

# South Humber Bank Energy Centre

South Marsh Road, Stallingborough, DN41 8BZ

**Environmental Impact Assessment: Environmental Statement - Non-Technical Summary (NTS)**

**Town and Country Planning EIA Regulations 2017 (as amended 2018)**

**Regulation 18(3) (e)**

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**Applicant: EP SHB Limited**  
**Date: December 2018**

## DOCUMENT HISTORY

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<b>Abbreviation</b>	<b>Description</b>
AONB	Area of Outstanding Natural Beauty: area designated under section 82(1) of the Countryside and Rights of Way Act 2000 for the purpose of conserving and enhancing its natural beauty.
AQMA	Air Quality Management Area: if a local authority identifies any locations within its boundaries where the air quality objectives are not likely to be achieved, it must declare the area as an air quality management area. The local authority is subsequently required to put together a local air quality action plan.
BAT	Best Available Techniques – the available techniques which are the best for preventing or minimising emissions and impacts on the environment. BAT is required for operations involving the installation of a facility that carries out industrial processes.
CEMP	Construction Environmental Management Plan: details how the development will avoid reduce or mitigate effects on the environment.
EIA	Environmental Impact Assessment – a term used for the assessment of environmental consequences (positive or negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action.
EPUKI	EP UK Investments – The Applicant
ES	Environmental Statement - A report in which the process and results of an Environment Impact Assessment are documented.
HGV	Heavy Goods Vehicle: vehicle weighing more than 3500 kg.
LWS	Local Wildlife Site: non-statutory sites of nature conservation value that have been designated 'locally'. These sites are referred to differently between counties with common terms including site of importance for nature conservation, county wildlife site, site of biological importance, site of local importance and sites of metropolitan importance.
MW	Megawatts – unit of energy.
NELC	North East Lincolnshire Council
PRoW	Public Right of Way: a highway where the public has the right to walk. It can be a footpath (used for walking), a bridleway (used for walking, riding a horse and cycling), or a byway that is open to all traffic (include motor vehicles).
SAC	Special Area of Conservation: strictly protected sites designated

	under the EC Habitats Directive.
SNCI	Sites of Nature Conservation Importance: support both locally and nationally threatened wildlife, and many sites contain habitats and species that are priorities under the county or UK biodiversity action plans.
SPA	Special Protection Area: strictly protected sites classified in accordance with Article 4 of the EC Birds Directive.
SSSI	Site of Special Scientific Interest: area of land notified by Natural England under section 28 of the Wildlife and Countryside Act 1981 as being of special interest due to its flora, fauna or geological or physiological features.

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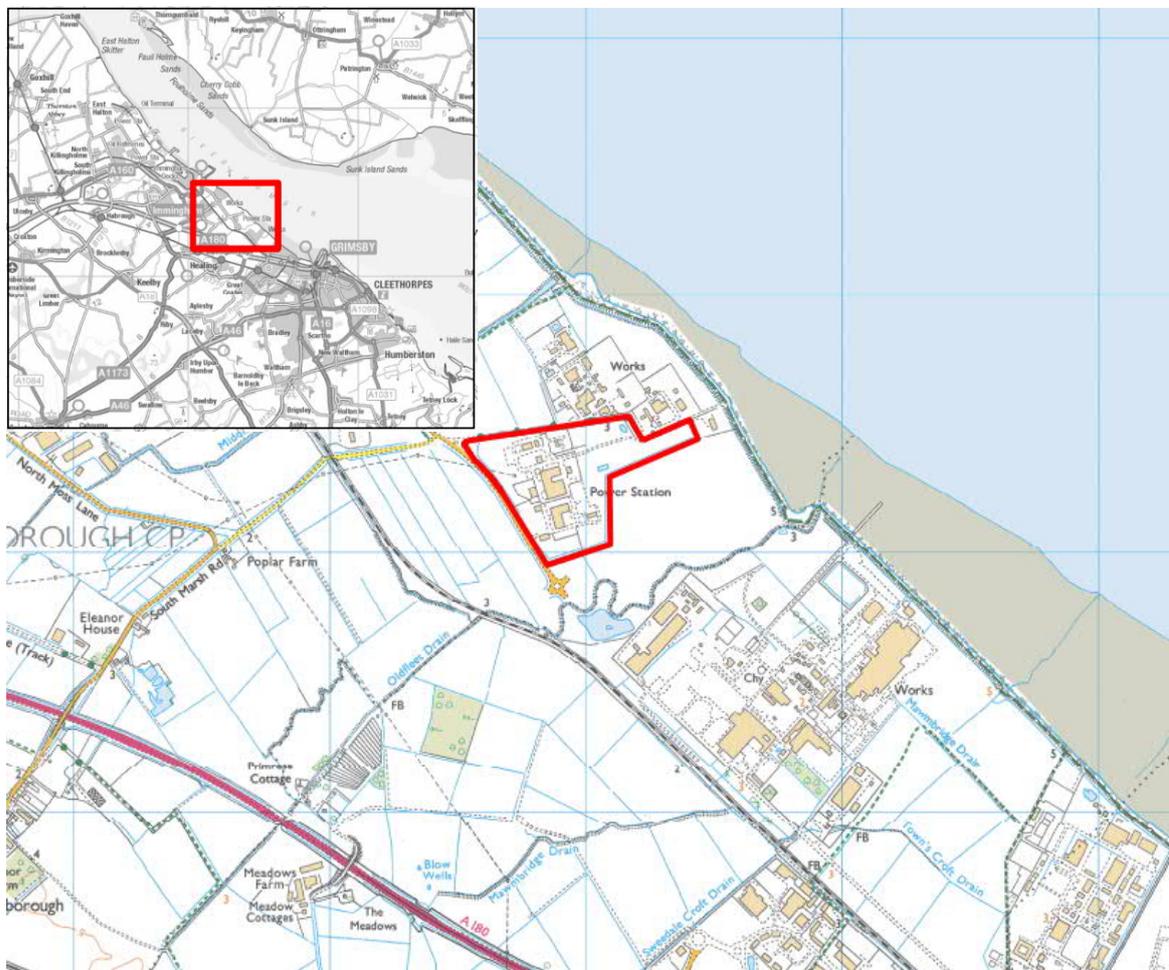
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## 1.0 INTRODUCTION

### 1.1 Introduction

- 1.1.1 This document presents a Non-Technical Summary (NTS) of the Environmental Statement (ES) that has been prepared in support of a Planning Application for a proposed energy from waste power station with a maximum gross electrical output of 49.9 MW (referred to as the 'Proposed Development').
- 1.1.2 The Proposed Development is to be constructed within the site of the existing South Humber Bank Power Station at South Marsh Road, Stallingborough, North East Lincolnshire, as shown on **Figure 1** below.
- 1.1.3 The Proposed Development and the land within the Planning Application Site Boundary including the Main Development Area (referred to as 'the Site') are described in Section 3 and 4 of this NTS.

**Figure 1: Site Location Plan**



- 1.1.4 The purpose of this NTS is to describe the Proposed Development and provide a summary in non-technical language of the key findings of the ES for the benefit of consultees and stakeholders.
- 1.1.5 The ES is a document to enable stakeholders to understand the potential environmental effects of the Proposed Development identified through the Environmental Impact Assessment (EIA) process. EIA is a systematic process used to predict the adverse (negative) and beneficial (positive) effects of a proposed development. Full technical

details are provided within the ES Volume I – Main Report, Volume II – Figures, and Volume III – Technical Appendices.

- 1.1.6 Further information on the Proposed Development can also be found on the project website:

<http://www.shbenergycentre.co.uk/>

## **1.2 The Applicant**

- 1.2.1 The Applicant for the Planning Application is EP SHB Limited, a subsidiary of EP UK Investments (EPUKI). EPUKI owns and operates a number of power stations in the UK, including South Humber Bank Power Station.

## **1.3 The EIA Regulations**

- 1.3.1 The ES has been prepared to comply with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended 2018 (referred to as ‘the EIA Regulations’).
- 1.3.2 EP SHB identified the issues that the EIA needed to address within the EIA Scoping Report submitted to North East Lincolnshire Council (NELC) in July 2018, following initial consultation with a number of statutory consultees. The Scoping Opinion was received from NELC on the 3<sup>rd</sup> of September 2018, including the formal responses received by NELC from consultees. The scope of the EIA has considered the issues raised through the scoping process and in accordance with the EIA Regulations, meets the requirements of the Scoping Opinion.

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## 2.0 EIA ASSESSMENT METHODOLOGY

### 2.1 General Assessment Approach

- 2.1.1 The assessment presented in the ES follows a standard EIA methodology, which is summarised below.
- 2.1.2 The objective of the EIA process is to anticipate the changes (or 'impacts') that may occur to the environment as a result of the Proposed Development, such as increases in traffic and changes to air quality or noise. The changes are compared to the environmental conditions that would have occurred without the Proposed Development (defined as 'the baseline'). The EIA process identifies potentially sensitive 'receptors' that may be affected by these changes (e.g. people living near the development, local flora and fauna, etc.) and defines the extent to which these receptors may be affected by the predicted changes (i.e. whether or not the receptors are likely to experience a 'significant effect').
- 2.1.3 Where possible, the EIA uses best practice defined methodologies, based on legislation, definitive standards and accepted industry criteria. This is set out in detail in each technical chapter of the ES (Volume I – Main Report).
- 2.1.4 As the design of the Proposed Development has evolved, EP SHB has worked with the environmental specialists to ensure the design avoids or reduces environmental effects on receptors where possible through the use of embedded mitigation measures (meaning measures that form part of the design or methods for construction or operation), such as an appropriate height for the emission stacks. These measures are taken into account in the EIA and assessment of effects of the Proposed Development.
- 2.1.5 Effects on the receptors can be adverse (negative), neutral (neither negative nor positive) or beneficial (positive). They can also be temporary (e.g. noise during construction) or permanent (e.g. the views of the finished buildings).
- 2.1.6 For the purpose of the ES, adverse and beneficial effects are described as 'significant' or 'not significant'. Where the environmental assessment predicts a significant effect on one or more receptors, proposed mitigation measures are identified to avoid or reduce the effect, or to reduce the likelihood of it happening. The use of such mitigation will be secured through appropriate conditions attached to the planning consent, should it be granted.

### 2.2 Environmental Impact Assessment Scoping

- 2.2.1 EIA Scoping is a process that is designed to identify relevant topics that need to be included in the EIA and reported in the ES. EP SHB submitted an EIA Scoping Report in July 2018 to NELC and relevant consultees to allow them to contribute to defining the extent and approach to the environmental assessments being undertaken.
- 2.2.2 As a result of the scoping process the following environmental assessment topics have been considered in the EIA process and reported in the ES:
- air quality;
  - noise and vibration;
  - traffic and transportation;
  - ecology and nature conservation;
  - landscape and visual amenity;
  - geology, hydrogeology and land contamination;

- cultural heritage (including archaeology);
- water resources, flood risk and drainage;
- socio economics;
- waste; and
- cumulative and combined effects.

2.2.3 The EIA scoping process concluded that the following technical topics are not relevant to the EIA for this Proposed Development and these have therefore not been assessed in detail:

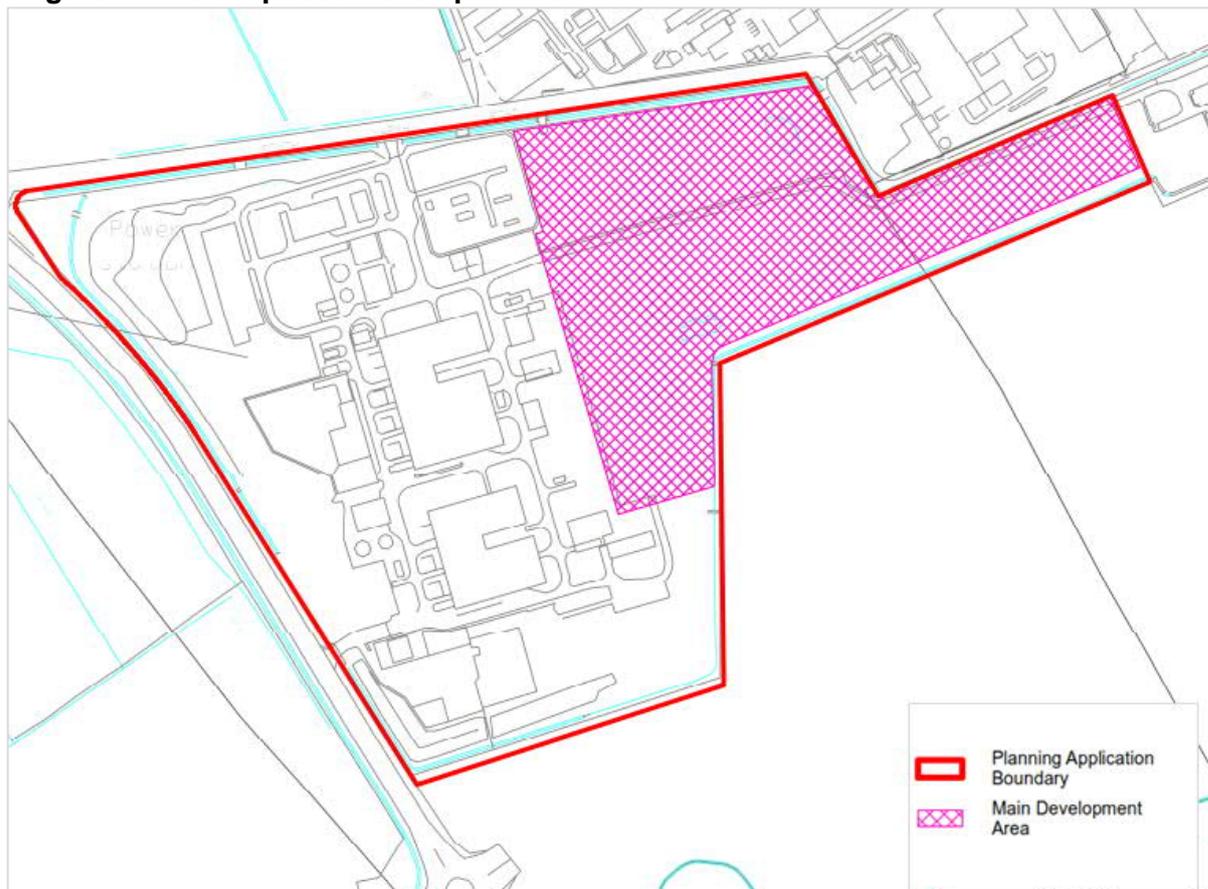
- aviation;
- electronic interference (TV reception);
- accidental events/ health and safety;
- major incidents; and
- sustainability and climate change.

## 3.0 THE PROPOSED DEVELOPMENT SITE

### 3.1 Introduction

- 3.1.1 All of the land within the Planning Application Site Boundary is referred to as 'the Site'.
- 3.1.2 The Site contains all of the land required for the Proposed Development. The Main Development Area is the area in which the Proposed Development will be constructed within the wider Site. These areas are shown on **Figure 2**.

**Figure 2: The Proposed Development Site**



- 3.1.3 The Site is centred on grid reference 522962,413347 and is located west of the Humber Estuary between the towns of Immingham and Grimsby; both over 3 km from the Site.
- 3.1.4 The Site area is approximately 25 hectares (ha) and will be accessed from the A180 via the A1173, Kiln Lane, Hobson Way and a new dedicated access from South Marsh Road to the east of the existing South Humber Bank Power Station entrance.
- 3.1.5 The Main Development Area, which is approximately 7 ha in area, has no formal use at present, apart from accommodating the below-ground cooling water pipelines and other service connections associated with the South Humber Bank Power Station. Two man-made ponds and areas of semi-improved grassland are present within the Main Development Area.

### 3.2 The Surrounding Area and Potential Environmental Receptors

- 3.2.1 The area surrounding the Site is in agricultural use immediately to the south, west and north-west, with Synthomer (UK) Limited and the NEWLINCS waste management

facility both located to the north of South Marsh Road. The Humber Estuary lies around 175 m to the east of the Site.

3.2.2 The surrounding area is characterised by a mix of industrial and agricultural land use with the main settlements being the villages of Stallingborough, Healing and Great Coates that are more than 2km from the Site.

3.2.3 A summary of key environmental receptors is provided below. Where distances are quoted the distance is defined (unless otherwise stated) as the shortest distance between two described locations, for example from the closest point of the Site boundary to the closest point of a designated site boundary.

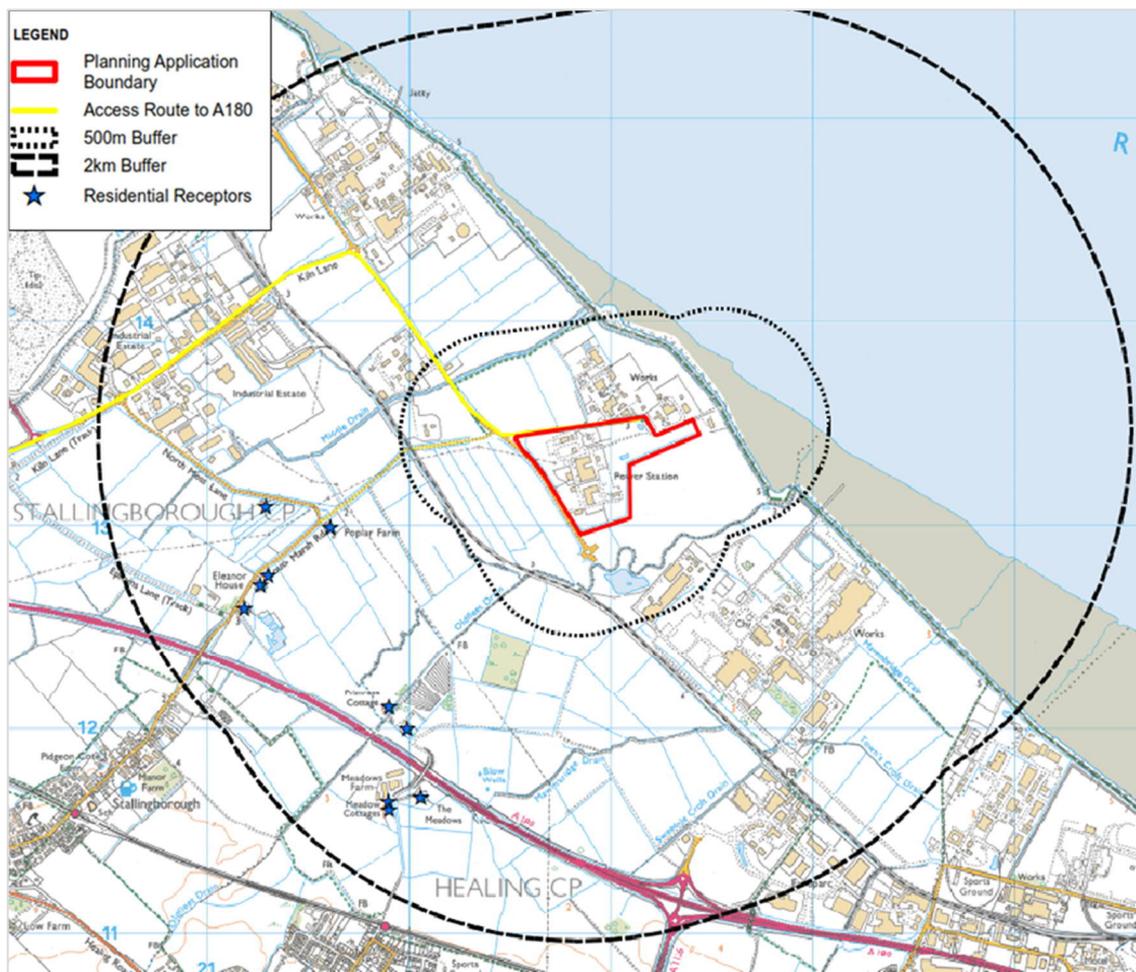
Residential Receptors

3.2.4 There are no residential receptors within 500 m of the Site.

3.2.5 The closest residential properties (individual receptors) are located approximately 1 km west and are presented on **Figure 3** below. These are:

- Poplar Farm (located on South Marsh Road); and
- Primrose Cottage (accessed via Station Road north of the A180).

**Figure 3: Residential Receptors**



3.2.6 There are eight other residential properties located within 2 km.

3.2.7 The nearest settlement is the village of Stallingborough over 2 km away.

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### Ecological Receptors

- 3.2.8 The Site is not subject to any statutory or non-statutory ecological designations.
- 3.2.9 The nearest is the Humber Estuary Ramsar site, Special Protection Area (SPA), Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) located 175 m east of the Site.
- 3.2.10 There are no other SSSIs within 2 km or European sites within 10 km of the Site.
- 3.2.11 There are four Local Wildlife Sites (LWS) within 2 km of the Site:
- Healing Cress Beds Stallingborough LWS – approximately 0.7 km south-west;
  - Sweedale Croft Drain LWS – approximately 0.8 km south-east;
  - Laporte Road Brownfield Site LWS – approximately 1 km north-west; and
  - Fish Ponds to the West of Power Station, Stallingborough LWS – approximately 1 km south-west.
- 3.2.12 There are two Sites of Nature Conservation Importance (SNCI) identified within 2 km of the Site:
- Field West of Power Station, Stallingborough SNCI (approximately 30 m south-west); and
  - North Moss Lane Meadow SNCI (approximately 0.9 km north-west).
- 3.2.13 The potential effects of the Proposed Development on designated nature conservation sites and other ecological receptors are considered in Chapter 10: Ecology and Nature Conservation.

### Public Rights of Way Near the Site

- 3.2.14 The Site is not crossed by any public rights of way.
- 3.2.15 There are two public rights of way within 500 m of the Site – a public footpath located to the north, passing in an east-west direction from Hobson Way to the coastline, where it connects to a public bridleway which runs in a north-south direction along the Humber Estuary to the east of the Site.

### Water Features and Flood Risk

- 3.2.16 The Site is located in Flood Zone 3a. Zone 3a is land that has a 1 in 100 year or greater annual probability of river flooding; or land that has a 1 in 200 year or greater annual probability of sea flooding. However, the Site benefits from the presence of tidal flood defences along the south bank of the Humber Estuary which are maintained by the Environment Agency.
- 3.2.17 The Oldfleet Drain is located approximately 300 m to the south of the Site (at its closest point) which is classed by the Environment Agency as a Main River.
- 3.2.18 The Site is located 175 m from the Humber Estuary.

### Cultural Heritage Receptors

- 3.2.19 There are no designated heritage assets within the Site.
- 3.2.20 There are three Scheduled Monuments located within 5 km of the Site:
- Stallingborough medieval settlement, post-medieval house and formal gardens (NHLE 1020423) is located approximately 3.3 km to the west of the Site;

- the churchyard cross 20 m south of St Peter and St Paul's Church (NHLE 1020023), Stallingborough is located approximately 3.3 km to the west of the Site; and
- two moated sites at Healing Hall (NHLE 1010947) are located approximately 3.7 km to the south-west of the Site.

3.2.21 There are six Grade II listed buildings within 3 km of the Site. A further seven Listed Buildings have been identified within a 5 km radius that have either a Grade I or Grade II\* designation

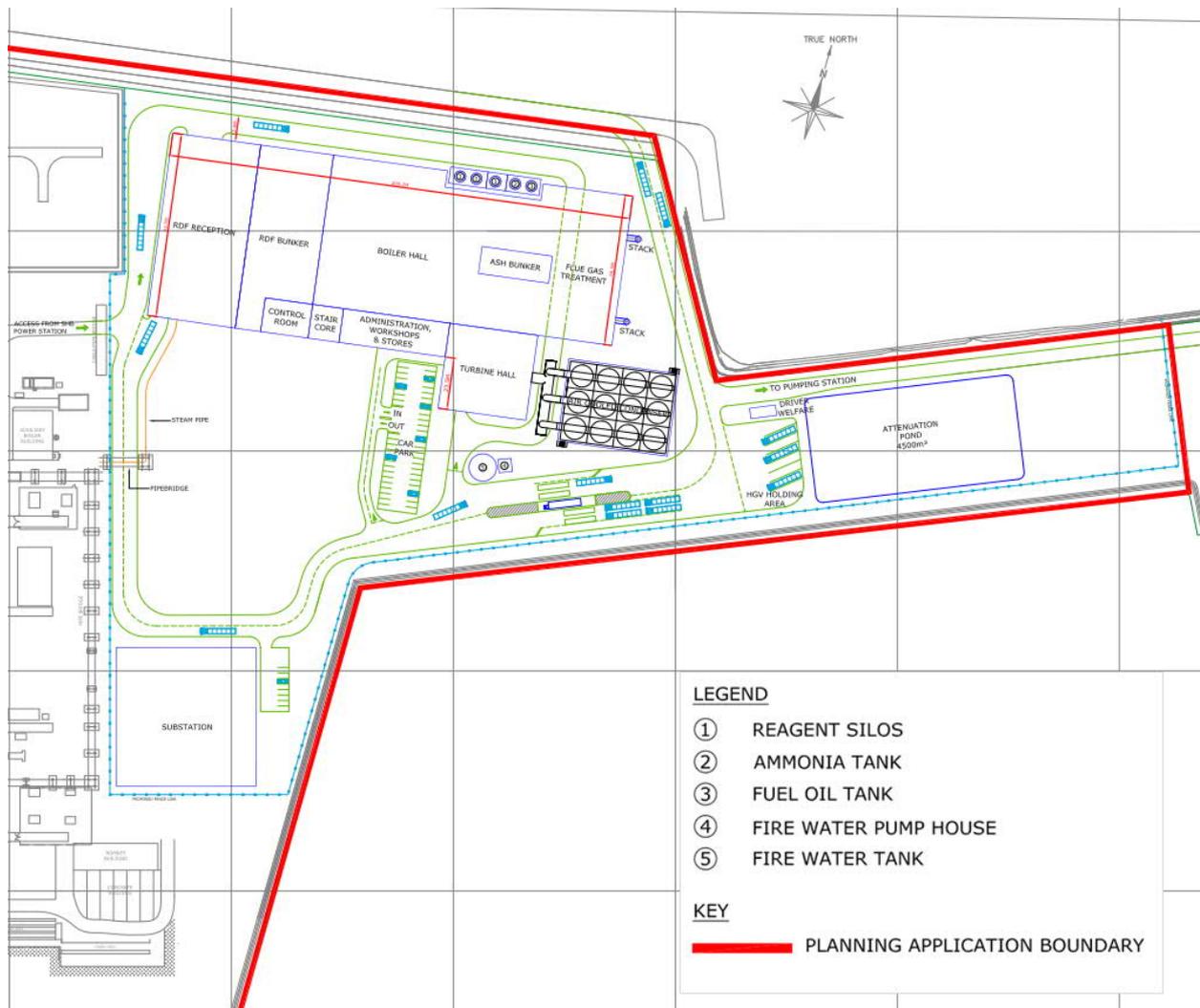
## 4.0 THE PROPOSED DEVELOPMENT

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

4.1.2 There are several elements of the Proposed Development as shown on **Figure 4**. These are likely to include:

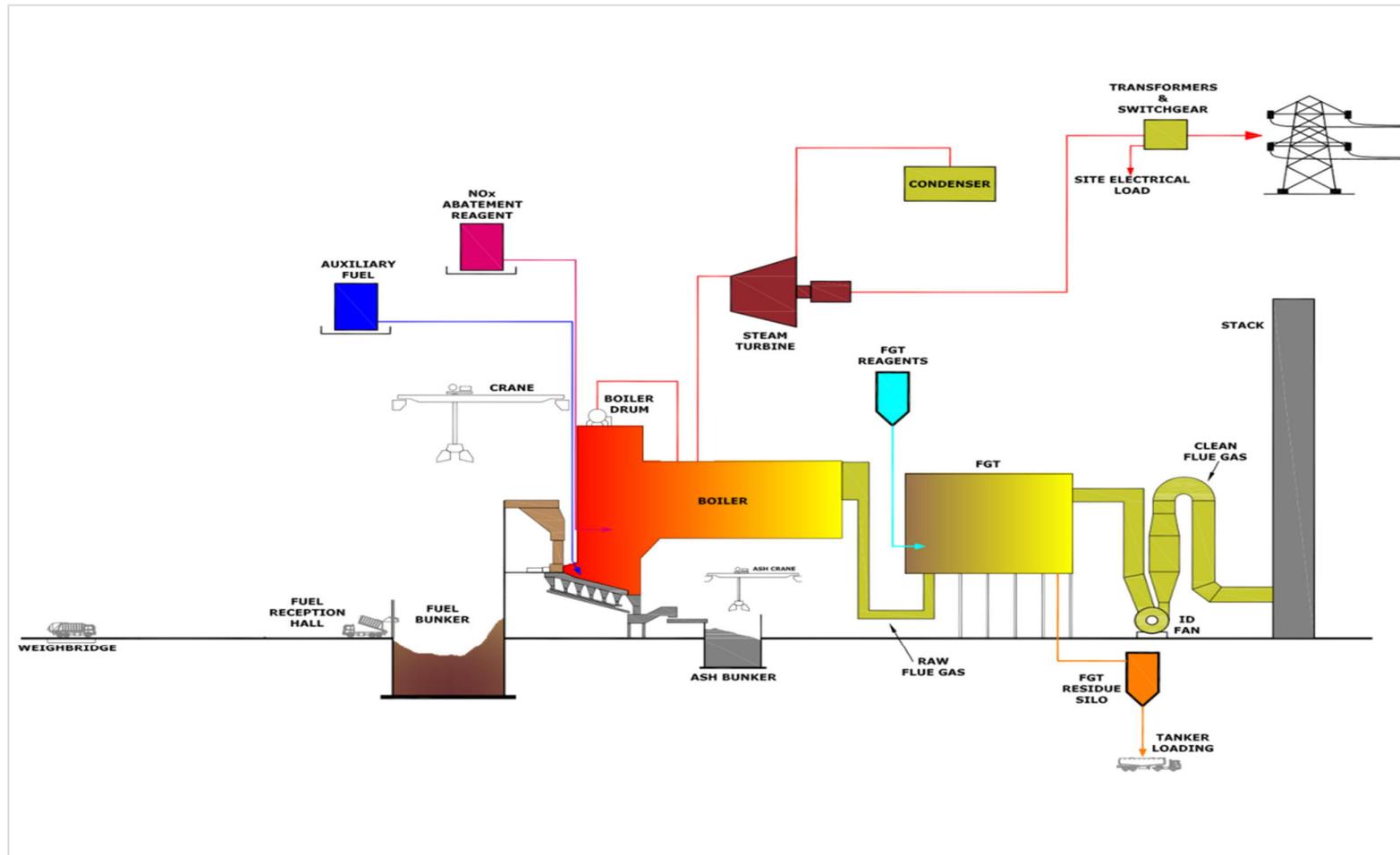
- fuel reception hall including storage bunker;
- boiler house;
- flue gas treatment hall;
- turbine hall;
- administration block including control room, workshops and stores;
- an air cooled condenser adjacent to the turbine hall;
- up to two emissions stacks adjacent to the flue gas treatment hall;
- 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;
- access from South Marsh Road;
- weighbridges, gatehouse, internal access roads 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.

Figure 4: Parts of the Proposed Development



- 4.1.3 The design of the Proposed Development incorporates a degree of flexibility in the dimensions and configurations of buildings and structures to allow for the selection of the preferred technology and contractor, although the emissions stack positions are fixed to a defined area of the Site.
- 4.1.4 The Proposed Development may be built in one or two phases, and either as a single or two stream design, with or without a steam turbine. The ‘worst case’ scenario in terms of environmental effects has been considered for each assessment topic.
- 4.1.5 The concept design of the Proposed Development has been developed to take into account the findings of the environmental assessments and where practicable, decisions have been influenced by the findings of the EIA in order to design out or minimise environmental effects.
- 4.1.6 The schematic shown in **Figure 5** below illustrates the energy from waste process.

Figure 5: Process Diagram Schematic for the Energy from Waste Process



## 5.0 CONSTRUCTION PROGRAMME AND MANAGEMENT

- 5.1.1 A summary of construction activities and anticipated timescales is presented in **Table 1** below.
- 5.1.2 It is anticipated that construction of the Proposed Development will take approximately three years. Construction activities are expected to commence mid-2019, with the Proposed Development becoming operational in 2022. If a phased approach to development is selected and a second phase of construction is required this would also take approximately three years to complete, either concurrently with or after completion of the first phase.
- 5.1.3 The construction working hours are generally expected to be between 07:00 and 19:00 Monday to Saturday. Any concrete slip-forming activities e.g. for the fuel bunker, will need to be carried out continuously over a 24 hour period as these activities cannot be stopped. Where any activities need to be conducted outside the core hours they will comply with any restrictions agreed with the planning authority, in particular regarding control of noise and traffic.
- 5.1.4 Management of the environmental effects associated with the construction works will be formalised and agreed with regulators through the development and implementation of a Construction Environmental Management Plan (CEMP) and other related documents including a Construction Traffic Management Plan and a Construction Workers Travel Plan. Frameworks for these documents are included in the ES Volume III (Appendix 5A and Appendix 9A, Annexes 25 and 26) and they will be finalised by the construction contractor when they are appointed.

Table 1: Indicative Construction Programme

	2019					2020								2021								2022																	
	Q3			Q4		Q1			Q2			Q3		Q4			Q1		Q2			Q3																	
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Site mobilisation	◆																																						
Enabling works																																							
Earthworks and civils																																							
Mechanical erection																																							
Cold commissioning																																							
Hot commissioning																																							
Connection date																																							
First fire with primary fuel																																							
Take over																																							

## 6.0 ALTERNATIVES AND DESIGN EVOLUTION

- 6.1.1 Alternatives have been considered throughout the development of the concept design for the Proposed Development and preparation of the planning application, including
- alternative locations within the Site (the Proposed Development has been sited away from the Humber Estuary designated nature conservation sites),
  - alternative technologies (such as advanced thermal treatment technologies as well as the proposed grate fired combustion), and
  - alternative design options (such as the Site access location, the height of the stacks, and the cooling technology).
- 6.1.2 The environmental effects of these alternatives have been compared to inform the Proposed Development layout and design.
- 6.1.3 The Proposed Development and Site have been defined as a result of iterative technical and environmental studies.
- 6.1.4 As with any development of this nature, the design process is based upon lessons learned from previous similar developments and the application of Best Available Techniques (BAT) (the available techniques that are currently identified to be the best for this industry in preventing or minimising emissions and impacts on the environment).
- 6.1.5 The Proposed Development includes a degree of flexibility in the dimensions of buildings and structures to allow for the selection of the preferred technology and contractor.
- 6.1.6 In order to ensure a robust assessment, a maximum built 'envelope' (also referred to as the 'Rochdale envelope') has been defined to accommodate this necessary flexibility and to enable the EIA to consider the 'worst case'. For example the landscape and visual impact assessment has assessed the largest massing of buildings.

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## 7.0 SUMMARY OF ENVIRONMENTAL EFFECTS

- 7.1.1 An assessment of the environmental effects of the Proposed Development during its construction, operation (including maintenance) and eventual decommissioning has been completed for each of the topics identified in Section 2.2 above.
- 7.1.2 The likely significant environmental effects of the Proposed Development are fully described within the ES Main Report (Volume I). This section provides a brief summary of the overall findings of the ES, expressed in a non-technical language.

### 7.2 Air Quality

#### Introduction

- 7.2.1 The air quality assessment considers the potential impacts from the Proposed Development on human health and ecosystems, with respect to construction traffic and plant emissions, construction dust and operational process emissions.
- 7.2.2 The air quality assessment uses computer models to predict the dispersion of emissions to air from the Proposed Development.
- 7.2.3 There are no declared Air Quality Management Areas (AQMA) within 5 km of the Site and baseline air monitoring was undertaken in the vicinity of the Site by EP SHB to supplement the publicly available data.

#### Effects During Construction

- 7.2.4 During construction, impacts could arise due to emissions from construction vehicles and mobile construction plant as well as dust and particulate matter from construction activities. Considering the distances to receptors, and commitment to the use of appropriate construction management measures and mitigation throughout the construction phase, employed through the implementation of a CEMP, as well as construction vehicle travel plans, emissions to air are assessed to have no significant adverse effects on human or ecological receptors.

#### Effects During Operation

- 7.2.5 Predicted ground level concentrations of air pollutants due to emissions from the stacks during operation of the Proposed Development have been calculated. The results have been used to determine that the appropriate stack heights for the Proposed Development should be 100m above ground level. The concentrations of air pollutants at human health and ecological receptors during operation of the Proposed Development have been determined to result in no significant adverse effects on human or ecological receptors.
- 7.2.6 Emissions from the Proposed Development during operation will be carefully controlled through an Environmental Permit that will be regulated by the Environment Agency. The Environmental Permit must be granted prior to commercial operation of the Proposed Development and will set out specific requirements to ensure continuous compliance with European and national legislation for this type of power station, including the application of BAT to minimise and control emissions.

#### Effects During Decommissioning

- 7.2.7 During the decommissioning of the Proposed Development, effects are considered to be comparable to, or less than, those for construction activities (and controlled similarly) and therefore not considered to be significant.

## 7.3 Noise and Vibration

### Introduction

7.3.1 The potential for increased noise at nearby receptors has been assessed and predicted using noise models and the results compared with recorded baseline noise levels at the identified receptors during the day and night. The predicted changes have been compared with national standards to see whether the increased noise will be noticeable at receptors and whether there is therefore the potential for significant effects without further mitigation measures being applied.

7.3.2 The assessment has also considered the potential for vibration effects.

### Effects During Construction

7.3.3 The Proposed Development will affect traffic flows on existing roads in the area surrounding the Site during construction which may increase noise levels; construction activities within the Site will also generate noise.

7.3.4 The noise predictions show that noise effects during construction of the Proposed Development are not anticipated to be significant at the nearest residential receptors. If drop hammer piling is required during the winter months, when waterbirds are present on the field to the south of the Site, there is potential for a significant adverse effect on these birds, but this would be effectively mitigated, for example, either by changing the type of piling technique used and or applying seasonal restrictions to drop hammer piling.

7.3.5 Vibration associated with the construction activities are not predicted to result in significant effects on residential receptors. If drop hammer piling is required during the winter months, when birds are present on the field to the north and south of the Site, there is potential for a significant adverse effect on these birds, but this would be effectively mitigated, for example, either by changing the type of piling technique used and or applying seasonal restrictions to drop hammer piling.

### Effects During Operation

7.3.6 Operational noise modelling has been undertaken for the Proposed Development. This shows that noise from the operational Site is not predicted to have a significant adverse effect on the nearest receptors through the adoption of appropriate mitigation measures.

7.3.7 Due to the distance of the nearest receptors and the nature of the Proposed Development, vibration from the operation of the Proposed Development has been scoped out of the assessment.

### Effects During Decommissioning

7.3.8 The nature of decommissioning works is likely to be similar to that of construction works (with the exception of piling). No significant effects are predicted.

## 7.4 Traffic and Transport

### Introduction

7.4.1 The traffic and transportation assessment identifies the potential effects of the Proposed Development on local roads. The assessment considers the predicted number of vehicle movements generated during the construction and operation of the Proposed Development, and the sensitivity (including pedestrian and cyclist safety) and capacity of the local road network.

- 7.4.2 Access to the Site for construction worker vehicles and heavy goods vehicles (HGVs) will be from the existing site access point on South Marsh Road and via a newly constructed access point, in the north-east of the Main Development Area.

Effects During Construction

- 7.4.3 The construction phase will result in temporary increases of traffic flows, including HGVs, on the roads leading to the Site. However, the assessment concludes that these additional traffic movements will not have significant adverse effects on the road network in terms of capacity and will not affect sensitive road users (pedestrians and cyclists).
- 7.4.4 A Construction Worker Travel Plan and Construction Traffic Management Plan will be developed by the contractor to manage and where possible, reduce, the number of vehicles accessing the Site. Thus, the effects of construction traffic on all road links and junctions within the Study Area are considered to be not significant.

Effects During Operation

- 7.4.5 Once operational, there will be approximately 56 staff working in three shifts at the Proposed Development. Conservatively, assuming car occupancy of 1, this equates to 56 cars per day. In addition, there will be 312 HGVs per day associated with deliveries of fuel and equipment.
- 7.4.6 Approximately every five or six years the facility would be taken offline for approximately 5 weeks for maintenance works to be carried out, where it could be expected that up to 200 staff could be on site on any one day.
- 7.4.7 Given the current traffic flows, the traffic effects during operation, maintenance and planned outages are considered to be not significant.

Effects During Decommissioning

- 7.4.8 There would be expected to be some traffic movements associated with the removal (and recycling, as appropriate) of material arising from demolition and potentially the import of materials for land restoration and re-instatement. However, vehicle numbers are expected to be much lower than those experienced during the construction or operational phases and therefore effects are not anticipated to be significant.

## 7.5 Ecology and Nature Conservation

Introduction

- 7.5.1 Ecological receptors have been identified in and around the Site through a desk based study and ecological surveys of the Site and its immediate surroundings. The Site itself is not designated for ecology or nature conservation purposes. The Humber Estuary is located approximately 175 m east of the Site and is a nature conservation asset of international importance, which is reflected in its designations as a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar and Site of Special Scientific Interest (SSSI).
- 7.5.2 Surveys have identified that some areas within the Site support protected species, including breeding birds, water vole, otter and possibly grass snake. The baseline conditions are detailed in full in Chapter 10: Ecology (ES Volume I).

Effects During Construction

- 7.5.3 The construction phase of the Proposed Development will comply with industry good practice and environmental protection legislation.

- 7.5.4 As outlined in Section 7.3, there is the potential for noise and vibration disturbance, and there is also potential for visual disturbance, during the construction phase on wildlife, particularly on waterbirds in the field to the south of the Site that is considered to be functionally linked to the Humber Estuary nature conservation designations. The impact of drop hammer piling (the noisiest construction activity) has the potential to result in significant noise effects on waterbirds in the field to the south of the Site. Drop hammer piling could also result in significant vibration effect on birds using fields to the north and south of the Site. However, with the mitigation as described above in Section 7.3 with regards construction noise and vibration and the introduction of a visual screen between the Proposed Development and the field to the south, no significant adverse effects are anticipated.
- 7.5.5 The loss of habitat within the Main Development Area that is used by waterbirds (linked to the Humber Estuary nature conservation designations) will be mitigated by a financial contribution by EP SHB to the South Humber Gateway strategic mitigation scheme as set out in NELC policy.
- 7.5.6 Two man-made ponds (containing fish) and areas of semi-improved grassland within the Site will be lost in order to construct the Proposed Development. To mitigate for this loss, a new mitigation area will be created, containing a new pond and species-rich grassland. The ecological mitigation area will aim to deliver higher biodiversity than the ponds and grassland lost, and as such this loss will not result in significant adverse effects. In addition, a Fish Management Plan will be prepared to protect the welfare of the fish in the ponds.

#### Effects During Operation

- 7.5.7 Potential impacts during the operational phase that could result in effects on ecological features include air quality impacts from stack emissions, and increased levels of disturbance (noise, vibration, artificial lighting), potentially resulting in adverse effects on ecological features. However, the assessment has concluded that there will be no significant adverse effects on designated sites, notable habitats or protected species during the operation, including air quality and disturbance.

#### Effects During Decommissioning

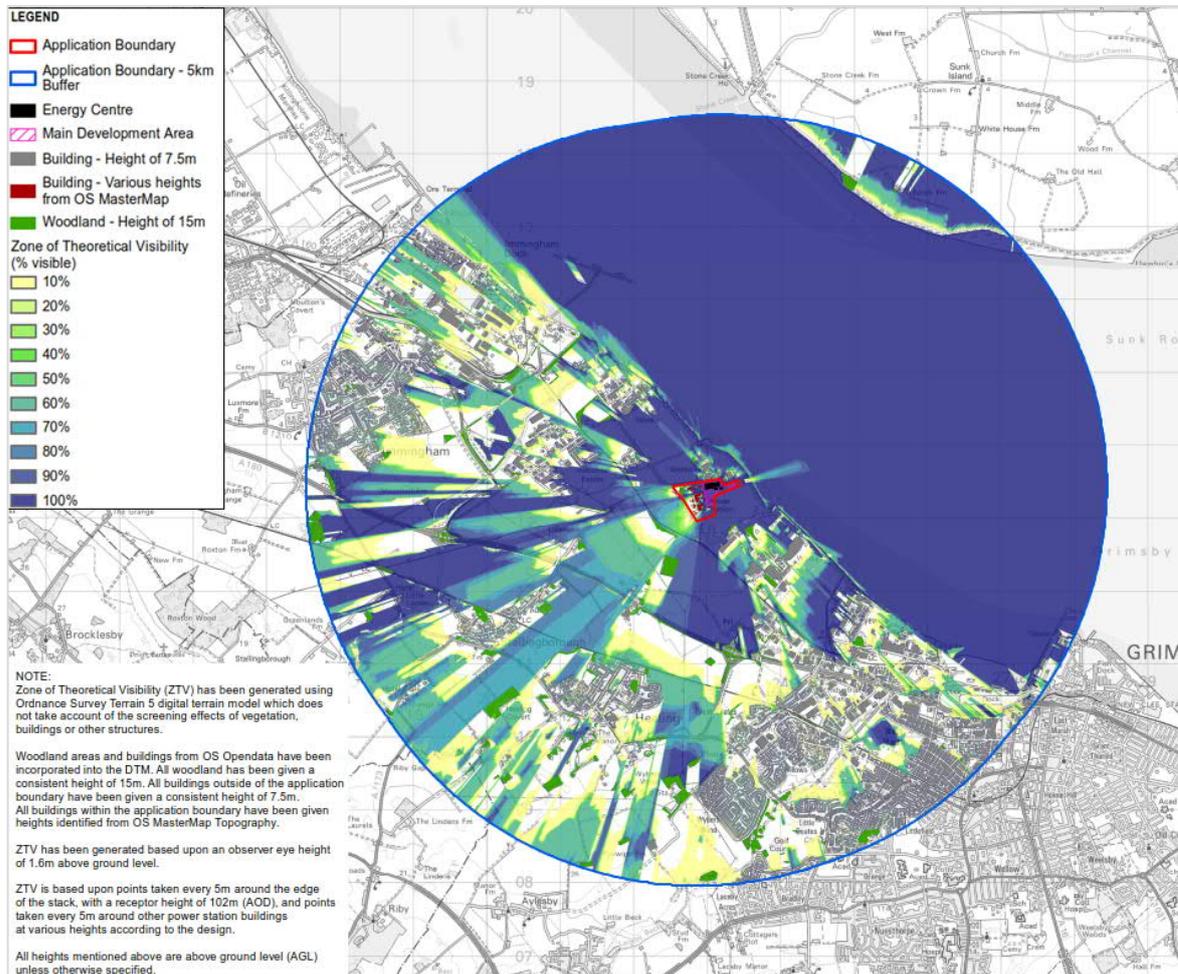
- 7.5.8 No significant effects are anticipated as a result of the decommissioning phase of the Proposed Development. Any necessary mitigation requirements would be determined and agreed at a future date prior to decommissioning, taking account of relevant legislative, policy and permitting requirements at that time.

## **7.6 Landscape and Visual Amenity**

### Introduction

- 7.6.1 The Study Area for landscape and visual effects includes areas where it is considered that there is potential for significant direct or indirect effects on landscape character or sensitive views due to the construction or operation of the Proposed Development. The area in which the Proposed Development is likely to be visible (known as the Zone of Theoretical Visibility) is shown on **Figure 6**.

**Figure 6: Zone of Theoretical Visibility**



7.6.2 Based upon the tallest element of the Proposed Development being the stacks (with a maximum height of 100 m above ground level) it is considered that it is unlikely that significant effects will be possible from further than 5 km away.

7.6.3 The Site is not located within or adjacent to any national or regional designations for landscape protection (e.g. Area of Outstanding Natural Beauty (AONB) or Green Belt land); however, the Lincolnshire Wolds AONB lies approximately 8.5 km south-west of the Site and has been considered in the assessment. The Site is located within National Character Area 41: the Humber Estuary, which is focussed on the expanse of the Humber Estuary and associated low-lying land.

Effects During Construction

7.6.4 During construction there will be changes in the landscape due to the movement of the plant within close proximity to the Site and the introduction of large scale structures in various stages of the development. However, given the presence of existing large scale power generation infrastructure in the landscape, no significant effects on the landscape are predicted.

7.6.5 Of the ten viewpoints considered in the assessment, only one visual amenity receptor (Viewpoint 9 – footpath users of the PRow along Middle Drain to the north-west of the Site) is predicted to experience significant adverse effects, as a result of the close distance and height of the proposed structures. No specific mitigation measures are

proposed since it is difficult to avoid or mitigate this effect due to the size of the buildings and structures proposed.

#### Effects During Operation

- 7.6.6 During operation, the Proposed Development will introduce new structures to the landscape; however, these would be similar in scale and form to those structures in the wider landscape and will not result in any significant adverse landscape effects.
- 7.6.7 As for the construction phase, significant adverse visual effects are predicted at Viewpoint 9. However, due to the size and massing of the structures, no specific mitigation measures are proposed.

#### Effects During Decommissioning

- 7.6.8 During the eventual decommissioning of the Proposed Development, effects are considered to be comparable to, or less than, those for construction activities (and controlled similarly), with potential for a significant adverse effect during decommissioning on Viewpoint 9.

### **7.7 Geology, Hydrogeology and Land Contamination**

#### Introduction

- 7.7.1 A desk based assessment of historical ground condition information and previous site surveys has been undertaken to identify the potential effects associated with ground conditions.
- 7.7.2 Baseline information indicates that the Main Development Area is likely to be underlain by some areas of made ground associated with historic developments on the Site. Below this are areas of clay, silt, sand and gravel, while the bedrock below that is Flamborough Chalk Formation, comprised of flint-free chalk.
- 7.7.3 The assessment has considered the potential risks to people (staff on site during construction and operation), surrounding land uses, ecological receptors, buildings, soils and groundwater from the construction, operation and decommissioning of the Proposed Development.

#### Effects During Construction

- 7.7.4 Potential impacts during the construction phase could include the discovery of contaminated groundwater and soils during groundworks, contamination risks to soils and groundwater from leaks and spills, airborne contamination (dusts) and risks from presence of ground gases.
- 7.7.5 However, these potential impacts will be managed by appropriate construction mitigation measures (which will be outlined in the CEMP) and as such no significant adverse effects are anticipated.

#### Effects During Operation

- 7.7.6 Potential impacts during the operational phase could include leaks, spills and contamination from storage of chemicals, fuels and wastes on site affecting site users and groundwater, and the presence of gases, vapours and groundwater in the ground affecting site users and buildings.
- 7.7.7 However, with appropriate management, housekeeping and preventative maintenance practices (such as appropriate storage of potentially contaminating liquid), as required by the Environmental Permit that will be required for the operational Site, potential impacts to soil and groundwater will be avoided. As such, significant adverse effects are not anticipated.

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#### Effects During Decommissioning

- 7.7.8 During the eventual decommissioning, effects are considered to be comparable to, or less than, those for construction activities (and controlled similarly) and therefore not considered to be significant.

### **7.8 Cultural Heritage**

#### Introduction

- 7.8.1 There are a total of 16 designated heritage assets within the 5 km Study Area and seven non-designated archaeological assets within the 1 km Study Area. This includes three Scheduled Monuments (the closest of which is 3.2 km from the Site) and 13 Listed Buildings (of which six are located within 3 km of the Site).

#### Effects During Construction

- 7.8.2 There will be no physical impact upon any designated heritage assets during construction. There will also be no effect on buried archaeology as the Site has been extensively worked as part of the construction of the South Humber Bank Power Station, and as such, any surviving remains would have been removed during this time.
- 7.8.3 There may be temporary impacts on the historic environment due to changes in the setting of these assets during the construction of the Proposed Development through the use of temporary cranes etc. However, these are not considered to result in significant effects.

#### Effects During Operation

- 7.8.4 The potential impacts on the setting of built heritage assets due to the presence of the Proposed Development are assessed as part of the construction assessment above. No additional effects on the cultural heritage assets in the Study Area have been identified for the operational phase.

#### Effects During Decommissioning

- 7.8.5 During the eventual decommissioning, effects are considered to be comparable to, or less than, those for construction activities and therefore not considered to be significant.

### **7.9 Flood Risk, Hydrology and Water Resources**

#### Introduction

- 7.9.1 The assessment identifies the key water bodies that may receive runoff or discharges from the Site during construction, operation and decommissioning of the Proposed Development, and considers the potential contamination risk to these water bodies as a result. The Study Areas for groundwater and surface water have been defined based on the potential for impacts to occur.
- 7.9.2 The main surface watercourses close to the Site are the Humber Estuary to the east and a number of land drains (ranging in size from Main Rivers to minor drainage ditches).
- 7.9.3 The Site is located in an area of high flood risk (Flood Zone 3), as defined by the Environment Agency as land that has a 1 in 100 year or greater probability of river flooding; or 1 in 200 year or greater annual probability of sea flooding; however, the Site benefits from the presence of tidal flood defences along the south bank of the Humber Estuary to effectively manage this risk. A standalone Flood Risk Assessment has been prepared for the Proposed Development (see ES Volume II Appendix 14A).

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### Effects During Construction

- 7.9.4 During construction there is the potential for spillages to occur which could impact upon water quality of surface waterbodies or groundwater, but the likelihood of these occurring would be low through the use of working methods that will be formalised through the CEMP. As a result, no significant effect on surface or groundwater is predicted.
- 7.9.5 The construction of the Proposed Development will involve the removal of two existing man-made ponds within the Main Development Area. However, these do not serve a drainage purpose and with a new surface water attenuation pond to be constructed (as well as a biodiversity pond), no significant adverse effects are expected. Likewise, any increase in impermeable area during construction, which could lead to increased flood risk will be managed by effective drainage design in line with the Outline Drainage Strategy that accompanies the planning application.
- 7.9.6 Any drain crossings required for access during construction will use appropriately sized culverts to allow the existing flow capacity of the drain to be maintained and as such no significant adverse effects on flood risk are expected.

### Effects During Operation

- 7.9.7 As in the construction phase, the change to impermeable area which could increase surface flows of water and potentially impact on flood risk will be managed by an appropriate drainage system. Likewise, with appropriate measures put in place to prevent spillages, there is a low probability of pollution events occurring and therefore it has been concluded there are no significant adverse effects on surface or groundwater as a result of the Proposed Development's operation.
- 7.9.8 In the unlikely event that the Humber Estuary defences were overtopped or breached flood risk could be increased because the footprint of the Proposed Development would displace flood water that might otherwise be stored within the Site. However as no land raising is proposed, the displacement impact would be small so the effect is not considered to be significant. With flood resilience measures and emergency protocols for the Proposed Development, no significant adverse effects are anticipated during operation.

### Effects During Decommissioning

- 7.9.9 During the decommissioning phase, effects are considered to be comparable to, or less than, those for construction activities (and controlled similarly) and therefore not considered to be significant.

## **7.10 Socio Economics**

### Introduction

- 7.10.1 The socio-economics assessment considers the potential economic impacts of the Proposed Development on employment, local businesses and the local population. The effects during construction and operation are described below.
- 7.10.2 Economic benefits can arise directly (through employment of local people) and indirectly (e.g. during the construction phase, when contractors may be using local accommodation and other amenities).
- 7.10.3 The socio-economics assessment is the only technical assessment to consider the single stream design as the 'worst case' because the economic benefits of the Proposed Development would be smaller.

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#### Effects During Construction

- 7.10.4 The Proposed Development (single stream design) is predicted to have a temporary significant beneficial effect on the local and regional economy through the creation of an estimated 439 construction jobs, of which around 219 are expected to be sourced from within the region. The creation of employment during construction is considered to comprise a significant beneficial effect.

#### Effects During Operation

- 7.10.5 The Proposed Development (single stream design) will also generate approximately 44 long-term jobs once operational, of which 38 are likely to be sourced from the region. This would increase to 49 jobs sourced from the region during periods of extended maintenance (known as outages). The jobs would be in operative, management and maintenance roles. The operational employment generated is considered to comprise a significant beneficial effect.

#### Effects During Decommissioning

- 7.10.6 During the decommissioning phase, effects are considered to be comparable to, or less than, those for construction activities (approximately 439 temporary jobs – although the actual numbers are uncertain at this stage), which is considered to be a minor beneficial (not significant) effect.

### **7.11 Waste Management**

#### Introduction

- 7.11.1 The assessment has taken into consideration the likely effects associated with the generation of waste and use of resources due to the Proposed Development.

#### Effects During Construction

- 7.11.2 The construction of the Proposed Development could generate approximately 160,000 m<sup>3</sup> of surplus excavation material if the top layer of ground is cut and filled to improve its engineering properties for construction. Some of this material may be re-used within the Site; however, to undertake a worst-case assessment it has been assumed that all of this will be disposed of in off-site landfill. This is considered in the context of the total regional waste arisings of around 14 million m<sup>3</sup> of inert waste landfill capacity in the Yorkshire and Humber region. As a percentage of the regional total (approximately 1.1%), waste from the Proposed Development is therefore estimated to be small and is not considered significant or likely to lead to any capacity issues within the regional waste management network.
- 7.11.3 Good practice waste management procedures will minimise the risk of adverse effects on human or ecological receptors from the waste storage, transfer or disposal.
- 7.11.4 The contractor, where possible, will be required to minimise the use of virgin raw materials by specifying products and materials with recycled content and which are durable with a long life.

#### Effects During Operation

- 7.11.5 During operation the Proposed Development will generate inert bottom ash which can either be recycled for use in the construction industry, or landfilled. EP SHB will explore opportunities for beneficial re-use of bottom ash.
- 7.11.6 In addition, small amounts of hazardous wastes will be generated and will be carefully disposed of. Neither of these waste quantities are considered to result in significant adverse effects on regional waste management infrastructure.

### Effects During Decommissioning

7.11.7 Waste generated from decommissioning was scoped out of the waste assessment as it is not possible at this stage to determine quantities of waste as there is no information on waste policies in the future. However, the future decommissioning contractor will comply with relevant legislation and policy at that time.

## **7.12 Cumulative and Combined Effects**

### Introduction

7.12.1 Other proposed developments that are also likely to be constructed and operated in future, and that have the potential to generate cumulative environmental effects together with the Proposed Development, have been identified in the ES. Significant cumulative effects may be possible due to the nature of these developments (e.g. the potential to release emissions to air in the vicinity of the same receptors) or their location (e.g. close enough to the Site to affect the same receptors).

7.12.2 The other proposed developments that are considered to have potential for significant cumulative effects, and that have been assessed in more detail are:

- Stallingborough Link Road (a new single carriageway road in Stallingborough);
- Cress Marsh SPA Mitigation (an ecological mitigation area for birds);
- Engineering Works – Paragon House (car parking and access works);
- Renewable Power Facility – Kiln Lane (a new power facility and associated ancillary infrastructure);
- Selvic Shipping CHP Boilers (combined heat and power boilers and associated flues);
- Waste Tyre Pyrolysis – Immingham Railfreight (an energy pyrolysis plant using tyres);
- VPI Immingham (a new 49 MW gas-fired power station);
- Great Coates Renewable Energy Centre (a new energy from waste plant);
- Waste to Energy – Immingham Railfreight (a new energy from waste plant);
- North Beck Energy Centre (a new energy from waste plant);
- Stallingborough Interchange Business Park (a 62 hectare business park); and
- VPI Immingham OCGT DCO (a scoping opinion request for new 299 MW power station).

7.12.3 The potential for cumulative effects with these other developments was considered for all of the environmental topics by a review of the available information (including the Environmental Statements and any detailed environmental modelling information where available). As a result of this detailed consideration, no significant cumulative effects during construction or operation were identified for the majority of topics.

7.12.4 The only exception is a potentially significant cumulative visual effect from Viewpoint 9 (Middle Drain footpath users) during both construction and operation, where footpath users could experience views of the Proposed Development and several other developments considered in the cumulative assessment. A significant visual effect has already been identified at this location as a result of the Proposed Development in isolation (see Section 7.6 above). As discussed in Section 7.6, opportunities for

mitigating visual effects are limited by the large scale and massing of the Proposed Development buildings and structures and no mitigation is proposed.

- 7.12.5 The assessment of combined effects (meaning the combination of different types of effects from the Proposed Development on a single receptor) have also been assessed. This has not identified any significant combined effects where the combination of effects would result in a different rating of effect to that already predicted in the individual technical assessment.

## 8.0 SUMMARY AND CONCLUSIONS

- 8.1.1 The ES details the findings of the EIA that has been undertaken for the Proposed Development.
- 8.1.2 Following assessment of a comprehensive range of environmental topics as agreed through the EIA Scoping and consultation, the following potential significant residual effect (i.e. effects after implementation of mitigation, where mitigation measures are identified) has been identified:
- moderate adverse effects on views from a public footpath at Viewpoint 9 during construction, operation and decommissioning of the Proposed Development.
- 8.1.3 No other significant residual environmental effects have been identified.
- 8.1.4 A number of environmental impact avoidance, design and mitigation measures have been identified to mitigate and control environmental effects during construction and operation of the Proposed Development. It is proposed that these will be secured through appropriate conditions attached to the planning consent for the Proposed Development, should this be granted.