

South Humber Bank Energy Centre Development Consent Order

South Marsh Road, Stallingborough, DN41 8BZ

**Environmental Impact Assessment: Preliminary Environmental Information
Report - Non-Technical Summary (NTS)**

**The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
(as amended)**



Applicant: EP Waste Management Limited
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Abbreviation	Description
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.
CHP	Combined Heat and Power: a form of combined power generation whereby a system provides both electricity and some form of heat.
DCO	Development Consent Order: the type of consent being sought by the Applicant for the Proposed Development.
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.
EfW	Energy from Waste
EPUKI	EP UK Investments
ES	Environmental Statement: a report within which the process and results of an Environment Impact Assessment are documented.
ExA	The Examining Authority: the inspector or panel of inspectors appointed to oversee the assessment of an application to the Planning Inspectorate for Development Consent.
FGT	Flue Gas Treatment: a process involving a series of chemical and mechanical systems installed to effectively manage Air Quality effects in accordance with the Best Available Techniques ('BAT').
Ha	Hectare
HGV	Heavy Goods Vehicle: vehicle weighing more than 3,500 kg.

Abbreviation	Description
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
NHLE	National Heritage List for England
NTS	Non-Technical Summary
PEI	Preliminary Environmental Information
PINS	The Planning Inspectorate: an executive government agency which deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England and Wales.
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.
SoS	Secretary of State
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.

CONTENTS

1.0	INTRODUCTION.....	1
2.0	EIA ASSESSMENT METHODOLOGY.....	4
3.0	THE PROPOSED DEVELOPMENT SITE	6
4.0	THE PROPOSED DEVELOPMENT	10
5.0	CONSTRUCTION PROGRAMME AND MANAGEMENT	13
6.0	NEED, ALTERNATIVES AND DESIGN EVOLUTION	16
7.0	SUMMARY OF ENVIRONMENTAL EFFECTS	17
8.0	SUMMARY AND CONCLUSIONS.....	28
	FIGURE 1: SITE LOCATION PLAN	1
	FIGURE 2: THE PROPOSED DEVELOPMENT SITE	6
	FIGURE 3: RESIDENTIAL RECEPTORS.....	8
	FIGURE 4: LAYOUT OF THE PROPOSED DEVELOPMENT.....	11
	FIGURE 5: PROCESS DIAGRAM SCHEMATIC FOR THE EFW PROCESS	12
	FIGURE 6: ZONE OF THEORETICAL VISIBILITY	21
	TABLE 1: INDICATIVE CONSTRUCTION PROGRAMME	
	SCENARIOS.....	13
	TABLE 2: INDICATIVE CONSTRUCTION ACTIVITES PROGRAMME.....	15

- 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 Environmental Impact Assessment (EIA) to date, for the benefit of stakeholders. The PEI Report presents:
- a description of the Site and the Proposed Development;
 - information on the alternative sites, technologies and layouts that have been considered;
 - a summary of the likely significant environmental effects of its construction, operation (including maintenance) and decommissioning based on the preliminary environmental information compiled at the time of writing; and
 - measures that are proposed to avoid or reduce such effects.
- 1.1.5 The PEI Report is provided to allow stakeholders to develop an informed view of the likely significant environmental effects of the Proposed Development.
- 1.1.6 EIA is a systematic process used to predict the adverse (negative) and beneficial (positive) effects of a proposed development; Section 2 below summarises the process. Full technical details of the EIA process are provided within the PEI Report, Volume I, Chapter 2 (Assessment Methodology).
- 1.1.7 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 development consent is EP Waste Management Limited, a subsidiary of EP UK Investments Limited (EPUKI). EPUKI owns and operates a number of power stations in the UK, including South Humber Bank Power Station.

1.3 The Consented Development

- 1.3.1 Full planning permission for an EfW power station at the Site was granted by North East Lincolnshire Council (NELC) under the Town and Country Planning Act 1990 on the 12th April 2019 (Ref. 'DM/1070/18/FUL'). This is referred to as 'the Consented Development'. This was subject to a full EIA.
- 1.3.2 The Consented Development has a gross electrical capacity of 49.9 MW.
- 1.3.3 Since the grant of this planning permission ('the Planning Permission'), the Applicant has been assessing opportunities to improve the efficiency of the Consented Development and now proposes an energy from waste power station with a gross electrical capacity of up to 95 MW - the Proposed Development. The Proposed Development will require some additional works at the Site compared to the Consented Development. However, the Applicant is not seeking any changes to the maximum building dimensions or annual fuel throughput that were approved under the Planning Permission and which were assessed as part of the EIA undertaken for the Consented Development.
- 1.3.4 The EIA for the Proposed Development considers the three likely ways (three construction programme scenarios) in which an EfW could be developed on the Site. These scenarios are described in paragraphs 5.1.1 and 5.1.2 below.

1.4 The Development Consent Process

- 1.4.1 As described above, the Proposed Development will comprise an EfW power station with a capacity of up to 95 MW gross electrical output. It therefore falls within the definition of

a 'nationally significant infrastructure project' under Sections 14(1)(a) and 15(2) of the Planning Act 2008 as a 'generating station exceeding 50 MW'.

1.4.2 Development consent for the Proposed Development is therefore required from the Secretary of State (SoS) for Business, Energy and Industrial Strategy.

1.4.3 An application for development consent is submitted to the Planning Inspectorate (PINS), acting on behalf of the SoS. If the Application is accepted, which will be determined within 28 days after the Application is received, PINS will appoint an inspector (or panel of inspectors), known as the Examining Authority (ExA) to examine the Application. The examination must be completed within six months, following which the ExA has three months to write a report providing a recommendation to the SoS whether to grant development consent. The SoS then has three months to make a final decision on whether to grant development consent.

1.5 The EIA Regulations - Scoping

1.5.1 The Applicant has notified the Secretary of State in writing under Regulation 8(1)(b) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations') that it intends to provide an Environmental Statement (ES) in respect of the Proposed Development. The Proposed Development is therefore 'EIA development' for the purposes of the EIA Regulations and an ES will form part of the Application.

1.5.2 The purpose of the EIA Scoping process is to determine which topics should be included in the EIA and the level of detail to which they should be assessed. An EIA Scoping Report and a request for an EIA Scoping Opinion under Regulation 10 of the EIA Regulations was submitted to PINS on 21st August 2019.

1.5.3 The EIA Scoping Report (see Appendix 1A in PEI Report Volume III) was developed with reference to standard guidance and best practice and was informed by the EIA team's experience working on several other similar projects, including the EIA for the Consented Development, which was completed in December 2018.

1.5.4 The EIA Scoping Report set out:

- details of the Proposed Development (including comparison with the Consented Development) and the Site;
- a summary of alternatives considered;
- a summary of existing and future baseline conditions;
- an outline of the likely environmental effects of the Proposed Development;
- a description of the matters to be scoped in and out of the EIA;
- proposed assessment methods; and
- the proposed structure of the ES.

1.5.5 A Scoping Opinion was received from PINS on 2nd October 2019 and is presented within Appendix 1B in PEI Report Volume III. The matters raised have been reviewed and are being taken into consideration in the relevant technical assessments. Further details on the EIA Scoping Opinion are set out in the PEI Report, Volume I, Chapter 2.

1.6 The EIA Regulations - PEI

1.6.1 The PEI Report has been prepared to meet the requirements of Regulation 12(2) of the EIA Regulations. In accordance with Regulation 12(2)(b), the PEI Report presents "*the information referred to in Regulation 14(2) which [...] is reasonably required for the*

consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)". Regulation 14(2) describes the requirements of an ES.

- 1.6.2 Following the completion of an EIA Scoping Report and publication of PINS' Scoping Opinion, the EIA for a Development Consent Order (DCO) is reported in two stages:
1. the PEI Report is prepared to inform consultation with the public and other stakeholders about the Proposed Development, based on the preliminary environmental information available at the time of consultation; and
 2. the ES is then prepared to accompany the Application.

2.0 EIA ASSESSMENT METHODOLOGY

2.1 EIA Methodology

- 2.1.1 The assessment presented in the PEI Report follows a standard EIA methodology, which is summarised below. It largely reflects the approach which will be taken in the ES.
- 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 PEI Report, Volume I (Main Report).
- 2.1.4 As the design of the Proposed Development has evolved, the Applicant 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 PEI Report, adverse and beneficial effects are described as 'significant' or 'not significant'. Where the EIA 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 the DCO, should it be granted.
- 2.1.7 Full details of the EIA Assessment Method are provided within the PEI Report, Volume I, Chapter 2.

2.2 Environmental Impact Assessment Scoping

- 2.2.1 As noted in Section 1.5 above, EIA Scoping is a process designed to identify relevant topics that need to be included in the EIA and reported in the ES. In response to the Scoping Opinion, the EIA and this PEI Report include assessments of the following environmental topics:
- air quality;
 - noise and vibration;
 - traffic and transport;
 - ecology and nature conservation;
 - landscape and visual amenity;
 - geology, hydrogeology and land contamination;
 - cultural heritage;

- water resources, flood risk and drainage;
- socio-economics;
- waste management; and
- cumulative and combined effects.

2.2.2 As requested in the EIA Scoping Opinion, the final ES will include clear signposting to the sections of the ES that consider major accidents (including in relation to nearby hazardous installations), natural disasters (including severe weather events), public health, and climate change.

2.2.3 The topics that have been scoped out of the EIA are:

- aviation (Humberside Airport has confirmed that the stacks would not be all enough to cause any concern for aviation, although they will require aviation warning lighting at the top); and
- electronic interference (the height and mass of the proposed buildings would not cause any physical blocking of digital terrestrial television signals).

2.3 PEI Approach

2.3.1 The format of the PEI Report largely reflects the proposed format of the final ES and covers the assessment topics agreed during the EIA Scoping process between August and October 2019.

2.3.2 Volume I of the PEI Report is structured into chapters, as follows:

- Chapters 1 and 2 – an introduction to the PEI Report and EIA approach;
- Chapters 3 to 6 – a description of the Site and Proposed Development including information on construction timescales and alternatives;
- Chapters 7 to 16 – preliminary assessments of the likely significant effects of the Proposed Development in relation to the environmental topics scoped in to the EIA;
- Chapter 17 – preliminary assessment of potential inter-relationships between the topics covered in Chapters 7 to 16 (combined effects), and between the Proposed Development and other planned developments in the surrounding area (cumulative effects); and
- Chapter 18 – a summary of the identified potential significant environmental effects.

2.3.3 Volumes II and III of the PEI Report comprise the figures and technical appendices that accompany each chapter of Volume I.

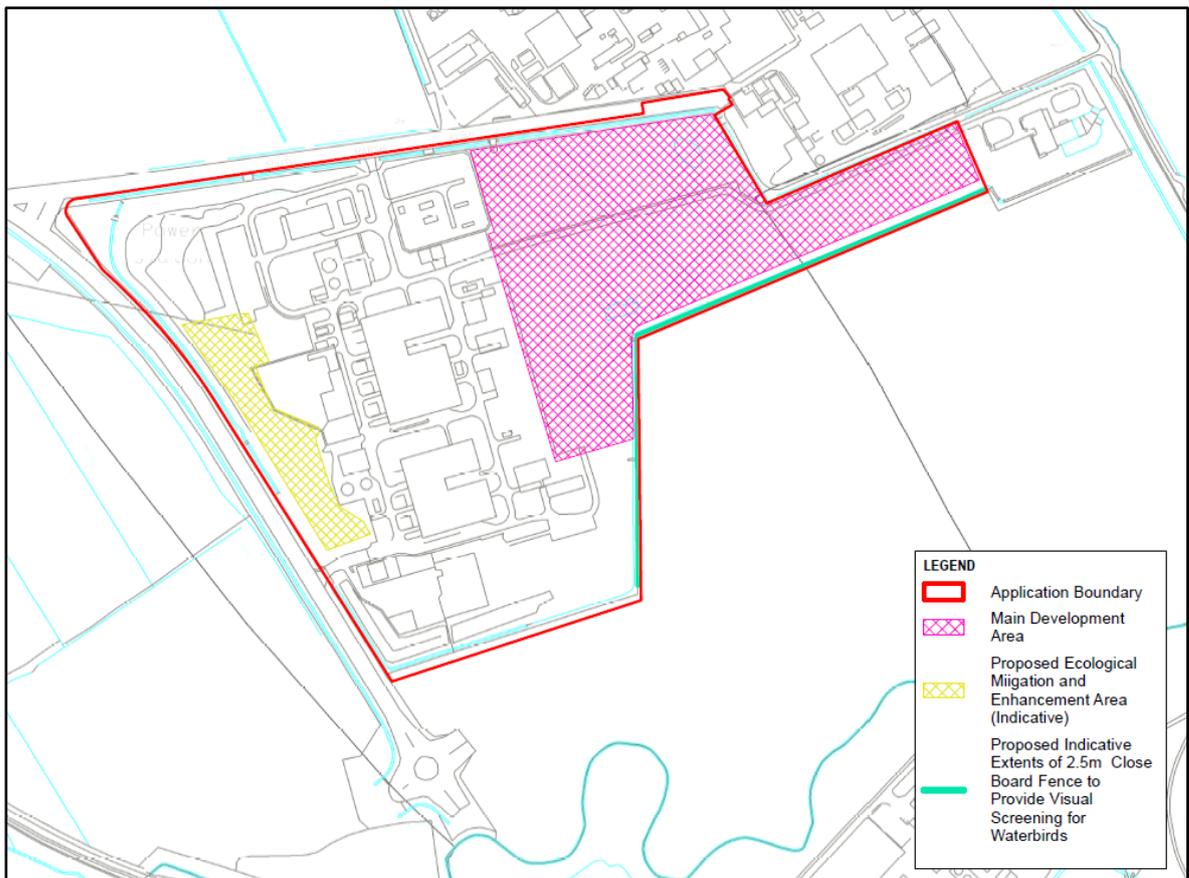
2.3.4 This NTS also forms part of the PEI Report.

3.0 THE PROPOSED DEVELOPMENT SITE

3.1 Introduction

- 3.1.1 All of the land proposed to be included within the DCO 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). The Site 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. The Proposed Development has been designed to operate without affecting the ongoing operation of the South Humber Bank Power Station, for example through the provision of a separate access from South Marsh Road.

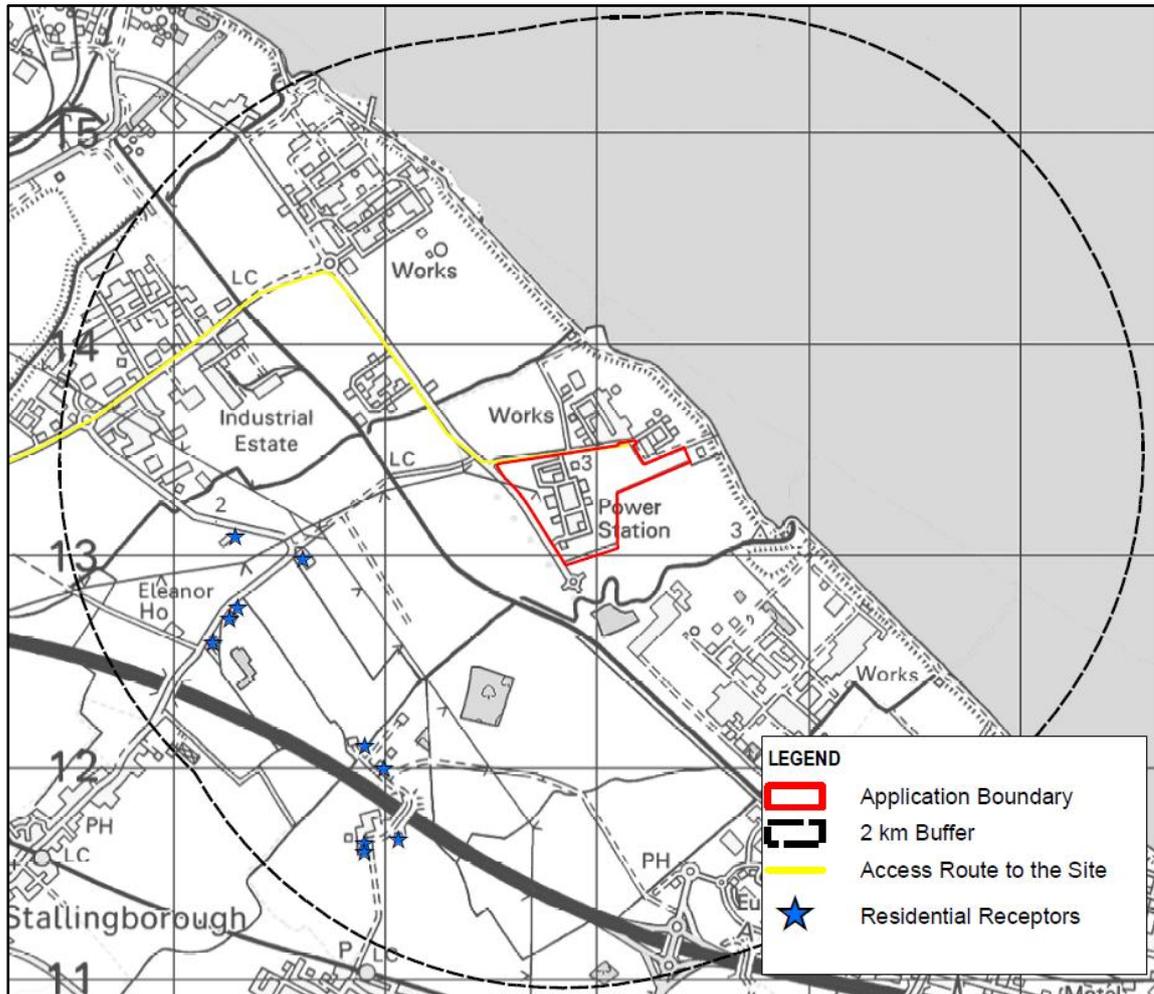
3.2 The Surrounding Area and Potential Environmental Receptors

- 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, which are more than 2 km from the Site.
- 3.2.3 Full details of the Site and surrounding environment are available within the PEI Report, Volume I, Chapter 3; this is supported by topic-specific considerations in Chapters 7 to 16.
- 3.2.4 A summary of key environmental receptors is provided below. Where distances are quoted the distance is measured (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

- 3.2.5 There are no residential receptors within 500 m of the Site.
- 3.2.6 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



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

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

Ecological Receptors

3.2.9 The Site is not subject to any statutory or non-statutory ecological designations.

3.2.10 The nearest designated site 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.

3.2.11 There are no other SSSIs within 2 km or European sites within 10 km of the Site.

3.2.12 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.

3.2.13 There are two Sites of Nature Conservation Importance (SNCI) 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).

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 the second, 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. Flood 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 (National Heritage List for England (NHLE) reference 1020423) is located approximately 3.5km 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 3.2 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 EfW power station with a gross electrical capacity of up to 95 MW.

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

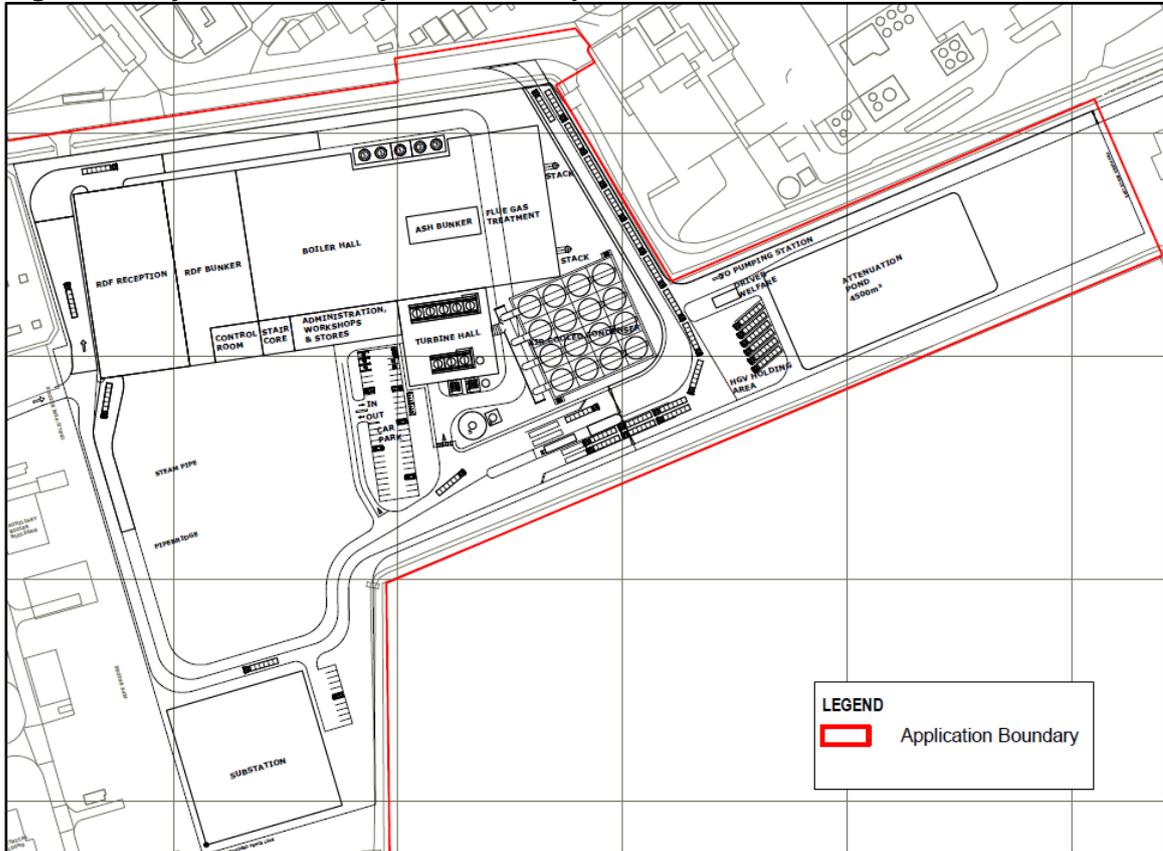
- fuel reception hall including storage bunker;
- boiler house (which contains the main elements of the combustion process);
- flue gas treatment (FGT) hall;
- turbine hall; and
- administration block including control room, workshops and stores.
- an air cooled condenser (ACC) adjacent to the turbine hall;
- up to two emissions stacks adjacent to the FGT hall;
- by-product handling and storage facilities;
- 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;
- potential 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.

4.1.3 The aspects of the Proposed Development that are additional to the Consented Development are:

- a larger ACC, with an additional row of fans and heat exchangers compared to the Consented Development – this will allow a higher mass flow of steam to be sent to the steam turbine whilst maintaining the exhaust pressure and thereby increasing the amount of power generated;
- a greater installed cooling capacity for the generator – additional heat exchangers will be installed to the closed circuit cooling water system compared to the Consented Development to allow the generator to operate at an increased load and generate more power;
- an increased transformer capacity – depending on the adopted grid connection arrangement the capacity will be increased through an additional generator transformer operating in parallel with the Consented Development's proposed generator transformer (or a single larger generator transformer) or an additional circuit breaker may be installed. Both arrangements would allow generation up to 95 MW; and

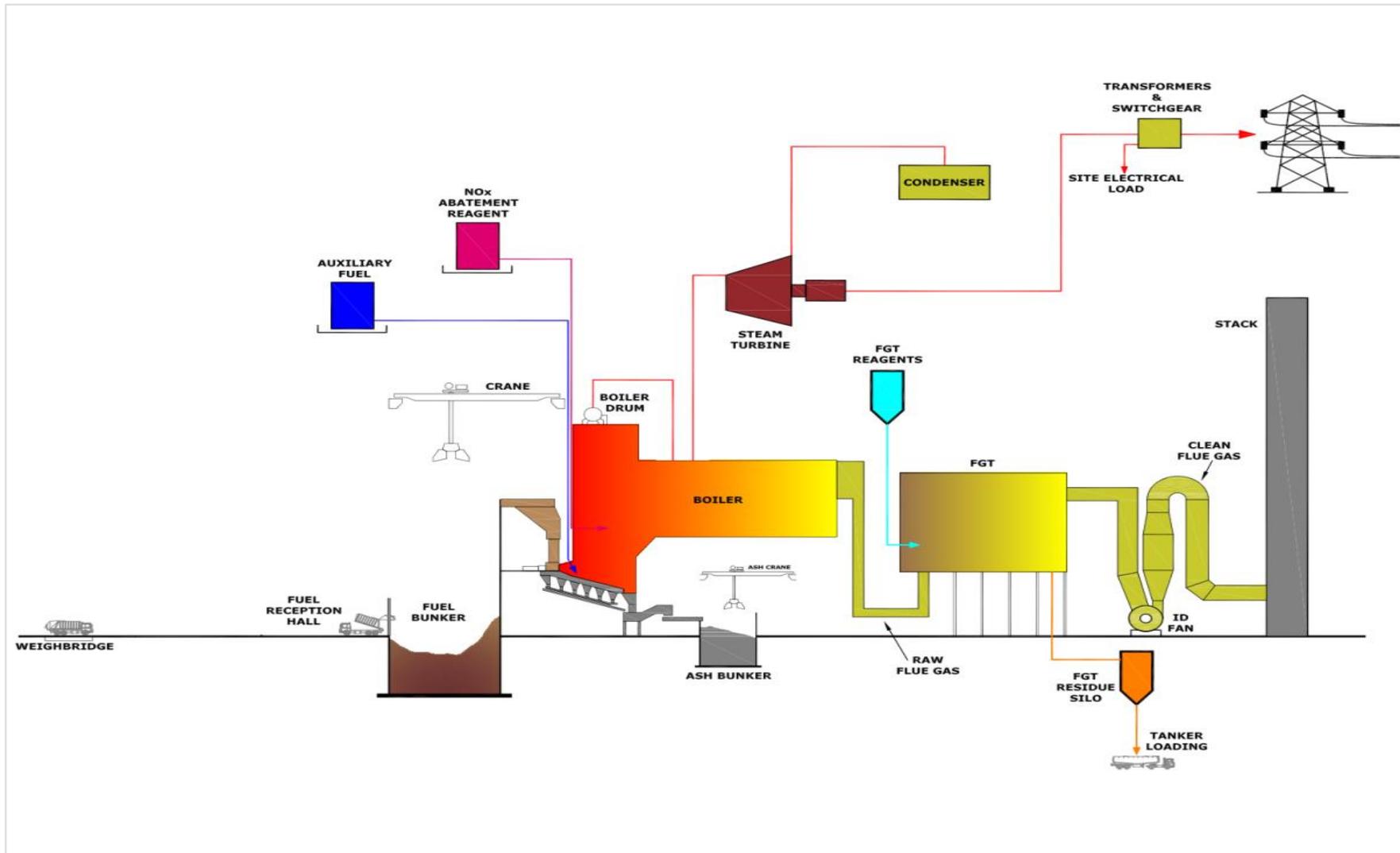
- ancillary works – the above works will require additional ancillary works and operations compared to the Consented Development, such as new cabling or pipes, and commissioning to ensure that the apparatus has been correctly installed and will operate safely and as intended.

Figure 4: Layout of the Proposed Development



- 4.1.4 The design of the Proposed Development incorporates an appropriate degree of flexibility in the dimensions and configurations of buildings and structures to allow for the selection of the preferred technology and contractor. For example, the emissions stacks will be positioned within a defined area of the Site.
- 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, to design out or minimise environmental effects.
- 4.1.6 The Proposed Development will operate, and receive fuel deliveries, 24 hours per day, seven days per week.
- 4.1.7 The schematic shown in **Figure 5** below illustrates the EfW process.

Figure 5: Process diagram schematic for the EfW process



5.0 CONSTRUCTION PROGRAMME AND MANAGEMENT

- 5.1.1 The most likely construction programme scenario is currently anticipated to be the construction of the Consented Development under the Planning Permission starting in Quarter 1 (Q1) 2020 and taking approximately three years to complete, with the additional aspects of the Proposed Development also being constructed approximately half way through the same construction period, following the grant of the DCO (potentially beginning in Q3 2021).
- 5.1.2 The other potential construction programme scenarios that are being considered for the purposes of this EIA in order to present a robust assessment of potential impacts are:
- construction of the Proposed Development in a single circa three year construction phase commencing shortly after the DCO is awarded (expected in Q3 2021) (with no construction under the Planning Permission); or
 - construction of the Proposed Development in a single circa three year construction phase commencing up to five years after the DCO is awarded, in Q3 2026 (again, with no construction under the Planning Permission).
- 5.1.3 The three potential construction programme scenarios are illustrated in Table 1 below. An indicative programme of construction activity within the three year construction period is provided at Table 2.

Table 1: Indicative construction programme scenarios

SCENARIO	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Scenario 1 Start Q1 2020 (pursuant to Planning Permission).	█	█	█							
Scenario 2 Start shortly after DCO award.		█	█	█	█					
Scenario 3 Start five years after DCO award.							█	█	█	█

- 5.1.4 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 as these activities cannot be stopped. Where this or any other activities are to be conducted outside the core hours they will comply with any restrictions agreed as part of the DCO (or the Planning Permission), including in relation to control of noise and traffic.

- 5.1.5 Each environmental assessment topic within the PEI Report identifies and assesses the 'worst case' construction scenario from the three scenarios described above for that topic, where relevant. For some topics, there is no material difference between the three scenarios, as the start date has no bearing on the assessment of effects, and where this is the case this is also stated.
- 5.1.6 Full details of the construction programme and management are available within the PEI Report, Volume I, Chapter 5.

6.0 NEED, ALTERNATIVES AND DESIGN EVOLUTION

- 6.1.1 There is a national need for new low carbon energy generation facilities and also a national need for waste management facilities. The Proposed Development will make effective use of a renewable resource, diverting waste from landfill or from export overseas while supporting energy security and diversification.
- 6.1.2 The EIA Regulations state that the ES (and a PEI Report) should include a description of reasonable and relevant alternatives and the main reasons for selecting the chosen development including a comparison of environmental effects.
- 6.1.3 The PEI Report, Volume I, Chapter 6 provides this information in respect of the Proposed Development. In summary, alternatives have been considered during the evolution of the Proposed Development and preparation of the DCO 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.
- 6.1.4 The environmental effects of these alternatives have been compared to inform the Proposed Development layout and design. The Proposed Development and Site have been determined as a result of iterative technical and environmental studies.
- 6.1.5 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).
- 6.1.6 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.
- 6.1.7 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 that could be required.
- 6.1.8 The design may continue to evolve following consultation, however the design parameters defined within the Planning Permission will be retained. The final design will be reported in the ES submitted as part of the Application.

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 PEI Main Report (Volume I). This section provides a brief summary of the overall findings of the PEI.

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 the Applicant 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. Emissions to air relating to construction are assessed to have no significant adverse effects on human or ecological receptors. This is due to several reasons, including:

- the distance from the Site to sensitive receptors;
- commitment to the use of appropriate construction management measures and mitigation throughout the construction phase (employed through the implementation of a Construction Environmental Management Plan (CEMP); and
- the use of a Construction Traffic Management Plan.

Effects During Operation

7.2.5 Predicted concentrations of air pollutants at ground level 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 height of the stacks for the Proposed Development is 100 m 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 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 considered to be not 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.
- 7.3.5 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 or timing restrictions to drop hammer piling.
- 7.3.6 Vibration associated with the construction activities are not predicted to result in significant effects on residential receptors.
- 7.3.7 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 via the measures described above.

Effects During Operation

- 7.3.8 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 due to the adoption of appropriate mitigation measures.
- 7.3.9 Based on 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

- 7.3.10 The nature of decommissioning works is likely to be similar to that of construction works (with the exception of piling, which is not required for decommissioning). 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 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 one, this equates to 56 cars per day. In addition, there will be up to 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 five 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 It is expected for there 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 SAC, SPA and 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 the PEI Report, Volume I, Chapter 10: Ecology.

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 which is considered to be functionally linked to the Humber Estuary nature conservation designations (i.e. it is outside the formally designated area but supports species which are important to the designation). 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 the Applicant to the South Humber Gateway strategic mitigation scheme as set out in NELC policy.
- 7.5.6 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 habitats lost, and as such this loss will not result in significant adverse effects.

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 and visual disturbance), potentially resulting in adverse effects on ecological features. However, due to the mitigation included in the design such as appropriate stack heights and a visual screen between the Main Development Area and field used by waterbirds to the south, 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

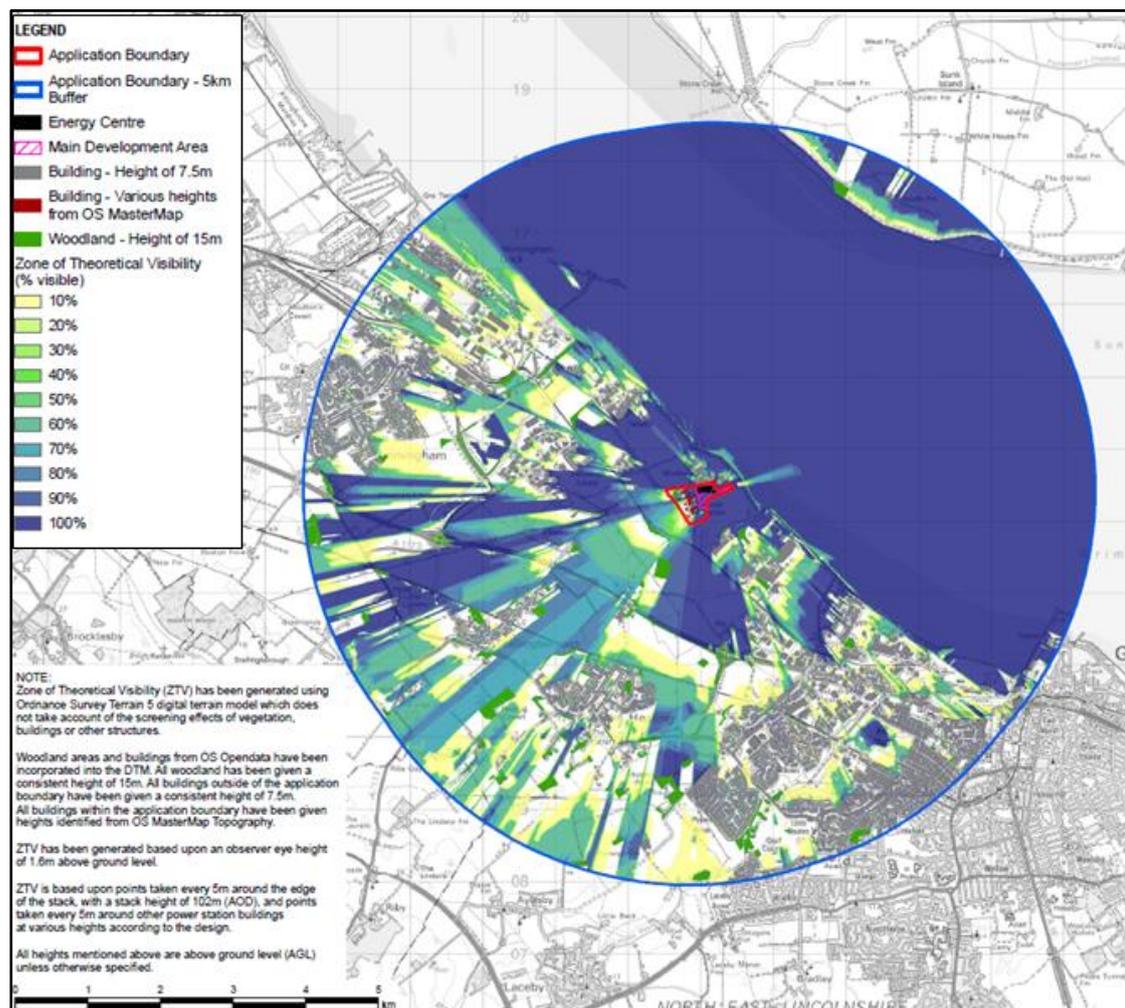
- 7.5.8 No significant effects are anticipated as a result of the decommissioning phase of the Proposed Development. Any necessary mitigation requirements would be determined and agreed at a future date prior to decommissioning, taking account of relevant legislative, policy and permitting requirements 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 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 experienced 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 Public Right of Way (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 the 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 for the operational Site, potential impacts to soil and groundwater will be avoided. As such, significant adverse effects are not anticipated.

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 such as through the use of temporary cranes. 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 3a), which is defined by the Environment Agency as land that has a 1 in 100 year or greater annual probability of river flooding; or 1 in 200 year or greater annual probability of sea flooding. The Site benefits from the presence of tidal flood defences along the south bank of the Humber Estuary to effectively manage the risk of sea flooding. A standalone Flood Risk Assessment has been prepared for the Proposed Development (see the PEI Report, Volume II, Appendix 14A).

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 Any increase in impermeable area during construction, which could lead to increased flood risk will be managed by effective drainage design.
- 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 Proposed Development could 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 for the Proposed Development concludes that construction employment is higher than for the Consented Development. This is because the Consented Development assessment considered the 'worst case' to be the construction of a single stream plant (which has now been discounted by the Applicant).

Effects During Construction

- 7.10.4 The Proposed Development is predicted to have a significant temporary beneficial effect on the local and regional economy through the creation of an estimated 731 net construction jobs, of which around 366 are expected to be sourced from within the region.

Effects During Operation

- 7.10.5 The Proposed Development will also generate approximately 55 net long-term jobs once operational, of which 48 are likely to be sourced from the region.
- 7.10.6 It is expected that each year, the Proposed Development will be taken offline for around three weeks to allow for invasive maintenance such as internal inspection of the boiler. Approximately every five to six years, the Proposed Development will be taken offline for a 'major outage' for more substantial maintenance such as replacement of boiler sections. For the periodic maintenance element of the Proposed Development, the total net employment would be 195 employees of which around 49 are expected to be sourced from within the region.
- 7.10.7 The jobs would be in operative, management and maintenance roles. The operational employment generated is considered to comprise a significant, long term beneficial effect.

Effects During Decommissioning

- 7.10.8 During the decommissioning phase, effects are considered to be comparable to, or less than, those for construction activities.

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 is anticipated to generate around 3,500 m³ of construction waste, most of which may be suitable for re-use or recycling.
- 7.11.3 In addition the construction of the Proposed Development could generate approximately 160,000 m³ 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.
- 7.11.4 The construction waste is considered in the context of the total regional waste arisings of around 14 million m³ of inert waste landfill capacity in the Yorkshire and Humber region. As a percentage of the regional total (approximately 1.2%), 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.
- 7.11.5 Good practice waste management procedures will minimise the risk of adverse effects on human or ecological receptors from the waste storage, transfer or disposal.
- 7.11.6 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

- 7.11.7 During operation the Proposed Development will generate approximately 180,000 tonnes of inert bottom ash per annum which can either be recycled for use in the construction industry or landfilled. The Applicant will explore opportunities for beneficial re-use of bottom ash.
- 7.11.8 In addition, approximately 20,600 tonnes of FGT residues will be generated. Owing to their alkaline nature, the FGT residues will be disposed of as a 'hazardous waste'.

7.11.9 Neither of these waste quantities are considered to result in significant adverse effects on regional waste management infrastructure.

Effects During Decommissioning

7.11.10 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 PEI Report. 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 to date are:

- Stallingborough Link Road (a new single carriageway road in Stallingborough);
- Sustainable Transport Fuels Facility (a waste to fuel facility);
- 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 EfW power station);
- Waste to Energy – Immingham Railfreight (a new EfW power station);
- North Beck Energy Centre (a new EfW power station);
- Stallingborough Interchange Business Park (a 62 hectare business park); and
- VPI Immingham OCGT DCO (a new 299 MW gas-fired power station).

7.12.3 The potential for cumulative effects with these other developments is being considered for all of the environmental topics by a review of the available information (including the ESs and any detailed environmental modelling information where available). No significant cumulative effects during construction or operation have been identified to date for the majority of topics.

7.12.4 The only exception is two potentially significant cumulative visual effects from Viewpoint 5 (Beechwood Farm Carvery) and Viewpoint 9 (Middle Drain footpath) during both construction and operation, where visitors/ customers and footpath users could experience views of both the Proposed Development and the Sustainable Transport Fuels Facility. A significant visual effect has already been identified at Viewpoint 9 (Middle Drain footpath) 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 buildings and structures and no mitigation is proposed.

- 7.12.5 Combined effects (meaning the combination of different types of effects from the Proposed Development on a single receptor) have also been assessed. The assessment 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 PEI Report explains the interim findings of the EIA process 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 wider consultation process, the following potential significant residual effect (i.e. effects after implementation of mitigation, where mitigation measures are identified) has been identified:
- significant adverse effects on views from Viewpoint 9 (Middle Drain footpath) during construction, operation and decommissioning of the Proposed Development;
 - significant adverse effects on views from Viewpoint 5 (Beechwood Farm Carvery) and Viewpoint 9 Middle Drain footpath) during construction and operation of the Proposed Development together with the construction and operation of other developments proposed in the vicinity of the Site; and
 - significant beneficial socio-economic effects during construction and operation of the Proposed Development due to the creation of jobs.
- 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 requirements and other controls within the DCO for the Proposed Development, should this be granted.