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2.0 ASSESSMENT METHODOLOGY

2.1 Environmental Impact Assessment Approach and Scope

2.1.1 This Environmental Statement (ES) has been prepared to satisfy the requirements of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations') in relation to the proposed Development Consent Order (DCO) application ('the Application') outlined within Chapter 1: Introduction.

2.1.2 In preparing this ES, reference has been made to the following guidance:

- Advice Note Three: EIA Notification and Consultation (Planning Inspectorate (PINS), 2017a);
- Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (PINS, 2017b);
- Advice Note Nine: Rochdale Envelope (PINS, 2018); and
- Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (PINS, 2019).

2.1.3 Reference has also been made to the Scoping Opinion received from the Secretary of State (SoS) received on 2nd October 2019 (Appendix 1B, ES Volume III, Document Ref. 6.4) and the advice contained within it regarding assessment methodology, topics and presentation of this ES.

2.1.4 In response to the Scoping Opinion and to ensure that the ES is based on it, the EIA includes 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.

2.1.5 As requested in the EIA Scoping Opinion (Appendix 1B, ES Volume III, Document Ref. 6.4), the ES also includes 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. A summary of key points relevant to these topics is provided below.

Major Incidents and Natural Disasters

- 2.1.6 Accidental events such as the potential for fuel spillages, fires and abnormal air emissions, and how the risk of these events will be minimised and impacts managed, is discussed in the relevant chapters of the ES including Chapter 4: The Proposed Development, Chapter 7: Air Quality, Chapter 12: Geology, Hydrogeology and Land Contamination, and Chapter 14: Water Resources, Flood Risk and Drainage. The majority of emergency response plans and contingency measures will be addressed in the Environmental Permit required for the operation of the Proposed Development, which is regulated by the Environment Agency.
- 2.1.7 Consultation with the Health and Safety Executive (HSE) was carried out in relation to the Consented Development giving due consideration to the consultation zones for nearby potentially hazardous installations and pipelines using the HSE's Land Use Planning Methodology. The HSE has also been consulted on the Proposed Development. The Site contains areas within HSE Inner, Middle and Outer Consultation Zones of other nearby facilities. The HSE issued a 'Do not Advise Against' response to the planning application for the Consented Development as no workplaces accommodating more than 100 occupants or with three or more storeys were proposed within the Inner Zone. The Proposed Development layout has not changed in this regard subsequent to when the HSE was consulted on the Consented Development and there has been no change to HSE's Land Use Planning Methodology guidance. As anticipated the HSE confirmed in response to the consultation on the Proposed Development that "*providing development within this development area is for workplaces (predominantly non-retail), with less than 100 occupants in each building and less than 3 occupied storeys, then HSE would not advise against*" the Proposed Development. The location of the administration building, which is the only building with potential for more than three occupied storeys, is secured through the inclusion of it within a specific 'work number' in Schedule 1 to the Draft DCO (Document Ref. 3.1) and as shown on the Works Plans (Document Ref. 4.3) in the Application.
- 2.1.8 Relevant issues relating to natural disasters (storms and flooding) are covered in Chapter 14: Water Resources, Flood Risk and Drainage, and the associated Flood Risk Assessment (Appendix 14A, ES Volume III, Document Ref. 6.4).
- 2.1.9 No other potential major incidents and natural disasters relevant to the Site and the Proposed Development have been identified.
- 2.1.10 On the basis of paragraphs 2.1.6 to 2.1.9 above, a separate Major Incidents and Natural Disasters chapter is not included.

Human Health

- 2.1.11 Human health impacts including air and noise emissions, contaminated land, water quality, waste management and socio-economics are considered in the relevant chapters of this ES including Chapter 7: Air Quality, Chapter 8: Noise and Vibration, Chapter 12: Geology, Hydrogeology and Land Contamination, Chapter 14: Water Resources, Flood Risk and Drainage, Chapter 15: Socio-Economics and Chapter 16: Waste Management.

- 2.1.12 Public Health England has also requested that any potential impacts due to electric and magnetic fields associated with the Proposed Development's connection to the electricity grid are considered.
- 2.1.13 Chapter 18: Human Health signposts the relevant sections of the technical chapters covering matters relating to human health, and provides further information on electric and magnetic fields.

Sustainability and Climate Change

- 2.1.14 Relevant sustainability and climate change considerations that have been incorporated into the design of the Proposed Development are covered within the relevant chapters of the ES.
- 2.1.15 The main climate change consideration is future flood risk taking into account climate change effects, and associated measures required to ensure the Proposed Development is designed appropriately (e.g. surface water attenuation, flood resilient design) (see Flood Risk Assessment and Drainage Strategy in Appendices 14A and 14B, ES Volume III, Document Ref. 6.4).
- 2.1.16 Sustainability is also relevant to the need for an additional waste management facility (the Proposed Development), which comprises a form of renewable energy. This is considered in Chapter 6: Need, Alternatives and Design Evolution and is also considered in the Planning, Design and Access Statement (Document Ref. 5.5).
- 2.1.17 Carbon dioxide emissions are assessed in the Greenhouse Gas Emissions Assessment (Appendix 19A, ES Volume III, Document Ref. 6.4).
- 2.1.18 Chapter 19: Sustainability and Climate Change signposts the relevant sections of the technical chapters covering matters relating to sustainability and climate change.

Scoped Out Topics

- 2.1.19 The EIA Scoping Report and subsequent EIA Scoping Opinion concluded that two specific topics did not need to be considered as part of the EIA for the Proposed Development and could be scoped out. These topics, and the reasons for them being scoped out, are considered below.

Aviation

- 2.1.20 The Civil Aviation Authority (CAA) has a general interest in charting all known structures of 91.4 m (300 feet) or more above ground level and may also require lighting at the top of tall structures. The existing South Humber Bank Power Station stacks are 75 m in height and have lighting at the top for aviation purposes.
- 2.1.21 The Proposed Development is within 14 km of Humberside International Airport and is within the Safeguarding area for it. Consultation with Humberside Airport determined that the Airport would not object unless the stack height was over 171 m.
- 2.1.22 The CAA and Humberside Airport were formally consulted through the planning application process for the Consented Development and as a result of this

consultation a planning condition is attached to the Planning Permission requiring:

- notification to the Defence Geographic Centre of the location of development and details of construction (dates and structure/ equipment heights); and
- aviation warning lighting to be fitted to the stacks at the highest practicable point on the structure.

2.1.23 The same requirements are expected to apply to the Proposed Development, and through their application no assessment of aviation impacts is therefore required as part of the EIA.

Electronic Interference

2.1.24 The introduction of new structures of significant height and bulk into an environment can cause disruption to the reception of electromagnetic waves. Although this effect relates to both radio and TV signals, TV reception is potentially more affected and as such only TV reception has been considered. The proposed maximum building heights will be no higher than the existing stacks at South Humber Bank Power Station, and the highest point of the Proposed Development stacks will be fixed at 102 m AOD. The expected maximum heights of temporary construction cranes will be similar to the height of the proposed stacks.

2.1.25 Terrestrial television signals are transmitted in digital format. The only relevant interference mechanism affecting digital terrestrial TV signals is attenuation due to buildings physically blocking (and absorbing) them. If the TV signals are too weak then the pictures very quickly deteriorate into random 'blocks' and then disappear altogether.

2.1.26 Given the height and mass of the buildings, stacks and temporary structures associated with the Proposed Development, the lack of nearby residential properties and the lack of any sight lines between transmission antenna and residential areas being obscured by the Proposed Development, it is considered that an assessment of the Proposed Development's effect on electronic interference is not required as part of the EIA.

2.2 Environmental Statement

2.2.1 This ES presents a description of the Proposed Development and its likely significant environmental effects on the environment during construction, operation (including maintenance where relevant) and decommissioning. It also details measures to avoid or reduce such effects and the alternatives considered.

2.2.2 The ES summarises the outcomes of the following EIA activities:

- establishing the baseline conditions;
- consultation with statutory and non-statutory consultees;
- consideration of relevant local, regional and national planning policies, guidelines;
- adherence to legislation relevant to EIA;

- consideration of technical standards for the development of significance criteria;
- application of specialist assessment methodologies;
- design review;
- review of secondary information, previous environmental studies, publicly available information and databases;
- expert opinion;
- physical surveys and monitoring;
- desk-top studies;
- modelling and calculations; and
- reference to current guidance.

2.2.3 These activities enable the prediction of impacts in relation to the baseline, and a prediction based on the information available of the likely significance of effects on environmental receptors.

2.2.4 The term 'impact' refers to changes arising from the Proposed Development, whereas the term 'effect' is used to describe the result of the impact on a receptor.

2.2.5 The technical chapters within the ES (Chapters 7-16) each follow the same structure for ease of reference, which is:

- Introduction;
- Legislation and Planning Policy Context;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Development Design and Impact Avoidance;
- Likely Impacts and Effects, both of the Proposed Development in isolation and the Proposed Development compared to the Consented Development;
- Mitigation and Enhancement Measures;
- Limitations or Difficulties;
- Residual Effects and Conclusions; and
- References.

2.2.6 As Chapter 18: Human Health and Chapter 19: Sustainability and Climate Change are overview chapters only, therefore these do not follow the same structure as outlined above.

2.3 Study Areas: Spatial Scope of Assessment

2.3.1 The technical assessment chapters describe as necessary their spatial scope including their rationale for determining the specific area within which the assessment is focussed. The study areas are a function of the nature of the

impacts and the locations of potentially affected environmental resources or receptors.

2.4 Assessment Years and Assessment Scenarios: Temporal Scope of Assessment

2.4.1 The approach to assessment has been to identify the environmental impacts of the Proposed Development at key stages in its construction, operation and eventual decommissioning.

2.4.2 There are several scenarios being considered for the construction and subsequent operation of the Proposed Development. These scenarios are outlined in more detail in Chapter 4: The Proposed Development and Chapter 5: Construction Programme and Management. However, for the purposes of the EIA, to ensure a robust assessment of environmental impacts, a worst case scenario is identified and assessed for each topic in Chapters 7 to 16 of the ES. Where it is not necessarily clear which scenario will represent the worst case for a particular topic, all relevant scenarios are assessed.

Baseline Conditions (including Future Baseline)

2.4.3 In order to assess the potential impacts and effects of the Proposed Development, it is necessary to determine the environmental conditions that currently exist on the Site and in the surrounding area, for comparison. These are known as the existing baseline conditions. Baseline conditions are determined using the results of site surveys and investigations or desk-based data searches, or a combination of these, as appropriate.

2.4.4 It is also relevant for the EIA to consider future baseline conditions taking account of any planned or likely changes to the existing baseline. For the Proposed Development, the future baseline conditions at the Site may be similar to the existing baseline conditions (if the Consented Development is not progressed) or may be different (if the Consented Development is progressed).

2.4.5 The main assessment presented in each technical chapter considers the effects of the Proposed Development as a whole, against a future baseline without the Consented Development. Each chapter also provides a comparison of the effects of the Proposed Development compared to the effects of the Consented Development. The main assessment provides an understanding of the effects of the Proposed Development as a whole, and the additional analysis provides an understanding of the additional effects arising from the Proposed Development compared to the Consented Development.

2.4.6 Most of the baseline surveys for the Consented Development were undertaken in 2018. These are considered to be still relevant and valid and have been used to inform the EIA for the Proposed Development. Where any new data has been obtained this is noted within the relevant technical chapters.

2.4.7 The assessment scenarios that have been considered for the purposes of the EIA are as follows:

- Existing Baseline (without the Proposed Development) – the year that the baseline data has been collected;

- Future Baseline (without the Proposed Development) – for comparison respectively with the Construction and Operation scenarios described below;
- Construction of the Proposed Development – Chapters 7-19 identify and assess the relevant ‘worst case’ construction scenario for each topic;
- Opening and/or Operation of the Proposed Development (where Opening represents the start of operation) – as for Construction, Chapters 7-19 identify and assess the relevant ‘worst case’ scenario for each topic where necessary; and
- Decommissioning of the Proposed Development.

2.5 Development Design, Impact Avoidance and Mitigation

- 2.5.1 Measures that have been integrated into the Proposed Development in order to avoid or reduce adverse environmental effects will be described. Such measures may include refinement of the design and layout of the Proposed Development to avoid impacts on sensitive receptors, implementation of Environmental Management Plans, and adherence to relevant legislation, guidance and best practice. The assessment of impacts and effects has been undertaken on the basis of these measures being implemented (i.e. they are 'embedded mitigation').
- 2.5.2 The key aspects where the design has evolved are described in Chapter 6: Need, Alternatives and Design Evolution.
- 2.5.3 Once the likely effects have been identified and quantified, consideration has then been given to any further mitigation (over and above anything identified within the Development Design and Impact Avoidance sections of each technical chapter) that may be required to mitigate any significant adverse effects identified. These measures are described in the Mitigation and Enhancement Measures sections of each technical chapter. The residual effects (after the implementation of mitigation) are then assessed and presented at the end of each technical chapter. Significant residual effects are also summarised in Chapter 20: Summary of Significant Effects.

2.6 Impact Assessment Methodology and Significance Criteria

- 2.6.1 Impacts are defined as changes arising from the Proposed Development, and consideration of the result of these impacts on environmental receptors enables the identification of associated effects, and their classification (major, moderate, minor and negligible, and adverse, neutral or beneficial). Each effect has been classified both before and after mitigation measures have been applied.
- 2.6.2 The classification of effects is undertaken with due regard to the following:
- extent (local, regional or national) and magnitude of the impact;
 - effect duration (whether short, medium or long-term);
 - effect nature (whether direct or indirect, reversible or irreversible);
 - whether the effects occur in isolation, are cumulative or interactive;
 - performance against environmental quality standards and in the context of relevant legislation, standards and accepted criteria;

- sensitivity of receptors;
 - for some effects, the number of receptors affected;
 - compatibility with environmental policies; and
 - professional experience and judgment of the assessor.
- 2.6.3 Further details are provided in each technical assessment chapter where appropriate.
- 2.6.4 Where it has not been possible to quantify (quantitatively assess) effects, qualitative assessments have been carried out, based on available knowledge and professional judgment. Where any uncertainty exists, this has been noted as limitations to the assessment within the Limitations or Difficulties section of each technical chapter.
- 2.6.5 To enable comparison between technical topics and aid understanding within the ES, standard terms are used wherever possible to classify potential effects (major, moderate, minor and negligible), and effects are also described as being adverse, neutral or beneficial.
- 2.6.6 Definitions of the standard terms are provided below:
- negligible – imperceptible effect to an environmental resource or receptor;
 - minor – slight, very short or highly localised effect;
 - moderate – limited effect (by extent, duration or magnitude);
 - major – considerable effect (by extent, duration or magnitude) of more than local scale or in breach of recognised acceptability, legislation, policy or standards;
 - adverse – detrimental or negative effects to an environmental resource or receptor;
 - neutral – effects to an environmental resource or receptor that are neither advantageous or detrimental; and
 - beneficial – advantageous or positive effect to an environmental resource or receptor.
- 2.6.7 Moderate and major effects are generally considered to be ‘significant’ for the purposes of the EIA Regulations, in accordance with standard EIA practice.
- 2.6.8 Each of the technical chapters provides further description and definition of the assessment criteria relevant to each topic. Where possible, this has been based upon quantitative and accepted criteria (for example, British Standards), together with the use of value judgment and expert interpretation to classify effects.
- 2.6.9 In general, the classification of an effect is based on the magnitude of the impact and sensitivity or importance of the receptor, using the matrix shown at Table 2.1. Where there are deviations away from this matrix (due to the technical guidance for a specific assessment topic), this is highlighted within the relevant technical chapter and the reason for the variation explained.

Table 2.1: Classification of effects

MAGNITUDE OF IMPACT	SENSITIVITY/ IMPORTANCE OF RECEPTOR			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

2.6.10 Short term effects are considered to be those associated with the construction phase and which cease when construction works are completed; long term effects are those associated with the completed, operational development and which will last for the duration of the operational phase. Effects may also be permanent (irreversible) or temporary (reversible) and direct or indirect.

2.7 Cumulative and Combined Effects

2.7.1 In accordance with the EIA Regulations, consideration is given to the potential for cumulative and combined effects to arise as a result of the Proposed Development.

2.7.2 Cumulative effects are those that accrue over time and space from a number of development activities. The impact of the Proposed Development will be considered in conjunction with the potential impacts from other projects or activities which are reasonably foreseeable in terms of delivery (i.e. have been submitted for planning approval but not yet approved, or have planning consent), located within a geographical scope where environmental impacts could act together to create a more significant overall effect on a receptor and where sufficient environmental information is available.

2.7.3 Combined effects are those resulting from a single development, in this case the ‘Proposed Development’, on any one receptor that may collectively cause a greater effect (such as the combined effects of noise and air quality/ dust impacts during construction on local residents).

2.7.4 Cumulative and combined effects are discussed in Chapter 17 of the ES.

2.8 References

Planning Inspectorate (2017a) *Advice Note Three: EIA Notification and Consultation, Version 7, August 2017*

Planning Inspectorate (2017b) *Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements, Version 6, December 2017*

Planning Inspectorate (2018) *Advice Note Nine: Rochdale Envelope, Version 3, July 2018*

Planning Inspectorate (2019) *Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, Version 2, August 2019*