

VPI Immingham OCGT Project

Document Ref: 6.1
PINS Ref: EN010097

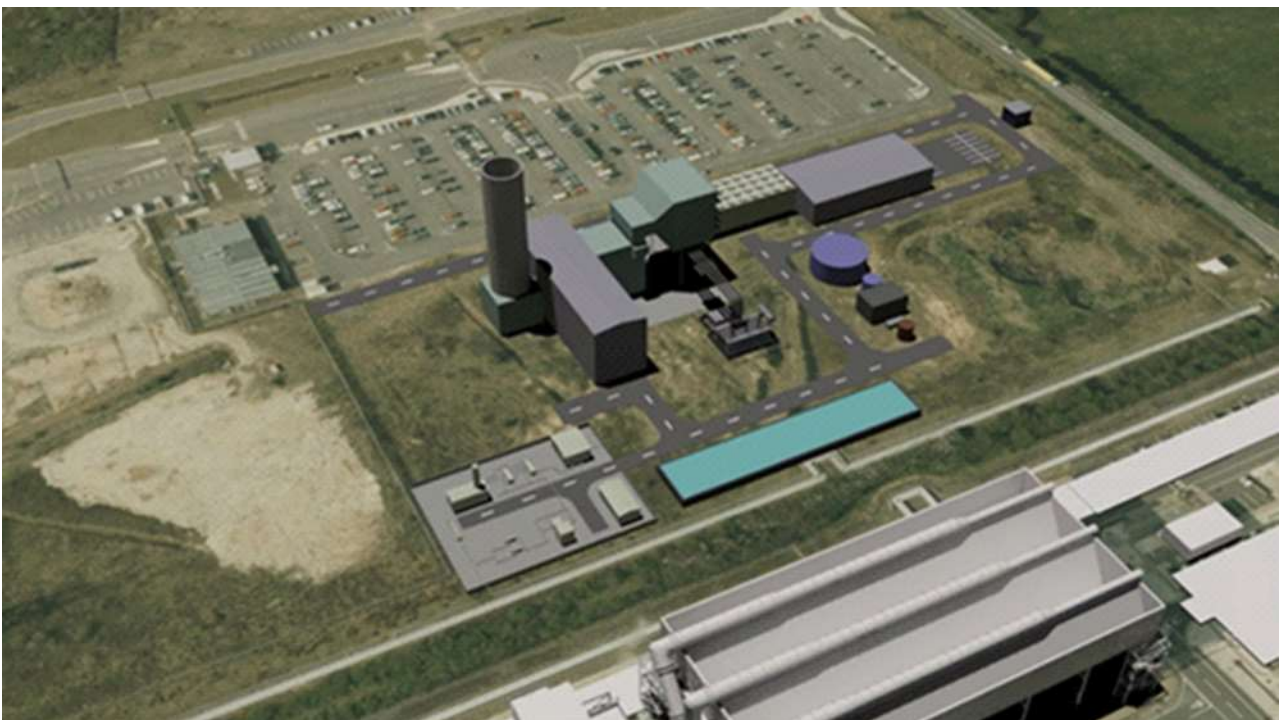
The Immingham Open Cycle Gas Turbine Order

Land to the north of and in the vicinity of the VPI Immingham Power Station, Rosper Road, South Killingholme, Lincolnshire, DN40 3DZ

Environmental Statement: Non-Technical Summary

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)



Applicant: VPI Immingham B Ltd

Date: April 2019

DOCUMENT HISTORY

Document Ref	6.1		
Revision	1		
Author	Malcolm Sangster		
Signed	MS	Date	April 2019
Approved By	Richard Lowe		
Signed	RL	Date	April 2019
Document Owner	AECOM		

GLOSSARY

Abbreviation	Description
AGI	Above Ground Installation
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
BAT	Best Available Techniques
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DEMP	Demolition Environmental Management Plan
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
ES	Environmental Statement
FRA	Flood Risk Assessment
GHG	Greenhouse Gases
HGV	Heavy Goods Vehicle
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NTS	Non-Technical Summary
NSIP	Nationally Significant Infrastructure Project
NSR	Noise Sensitive Receptor
MW	Megawatt
OCGT	Open Cycle Gas Turbine
OMH	Open Mosaic Habitat
PINS	The Planning Inspectorate
PRoW	Public Right of Way
SAC	Special Area of Conservation
SMR	Strip, Map and Record
SoS	Secretary of State
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
TLOR	Total Lindsey Oil Refinery

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1.0 INTRODUCTION

1.1 Overview

- 1.1.1 This document presents a Non-Technical Summary (NTS) of the Environmental Statement (ES) that has been prepared in support of a Development Consent Order (DCO) Application for a proposed gas-fired electricity generating station with an electrical output of up to 299 megawatts ('MW') (referred to as the 'Proposed Development').
- 1.1.2 The Application has been submitted to the Planning Inspectorate, with the decision whether to grant a Development Consent Order (DCO) being made by the Secretary of State (SoS) pursuant to the Planning Act 2008 (2008 Act). The ES presents the findings of the Environmental Impact Assessment (EIA) undertaken in connection with the Proposed Development.
- 1.1.3 The Proposed Development Site (the 'Site') is located primarily on land to the north of the existing VPI Immingham Combined Heat and Power Plant (the 'Existing VPI CHP Plant'), Rosper Road, South Killingholme, North Lincolnshire, DN40 3DZ. The Site and the Proposed Development are described in Sections 3 and 4 of this NTS. The location and Site boundary are shown on Figures NTS1 and NTS2.

Figure NTS 1: Site Location



- 1.1.4 The purpose of this NTS is to describe the Proposed Development and provide a summary in non-technical language of the key findings of the ES. Technical details are provided within the remainder of the ES (ES Volume I – Main Report, ES Volume II – Figures and ES Volume III – Technical Appendices (Application Document Refs. 6.2 to 6.4)).

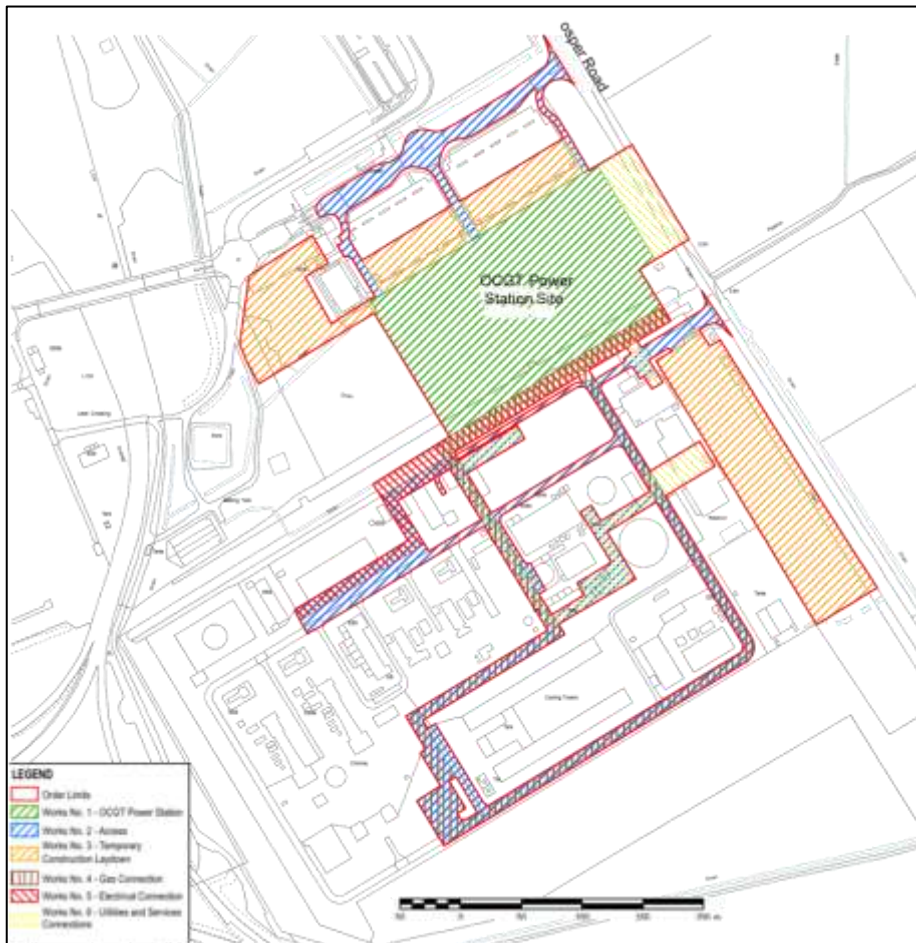
- 1.1.5 The ES has been prepared to comply with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations) -see Section 1.5 of this NTS for more information. The EIA is a process used to identify and assess the potential environmental effects of projects both negative ('adverse') and positive ('beneficial'). These effects are then determined to be either 'significant' or 'non-significant', by reference to relevant legislation, guidance and EIA assessment principles. Mitigation measures are proposed to seek to avoid or reduce significant effects, while enhancement measures to achieve beneficial effects are introduced where possible.

1.2 The Applicant

- 1.2.1 VPI Immingham B Ltd is a wholly owned subsidiary of VPI Holding Ltd ('VPI'). VPI owns and operates the Existing VPI CHP Plant at South Killingholme, one of the largest CHP plants in Europe, providing both electricity and steam to the adjacent oil refineries and electricity to the National Grid.

1.3 The Proposed Development

- 1.3.1 The Proposed Development comprises the construction and operation of a gas-fired Open Cycle Gas Turbine (OCGT) power station with a gross electrical output of up to 299MW.
- 1.3.2 The main components of the Proposed Development are as follows, see section 4 of this NTS for more details:
- OCGT Power Station;
 - Gas Connection;
 - Electrical Connection;
 - Utilities and Services Connections.
- 1.3.3 These are supported by appropriate site access from the public highway and allocation of an area of the Site for temporary use for construction and laydown.
- 1.3.4 These are illustrated on Figure NTS 2.

Figure NTS 2: Parts of the Site


- 1.3.5 In addition to the Site, the Application includes provision for the use of an existing gas pipeline to provide fuel to the Proposed Development. This was constructed in 2003 to provide fuel to the Existing VPI CHP Plant. The route of this pipeline runs from a connection point at an Above Ground Installation (the 'Existing AGI Site') within the Existing VPI CHP Plant Site to a tie in point at the existing National Grid Gas pipeline located to the west of South Killingholme.
- 1.3.6 The Applicant is not seeking consent to carry out any works to this pipeline and, as a result, it does not form part of the Proposed Development nor is it assessed in the EIA. It is included in the Application because the Applicant is seeking rights to use and maintain the pipeline and it is therefore included within the DCO 'Order land' (the area over which powers of compulsory acquisition or temporary possession are sought).

1.4 The Development Consent Order Process

- 1.4.1 The Proposed Development is classed as a 'Nationally Significant Infrastructure Project' (NSIP) of the 2008 Planning Act, as it is an onshore generating station in England that would have a generating capacity greater than 50MWe output. As such, a DCO is required to authorise the Proposed Development, in accordance with the Planning Act 2008.
- 1.4.2 An application for a DCO for the Proposed Development is being submitted to the Planning Inspectorate (PINS). Subject to the Application being accepted, PINS will then

examine the Application and make a recommendation to the SoS, who then decides whether to grant a DCO.

1.5 The EIA Process

- 1.5.1 The Proposed Development falls within Schedule 2 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations'). As such it is not automatically EIA development, but as the Applicant has notified the SoS that it proposes to provide an ES. Accordingly an EIA has been undertaken and this ES presents the findings of that EIA.
- 1.5.2 The issues that the Applicant considered the EIA needed to address were identified in the EIA Scoping Report submitted to the Planning Inspectorate in May 2018 (Appendix 1A (ES Volume III, Application Document Ref. 6.4)).
- 1.5.3 The SoS' Scoping Opinion was received in July 2018, including the responses received by the Planning Inspectorate from consultees (Appendix 1B (ES Volume III, Application Document Ref. 6.4)). Key issues raised in the Scoping Opinion are summarised at the start of each technical chapter of the ES, and all issues have been considered during the EIA process. As required by the EIA Regulations (regulation 14(3)), the ES is based on the Scoping Opinion.

1.6 Consultation

- 1.6.1 The Applicant adopted a two stage approach to pre-application consultation on the Proposed Development. A non-statutory consultation stage was carried out from 5 July 2018 to 6 August 2018, whilst the statutory consultation (as required by the 2008 Act) ran from 23 October to 3 December 2018. Feedback from the consultation was used during the finalisation of the Application and this ES. The approach to consultation and how the Applicant has had regard to the responses received is documented within the Consultation Report (Application Document Ref. 5.1).

Changes since Consultation

- 1.6.2 Since conducting the consultation exercises, some changes have been made to the Proposed Development. These are summarised below:
- Alterations to the gas pipeline routes. During consultation two potential gas pipeline routes were under consideration to the east and the west of the Existing VPI CHP Plant site. These have now been discounted in favour of two routes within the Existing VPI CHP Plant site itself. This change reduces the Site area accordingly, as well as reducing the interactions between the new gas pipeline and apparatus belonging to third parties;
 - Removal of the AGI. Originally the intention was to build a new AGI to the south of the Existing VPI CHP Plant Site. This has now been discounted in favour of a connection at the Existing AGI Site, within the Existing VPI CHP Plant Site, reducing the Site area accordingly.

2.0 EIA ASSESSMENT METHODOLOGY

2.1 General Assessment Approach

2.1.1 Through submission of the EIA Scoping Report to the Planning Inspectorate and subsequent consultation with a number of statutory consultees, the topics assessed within the EIA were agreed, as follows:

- Air Quality;
- Traffic and Transport;
- Noise and Vibration;
- Ecology;
- Landscape and Visual Amenity;
- Ground Conditions and Hydrogeology;
- Surface Water, Flood Risk and Drainage;
- Cultural Heritage;
- Socio-Economics;
- Sustainability and Climate Change;
- Human Health; and
- Cumulative and Combined Effects.

2.1.2 The EIA scoping process concluded that aviation, electronic interference and accidental events/health and safety could be scoped out of the EIA.

2.1.3 Although accidental events/ health and safety has been scoped out of the EIA as a standalone topic, where significant effects are likely to impact human/ environmental receptors, an assessment outlining the methodology used and proposed mitigation is included in the relevant chapter.

2.1.4 The assessment presented in the ES, where possible, uses standard methodologies based on legislation, recognised standards and accepted industry criteria. Methodologies differ between each technical topic, with the method adopted set out within each topic chapter of the ES (Volume I, Application Document Ref. 6.2).

2.1.5 The purpose of the EIA process is to predict the changes (or 'impacts') that may occur to the environment (including human receptors) as a result of the Proposed Development. The changes are compared to the environmental conditions that would have occurred without the Proposed Development (the baseline); the 'future baseline' is also considered (the likely condition of the local environment prior to construction, again without the Proposed Development).

2.1.6 The EIA process identifies potentially sensitive 'receptors' that may be affected by these changes (e.g. people living near the Proposed Development, local flora and fauna) and assesses the extent to which these receptors may be affected by the predicted changes, in particular whether or not the receptors are likely to experience a 'significant effect'.

2.1.7 The environmental impacts and effects of the Proposed Development are assessed at key stages in its construction and operation (including maintenance and use) and, where

possible and relevant, its eventual decommissioning. 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. These measures are taken into account in the EIA and assessment of effects of the Proposed Development.

- 2.1.8 Effects on the receptors can be adverse, beneficial or neutral (neither adverse nor beneficial). They can also be temporary (e.g. noise during construction) or permanent (e.g. the visual effect of the finished buildings).
- 2.1.9 For the purpose of the ES, each adverse or beneficial effect is described as either 'significant' or 'not significant'. If the environmental assessment predicts a significant adverse effect on one or more receptors, mitigation measures are identified where possible, to avoid or reduce the effect, or reduce the likelihood of it happening.

3.0 DESCRIPTION OF THE SITE

- 3.1.1 The Site is located to the north of the Existing VPI CHP Plant and east of the Lindsey Oil Refinery (TLOR) in North Killingholme, Lincolnshire (as shown in Figure NTS 1). The Site is located entirely within the boundary of North Lincolnshire Council.
- 3.1.2 The OCGT Power Station Site consists of an undeveloped parcel of land of approximately 3.0 hectares (ha) lying between the Existing VPI CHP Plant to the south, and Rosper Road to the east. Immediately to the north of the Site are a private car park and a number of single storey structures associated with TLOR. Immingham Dock is located approximately 1.5km to the south east at its closest point. The Humber ports facility is located approximately 500m at its closest point and the Humber Refinery is located approximated 500m to the south. The nearest conurbation is the town of Immingham, and is located approximately 1.8km southeast of the Site. The villages of South and North Killingholme are located approximately 1.4km and 1.6km from the Site respectively. The nearest residential property is a single property on Marsh Lane located approximately 325m to the east of the Site.
- 3.1.3 The Site is located in an area comprising a mix of industrial and agricultural activities. The land to the east of the Site and on the other side of Rosper Road comprises agricultural fields extending approximately 1km toward the Humber Estuary before industrial activities associated with the storage and export of gas and oil and other port activities commence along the banks of the Estuary itself, approximately 1.4km from the Site at its closest point. The land to the west of the OCGT Power Station Site has been identified by an affiliated company of the Applicant for development of a <50MW gas fired power station; this was recently granted planning consent by North Lincolnshire Council (reference PA/2018/918P).
- 3.1.4 A railway spur runs north-south to the immediate west of the Site. The spur services TLOR and joins the main line approximately 400m south west of the Site. The main line is the principal railway line in north east Lincolnshire running between Cleethorpes and Barton on Humber.
- 3.1.5 Various corridors of land extending from the Site into the Existing VPI CHP Plant Site will allow for new gas, electrical and utility connections to facilitate the fuelling, export of electricity and operation of the Proposed Development.
- 3.1.6 A number of potential environmental receptors have been identified in and around the Site and these are considered where appropriate within each of the technical assessments undertaken to inform the ES – see the relevant chapter of the ES (Volume I, Application Document Ref. 6.2), and the summary of each topic presented in this NTS.
- 3.1.7 The Site has been selected by the Applicant for the development of a generating station, as opposed to other potentially available sites for the following reasons:
- It is currently vacant and is surrounded by major industry;
 - It has excellent electrical grid, gas, and transport links and is a brownfield site which is considered more attractive to redevelop than a greenfield one;
 - The Applicant has the benefit of an option agreement in relation to the OCGT Power Station Site and other land in the ownership of TLOR;

- 3.1.7.1 The Site is remote from major conurbations, located in an established industrial area of low sensitivity; and
- 3.1.7.2 The Site is adjacent to the Existing VPI CHP Plant, providing synergies with the existing workforce, services and utilities.

4.0 THE PROPOSED DEVELOPMENT

4.1 Principal Components

4.1.1 There are several elements of the Proposed Development. These include:

- A single OCGT unit comprising a gas turbine, electrical generator, a stack and main transformer;
- Switchyard, associated switch gear and ancillary equipment;
- Gas receiving area, gas treatment control facilities and gas reception buildings;
- New gas pipeline connection to the Existing AGI on the Existing VPI CHP Plant Site;
- Electrical connection to the National Grid substation on the Existing VPI CHP Plant Site;
- Auxiliary generator and liquid fuel tank for emergency electrical supplies;
- Lubricating oil, hydraulic oil and chemical storage tanks and equipment;
- Above ground raw water and fire storage tanks;
- Auxiliary closed loop cooling equipment/system and top up cooling water supply; and
- Various other supporting facilities, such as electrical, control, administration and welfare buildings, workshops and stores, access roads, car parking, drainage, fencing and landscaping.

4.1.2 The Proposed Development would not run continuously but would operate intermittently. It would, however, be permanently on standby and available at all times. It is most likely to run during periods of low electricity supply or high demand on the transmission network, such as during the winter period, when renewable generating technologies are unable to meet demand due to their intermittency, or when required to provide technical services to support the National Grid.

4.1.3 Subject to the necessary consents being granted and a final investment decision being made, it is envisaged that construction work would commence in Q1 2021, taking approximately 24 months, with commencement of commercial operation taking place from Q4 2022 or early 2023.

4.2 Design Parameters

4.2.1 The design of the Proposed Development has followed an iterative process, based on preliminary environmental assessments and consultation with statutory and non-statutory consultees.

4.2.2 A number of the design aspects and features of the Proposed Development cannot be confirmed until the tendering process for the design and construction of the generating station has been completed. These include the size of structures and buildings (to allow flexibility in selection of the preferred technology) and the final stack height and location. Wherever an element of flexibility is maintained, alternatives have been assessed and the worst case impacts have been reported in the ES.

4.3 Proposed Development Construction

- 4.3.1 The Applicant would appoint a contractor to build the Proposed Development. That contractor is likely to appoint sub-contractors to undertake all of the associated civil works.
- 4.3.2 A Construction Environmental Management Plan (CEMP) would be prepared by the contractor, based on the Framework CEMP submitted with the Application (Appendix 4A, ES Volume III, Application Document Ref. 6.4). The CEMP will describe the measures to be employed during construction to control and minimise the impacts on the environment.
- 4.3.3 Construction of the Proposed Development could start as early as Q1 2021 and the shortest construction and commissioning programme would be approximately 24 months.
- 4.3.4 The contractor would provide temporary site facilities within the designated parts of the Site (including the proposed Temporary Construction and Laydown Site). Owing to the current nature of ground conditions in these areas, minimal work would be needed to create a usable surface that can accommodate storage of vehicles, materials and placement of contractor cabins.
- 4.3.5 The contractor would prepare and level the OCGT Power Station Site, followed by piling (if required) and excavation for the building foundations. Once the buildings are erected, the contractor would commence the installation and commissioning of plant (e.g. gas turbine, generator and stack) on a programme of approximately 9 months.
- 4.3.6 Construction of the Proposed Development is anticipated to create up to 150 temporary construction jobs. Normal construction hours would be Monday – Friday 07:00 – 19:00 and Saturday 08:00 – 18:00. In addition, the DCO application includes an allowance for periods of an additional 30 minutes at the beginning and end of each working day to allow contractors to arrive at Site, have briefings and don or remove Personal Protective Equipment, for example.

4.4 Proposed Development Operation

- 4.4.1 The Proposed Development would be on standby and would need to be available at all times. It is most likely to run during periods of low electricity supply or high demand on the transmission network, or when required to provide technical services to support the National Grid. It is expected that the maximum number of operating hours will be up to 2,250 maximum in any one calendar year, and 1,500 hours per year averaged over 5 years.
- 4.4.2 Operation of the Proposed Development is anticipated to create up to 15 permanent operational roles. These may be new jobs or roles undertaken by personnel from the Existing VPI CHP Plant.
- 4.4.3 The operation of the OCGT Power Station would be subject to control through an Environmental Permit regulated by the Environment Agency, so that the impact of emissions to the environment and human health would be minimised. The permit would control the annual running hours of the Proposed Development.

4.5 Decommissioning

- 4.5.1 The Proposed Development is expected to have a design and operating life of 40 or more years. At the end of its operating life, the most likely scenario is that all above-ground

equipment associated with the Proposed Development would be shut down and removed from the Site. Prior to removal, all residues and operating chemicals would be cleaned out from the plant and disposed of in an appropriate manner.

5.0 RELEVANT LEGISLATION AND PLANNING POLICY

5.1 The Planning Act 2008 and National Policy Statement

- 5.1.1 The 2008 Act provides a system for considering applications for DCOs and NSIPs. The Planning Inspectorate is responsible for receiving and examining DCO applications, upon which they make a recommendation to the relevant Secretary of State, who then decides whether the DCO should be granted.
- 5.1.2 The Government has put in place a series of National Policy Statements (NPSs), which set out the policy for considering certain NSIPs. There are a number of National Policy Statements covering new energy developments, which define the clear and urgent need for new energy generating plants to be developed in the UK. The most relevant NPSs for the Proposed Development are the Overarching NPS for Energy (EN-1) (Department for Energy and Climate Change, 2011a) and the NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2) (Department for Energy and Climate Change, 2011b).
- 5.1.3 Details on the policies that apply to the Proposed Development are described further within the ES (Chapter 5: Planning Policy in Volume I (Application Document Ref. 6.2). Those that apply to each of the assessments undertaken can be found in the technical chapters (6-16).

5.2 The National Planning Policy Framework

- 5.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are to be applied, though it clearly states that it does not contain specific policies for NSIPs (these policies are provided by the NPSs referred to above). The NPPF can, however, be a material consideration in examining applications for DCOs and therefore the ES has considered its policies where relevant.

5.3 North Lincolnshire Council Development Plans

- 5.3.1 There are a number of North Lincolnshire Council local development plan documents that set out relevant local policy and these have been considered during the assessment process.

6.0 AIR QUALITY

6.1 Introduction

- 6.1.1 The air quality assessment considers potential impacts from the Proposed Development on human health and ecosystems, with respect to associated construction traffic, construction plant emissions and construction dust. It also considers the effects of operational process emissions associated with the Proposed Development on air quality for human health and ecosystems and the cumulative effects of emissions associated with the Proposed Development and other committed developments in the vicinity.
- 6.1.2 The air quality assessment uses computer models to predict the dispersion of air emissions from the Proposed Development including anticipated emissions from the Proposed Development itself and associated traffic emissions.
- 6.1.3 There are no declared Air Quality Management Areas (AQMA) within 5km of the Site. There is one former AQMA located in the town of Immingham approximately 3.25km southeast of the Site; however, this was revoked in 2016.

6.2 Effects During Construction

- 6.2.1 During construction, impacts could arise from emissions from construction vehicles and mobile construction plant as well as dust and particulate matter from construction activities. However, based on the limited number of construction vehicles expected to access the Site, as well as through the use of appropriate standard construction management measures and mitigation throughout the construction phase, employed through the implementation of a CEMP, emissions to air are assessed to have no significant adverse effects on human health or ecological receptors.
- 6.2.2 The assessment has considered potential risks of construction dust on residential and ecological receptors and, based on the potential scale and sensitivity of the receptors, the risk of dust impacts is considered to be low. The necessary mitigation measures will be implemented to ensure potential impacts are not significant. The assessment of construction traffic identified that since there are no properties or designated habitat sites within 200m of the Site boundary, there would not be significant effects on air quality receptors.

6.3 Effects During Operation

- 6.3.1 Predicted ground level concentrations of air pollutants due to air emissions from the operation of the Proposed Development have been calculated. The results have been used to determine the appropriate stack height for the Proposed Development. Through the use of an appropriate stack height, emissions at human health and ecological receptors have been determined to have a negligible adverse effect and are therefore not considered to be significant.
- 6.3.2 Emissions from the Proposed Development during operation will be carefully controlled through an Environmental Permit that will be regulated by the Environment Agency. The Environmental Permit must be granted prior to commercial operation of the Proposed Development and will set out specific requirements to ensure continuous compliance with European and national legislation for this type of power station, including the use of Best Available Techniques (BAT) to minimise emissions.

6.4 Effects During Decommissioning

- 6.4.1 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.

6.5 Conclusions

- 6.5.1 The effects of emissions from construction activities and construction road traffic on air quality, and the impact of emissions at human health and ecological receptors are not considered to be significant and will be controlled through the use of embedded mitigation in the CEMP. During operation, the use of an appropriate stack height and compliance with the Environmental Permit will result in negligible air quality effects on human health and ecological receptors.

7.0 TRAFFIC AND TRANSPORT

7.1 Introduction

7.1.1 The traffic and transportation assessment identifies the potential effects of the Proposed Development on traffic and transport in the surrounding area. 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.

7.1.2 The Site has good access to the road network with Rosper Road joining Humber Road approximately 500m to the south east of the Site. There are limited opportunities to travel to the Proposed Development on foot or by public transport.

7.2 Effects During Construction

7.2.1 The Proposed Development construction traffic will result in small, temporary increases of traffic flows, including Heavy Goods Vehicles (HGVs), on the roads leading to the Site. However, the assessment concludes that predicted numbers of construction traffic movements will not have significant adverse effects on the road network in terms of capacity and effect on sensitive road users (pedestrians and cyclists).

7.3 Effects During Operation

7.3.1 Once operational, the maximum number of new potential permanent staff roles would lead to a maximum of 15 additional two-way car journeys per day. In addition, there will be a small amount of HGV traffic for deliveries of plant and equipment, equating to approximately 3 HGVs per day. Given the very low traffic flows, the effects during operation, maintenance and planned outages are considered to be not significant.

7.4 Effects During Decommissioning

7.4.1 During the eventual decommissioning, effects are considered to be comparable to, or less than, those for construction activities (and controlled in a similar way) and therefore also not significant.

7.5 Conclusions

7.5.1 In conclusion, construction of the Proposed Development will result in small, temporary increases in traffic (including HGVs), on the roads leading to the Site. During the operational of the Proposed Development, the additional traffic is likely to be minimal and will not have a significant impact on the highway network. The traffic impact during decommissioning would also not be significant.

7.5.2 A number of traffic management measures will be implemented to control traffic, including a Construction Traffic Management Plan (CTMP). Further details are in the ES (Volumes I & III, Application Document Refs. 6.2 and 6.4).

8.0 NOISE AND VIBRATION

8.1 Introduction

- 8.1.1 One Noise Sensitive Receptor (NSR) has been identified approximately 325m east of the Site (a residential property – Hazeldene on Marsh Road). The potential for increased noise and vibration during construction and operation of the Proposed Development has been predicted using noise models and the results compared with recorded baseline noise levels at the identified receptor during the day and night.
- 8.1.2 The predicted change has been compared with national standards for noise and vibration to identify whether the increased noise will be noticeable at the receptor and whether there is therefore the potential for significant effects without further mitigation measures being applied.
- 8.1.3 The assessment has also considered the potential for vibration effects from construction, operation and decommissioning of the Proposed Development.
- 8.1.4 As the Proposed Development would be located within an existing industrial setting (including the Existing VPI CHP Plant and TLOR) the local ambient noise environment is dominated by industrial noise. This has been confirmed using results from recent noise monitoring surveys.

8.2 Effects During Construction

- 8.2.1 At this stage, the final construction methods are not confirmed; therefore the worst case indicative construction noise levels have been used based on information from other similar projects and published standards.
- 8.2.2 The magnitude of impact is predicted to be Very Low at the NSR, and considered to have a negligible effect and therefore not significant. The NSR is also not in close enough proximity to the Site to be significantly affected by construction vibration.
- 8.2.3 Construction vibration is also unlikely to be strong enough to affect nearby buildings (such as the Existing VPI CHP Plant). Should the power station need piled foundations, further consideration would be given to potential impacts, once the contractor is appointed and detailed construction methods requirements are developed. A piling risk assessment would be prepared setting out the proposed approach and demonstrating how the effects of piling will be appropriately managed. Noise during construction would be controlled through the CEMP.

8.3 Effects During Operation

- 8.3.1 The selection of the Site location and development of the indicative layout has included consideration of potential noise effects and proximity to the NSR. Several assumptions have been made during the operational noise modelling; these are detailed in Chapter 8: Noise and Vibration of the ES (Volume I, Application Document Ref. 6.2).
- 8.3.2 The worst-case assessment for operation predicts very low noise impacts and therefore negligible effects at the NSR during both day and night. Given that the Proposed Development will only operate intermittently; an appropriate noise correction has been applied to the noise model to make it more conservative (as agreed with the local authority).

8.4 Effects During Decommissioning

- 8.4.1 The nature of future decommissioning activities at the end of the operational life of the Proposed Development are unknown at this stage but are envisaged to be similar in scale and duration to the construction activities, and also therefore similar in terms of noise effects. The works would be managed through a Demolition Environmental Management Plan (DEMP) prepared at the time.

8.5 Conclusions

- 8.5.1 The assessment predicted negligible adverse noise effects at the residential NSR during construction and operation. Therefore, no further specific mitigation or monitoring measures have been identified at this stage. If noisy construction work is required outside normal hours, additional management may be required through the CEMP which would provide details of proposed environmental control measures, including measures related to noise.

9.0 ECOLOGY

9.1 Introduction

- 9.1.1 The Site itself does not carry any designations for ecology or nature conservation purposes. There are no ancient woodlands in the vicinity of the Site, and there are no Higher Level Countryside Stewardship agreements applicable.
- 9.1.2 The Humber Estuary is located approximately 1.4 km north east of the Site and is a nature conservation asset of international importance, which is reflected in its designations as a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar and Site of Special Scientific Interest (SSSI).
- 9.1.3 A number of ecological surveys were conducted on the Site and its immediate surroundings including a Phase 1 Habitat survey and surveys for wintering birds, breeding birds, great crested newts, reptiles and terrestrial invertebrates.
- 9.1.4 No protected, rare or notable plant species, or invasive, non-native plant species were identified. Several protected and notable species were identified either as present in association with the Site, or potentially within the zone of influence of the Proposed Development.
- 9.1.5 The habitat assemblage within the OCGT Power Station Site represents an example of an Open Mosaic Habitat (OMH) on previously developed land, a type listed for nature conservation. However, a detailed survey indicated that it did not meet the criteria for County Local Wildlife Site selection and is evaluated as being of District value only. Other habitats within the Site have negligible nature conservation value.

9.2 Effects During Construction

- 9.2.1 There is the potential for noise/ visual disturbance during the construction phase on wildlife. However, given the industrial nature of the surrounding land use which includes the Existing VPI CHP Plant and TLOR, it is reasonable to assume that species present in close proximity to the Site (such as otters foraging and water voles resident on ditches in this area) would be habituated to current operational activity.
- 9.2.2 Construction noise would give rise to neutral effects on foraging/ passage otter and water voles as well as on the wintering birds protected by the Humber Estuary SPA/ Ramsar Site to the north east.
- 9.2.3 The construction phase of the Proposed Development will comply with industry good practice and environmental protection legislation during construction and be controlled through the CEMP.

9.3 Effects During Operation

- 9.3.1 Potential impacts during the operational phase that could result in effects on ecological features include air quality impacts: air pollution from stack emissions, potentially leading to adverse effects on sensitive habitats, through increased nitrogen and acid deposition; and disturbance impacts: increased levels of disturbance (noise, vibration, artificial lighting), potentially resulting in adverse effects on ecological features. However the assessment has concluded that there will be no significant adverse effects on designated

sites, notable habitats or protected species during the operation, including air quality and disturbance.

- 9.3.2 Some District value terrestrial habitat will be lost within the Site as a result of the Proposed Development; however, this will be offset by the creation and management of areas of newly created semi-improved grassland and standing water habitat. This will be secured in the DCO and will be in accordance with a framework Biodiversity Enhancement Management Plan which is submitted with the DCO application.

9.4 Effects During Decommissioning

- 9.4.1 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.

9.5 Conclusions

- 9.5.1 The loss of the OMH is considered to be of Moderate Adverse (Significant) impact. The application of appropriate mitigation through habitat creation on site reduces this impact to minor (Non-Significant). No significant adverse effects on ecological receptors are predicted as a result of operation or decommissioning of the Proposed Development.

10.0 LANDSCAPE AND VISUAL

10.1 Introduction

- 10.1.1 The study area for landscape and visual effects includes areas where it is considered that there is potential for significant direct or indirect effects on landscape character or sensitive views due to the construction, operation or decommissioning of the Proposed Development. The area in which the Proposed Development is likely to be visible (known as the Zone of Theoretical Visibility).
- 10.1.2 Based upon the tallest element of the Proposed Development being the stack (with a maximum height of 50m above ground) it is considered that it is highly unlikely that significant effects will be possible from further than 5km from the stack.
- 10.1.3 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). 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. There are no Public Rights of Way (PRoW) across the Site or immediately adjacent to it.

10.2 Effects During Construction

- 10.2.1 There is the potential for temporary impacts on the landscape and visual resource from a range of construction processes (such as temporary lighting, fencing, cranes and site traffic). However, industrial development is a characteristic element of the landscape and as such construction of the Proposed Development would not introduce new uncharacteristic landscape elements to the landscape.
- 10.2.2 While there would be some changes to aesthetics in the area, resulting from movement of plant in close proximity to the Site, this would be very isolated and limited in nature and duration. As such, the assessment identified no significant adverse effects on landscape or visual amenity during the construction period.

10.3 Effects During Operation

- 10.3.1 During operation, the Proposed Development would introduce new structures to the landscape; however, these would be similar in scale and form to the Existing VPI CHP Plant structures and the wider landscape and would not result in any significant adverse landscape effects.
- 10.3.2 The introduction of the Proposed Development would be perceptible and visible from a number of locations within the study area but the overall balance of industrial development and surrounding farmland would remain similar to baseline conditions.
- 10.3.3 Ground level structures would be screened by intervening vegetation, and taller structures such as the stack would be seen against existing structures within the Existing VPI CHP Plant and would therefore be visually assimilated into them due to their similar dimensions and form. As such, no significant visual effects have been identified during operation.

10.4 Effects During Decommissioning

- 10.4.1 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.

10.5 Conclusions

- 10.5.1 Due to the existing industrial character of the Site and surrounding landscape, the landscape and visual effects during construction and operation are not considered to be significant.

11.0 GROUND CONDITIONS AND HYDROGEOLOGY

11.1 Introduction

11.1.1 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. An intrusive ground investigation has also been conducted at the Site. These studies have been used to characterise the baseline ground conditions.

11.1.2 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.

11.2 Effects During Construction

11.2.1 There are several potential impacts that may arise during the construction phase. These include:

- The discovery/ disturbance of contaminated soils during groundworks and other construction activities (e.g. pipeline installations);
- The discovery of polluted groundwater or surface water recovered during the construction process which may not be suitable for discharge without treatment;
- Foundation methods and construction activities that may open and/ or modify potential pollutant linkages, including the disturbance of sediments from the existing drainage system;
- Re-profiling of the site including the possible introduction of new fill materials and the removal of unsuitable materials;
- Runoff from contaminated material exposed and/ or stockpiled during site construction works;
- Contamination arising from spillages associated with vehicles and construction materials;
- Airborne contamination arising from potentially contaminated dust;
- Presence of gases and water in the ground affecting construction workers;
- Removal of any waste materials and/ or contaminated soil; and
- Introduction of contaminated materials during infilling activities.

11.2.2 However, these potential impacts can be managed by standard practice construction mitigation measures (which will be outlined in the CEMP) as well as the proposed piling risk assessment, and as such no significant adverse effects are anticipated.

11.3 Effects During Operation

11.3.1 Potential impacts during the operational phase are anticipated to include leaks, spills and contamination from storage of chemicals, fuels and wastes on site affecting site users and ground waters, and the presence of gases, vapours and groundwater in the ground affecting site users and buildings.

11.3.2 However, with appropriate management and housekeeping practices which will be required for the Environmental Permit needed for the operation of the Proposed Development (such as appropriate storage of potentially contaminating chemicals), potential impacts to soil and groundwater can be avoided.

11.4 Effects During Decommissioning

11.4.1 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.

11.5 Conclusions

11.5.1 The construction, operation and decommissioning activities proposed at the Site would have the potential to generate a number of land contamination related adverse effects on identified receptors if appropriate impact avoidance measures are not implemented.

11.5.2 However, as the impact avoidance measures are to be employed and any further mitigation measures identified following an appropriately designed ground investigation will be implemented, the significance of effects related to potential impacts associated with the Proposed Development during the construction, operation, maintenance and decommissioning phases are likely to be negligible or minor adverse, and therefore not significant.

12.0 SURFACE WATER, FLOOD RISK AND DRAINAGE

12.1 Introduction

- 12.1.1 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.
- 12.1.2 The main surface watercourses close to the Site are the Humber Estuary to the east and a number of land drains within and in close proximity to the Site.
- 12.1.3 The various parts of the Site are located in areas of high flood risk (Flood Zone 3), medium flood risk (Flood Zone 2) and low flood risk (Flood Zone 1), as defined by the Environment Agency. However, the area benefits from flood defences, and so the risk of flooding is considered low. A Flood Risk Assessment (FRA) has nevertheless been conducted.

12.2 Effects During Construction

- 12.2.1 The assessment has concluded that 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, the potential impact of such an incident is not considered likely to result in a significant effect on surface or groundwater.
- 12.2.2 Flood resilience design techniques will be incorporated during the construction phase, such as to raise critical flood sensitive equipment and containment measures in the event of flooding.

12.3 Effects During Operation

- 12.3.1 Once the Proposed Development is operational, it is considered that the majority of the identified watercourses assessed would not be affected by the Proposed Development. As in the construction phase, with appropriate measures put in place to prevent spillages as required by the Environmental Permit, there is a low probability of pollution events occurring and therefore it has been concluded there are no significant effects on surface or groundwater as a result of the Proposed Development's operation.
- 12.3.2 The FRA concludes that the development of the Site would not increase the risk of flooding from tidal, fluvial, groundwater, overland flow, drainage infrastructure or artificial watercourse sources.

12.4 Effects During Decommissioning

- 12.4.1 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.

12.5 Conclusions

- 12.5.1 With the identified impact avoidance measures being employed, the effects related to impacts on water quality associated with the Proposed Development during construction, operation and decommissioning phases are likely to be negligible or minor adverse, and therefore not significant.
- 12.5.2 Flood risk on or off site would not be increased as a result of development of the Site.

13.0 CULTURAL HERITAGE

13.1 Introduction

13.1.1 A total of 58 heritage assets have been recorded within the 1km study area and there are 18 designated heritage assets (15 listed buildings and three scheduled monuments) recorded within a 3km study area. There are nine sites recorded within the Proposed Development boundary. These comprise a prehistoric flint scatter, two Iron Age ditches, an Iron Age/ Roman settlement site, medieval ridge and furrow, the line of a historically important hedgerow, the site of a 20th century chapel, a modern service trench and cropmarks of a square enclosure.

13.1.2 There is potential for previously unrecorded assets to be located within the Proposed Development, particularly of Iron Age to Roman date.

13.2 Effects During Construction

13.2.1 There will be no physical impact upon any designated heritage assets during construction.

13.2.2 There is potential for physical effects on the site of the Iron Age ditch, a non-designated heritage asset, as a result of the construction works. While this asset has a low heritage value, as the construction works would lead to its destruction, this has resulted in moderate adverse (significant) effects, even with mitigation measures employed.

13.2.3 It is proposed that archaeological strip, map and record (SMR) is carried out during intrusive ground works within the Site, in accordance with a Written Scheme of Investigation to be agreed with the local authority

13.3 Effects During Operation

13.3.1 During operation there are not predicted to be any significant effects on the cultural heritage assets in the study area beyond those already experienced.

13.4 Effects During Decommissioning

13.4.1 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.

13.5 Conclusions

13.5.1 No designated heritage assets will be physically impacted by the Proposed Development; however, significant effects could occur as a result of the destruction of two low value designated heritage assets within the Site (an Iron Age ditch and a square enclosure). These will be characterised through the conduct of an SMR.

14.0 SOCIO-ECONOMICS

14.1 Introduction

14.1.1 The socio-economics assessment considers the potential economic impacts of the Proposed Development on employment, local businesses and the local population. 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).

14.2 Effects During Construction

14.2.1 The Proposed Development is predicted to have a temporary significant beneficial effect on the local and regional economy through the creation of an estimated 150 construction jobs, of which approximately 110 are expected to be sourced from the region.

14.3 Effects During Operation

14.3.1 The Proposed Development will also generate approximately 15 long-term roles once operational. The roles would be in operative, management and maintenance roles in relation to the electricity generating element of the Proposed Development and its maintenance. This is considered a minor beneficial effect, but it is not significant.

14.4 Conclusions

14.4.1 The economic benefits generated by the construction of the Proposed Development will be beneficial on the local and regional economy.

15.0 SUSTAINABILITY AND CLIMATE CHANGE

15.1 Introduction

15.1.1 The assessment addresses the potential wider impacts on sustainability and climate change predicted to arise as a consequence of the Proposed Development. The Proposed Development will be designed in accordance with the principle of BAT. By applying these mechanisms, the Proposed Development is considered to meet the key sustainability requirements as set out in national, regional and local policy.

15.2 Effects During Construction

15.2.1 The construction stage of the Proposed Development will adhere to the basic principles of environmental sustainability including minimising the use of natural resources, greenfield land and water, whilst maximising energy efficiency. These will be achieved through design and implementation of management plans including a CEMP, Site Waste Management Plan (SWMP) and CTMP.

15.2.2 Based on conservative assumptions, it is estimated that the construction of the Proposed Development could result in the emission of less than 20,000~~19,150~~ tonnes of Greenhouse Gases (GHG, as carbon dioxide equivalents (CO₂e)). This is one thousandth of one percent of the annual UK carbon budget and so not significant in the context of UK emissions.

15.3 Effects During Operation

15.3.1 The Proposed Development is intended to support the increased penetration of renewables into the UK electricity supply system. It needs to be flexible so as to provide support to the national transmission system when other electricity supplies cannot meet demand. While the Proposed Development will utilise a high efficiency gas turbine, this flexibility means that the turbine must be operated in open cycle rather than combined cycle more, and this has a corresponding effect on the overall efficiency of the Proposed Development. Nevertheless, the limited running hours of the plant (expected to be up to 1,500 hours per year on a five year rolling average) will mean that the impact of GHG emissions from the operation of the Proposed Development is minor in comparison to existing baseload or mid merit UK power stations, and not significant.

15.3.2 Climate change has the potential to impact upon the vulnerability of the Proposed Development from changes to weather patterns and lead to more extreme weather conditions. Therefore design and operational measures to increase the resilience of the Proposed Development to potential effects of climate change will be incorporated in the detailed design, including flood resilience measures.

15.4 Conclusions

15.4.1 There will be unavoidable greenhouse gas emissions as a result of all phases of the development; however, the Proposed Development has several characteristics incorporated into its design, construction and management which meet the key sustainability requirements as set out in national, regional and local policy.

16.0 HUMAN HEALTH

16.1 Introduction

16.1.1 Potential effects of the Proposed Development on human health are considered in several of the chapters discussed above, including Air Quality, Noise and Vibration, Traffic and Transport, Surface Water, Flood Risk and Drainage, Ground Conditions and Hydrogeology, and Socio-Economics and are drawn together in the human health chapter of the ES (Volume I, Application Document Ref. 6.2).

16.1.2 The health assessment has also considered potential for the Proposed Development to result in significant electro-magnetic effects.

16.2 Effects During Construction

16.2.1 No significant adverse human health-related effects have been predicted, following the implementation of appropriate mitigation measures.

16.2.2 Potential effects associated with Electromagnetic Fields (EMF) will be limited, based on the limited additional electrical infrastructure required for the Proposed Development and with no residential receptors in close proximity to the Site, the only potential receptors of such effects are construction workers in the vicinity of the existing sub-station and electrical cable, and appropriate mitigation will be implemented to avoid any significant effects.

16.3 Effects During Operation

16.3.1 Through the application of modern plant design, no significant adverse human health-related effects have been predicted, following the implementation of appropriate mitigation measures.

16.3.2 Measures will be implemented to protect operational staff from potential EMF effects associated with the existing substation and the electrical cable. With the appropriate precautions in place, no significant health effects for operational staff are predicted.

16.4 Conclusions

16.4.1 No significant human health-related effects have been identified as a result of the construction or operation of the Proposed Development following the implementation of the identified mitigation measures.

17.0 CUMULATIVE AND COMBINED EFFECTS

17.1 Summary

- 17.1.1 Other proposed developments that are also likely to be constructed and operated in the future have the potential to generate cumulative environmental effects together with the Proposed Development have been identified. Significant cumulative effects may be possible due to the nature of the 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).
- 17.1.2 The potential for cumulative effects with these other developments was considered for all of the environmental topics by consideration of the available information (including Environmental Statements and any detailed environmental modelling information where available). As a result of the detailed consideration in respect of the identified proposed developments, no significant cumulative effects during construction or operation were identified for any of the environmental topics.
- 17.1.3 Combined effects (meaning the combination of different types of effects from the Proposed Development on a single receptor) have also been assessed, and no significant combined effects have been identified.

18.0 SUMMARY AND CONCLUSIONS

- 18.1.1 The ES details the findings of the EIA that has been undertaken for the Proposed Development based on the baseline information gathered and design details.
- 18.1.2 Following assessment of a comprehensive range of environmental topics as agreed through the EIA Scoping and consultation, the following potential significant residual effects (i.e. effects after implementation of mitigation, where measures are identified) have been found:
- Long term adverse effects on a non-designated heritage assets (an Iron Age Ditch) due to their potential destruction to facilitate the construction of the Proposed Development; and
 - Short term beneficial effects on the local and regional economy due to generation of construction employment.
- 18.1.3 No other significant environmental effects have been identified.
- 18.1.4 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. Where these are not embedded in the design of the Proposed Development, they will be secured through a number of requirements contained within the draft DCO (Application Document Ref. No. 2.1) or through other regulatory regimes such as environmental permitting.

