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5.0 CONSTRUCTION PROGRAMME AND MANAGEMENT

5.1 Introduction

- 5.1.1 This chapter provides a summary of the proposed approach for the construction phase of the Proposed Development.
- 5.1.2 This includes information on construction programme and timings, and methods of working where available. The Engineering, Procurement and Construction (EPC) contractor procurement process is currently being progressed for the Consented Development, which allows the overall duration of the construction period to be estimated with reasonable confidence, since the Additional Works (see Section 4.4 in Chapter 4: The Proposed Development) would not materially alter the overall duration. As the EPC contractor has not yet been appointed, construction timing details cannot be confirmed at this stage, therefore worst case estimates have been made based on experience gained on similar developments and professional judgment.
- 5.1.3 This chapter is supported by an Outline Construction Environmental Management Plan (CEMP) see Appendix 5A in ES Volume III (Document Ref. 6.4).

5.2 Construction Programme Scenarios

Scenario 1

- 5.2.1 As described in Chapter 4: The Proposed Development, the most likely construction programme is currently anticipated to be the construction of the Consented Development pursuant to the Planning Permission starting in Quarter 2 (Q2) 2020 and taking approximately three years to complete, with the Additional Works required for the Proposed Development being constructed approximately half way through the construction period for the Consented Development, subject to the grant of a Development Consent Order (DCO). Those works are estimated to begin during Q3 2021.
- 5.2.2 In this scenario (Scenario 1), the Applicant would continue to obtain any necessary approvals for the Consented Development pursuant to conditions attached to the Planning Permission. The submission of information to discharge planning conditions attached to the Consented Development has already begun and it is anticipated that applications to discharge conditions regarding the approval of detailed design for the Consented Development will be submitted during Q2 2020.

Scenarios 2 and 3

- 5.2.3 The other potential (albeit less likely) construction programme scenarios that are considered for the purposes of this Environmental Impact Assessment (EIA) in order to present a robust assessment of potential impacts are:
- Scenario 2: construction of the Proposed Development in a single circa three year construction phase commencing shortly after the DCO is granted (expected in Q3 2021) (with no construction of the Consented Development pursuant to the Planning Permission); and

- Scenario 3: construction of the Proposed Development in a single circa three-year construction phase commencing up to five years after the DCO is granted, in Q3 2026 (again, with no construction of the Consented Development pursuant to the Planning Permission).

5.2.4 These three potential construction programme scenarios are illustrated in Table 5.1. Each consist of the same single phase of construction, of the same circa three year duration.

5.2.5 Each environmental assessment topic 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 stated in the relevant chapter.

Table 5.1: Potential construction programme scenarios (if DCO granted around Q3 2021)

SCENARIO	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Scenario 1 Start Q2 2020 - pursuant to Planning Permission	Q2 2020			Q2 2023						
Scenario 2 Start shortly after DCO award		Q3 2021			Q3 2024					
Scenario 3 Start five years after DCO award							Q3 2026			Q3 2029

- 5.2.6 An indicative programme of construction activity within the three year construction period is provided at Table 5.2.
- 5.2.7 It is common for much of the ground work, for example piling and pouring of concrete slabs, to be completed prior to the erection of any above ground structures. The erection of civil and structural components, such as cladding and external civil works usually continue whilst the erection of mechanical components is ongoing. However, the detailed phasing of construction is the responsibility of the appointed EPC contractor and may vary dependent on plant layout and procurement of key equipment. This is not considered a limitation for the EIA as the assessment methodologies have adopted a worst case scenario approach (refer to Chapter 2: Assessment Methodology).
- 5.2.8 As shown in Table 5.2, the construction activities required for the Proposed Development include mobilisation and enabling works, earthworks, civil construction works, mechanical erection of equipment, buildings and structures, cold commissioning and hot commissioning. If the Additional Works are constructed as currently anticipated (namely, Scenario 1: commencing shortly after the DCO is granted, approximately midway through the construction of the Consented Development), then mobilisation, enabling works and earthworks will have already been completed and only the civil and mechanical works associated with the Additional Works (see Section 4.4 of Chapter 4: The Proposed Development), followed by cold and hot commissioning of the Proposed Development, are anticipated to be required under the DCO.

5.3 Construction Methods

Construction Equipment

5.3.1 For the purposes of the EIA presented in this Environmental Statement (ES) (and in particular for the noise assessment presented in Chapter 8: Noise and Vibration), worst case estimates have been made of the types and numbers of plant and machinery likely to be used on the Site during the construction period. These estimates are based on professional judgment using experience gained on similar developments. Appendix 8C in ES Volume III (Document Ref. 6.4) presents a list of the typical plant and equipment requirements during construction that have been assumed for the construction noise assessment.

Demolition

5.3.2 No demolition is required prior to construction commencing on Site.

Earthworks

5.3.3 Earthworks will be required to reprofile the Site as well as to prepare for foundations and remove or remediate unsuitable soils if required.

5.3.4 The appointed contractor may also express a preference to cut and fill the top layer (c. 2 m) of ground within the Main Development Area to improve the geotechnical condition of the ground. Should this be required it is estimated that a volume of approximately 160,000 m³ of spoil could be generated. Some of this could be reused on Site but as any significant land raising could have undesirable flood risk impacts (see Chapter 14: Water Resources, Flood Risk and Drainage and Appendix 14A: Flood Risk Assessment in ES Volume III, Document Ref. 6.4) the bulk of the material will need to be removed off Site to a suitable waste facility. This has been considered when estimating peak construction traffic movements (see Chapter 9: Traffic and Transport) and construction waste (see Chapter 16: Waste Management).

5.3.5 Some spoil may need to be temporarily stored within the Site. If necessary, suitable measures will be put in place to prevent sediment runoff being washed off Site.

5.3.6 Soils will be managed in accordance with best practice and a Materials Management Plan (MMP) will be prepared to detail the procedures and measures to be taken to manage excavated materials. Measures for the management of any contaminated soils will also be set out in the CEMP.

Construction Laydown Areas and Welfare Facilities

5.3.7 The proposed construction laydown areas (including storage, site offices, welfare facilities, temporary generators, concrete batching facilities, vehicle and cycle parking facilities, security fencing and gates, external lighting, roadways and haul routes, wheel wash facilities and signage), will be located within the Site, within the Main Development Area and/ or the construction laydown area (Work No. 5) to the east and south of the South Humber Bank Power Station main buildings (see Figure 3.1 in ES Volume II (Document Ref. 6.3) and the Works Plan (Document Ref. 4.3)).

- 5.3.8 Vegetation clearance, levelling and ground preparation works for these laydown areas will be required to provide a suitable surface material. This will be permeable to allow uncontaminated rain water to percolate to ground, with suitably bunded locations identified as storage areas for any hazardous or polluting materials or chemicals to prevent pollution.

Erection of Buildings and Structures

- 5.3.9 Based on the expected ground conditions and the proximity of the Site to the Humber Estuary it is expected that piling will be required as a foundation for the main buildings (Work No. 1). A Piling Risk Assessment will be undertaken in accordance with Environment Agency guidance to consider and mitigate the risks of causing new pollutant linkages and/ or worsening existing linkages with respect to risks to controlled waters during construction of the Proposed Development.
- 5.3.10 As set out in Chapter 8: Noise and Vibration and Chapter 10: Ecology, the piling method will also be designed to avoid disturbance to wintering waterbirds using nearby fields.

Construction of Utilities Connections

- 5.3.11 The Proposed Development will require a number of utilities connections potentially including electricity and gas connections, foul and surface water drainage connections, mains water and telecommunications. Further detail on these are provided in Chapter 4: The Proposed Development. These connections will be provided by the relevant statutory undertaker and are considered where relevant in the assessment of cumulative effects (see Chapter 17: Cumulative and Combined Effects).
- 5.3.12 Within the Site, pipes and cables will be laid both above and below ground. Those laid below ground will require the excavation and backfilling of trenches.

Construction Works Associated with the Additional Works

- 5.3.13 As described earlier in this chapter, the construction of the Additional Works (defined at Section 4.4 of Chapter 4: The Proposed Development) would be undertaken as part of the single construction phase. However to enable comparison with the Consented Development, the activities associated with the construction of the Additional Works are described separately as follows:
- construction of the larger ACC will involve the mechanical erection of an additional row of fans and heat exchangers on the existing concrete base;
 - additional cooling capacity for the closed circuit cooling water system will involve installation of additional heat exchanger modules on the turbine hall roof;
 - the additional transformer capacity will require the installation of an additional or single larger transformer on an existing concrete base; and
 - cabling and pipes will be installed as necessary to connect the additional infrastructure;
 - the additional infrastructure will be subject to cold and hot commissioning with the rest of the Proposed Development.

5.3.14 The estimates of construction staff and construction traffic assumed for the Consented Development have been reviewed and the estimates are considered to remain appropriate for the Proposed Development, due to the use of the Rochdale envelope (worst case) approach for the Consented Development assessments. These estimates are described further below.

Construction Staff

5.3.15 Based on professional judgment and the construction of similar developments, it is estimated that the construction workforce will peak at around 750 workers.

5.3.16 The peak of construction activity and associated construction related traffic movements is anticipated to be in the second year of the construction phase.

5.3.17 It is anticipated that construction staff will use the existing trunk road and local networks to travel to the Site. Further detail is presented in the Construction Traffic Management Plan, and Construction Worker Travel Plan of the Transport Assessment presented within Appendix 9A in ES Volume III (DCO Application Document Ref. 6.4).

Construction Traffic and Site Access

5.3.18 Based on the anticipated peak construction workforce there will be an estimated peak of around 375 passenger vehicle one-way movements per day to Site.

5.3.19 Based on typical requirements for bulk deliveries during construction the estimated peak of deliveries will generate around 58 HGV one-way movements per day to Site.

5.3.20 In addition, if the top layer of soil is replaced for geotechnical ground improvement (see above), it is estimated that up to 160,000 m³ of material would need to be removed from Site. This activity would generate approximately 180 one-way additional HGV movements per day over a period of approximately three months in the first year of construction.

5.3.21 Two access points will be used for construction traffic entering the Site. These are as follows:

- the existing entrance gate in the perimeter fence on South Marsh Road in the north-west of the Main Development Area; and
- the proposed new access point from South Marsh Road in the north-east of the Main Development Area.

5.3.22 Construction traffic may also access the Main Development Area via the existing South Humber Bank Power Station site entrances on South Marsh Road and Hobson Way if necessary.

5.3.23 All HGV construction traffic will access/ depart the Site via the A180, the A1173, Kiln Lane, Hobson Way and South Marsh Road.

5.3.24 Third party access will be maintained along South Marsh Road throughout the construction period.

Construction Working Hours

5.3.25 Construction working hours are expected to be between 07:00 and 19:00 Monday to Saturday. However, any concrete slip-forming activities e.g. for the fuel bunker, will need to be carried out continuously. Where this or any other on Site works are to be conducted outside the core hours, they will comply with any restrictions agreed with the planning authorities, including in relation to control of noise and traffic.

Construction Lighting

5.3.26 Temporary construction lighting will be required at the Site to enable safe working in the hours of darkness. Any temporary construction lighting used at the Site will be arranged so that light spill outside of the Site is minimised to avoid disturbance to sensitive receptors, including ecological receptors.

5.3.27 Details on the approach to construction lighting is presented in the Indicative Lighting Strategy (Document Ref. 5.12) and control of construction lighting impacts will be implemented as part of the CEMP.

Construction Environmental Management Plan (CEMP)

5.3.28 Standard best practice mitigation measures that will be adopted during the construction phase have been taken into account in the EIA. Construction works will be undertaken in accordance with the environmental commitments identified in Chapters 7 to 19 (summarised in the Commitments Register at Appendix 20A in ES Volume III, Document Ref. 6.4) and having regard to relevant legislation.

5.3.29 The purpose of the CEMP is:

- to ensure nuisance levels as a result of construction and operation activities are kept to a minimum;
- to comply with regulatory requirements and environmental commitments;
- to ensure procedures are put into place to minimise environmental effects during construction; and
- to maximise potential environmental enhancements.

5.3.30 An Outline CEMP is provided at Appendix 5A in ES Volume III (Document Ref. 6.4).

Materials Management Plan (MMP)

5.3.31 The pre-construction ground investigation has been completed (see Chapter 12: Geology, Hydrogeology and Land Contamination). An MMP will be prepared and will detail the procedures and measures that will be taken to classify, track, store, dispose of and possibly re-use excavated materials that are expected to be encountered during the construction works.

5.3.32 The disposal of soil waste, contaminated or otherwise, to landfill sites will be minimised by reducing the overall quantities of waste generated during construction and by considering whether excavated material can, as an alternative to landfill, be beneficially utilised either on Site or on other sites within the Applicant's control (see Chapter 16: Waste Management).