, and may require shredding to ensure any large items do not cause a blockage. Typically, mixing is done using the cranes in the bunker and a shredder will be installed in the bunker.

4.2.11 The primary air for the boiler will be extracted from above the bunker, thereby maintaining a negative pressure and minimising the release of dust and odours.

Boiler House (Combustion System)

4.2.12 The boiler house will contain up to two combustion lines and associated boilers to produce steam for the generation of electricity or for export.

4.2.13 A reciprocating grate system will be used together with combustion air preheating. Auxiliary burners will be installed for use on start up or when required to maintain a two second residence time in the combustion chamber above 850°C. These burners will either be fired on natural gas or distillate.

4.2.14 Fuel will be transported from the bunker onto each grate using an overhead crane. The fuel feed rate, the grate control and the primary air flows will be controlled to ensure that the fuel is completely burnt when it reaches the end of the grate. The ash will fall into a quench pit where it will be cooled and from there transported to the ash handling system.

4.2.15 Gases will flow upwards into the combustion chamber where 'secondary' air will be added in a controlled way to enhance mixing of the flue gas and ensuring all combustible gases are burnt.

4.2.16 The combustion system is automatically controlled to optimise the process efficiency and control emissions. The control system uses a number of parameters to do this including gas temperature, oxygen content, steam flow, grate speed, fuel feed rate and air flows. In addition, the operator can override the automatic system if required based on operating experience and observation of plant performance.

4.2.17 Carbon monoxide and oxygen levels will be continuously monitored to ensure good combustion is maintained. The flue gas temperature will be automatically maintained above 850°C using the auxiliary burners where necessary.

4.2.18 In the event that the residence time at the required temperature cannot be maintained, fuel would automatically be stopped from entering the combustion chamber until normal operating conditions are re-established.

Flue Gas Treatment Hall

4.2.19 A combination of primary combustion control measures and FGT will be used to control emissions to the limits set in the Environmental Permit and to meet national and international standards. A number of pollutants may be present in the flue gas that will require treatment and control, as outlined below.

4.2.20 Nitrogen oxides (NOx) emissions are controlled through primary means including burner design and optimisation. However, additional secondary removal is likely to be required, using either Selective Non-Catalytic Reduction (SNCR) or Selective Catalytic Reduction (SCR) techniques. Both involve the controlled addition of ammonia or urea.

4.2.21 Acid gases produced during the combustion process will be removed by a scrubbing system, typically using hydrated lime as a reagent. Activated carbon will also be injected into the flue gas duct to minimise the emissions of dioxins, mercury, and other heavy metals.

4.2.22 After flowing through the gas scrubber, the gases will be drawn through a bag filter to remove particulates, including the added lime and activated carbon particles. Regular bag filter cleaning will be performed on-line by pulsing compressed air through the filter bags. The residues will be collected in fully enclosed hoppers beneath the filters.

4.2.23 Following cleaning, the gases from the combustion process will be released into the atmosphere via the gas flue within the stacks.

Turbine Hall (including steam and heat export potential)

4.2.24 The Proposed Development design is based on up to one steam turbine which may serve both streams (in the two stream plant scenario). The Proposed Development will be capable of generating up to 49.9 MW of electricity from the steam turbine, although some of the electricity generated will be used to meet the parasitic load within the plant.

4.2.25 Steam or hot water may also be exported to the SHBPS via an above ground pipeline. In addition to the export of steam or hot water to SHBPS, the Proposed Development will be configured to enable heat (steam or hot water) to be exported to nearby consumers via an extraction from the steam turbine (i.e. the Proposed Development will be CHP Ready).

Administration Block

4.2.26 The administration block will be located in the main building and will contain the main reception, offices, control room, station electrical equipment and staff welfare facilities.

Cooling System

4.2.27 There are a number of different cooling options available (see Chapter 6: Alternatives and Design Development). The Proposed Development will use an ACC to condense the turbine exhaust steam. The ACC will consist of fans housed within a frame of fin-tube walls, all supported above the ground by a steel structure. The steam will be condensed by passing through the finned tubes cooled by ambient air.

4.2.28 The ACC will be located outside the main building.

Emissions Stacks

4.2.29 Up to two standalone stacks each up to 100 m in height (i.e. with the top of the stacks at up to 102 m Above Ordnance Datum (m AOD)) will be constructed on the eastern side of the main building adjacent to the FGT hall. Flue gases will be emitted from the stacks at approximately 120°C. Detailed air dispersion modelling has been carried out to inform the stack height and the EIA as discussed in Chapter 7: Air Quality and presented in detail in Appendix 7A in ES Volume III.

4.2.30 Emissions from the stacks will be monitored continuously by an automatic computerised system and reported in accordance with the Environment Agency's requirements for the operation of the Proposed Development under an Environmental Permit.

4.2.31 The stacks will be fitted with aviation warning lights if required by the Civil Aviation Authority.

By-product Handling and Disposal

4.2.32 Two types of solid by-products and one type of liquid by-product (listed below) will be produced from the operation of the facility, each of which will have separate handling and disposal arrangements:

- incinerator bottom ash;
- FGT residues; and
- periodic liquid effluent from the boiler water treatment system and boiler blow-down.

4.2.33 Incinerator bottom ash is the burnt-out residue from the combustion process. The bottom ash will be discharged from the boiler to a bottom ash bunker for storage. Bottom ash will either be landfilled or recycled off-site as an aggregate.

4.2.34 As a worst case, based on a fuel NCV of 9 MJ/kg the facility would generate approximately 179,000 tpa of wet (i.e. quenched) bottom ash which will need to be

collected for disposal. Ferrous metals will be removed from the bottom ash by means of magnetic separators and discharged to a separate storage area for recycling.

4.2.35 FGT residues comprise fine particles of ash and residues that are collected in the bag filters. It is estimated that the Proposed Development will generate approximately 20,600 tpa of FGT residue. The FGT residue will be stored in a sealed silo adjacent to the FGT plant. Due to the alkaline nature of the FGT residues, they are classified as a hazardous material. As a result, the residues will be transported by road in a sealed tanker to an appropriate treatment facility.

4.2.36 Liquid effluent will be produced from the boiler water treatment system and from the boiler blow-down. This liquid effluent will be fed to the ash discharger via the process water system. Under normal operating conditions, no effluents will require disposal as they will be returned into the process for re-use. In this way, the majority of liquid effluent produced on Site will either be evaporated or absorbed into the ash for transport off site. Any excess liquid effluent, including arisings from boiler maintenance activities, will be collected on Site, analysed and transported off Site for treatment, or alternatively discharged to foul sewer under the conditions specified in the Environmental Permit and trade effluent agreement.

Hot Water or Steam Pipeline

4.2.37 To enable the potential export of surplus heat (in the form of hot water or steam) to SHBPS, an insulated pipeline may be installed alongside internal roadways. A separate condensate return line and associated control cables would also be installed.

Access, Weighbridges, Gatehouse, Internal Roadways and Parking

4.2.38 The Site will be accessed from the A180 via the A1173, Kiln Lane, Hobson Way and a new access from South Marsh Road to the east of the existing SHBPS entrance as shown on Figure 4.1 in ES Volume II.

4.2.39 The Main Development Area is currently crossed by an internal access road which links the SHBPS to the cooling water pumping station to the east of the Site. The Proposed Development will maintain access to the pumping station for SHBPS via a redirected roadway.

4.2.40 The Proposed Development has been designed to minimise conflict between HGVs and smaller vehicles, to reduce queue length and prevent delays to employees and visitors accessing the Site. HGV holding areas within the Site will avoid delivery HGVs queuing onto the public highway.

4.2.41 Internal roadways will be hard surfaced with appropriate drainage systems to manage surface water runoff and pollution risk.

4.2.42 After entering the Site, incoming HGVs will proceed via the gatehouse to the incoming weighbridges where the quantity of fuel will be checked, weighed and recorded. Vehicle loads will be systematically inspected at the weighbridge to confirm the nature of incoming fuel and only authorised fuel will proceed to the fuel reception area. Radioactivity detection will be installed to monitor incoming fuel at the entrance to the Site. Non-compliant waste will be quarantined and addressed separately.

4.2.43 After tipping fuel into the bunker and prior to exiting the Site, the weight of the outgoing vehicles will be recorded on separate outgoing weighbridges.

4.2.44 Up to 57 parking spaces will be provided on the Site as shown on Figure 4.1 in ES Volume II.

Substation and Electrical Connections

4.2.45 Electricity will be exported either to the National Grid Electrical Transmission (NGET) 400 kV system at the SHBPS 400 kV substation (located within the Site), or to the Northern Powergrid 132 kV local distribution network (located off Site).

4.2.46 Connection to the NGET system at the 400 kV substation would require 400 kV underground electrical cables and control system cables from a new transformer compound.

4.2.47 Connection to the 132 kV local distribution network would require an on Site substation which is included in the layout for the Proposed Development (see Figure 4.1 in ES Volume II). This substation would be connected to the local distribution network at a 132 kV tower approximately 2 km to the west of the Site. It is anticipated that the route to the 132 kV tower would follow South Marsh Road.

4.2.48 Grid connection works outside of the Site, if required, do not form part of the Proposed Development, and the relevant undertaker will rely either on their statutory powers or obtain the relevant consents prior to connection. Any such works have been considered in Chapter 17: Cumulative and Combined Effects.

Gas Connection

4.2.49 Natural gas may be required at the Proposed Development as auxiliary fuel for start-up of the combustion process and combustion stabilisation. The gas supply would be connected via a pipeline to either the National Grid gas network or the Cadent Gas local distribution network.

4.2.50 Connection to the National Grid gas network would be at the location of the adjacent SHBPS Above Ground Installation (AGI) or to the SHBPS gas supply pipework, both located within the Site.

4.2.51 Gas connection works outside of the Site, if required, do not form part of the Proposed Development, and the relevant undertaker will rely either on their statutory powers or obtain the relevant consents prior to connection. Any such works have been considered in Chapter 17: Cumulative and Combined Effects.

Storage Tanks and Silos

4.2.52 Various tanks and silos will be required for the storage of materials such as the following:

- FGT reagents and residues;
- auxiliary fuel (distillate) (if natural gas is not to be used);
- firewater and treated towns main water; and
- water treatment chemicals.

Auxiliary Generators

4.2.53 Auxiliary generators will be required to ensure power is available in the event of fuel supply interruption and power failure to the Site and to enable controlled shut-down of the plant in such a scenario. The capacity of these generators is expected to be relatively small, in the order of 2-5 MW, and will only be required as backup during a power failure on Site.

Surface Water Drainage

4.2.54 An Outline Drainage Strategy is presented within Appendix 14B in ES Volume III. Surface water runoff will be drained and attenuated within the Site and discharged at 'greenfield' runoff rate to one of the two existing land drains within the Site.

4.2.55 Oil/ water separators will be provided where necessary.

4.2.56 Water required for the operation of the Proposed Development is expected to be obtained from an Anglian Water towns main connection.

4.2.57 Foul water will be discharged to the mains sewer or stored for tankering off Site.

HGV holding area and driver welfare facilities

4.2.58 A holding area will be provided between the Site entrance and the incoming weighbridge with welfare facilities for delivery drivers.

Landscaping and Biodiversity Enhancement measures

4.2.59 Figure 4.2 in ES Volume II presents indicative areas proposed for ecological mitigation and enhancement. This is discussed in more detail in Chapter 10: Ecology and Nature Conservation Section 10.7 Mitigation and Enhancement Measures.

4.2.60 Hard landscaping will also be provided within the Site where appropriate.

Combined Heat and Power (CHP) Readiness

4.2.61 In accordance with Environment Agency guidance, opportunities for the use of CHP from the Proposed Development have been considered and the plant has been designed to be CHP Ready in the event that no immediate CHP opportunities can be identified.

4.2.62 A review has been undertaken of potential heat demand within a 15 km radius of the Proposed Development. This review identified the large existing industrial and commercial heat consumers. However, all but one of these consumers require the export of relatively high pressure steam or already have CHP facilities. In comparison to the export of hot water, the export of high pressure steam requires equipment and safety considerations that can inhibit exporting any significant distance. For these reasons no viable opportunities have been identified at this stage for receiving heat from the Proposed Development.

4.2.63 The remaining large heat consumer that was considered to be currently technically viable was a warehouse and storage facility located at Immingham Docks. The preferred heat supply solution would consist of a hot water network from the Proposed Development to supply space heating. Based on the size of the storage facility at Immingham Docks it is estimated that the annual heat demand is approximately 160,000 MWh. This demand equates to an average and peak demand of 14.3 MWth and 37.7 MWth respectively. An economic assessment has been undertaken of the construction and operation of this potential heat supply solution, but due to the distance to the potential heat user (circa 5 km) and the lack of existing subsidies available, this assessment concluded that the export of heat to the Docks is currently not economically feasible.

4.2.64 Since heat export is currently not economically feasible, the Proposed Development will be built to be CHP Ready, meeting the requirements of Best Available Technique outlined in the Environment Agency's CHP Guidance. This encompasses retaining sufficient space within the Main Development Area to allow future construction of CHP equipment, and equipping the plant with a suitable offtake point as part of its first commissioning. CHP Readiness will be secured through the Environmental Permit,

being sought separately from the Environment Agency. CHP opportunities will be periodically reviewed to demonstrate that the conclusions reached in the study remain valid.

4.3 Design Parameters

4.3.1 The design of the Proposed Development has been iterative and has changed as the EIA process has progressed. The changes to the Proposed Development are outlined in more detail in Chapter 6: Alternatives and Design Evolution.

4.3.2 A number of the design aspects and features of the Proposed Development cannot be confirmed until the tendering process for the EPC construction contract has been completed. For example, the building sizes may vary depending on the contractor selected and their specific configuration and selection of plant. Focussed use of the Rochdale Envelope approach has therefore been adopted to define appropriate parameters for use in the EIA.

4.3.3 Table 4.1 sets out the maximum dimensions for the layout of the Proposed Development (assuming a two stream plant) which have been used for the basis of the various technical assessments. Maximum parameters have been devised to enable the EIA to progress in the absence of the final design information and to enable the compilation of a robust assessment based on a reasonable and appropriate worst case option.

4.3.4 Existing ground levels at the site are approximately 2 m AOD. Finished floor levels at the Site are expected to remain at approximately 2 m AOD and no ground raising has been incorporated into the design of the Proposed Development.

4.3.5 There is the potential requirement for cut and fill during construction to improve the bearing capacity of the ground for development. This is outlined further in Chapter 5: Construction Programme and Management). The requirement will be determined by the contractor as part of the detailed design, but has been considered where relevant in the EIA (for example in terms of construction waste and traffic movements).

Table 4.1: Maximum Design Parameters

COMPONENT	DIMENSIONS
Main building maximum height	59 m AOD (including 2 m parapet wall on boiler house)
Main building maximum footprint	210 m x 110 m
Stack height	102 mAOD
Stack diameter	3 m per combustion stream
Bunker base maximum depth	-8 mAOD

4.3.6 The buildings are likely to be steel framed and concrete floored with appropriate cladding to ensure that noise limits are not exceeded at the nearest residential properties or do not affect sensitive ecological receptors (e.g. wintering and passage birds on adjacent land). All external plant items will also be designed to ensure that the combined noise from the entire facility will meet required limits at identified sensitive receptors. The external cladding will be appropriately coloured to minimise the visual impact of the Proposed Development (see Chapter 11: Landscape and Visual Amenity).

4.4 Proposed Development Operation

Start-Up and Shut-Down

4.4.1 The Proposed Development will be started and stopped automatically, but under the supervision of trained operators, using auxiliary fuel (distillate or gas) to reach safe combustion temperatures before any solid fuels are added. The flue gas cleaning system and emissions monitoring will be in operation before any solid fuel is added.

4.4.2 If the operator wishes to turn the process off, this will be carried out in a controlled manner by reversing the start-up process. Solid fuel feeding will be stopped, but the process will continue to operate to ensure that all material is burnt, and any flue gases are cleaned out of the system. Air flows will be left on to allow the boiler to cool down before the process is fully shut off.

4.4.3 If any emergency condition is reached, or if a rapid shut down is required, the Proposed Development will stop automatically in a rapid manner. Fuel flows and air flows will be stopped instantly causing combustion to stop very quickly. The boiler will be depressurised via safety valves if required. This system is fully interlocked to prevent manual intervention unless it is safe to do so. The Proposed Development is also protected in case of a complete loss of power.

Electrical

4.4.4 In normal operating conditions, the power requirements of the Proposed Development will be supplied by the steam turbine generator with the balance exported to the grid. In the event of a breakdown of the steam turbine generator (or if a steam turbine is not installed), the power for the Proposed Development will be supplied from the grid. Standby diesel generators will also be available for safe shut down of the Proposed Development in the event of a loss of grid connection.

Maintenance

4.4.5 Routine maintenance will be undertaken in accordance with maintenance manuals provided by the construction contractor.

4.4.6 It is expected that each boiler will be taken offline for maintenance each year. Overall it is expected that annual maintenance outages will last for approximately three weeks in total.

4.4.7 In addition to annual outages, it is expected that major outages will be required on a less frequent basis, for example, every six years. A major outage could be expected to last for up to five weeks.

Hazard Prevention and Emergency Planning

4.4.8 A site specific Health and Safety Plan covering the works, commissioning and operation of the Proposed Development will be prepared.

4.4.9 A Site Emergency Plan will be developed to cover the Proposed Development, which will include a fire strategy and appropriate training procedures.

4.4.10 Procedures will be in place to clearly outline the responsibilities, actions and communication channels for operational staff and personnel on how to deal with emergencies should they occur. Staff will also receive the level of training required for their role and position. This will include dealing with events such as fires, flooding etc. Such measures will be included in the site operating and management system and regulated by the Environment Agency through the Environmental Permit.

Process Inputs

4.4.11 The Proposed Development will use various raw materials during operation. Primarily these include hydrated lime, ammonium hydroxide or urea, activated carbon, water and fuel for auxiliary burners. Except for water (and potentially gas fuel for the auxiliary burners), these will be delivered to the facility in bulk transportation vehicles. The minimum on Site storage capacity will be set to reflect the process requirements and local delivery capability.

4.4.12 In order to minimise the risks of contamination to process and surface water, all liquid chemicals stored on site will be kept in bunded controlled areas with a volume of 110% of stored capacity. Fuel oil will be held in a bunded storage tank.

4.4.13 Gas (if required) and potable water will be supplied via gas and towns main water connections respectively.

Demineralised Water Treatment Plant and Demineralised Water Storage Tanks

4.4.14 Towns main water will need to be treated on Site in a water treatment plant to demineralise it for use in the boiler and for other uses. Treated water will be stored in tank(s) prior to use.

External Lighting

4.4.15 Prior to the commissioning of the Proposed Development a detailed lighting scheme will be submitted to North East Lincolnshire Council for approval. The external lighting scheme will be designed in accordance with relevant standards, such as the *Guidance Notes for the Reduction of Obtrusive Light (2011) published* by the Institute of Lighting Engineers and/or Chartered Institution Building Services Engineers (CIBSE) requirements – as appropriate.

4.4.16 The external lighting scheme will be designed to provide safe working conditions in all areas of the Site whilst reducing light pollution and the visual impact on the local environment. This is likely to be achieved by the use of luminaires that eliminate the upward escape of light.

Environmental Management

4.4.17 The Proposed Development will comply with the Industrial Emissions Directive (IED) under its Environmental Permit so that any impacts of emissions to air, soil, surface and groundwater, to the environment and human health will be minimised and avoided where possible.

4.4.18 The Site will be operated in line with appropriate standards and the operator will implement and maintain an Environment Management System (EMS) which will be certified to ISO 14001. The EMS will outline requirements and procedures required to ensure that the Site is operating to the appropriate standard.

4.4.19 Sampling and analysis of pollutants will be carried out where required including monitoring of exhaust emissions levels using Continuous Emission Monitoring Systems (CEMS) prior to discharge from the stacks, in accordance with the Environmental Permit.

4.5 Hours of Operation

4.5.1 The Proposed Development will operate twenty four hours a day, seven days a week, with occasional offline periods for maintenance. Fuel will be delivered to the Site by road, with deliveries assumed to be between the hours of 6 am and 6 pm every day of the week.

4.5.2 The Proposed Development will have storage capacity for approximately four days of fuel, so that the facility can continue to operate if there are any short term supply issues.

4.6 HGV Movements

4.6.1 Operational traffic movements are detailed within the Transport Assessment (TA) that accompanies this ES, and is presented as Appendix 9A in ES Volume III. In summary it is anticipated that during the operational phase of the Proposed Development, total HGV movements at the Site will be around 312 in and 312 out per day with a maximum of 44 deliveries in any one hour. These figures include fuel (RDF) deliveries and movements associated with delivery of consumables and removal of waste products e.g. bottom ash and FGT residues.

4.7 Staffing

4.7.1 The Proposed Development will be operated and managed by suitably qualified and trained personnel. It is anticipated that a total of up to 56 staff will be employed.

4.7.2 It is estimated that staff arrivals to the Site will be spread over a 24 hour period and on a shift system.

4.8 Decommissioning

4.8.1 The Proposed Development is expected to have a design and operating life of around 30 years. At the end of its design life it is expected that the Proposed Development will have some residual life remaining and an investment decision would then be made based on the market conditions prevailing at that time.

4.8.2 At the end of its operating life, all above-ground equipment associated with the Proposed Development will be decommissioned and removed from the Site. Prior to removing the plant and equipment, all residues and operating chemicals will be cleaned out from the plant and disposed of in an appropriate manner.

4.8.3 The bulk of the plant and equipment will have some limited residual value as scrap or recyclable materials, and the contractor will be encouraged to use materials that could be recycled.

4.8.4 Prohibited materials such as asbestos, polychlorinated biphenyls (PCBs), ozone depleting substances and carcinogenic materials, will not be allowed within the design of the Proposed Development, and other materials recognised to pose a risk to health (but which are not prohibited) will be subject to detailed risk assessment.

4.8.5 Prevention of contamination is a specific requirement of the Environmental Permit for the operation of the Proposed Development and therefore it is being designed such that it will not create any new areas of ground contamination or pathways to receptors as a result of construction or operation. Once the plant and equipment have been removed to ground level, it is expected that the hardstanding and sealed concrete areas will be left in place. Any areas of the Proposed Development that are below ground level will be backfilled to ground level to leave a levelled area.

4.8.6 A Decommissioning Plan (including Decommissioning Environmental Management Plan) will be produced and agreed with the Environment Agency as part of the Environmental Permitting and site surrender process. The Decommissioning Environmental Management Plan will consider in detail all potential environmental risks on the Site and contain guidance on how risks can be removed or mitigated. This will include details of how surface water drainage should be managed on the Site during the decommissioning and demolition.

4.8.7 The Decommissioning Plan will include an outline programme of works. It is anticipated that it would take nine to twelve months to decommission the Site, with demolition following thereafter.

4.8.8 During decommissioning and demolition there will be an electrical demand, as well as requirement for office, accommodation and welfare facilities.

4.8.9 Any demolition contractor would have a legal obligation to consider decommissioning and demolition under the Construction (Design and Management) Regulations 2015, or the equivalent prevailing legislation at that time.

4.8.10 Decommissioning activities will be conducted in accordance with the appropriate guidance and legislation at the time of the Proposed Development's closure. All decommissioning activities will be carried out in accordance with the waste hierarchy and materials and waste produced during decommissioning and demolition will be stored in segregated areas to maximise reuse and recycling. All materials that cannot be reused or recycled will be removed from the Site and transferred to suitably permitted waste recovery/ disposal facilities. It is anticipated that a large proportion of the materials resulting from the demolition will be recycled and a record will be kept to demonstrate that the maximum level of recycling and reuse has been achieved.

4.8.11 Upon completion of the decommissioning programme, including any remediation works that might be required, the Environment Agency will be invited to witness a post-decommissioning inspection by site staff. All records from the decommissioning process will be made available for inspection by the Environment Agency and other relevant statutory bodies.

4.9 References

- Environment Agency (2013) CHP Ready Guidance for Combustion and Energy from Water Power Plants Note (V1.0). Environment Agency, Bristol.
- The Institute of Lighting Professionals (2011) Guidance Notes for the Reduction of Obtrusive Light (GNO1). ILP, Rugby.