

VPI Immingham OCGT Project

Document Ref: 5.4
PINS Ref: EN010097

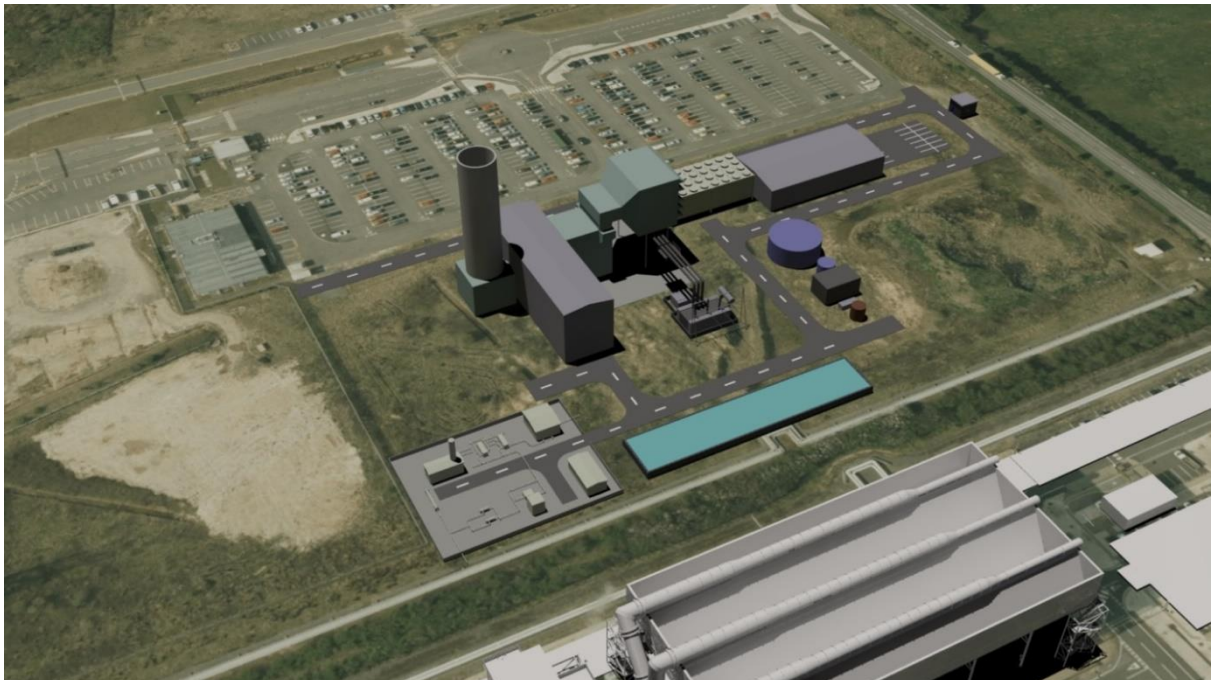
The Immingham Open Cycle Gas Turbine Order

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

Design and Access Statement

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Applicant: VPI Immingham Ltd

Date: April 2019

DOCUMENT HISTORY

Document Ref	5.4		
Revision	1.0		
Author	Clara Rands (CR)		
Signed	CR	Date	11.04.19
Approved By	Jake Barnes-Gott (JBG)		
Signed	(JBG)	Date	11.04.19
Document Owner	DWD		

GLOSSARY

Abbreviation	Description
Access	Work No. 2 – access works comprising access to the OCGT Power Station Site and access to Work Nos. 3, 4, 5 and 6;
Access Site	The land required for Work No.2.
AGI	Above Ground Installation – installations used to support the safe and efficient operation of the pipeline; above ground installations are needed at the start and end of a gas pipeline and at intervals along the route.
AOD	Above Ordinance Datum – a spot height (an exact point on a map) with an elevation recorded beside it that represents its height above a given datum.
AONB	Area of Outstanding Natural Beauty
Applicant	VPI Immingham B Ltd
Application	The Application for a Development Consent Order made to the Secretary of State under Section 37 of the Planning Act 2008 in respect of the Proposed Development, required pursuant to Section 31 of the Planning Act 2008 because the Proposed Development is a Nationally Significant Infrastructure Project under Section 14(1)(a) and Section 15 of the Planning Act 2008 by virtue of being an onshore generating station in England of more than 50 Megawatts electrical capacity.
Application Documents	The documents that make up the Application (as defined above).
CHP	Combined Heat and Power – A technology that puts to use the residual heat of the combustion process after generation of electricity that would otherwise be lost to the environment.
CTMP	Construction Traffic Management Plan – a plan outlining measures to organise and control vehicular movement on a construction site so that vehicles and pedestrians using site routes can move around safely.
CWTP	Construction Workers Travel Plan – a plan managing and promoting how construction workers travel to a particular area or organisation. It aims at promoting greener, cleaner travel choices and reducing reliance on the private car.
DCO	A Development Consent Order made by the relevant Secretary of State pursuant to The Planning Act 2008 to authorise a Nationally Significant Infrastructure Project. A DCO can incorporate or remove the need for a range of consents which would otherwise be required for a development. A DCO can also include powers of compulsory acquisition.

Abbreviation	Description
EIA	Environmental Impact Assessment – a term used for the assessment of environmental consequences (positive or negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action.
Electrical Connection	Work No. 5 – an electrical connection of up to 400 kilovolts and controls systems.
Electrical Connection Site	The land required for Work No.5.
Existing AGI	The exiting AGI within the Existing VPI CHP Site.
Existing AGI Site	The land comprising the exiting AGI within the Existing VPI CHP Site.
Existing Gas Pipeline	An existing underground gas pipeline owned by VPI LLP connecting the Existing AGI Site to an existing tie in the National Grid (NG) Feeder No.9 located to the west of South Killingholme.
Existing Gas Pipeline Site	The land comprising the Existing Gas Pipeline and a stand-off either side of it.
Existing VPI CHP Plant	The existing VPI Immingham Power Station. This facility is a gas-fired combined heat and power ('CHP') plant near Immingham providing steam and electricity to the neighbouring refineries and electricity to the National Grid.
Existing VPI CHP Plant Site	The land comprising the Existing VPI CHP Plant, located immediately to the south of the Main OCGT Power Station Site.
Flood Zone 1	Land with an Annual Exceedance Probability of less than 0.1% risk from fluvial flooding.
Flood Zone 2	Land with an Annual Exceedance Probability of between 0.1% and 1% risk from fluvial flooding.
Flood Zone 3a	Land having a 1 in 100 or greater annual probability of river flooding or land having a 1 in 200 or greater annual probability of sea flooding.
FRA	Flood Risk Assessment – the formal assessment of flood risk issues relating to the Proposed Development. The findings are presented in an appendix to the Environmental Statement.
Gas Connection	Work No. 4 – the new underground and overground gas pipeline
Gas Connection Site	The land required for Work No.5.
HGV	Heavy Goods Vehicle – vehicles with a gross weight in excess of 3.5 tonnes.
km	Kilometre – unit of distance.
Limits of Deviation	The lateral limits shown on the Works Plan submitted as part of the Application and within which the Proposed Development may occur.
LWS	Local Wildlife Site
m	Metres – unit of distance.
MW	Megawatts – unit of energy.
NELC	North East Lincolnshire Council
NG	National Grid
NLC	North Lincolnshire Council
NPPF	The National Planning Policy Framework – Policy Framework which was introduced in March 2012 and updated in July 2018. The NPPF is part of the Government's reform of the planning system

Abbreviation	Description
	intended to make it less complex, to protect the environment and to promote sustainable growth. It does not contain any specific policies on Nationally Significant Infrastructure Projects but its policies may be taken into account in decisions on DCOs if the Secretary of State considers them to be both important and relevant.
NPS	National Policy Statements – statements produced by Government under the Planning Act 2008 providing the policy framework for Nationally Significant Infrastructure Projects. They include the Government’s view of the need for and objectives for the development of Nationally Significant Infrastructure Projects in a particular sector such as energy and are the primary matter against which applications for NSIPs are determined.
NSIP	Nationally Significant Infrastructure Project – Defined by the Planning Act 2008 and including projects relating to energy (including generating stations, electric lines and pipelines); transport (including trunk roads and motorways, airports, harbour facilities, railways and rail freight interchanges); water (dams and reservoirs, and the transfer of water resources); waste water treatment plants and hazardous waste facilities. These projects are only defined as nationally significant if they satisfy a statutory threshold in terms of their scale or effect. The Proposed Development is a NSIP.
OCGT	Open Cycle Gas Turbine – a combustion turbine plant fired by gas or liquid fuel to turn a generator rotor that produces electricity.
OCGT Power Station	Work No. 1 – an OCGT power station with a gross capacity of up to 299MW.
OCGT Power Station Site	The land required for Work No.1.
Order land	The area over which powers of compulsory acquisition or temporary possession are sought in the DCO, shown on the Land Plans. The Order land is the same area as the Project Land.
Order limits	The area in which consent to carry out works is sought in the DCO, the area is split into different Work Numbers which are set out Schedule 1 to the DCO and shown on the Works Plans. The Order limits is the same area as the Site .
PA 2008	Planning Act 2008. An Act which provides the need for and the powers to apply for and grant development consent orders (‘DCO’) for nationally significant infrastructure projects (‘NSIP’).
PINS	Planning Inspectorate – executive agency of the Ministry of Housing, Communities and Local Government of the United Kingdom Government. It is responsible for examining applications for NSIPs, and reporting to the Secretary of State who makes a final decision on such applications.
Project Land	The land required for the Proposed Development (the Site) and the land comprising the Existing Gas Pipeline Site. The Project Land is the same as the ‘Order land’ (in the DCO).
Proposed Development	The construction, operation and maintenance of a new gas-fired electricity generating station with a gross output capacity of up to 299 MW, including electrical and gas supply connections, and other associated development.

Abbreviation	Description
PRoW	Public Right of Way
SAC	Special Area of Conservation – High quality conservation sites that are protected under the European Habitats Directive, due to their contribution to conserving those habitat types that are considered to be most in need of conservation.
SoS	The Secretary of State – the decision maker for DCO applications and head of a Government department. In this case the SoS for the Department for Business, Energy & Industrial Strategy (formerly the Department for Energy and Climate Change).
SPA	Special Protection Area – strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. Special Protection Areas are Natura 2000 sites which are internationally important sites for the protection of threatened habitats and species.
SSSI	Site of Specific Scientific Interest – nationally designated Sites of Special Scientific Interest, an area designated for protection under the Wildlife and Countryside Act 1981 (as amended), due to its value as a wildlife and/or geological site.
Temporary Construction and Laydown	Work No. 3 – temporary construction and laydown areas comprising hard standing, laydown and open storage areas, contractor compounds and staff welfare facilities, vehicle parking, roadways and haul routes, security fencing and gates, gatehouses, external lighting and lighting columns. There are three construction and laydown areas included in the Application.
Temporary Construction and Laydown Site	Land Required for Work No. 3.
TLOR	Total Lindsey Oil Refinery
Utilities and Services Connections	Work No 6 – utilities and services connections to the OCGT Power Station.
Utilities and Services Connections Site	The land required for Work No.6 – the land required for the utilities and services connections to the OCGT Power Station.
Vitol	Vitol Group – the owner of VPI LLP and VPIB.
VPIB	VPI Immingham B Limited – the Applicant
VPI LLP	VPI Immingham LLP – the owner and operator of the Existing VPI CHP Plant.
Work No.1	An OCGT power station (the ‘OCGT Power Station’) with a gross capacity of up to 299MW.
Work No.2	Access works (the ‘Access Site’), comprising access to the Main OCGT Power Station Site and access to Work Nos. 3, 4, 5 and 6.
Work No.3	Temporary construction and laydown area (the ‘Temporary Construction and Laydown’) comprising hard standing, laydown and open storage areas, contractor compounds and staff welfare facilities, vehicle parking, roadways and haul routes, security fencing and gates, gatehouses, external lighting and lighting columns;

Abbreviation	Description
Work No.4	An underground and overground gas pipeline (the 'Gas Connection') of up to 600 mm (nominal internal diameter) for the transport of natural gas to Work No. 1.
Work No.5	An electrical connection (the 'Electrical Connection') of up to 400 kilovolts and control systems.
Work No.6	Utilities and services connections (the 'Utilities and Services Connections').

CONTENTS

SUMMARY	1
1. INTRODUCTION	2
1.1 Overview.....	2
1.2 VPI Immingham LLP and VPIB.....	2
1.3 The Site.....	2
1.4 The Existing Gas Pipeline.....	3
1.5 The Proposed Development.....	4
1.6 The Purpose and Structure of this Document.....	5
2. LEGISLATIVE AND POLICY CONTEXT	7
2.1 Introduction.....	7
2.2 Legislative context.....	7
2.3 National Policy Statements.....	7
2.4 National Planning Policy Framework and Planning Practice Guidance.....	9
2.5 Local planning policy.....	10
3. SITE DESCRIPTION CONTEXT AND APPRAISAL	12
3.1 Introduction.....	12
3.2 Site location.....	12
3.3 Site Description.....	14
3.4 The surrounding area.....	18
3.5 Designated sites and assets.....	19
3.6 Flood risk and water resources.....	20
3.7 Site appraisal.....	20
4. DESIGN FLEXIBILITY AND INFORMATION	22
4.1 Introduction.....	22
4.2 Design flexibility.....	22
4.3 Design Information.....	23
5. DESIGN APPROACH AND EVOLUTION	25
5.2 Design principles.....	25
5.3 Design approach.....	25
5.4 Design Evolution.....	27
5.5 Design through consultation.....	29
6. DESIGN COMPONENTS	32
6.2 Use.....	32
6.3 Layout.....	32

6.4	Amount	39
6.5	Scale.....	39
6.6	Appearance	41
6.7	Landscaping	41
7.	ACCESS ARRANGEMENTS	44
8.	SECURING DETAILED DESIGN	46
9.	CONCLUSIONS	48

TABLES

Table 4.1: Main structure dimensions.....	23
Table 4.2: Design Information submitted as part of the Application	23
Table 8.1: DCO Articles and Requirements relating to Detailed Design	46

FIGURES

Table 1.1: Structure of the Design and Access Statement	5
Figure 3.1: Site Location	13
Figure 3.2: View west across the OCGT Power Station Site (from Rosper Road)	15
Figure 3.3: View south along Rosper Road towards the highway access to the Existing VPI CHP Plant Site (part of the Access Site)	15
Figure 3.4: View west along the southern boundary of the OCGT Power Station Site (defined by existing pipelines).....	16
Figure 3.5: View south west across the Site (from Rosper Road) towards the Existing VPI CHP Plant Site.....	16
Figure 3.6 Parts of the Site.....	17
Figure 3.7: Aerial image showing the surrounding area.....	18
Figure 5.1: In situ archaeology	26
Figure 5.2: Discounted gas pipeline routes	28
Figure 5.3: Proposed gas pipeline routes	28
Figure 5.4 Sample exhibition board from Stage 1 Consultation	30
Figure 5.5: Sample exhibition board from Stage 2 Consultation	31
Figure 6.1 – Indicative OCGT Power Station layout	34
Figure 6.2 – Indicative OCGT Power Station elevations.....	35
Figure 6.3 – Indicative Gas Connection Plan	36
Figure 6.4 – Indicative Electricity Connection Plan.....	37
Figure 6.5 – Indicative Utilities and Services Connections Plan	38
Figure 6.6 – CGI Image of the Proposed Development.....	40
Figure 6.7 – Biodiversity proposals	43
Figure 7.1: Access arrangements	45

SUMMARY

This Design and Access Statement ('DAS') (Application Document Ref: 5.4) has been prepared on behalf of VPI Immingham B Ltd ('VPIB' or the 'Applicant'). It forms part of the application (the 'Application') for a Development Consent Order (a 'DCO') submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy under section 37 of the Planning Act 2008' (the 'PA 2008').

VPIB is seeking development consent for the construction, operation and maintenance of a new gas-fired electricity generating station with a gross output capacity of up to 299 megawatts ('MW'), including electrical and gas supply connections, and other associated development (the 'Proposed Development'). The Proposed Development is located primarily on land (the 'Site') to the north of the 'Existing VPI Immingham CHP Plant', Rosper Road, South Killingholme, North Lincolnshire, DN40 3DZ.

A DCO is required for the Proposed Development as it falls within the definition and thresholds for a 'Nationally Significant Infrastructure Project' (a 'NSIP') under section 14 and section 15(2) of the PA 2008. The DCO, if made by the SoS, would be known as the 'VPI Immingham OCGT Order' (the 'Order').

The primary purpose of the DAS is to set out how VPIB has had regard to design and access considerations in designing the Proposed Development. The document explains the design principles and concepts that have been applied to the Proposed Development, and how VPIB has appraised the context of the Site and its wider setting, and taken that context into account in designing the Proposed Development.

The immediate context within which much of the Site sits is already industrialised in terms of its character and appearance. It is dominated by large and functional industrial buildings and plant, including the Existing VPI Immingham CHP Plant and the Lindsey and Humber Oil Refineries

This DAS also explains where VPIB is seeking flexibility in the design of the Proposed Development. In doing so, VPIB has defined design parameters upon which the Environmental Impact Assessment ('EIA') of the Proposed Development was based, to ensure that its likely significant effects have been robustly assessed. VPIB has also included appropriate articles and requirements within the draft DCO submitted with the Application (Application Document Ref: 2.1) to ensure that the detailed design of the Proposed Development is controlled and secured within the defined design parameters.

A structured programme of consultation with key stakeholders has fed back into the evolution and design refinement of the Proposed Development and the illustrative design and access principles that have emerged are a direct product of that iterative process. For further information on the consultation process, please refer to the Consultation Report (Application Document Ref: 5.1).

The design of the Proposed Development is primarily functional, reflecting its purpose to generate electricity and the context within which it would sit. The Proposed Development also incorporates appropriate access arrangements.

In summary, it is considered that the design and access arrangements for the Proposed Development meets the criteria for 'good design' for energy infrastructure as set out in the Overarching National Policy Statement for Energy (EN-1).

1. INTRODUCTION

1.1 Overview

- 1.1.1 This Design and Access Statement ('DAS') (Document Ref. 5.4) has been prepared on behalf of VPI Immingham B ('VPIB' or the 'Applicant'). It forms part of the application (the 'Application') for a Development Consent Order (a 'DCO'), that has been submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy under section 37 of the Planning Act 2008 (the 'PA 2008').
- 1.1.2 VPIB is seeking development consent for the construction, operation and maintenance of a new gas-fired electricity generating station with a gross output capacity of up to 299 megawatts ('MW'), including electrical and gas supply connections, and other associated development (the 'Proposed Development'). The Proposed Development is located primarily on land (the 'Site') to the north of the existing VPI Immingham Power Station, Rosper Road, South Killingholme, North Lincolnshire, DN40 3DZ.
- 1.1.3 A DCO is required for the Proposed Development as it falls within the definition and thresholds for a 'Nationally Significant Infrastructure Project' (a 'NSIP') under section 14(1)(a) and sections 15(1) and 15(2) of the PA 2008. The DCO, if made by the SoS, would be known as the 'Immingham Open Cycle Gas Turbine Order' (the 'Order').

1.2 VPI Immingham LLP and VPIB

- 1.2.1 VPI Immingham LLP ('VPI LLP') owns and operates the existing VPI Immingham Power Station, one of the largest combined heat and power ('CHP') plants in Europe, capable of generating 1,240 MW (about 2.5% of UK peak electricity demand) and up to 930 tonnes of steam per hour (hereafter referred to as the 'Existing VPI CHP Plant'). The steam is used by nearby oil refineries to turn crude oil into products, such as gasoline. The land comprising the Existing VPI CHP Plant is hereafter referred to as the 'Existing VPI CHP Plant Site'.
- 1.2.2 VPI LLP is a wholly owned subsidiary of the Vitol Group ('Vitol'), founded in 1966 in Rotterdam, the Netherlands. Since then Vitol has grown significantly to become a major participant in world commodity markets and is now the world's largest independent energy trader. Its trading portfolio includes crude oil, oil products, liquid petroleum gas, liquid natural gas, natural gas, coal, electricity, agricultural products, metals and carbon emissions. Vitol trades with all the major national oil companies, the integrated oil majors and independent refiners and traders. For further information on VPI LLP and Vitol please visit:
- <https://www.vpi-i.com/>
- 1.2.3 VPIB has been formed as a separate entity for the purposes of developing and operating the Proposed Development.

1.3 The Site

- 1.3.1 The Site is primarily located on land immediately to the north of the Existing VPI CHP Plant Site, as previously stated. Immingham Dock is located approximately 1.5 kilometres ('km') to the south east of the Site at its closest point. The Humber ports

facility is located approximately 500 metres ('m') north and the Humber Refinery is located approximately 500m to the south.

- 1.3.2 The villages of South Killingholme and North Killingholme are located approximately 1.4 km and 1.6 km to the west of the Site respectively, and the town of Immingham is located approximately 1.8 km to the south east. The nearest residential property comprises a single house off Marsh Lane, located approximately 325 m to the east of the Site.
- 1.3.3 The Site comprises the following main parts:
- OCGT Power Station Site;
 - Access Site;
 - Temporary Construction and Laydown Site;
 - Gas Connection Site;
 - Electrical Connection Site; and
 - Utilities and Services Connections Site.
- 1.3.4 The Site is located entirely within the boundary of the administrative area of North Lincolnshire Council ('NLC'), a unitary authority. The different parts of the Site are illustrated in the Works Plans (Application Document Ref: 4.3).
- 1.3.5 The Site has been selected by the Applicant for the Proposed Development, as opposed to other potentially available sites, for the following reasons:
- it comprises primarily of previously developed or disturbed land, including land within the operational envelope of the Existing VPI CHP Plant Site;
 - it is situated in an industrial setting with few immediate receptors and is not particularly sensitive from an environmental perspective;
 - it is primarily located adjacent to the Existing VPI CHP Plant, which provides visual screening and synergies in terms of the existing workforce, and utilities and service connections;
 - it benefits from excellent grid connections (gas and electricity) on the Existing VPI CHP Plant Site; and
 - it benefits from existing highway accesses onto Rosper Road, with the latter providing a direct connection (via a short section of Humber Road) to the Strategic Highway Network (A160) a short distance to the south of the Site.
- 1.3.6 A more detailed description of the Site is provided in Environmental Statement ('ES') Volume 1 Chapter 3 'Site Description' (Application Document Ref: 6.2.3).

1.4 The Existing Gas Pipeline

- 1.4.1 In addition to the Site, the Application includes provision for the use of an existing gas pipeline (the 'Existing Gas Pipeline') to provide fuel to the Proposed Development. The Existing Gas Pipeline was originally constructed in 2003 to provide fuel to the

Existing VPI CHP Plant. The route of the 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 ('NG') Feeder No.9 pipeline located to the west of South Killingholme.

- 1.4.2 A small part of the Existing Gas Pipeline Site lies within the administrative area of North East Lincolnshire District Council ('NELC'), the neighbouring local authority.
- 1.4.3 The Applicant is not seeking consent to carry out any works to the Existing Gas Pipeline and, as a result, it does not form part of the Site or Proposed Development. It is included in the Application on the basis that 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). The area of land covered by the Existing Gas Pipeline, including a 13 m stand-off either side of it to provide for access and any future maintenance requirements, is hereafter referred to as the 'Existing Gas Pipeline Site'.
- 1.4.4 The Site and the Existing Gas Pipeline Site are collectively referred to as the 'Project Land'. The area covered by the Project land is illustrated in the Location Plan (Application Document Ref: 4.1).
- 1.4.5 The Existing Gas Pipeline has not been assessed as part of the Environmental Impact Assessment ('EIA') carried out in respect of the Application. This is on the basis that it is a pre-existing pipeline and the Applicant is not seeking consent to carry out any works to it. Further explanation in respect of this matter is provided in ES Volume 1, Chapter 1 'Introduction' and Chapter 3 'Site Description' (Application Document Refs: 6.2.1 and 6.2.3).

1.5 The Proposed Development

- 1.5.1 The main components of the Proposed Development are summarised below, as set out in the draft DCO (Application Document Ref: 2.1):
 - Work No. 1 – an OCGT power station (the 'OCGT Power Station') with a gross capacity of up to 299MW;
 - Work No. 2 – access works (the 'Access'), comprising access to the OCGT Power Station Site and access to Work Nos. 3, 4, 5 and 6;
 - Work No. 3 – temporary construction and laydown area ('Temporary Construction and Laydown') comprising hard standing, laydown and open storage areas, contractor compounds and staff welfare facilities, vehicle parking, roadways and haul routes, security fencing and gates, gatehouses, external lighting and lighting columns;
 - Work No. 4 – gas supply connection works (the 'Gas Connection') comprising an underground and/or overground gas pipeline of up to 600 millimetres (nominal internal diameter) and approximately 800 m in length for the transport of natural gas from the Existing Gas Pipeline to Work No. 1;
 - Work No. 5 – an electrical connection (the 'Electrical Connection') of up to 400 kilovolts and associated controls systems; and

- Work No 6 – utilities and services connections (the ‘Utilities and Services Connections’).
- 1.5.2 It is anticipated that subject to the DCO having been made by the SoS and a final investment decision by VPIB, construction work on the Proposed Development would commence in early 2021. The overall construction programme is expected to last approximately 21 months and is anticipated to be completed in late 2022, with the Proposed Development entering commercial operation later that year or early the following year
- 1.5.3 A more detailed description of the Proposed Development is provided at Schedule 1 ‘Authorised Development’ of the draft DCO (Application Document Ref: 2.1) and ES Volume 1, Chapter 4 ‘The Proposed Development’ (Application Document Ref: 6.2.4).
- 1.5.4 The areas within which each of the main components of the Proposed Development are to be built are shown by the coloured and hatched areas on the Works Plans (Application Document Ref: 4.3).

1.6 The purpose and structure of this document

- 1.6.1 This DAS has been prepared to describe the approach that has been taken to the design of the Proposed Development and to demonstrate how regard has been had to the surrounding context and to good design.
- 1.6.2 The structure of the DAS is set out in Table 1.1 below.

Table 1.1: Structure of the Design and Access Statement

SECTION	TITLE	OVERVIEW
Section 2	Legislative and policy context	Provides a summary of relevant policy and guidance relating to design and access.
Section 3	Site description, context and appraisal	Describes the Site, its immediate context, the surrounding area and appraises this context and the opportunities provided by the Site.
Section 4	Design flexibility and information	Explains the design flexibility that is being sought by VPIB and sets out the design information being provided with the Application.
Section 5	Design approach and evolution	Describes the design process that has been followed, including the broad approach that VPIB has taken to the design of the Proposed Development and where the design has evolved.

SECTION	TITLE	OVERVIEW
Section 6	Design components	Describes the design of the Proposed Development with reference to its key design components, including use, the amount of development, its layout, scale, appearance and also landscaping.
Section 7	Access arrangements	Considers access both to and within the Site.
Section 8	Securing detailed design	Sets out how the detailed design of the Proposed Development will be in accordance with the design details and parameters upon which the Environmental Impact Assessment of it has been based and secured by DCO requirements.
Section 9	Conclusions	Sets out the conclusions that can be drawn with regard to design and access matters.

2. LEGISLATIVE AND POLICY CONTEXT

2.1 Introduction

2.1.1 This section provides an overview of the legislative context for the Proposed Development and the planning policy framework against which it is to be considered. Planning policy more generally is considered within the Planning Statement (Application Document Ref: 5.3).

2.2 Legislative context

2.2.1 The PA 2008 and related regulations do not require an application for a DCO to be accompanied by a DAS. However, section 10 'Sustainable development' of the PA 2008 (subsection (3)(b)) states that in setting policy for NSIPs (through National Policy Statements) the SoS must have regard to the desirability of achieving 'good design'.

2.2.2 The Town and Country Planning (Development Management Procedure) (England) Order 2015 (the '2015 Order'), while applying to applications for planning permission under the Town and Country Planning Act 1990 (the 'TCPA'), is of relevance. This is because it sets out the matters to be addressed within a DAS.

2.2.3 Article 9 'Design and access statements' of the 2015 Order (paragraph 2) states that a DAS must:

- explain the design principles and concepts that have been applied to the development;
- demonstrate the steps taken to appraise the context of the development and how the design of the development takes this context into account;
- explain the policy adopted as to access, and how policies relating to access in relevant local development documents have been taken into account;
- state what, if any, consultation has been undertaken on issues relating to access to the development and what account has been taken of the outcome of any such consultation; and
- explain how any specific issues which might affect access to the development have been addressed.

2.2.4 Article 9 (paragraph 4) confirms that a DAS is not required for applications involving engineering or mining operations. It is relevant to note that while the Proposed Development involves new buildings and structures, the other works comprised within the Proposed Development (e.g. the electrical, surface water and gas supply connection works) for the most part represent engineering works. The main focus of this DAS is therefore upon the OCGT Power Station.

2.3 National Policy Statements

2.3.1 The planning policy framework for examining and determining applications for NSIPs is set out in National Policy Statements ('NPS'). Section 104 of the PA 2008 confirms that where an NPS has effect in relation to development of the description to which the application relates, the SoS must decide the application in accordance with the

NPS unless certain exceptions apply. Policy relating to design contained with the NPSs of relevance to the Proposed Development is set out below.

Overarching NPS for Energy (EN-1)

2.3.2 EN-1 defines the need for nationally significant energy infrastructure and sets out certain assessment principles and criteria against which applications for such infrastructure should be considered. This includes section 4.5 'Criteria for good design for energy infrastructure'.

2.3.3 Paragraph 4.5.1 recognises that the functionality of buildings and infrastructure, including fitness for purpose and sustainability, are as equally important as visual appearance and aesthetic considerations. It goes on to state that applying good design to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates 'good aesthetic' as far as possible. It is acknowledged however:

"...that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of an area."

2.3.4 Paragraph 4.5.2 of EN-1 notes that good design is also a means by which many policy objectives in EN-1 can be met, for example, good design, in terms of siting and use of appropriate technologies can help mitigate adverse impacts such as noise.

2.3.5 Paragraph 4.5.3 confirms that in assessing applications, the SoS will need to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be. In doing so, it goes on to state that the SoS should be satisfied that:

"..the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible. Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation. Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist in ensuring that such development contributes to the quality of the area."

2.3.6 Paragraph 4.5.4 stresses the importance of applicants being able to demonstrate in their application documents how the design process was conducted and how the proposed design evolved. However, it is clear that in considering applications the SoS should take into account the ultimate purpose of the infrastructure and bear in mind the operational, safety and security requirements that the design has to satisfy.

NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2)

2.3.7 EN-2 provides limited additional guidance on 'good design' for fossil fuel generating stations over and above that provided by EN-1. Paragraph 2.3.15 does, however, state that the principles of good design set out at Section 4.5 of EN-1 should be applied to all energy infrastructure.

- 2.3.8 Paragraph 2.3.16 states that applicants should demonstrate good design in respect of landscape and visual amenity and in the design of the development to mitigate impacts such as noise and vibration, transport impacts and air emissions.

NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)

- 2.3.9 Paragraph 2.3.1 states that Section 4.5 of EN-1 sets out the principles of good design that should be applied to all energy infrastructure.
- 2.3.10 Paragraph 2.3.2 states that for the reasons given at Section 4.5 of EN-1, applicants should demonstrate good design, in particular, when mitigating the impacts relevant to the infrastructure.

NPS for Electricity Networks Infrastructure (EN-5)

- 2.3.11 Paragraph 2.5.1, as with EN-4, refers to the principles of good design set out at Section 4.5 of EN-1.
- 2.3.12 Paragraph 2.5.2 states that proposals for electricity networks infrastructure should demonstrate good design in mitigating the potential adverse impacts that can be associated with overhead electric lines, particularly impacts upon biodiversity and geological conservation, landscape and visual, noise and vibration and electro-magnetic fields.

2.4 National Planning Policy Framework and Planning Practice Guidance

- 2.4.1 The National Planning Policy Framework ('NPPF') was introduced in March 2012 and last updated in February 2019. The policies contained within the NPPF are expanded upon and supported by the 'Planning Practice Guidance', which was originally published in March 2014 and has been updated incrementally since.
- 2.4.2 The NPPF sets out the Government's planning policies for England and how these are to be applied. It is a material consideration in planning decisions. Paragraph 5 of the NPPF makes it clear that the document does not contain specific policies for NSIPs and that applications in relation to NSIPs are to be determined in accordance with the decision-making framework set out in the PA 2008 and relevant NPSs, as well as any other matters that are considered both important and relevant. However, paragraph 5 clarifies that matters considered both important and relevant to NSIPs may include the NPPF.
- 2.4.3 Part 12 'Achieving well-designed places' of the NPPF deals with the matter of design in the built environment. Paragraph 124 confirms that the Government attaches great importance to the design of the built environment and that good design is a key aspect of sustainable development and is indivisible from good planning.
- 2.4.4 Paragraph 127 states that decisions should ensure that developments, amongst other things:
- a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
 - b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;

- c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);
- d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
- e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and
- f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience.

2.4.5 Paragraph 128 states that design quality should be considered throughout the evolution and assessment of individual proposals. Early discussion between applicants, the local planning authority and local community about the design and style of emerging schemes is important for clarifying expectations and reconciling local and commercial interests. Applicants should work closely with those affected by their proposals to evolve designs that take account of the views of the community. Applications that can demonstrate early, proactive and effective engagement with the community should be looked on more favourably than those that cannot.

2.4.6 It is notable that the VPIB has carried out a two-stage approach to pre-application consultation. The 'Stage 1 Consultation' was utilised to present initial proposals to consultees and the 'Stage 2 Consultation' was utilised to present more developed proposals, including how consultee comments has been taken into consideration in the design of the Proposed Development.

2.5 Local planning policy

2.5.1 The Site, where the OCGT Power Station would be located, is situated entirely within the boundary of the administrative area of NLC (a unitary authority). A small part of the Existing Gas Pipeline Site lies within the administrative area of North East Lincolnshire District Council ('NELC'), the neighbouring local authority.

2.5.2 The most relevant planning policy relating to design is contained within North Lincolnshire Core Strategy (adopted June 2011), North Lincolnshire Local Plan (adopted May 2003) and North East Lincolnshire Local Plan (adopted March 2018). The latter document, produced by NELC, is of lesser relevance than those adopted by NLC, on the basis that the Site is not located within the NELC administrative area. For the avoidance of doubt, only the Existing Gas Pipeline is located within the NELC area, to which no works are proposed.

2.5.3 Policy CS5 'Delivering Quality Design in North Lincolnshire' of the North Lincolnshire Core Strategy requires all new development in North Lincolnshire to be well designed and appropriate for its context. The policy states that development should:

- Contribute towards creating a positive and strong identity for North Lincolnshire;

- Ensure it takes account of the existing built heritage;
- Incorporate the principles of sustainable development throughout the whole design process;
- Create safe and secure environments;
- Consider the relationship between any buildings and the spaces around them;
- Create attractive, accessible and easily distinguished public and private spaces;
- Support sustainable living;
- Provide flexibility;
- Be easily accessible to all users; and
- Incorporate appropriate landscaping and planting.

2.5.4 Policy 22 'Good Design in New Developments' of the North East Lincolnshire Local Plan states that a high standard of sustainable design is required in all developments, and that NELC will expect the design approach of each development to be informed by a thorough consideration of the particular site's context (built and natural environment, and social and physical characteristics).

2.5.5 The compliance of the Proposed Development with national and local planning policy is considered in detail at section 5 of the Planning Statement (Application Document Ref: 5.3).

3. SITE DESCRIPTION, CONTEXT AND APPRAISAL

3.1 Introduction

3.1.1 This section describes and appraises the Site's context. This includes a description of its location, the Site itself, the immediate context within which it sits, the surrounding area and how access is achieved. Finally, it appraises the characteristics of the Site, including the opportunities and constraints it presents for development.

3.1.2 It should be noted that the distances referred to in this section refer to the areas of land on which new development (permanent and temporary) is proposed, i.e. the Site. The distances do not relate to the Existing Gas Pipeline, which does not form part of the Site.

3.2 Site location

3.2.1 The Site is located on land within and immediately to the north of the Existing VPI CHP Plant Site. The OCGT Power Station Site is located immediately adjacent to the Existing VPI Immingham CHP Plant Site. Immingham Dock is located approximately 1.5 km to the south east of the Site at its closest point. The Humber ports facility is located approximately 500 m north and the Humber Refinery is located approximately 500 m to the south.

3.2.2 The villages of South Killingholme and North Killingholme are located approximately 1.4 km and 1.6 km to the west of the Site respectively, and the town of Immingham is located approximately 1.8 km to the south east. The nearest residential property comprises a single house off Marsh Lane, located approximately 325 m to the east of the Site.

3.2.3 The location of the Site is shown in Figure 3.1 on the following page.

Figure 3.1: Site Location



3.3 Site Description

3.3.1 The Site extends to approximately 11.1 hectares and is split into the parts shown in Figure 3.6 later in this report. It comprises primarily of previously developed land, including areas within the operational Existing VPI CHP Plant Site.

3.3.2 The different parts can be described as follows:

- The OCGT Power Station Site comprises an undeveloped parcel of land of approximately 2.8 ha lying between the Existing VPI CHP Plant Site to the south, and Rosper Road to the east. Immediately to the north are a private car park and a number of single storey structures associated with the TLOR. According to a review of historical mapping, it is likely that the Site was used for farming purposes until 1970s when the neighbouring refineries were developed.
- The Access Site includes the existing highway accesses from Rosper Road that serve the TLOR and the Existing VPI CHP Plant, along with internal access roads serving the adjacent TLOR and areas of disturbed and previously developed land.
- The Temporary Construction and Laydown Site comprises three parcels of land, including an undeveloped area to the east of the Existing VPI CHP Site, an area to the north of the OCGT Power Station Site that is currently used for car parking by the TLOR and an undeveloped area to the west of the OCGT Power Station Site.
- The Gas Connection Site and Electrical Connection Site comprise corridors of land within the operational Existing VPI CHP Plant Site.
- The Utilities and Services Connections Site comprises a corridor of land within the operational Existing VPI CHP Plant Site and an area comprising predominantly of highway (Rosper Road) verge immediately to the east of the OCGT Power Station Site.

3.3.3 The photographs on the following pages show different parts of the Site and the surrounding area.

Figure 3.2: View west across the OCGT Power Station Site (from Rosper Road)



Figure 3.3: View south along Rosper Road towards the highway access to the Existing VPI CHP Plant Site (part of the Access Site)



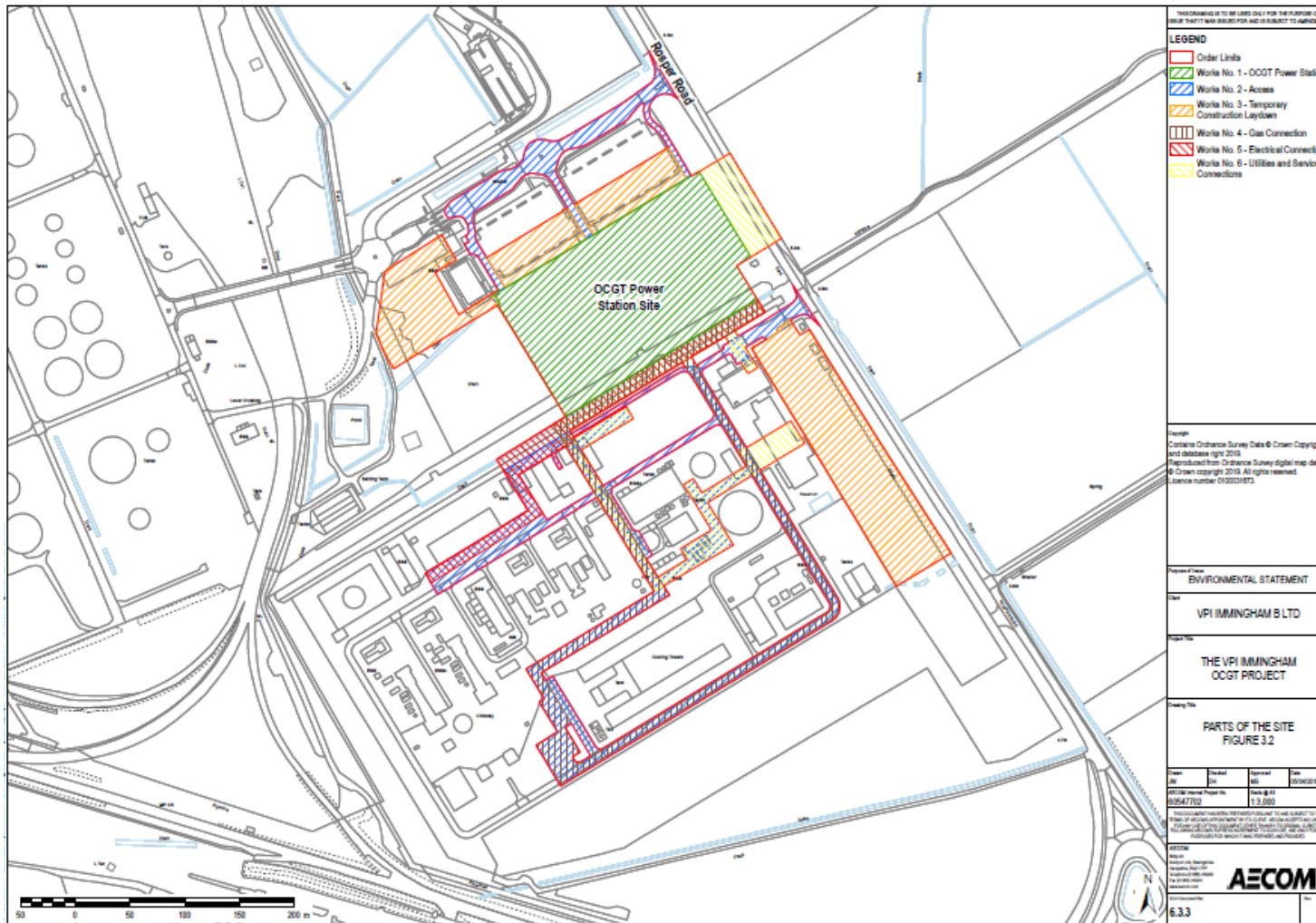
Figure 3.4: View west along the southern boundary of the OCGT Power Station Site (defined by existing pipelines)



Figure 3.5: View south west across the Site (from Rosper Road) towards the Existing VPI CHP Plant Site



Figure 3.6 Parts of the Site



3.4 The surrounding area

3.4.1 The Site is located in an area that is primarily characterised by significant industrial development, including energy generation, oil refineries and port related activities. The industrial development is interspersed by areas of agricultural land, which was the main use prior to the aforementioned industrial development and subsequent designation of the area as the 'South Humber Bank Strategic Employment Site' ('SES') under Policy CS12 of the Core North Lincolnshire Core Strategy (2011).

3.4.2 The surrounding land uses are as follows:

- North – the Site is bounded to the north by the current car park and access to the TLOR, beyond which there is a drainage ditch and training centre associated with the TLOR;
- South – the OCGT Power Station Site is bounded to the south by the Existing VPI Plant Site, beyond which the most southerly part of the Gas Connection Site is situated and agricultural fields are located;
- East – the Site is bounded by Rosper Road, beyond which agricultural fields, Immingham Docks and the Humber ports facility are situated; and
- West – the Site is bounded by an area of land that benefits from planning permission granted by NLC (Reference: PA/2018/918) in 2018 for the development of a 49.9 MW gas-fired power station, beyond which the TLOR is situated.

3.4.3 The surrounding area is shown in the aerial image below (Figure 3.7).

Figure 3.7: Aerial image showing the surrounding area



3.5 Designated sites and assets

- 3.5.1 There are a number of statutory and non-statutory nature conservation sites in the vicinity of the Site, as follows:
- Humber Estuary Special Conservation Area ('SAC'), Special Protection Area ('SPA'), Ramsar site and Site of Special Scientific Interest ('SSSI'), located approximately 1.4 km north east of the Site;
 - North Killingholme Haven Pits SSSI, located approximately 2 km to the north of the Site, which overlaps with the Humber Estuary Ramsar and SPA;
 - Eastfield Road Railway Embankment Local Wildlife Site ('LWS'), located approximately 1 km west of the Site;
 - Burkinshaw's Covert LWS, located approximately 400 m north east of the Site;
 - Station Road Field LWS, located approximately 400 m north of the Site; and
 - Rosper Road Pools LWS, located approximately 245 m south of the Site.
- 3.5.2 There are no World Heritage Sites or Registered Battlefields within 5 km of the Site. There is one Registered Garden (Brocklesby Park) located approximately 5 km south-west of the Site.
- 3.5.3 There are five Scheduled Monuments ('SM') within 5km of the Main Site, as follows:
- Manor Farm moated site, located approximately 2 km west of the Site;
 - North Garth moated site and associated enclosures, located approximately 2.4 km north west of the Site;
 - Moated site and associated earthworks at Baysgarth Farm, located approximately 2.6 km north west of the Site;
 - Manor farm moated site, East Halton, located approximately 3.5km north of the Site; and
 - Thornton Abbey Augustinian Monastery, including gatehouse, precinct, medieval road and bridge, moat, fishponds, post-Dissolution college and school, and house, located approximately 4.6km north-west of the Site.
- 3.5.4 There are three Grade 1, one Grade II*, and 11 Grade II listed buildings located within 3 km of the Site. The Grade I listed buildings are all churches (the Church of St Denys at North Killingholme, the Church of St Peter at East Halton and St Andrew in Immingham). There is a Grade II* listed Manor House, associated with the Scheduled Monument at Manor Farm 2km west of the site. There are also 11 Grade II listed buildings within 2.5 km, including the Killingholme lighthouses, located approximately 1.6km to the east of the site on the banks of the Humber River.
- 3.5.5 There are no Conservation Areas (areas of special architectural or historic interest) within 5 km of the Site.
- 3.5.6 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 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. With the nearest PRoW being Marsh Lane approximately 500m south east of the Site.

3.6 Flood risk and water resources

- 3.6.1 The Site is located predominantly within Flood Zone 3a according to the EA's Flood Map for Planning, whereas other parts are located within Flood Zone 2 (medium risk) and Flood Zone 1 (low risk). The Site is however located in an area that benefits from flood defences and the risk of flooding from fluvial, groundwater, surface water, artificial watercourses and drainage infrastructure sources is assessed as low. The flood defences are not shown on the aforementioned flood map.
- 3.6.2 A Flood Risk Assessment is provided at Appendix 12A of ES Volume III (Application Document Ref: 6.4). This demonstrates that the Proposed Development would remain safe during its lifetime and would not increase flood risk elsewhere and is, therefore, considered to be acceptable in flood risk terms.
- 3.6.3 The Site is not located within a Source Protection Zone. The superficial geology is characterised as a Secondary 'A' Undifferentiated Aquifer, whilst the bedrock geology is classified as Principal Aquifer.

3.7 Site appraisal

- 3.7.1 It is clear from the above that the Site is located in an area that is primarily characterised by significant industrial development, including energy generation, oil refineries and port related activities of significantly larger scale than the Proposed Development. It follows that the Proposed Development would not be out of character in the area, and it is notable that there are no designated sites/assets within or immediately adjacent to the Site.
- 3.7.2 The Site has been selected by the Applicant for the Proposed Development, as opposed to other potentially available sites, for the following reasons:
- it comprises primarily of previously developed or disturbed land, including land within the operational envelope of the Existing VPI CHP Plant Site;
 - it is situated in an industrial setting with few immediate receptors and is not particularly sensitive from an environmental perspective;
 - it is primarily located adjacent to the Existing VPI CHP Plant, which provides visual screening and synergies in terms of the existing workforce and services;
 - it benefits from excellent grid connections (gas and electricity) on the Existing VPI CHP Plant Site; and
 - it benefits from existing highway accesses onto Rosper Road, with the latter providing a direct connection (via a short section of Humber Road) to the Strategic Highway Network (A160) a short distance to the south of the Site.
- 3.7.3 The Site does present some constraints, including the proximity of the aforementioned internationally designated nature conservation sites, the potential for

protected species, an area of known archaeology preserved in-situ within the Site (further detail provided later in this report), and the potential presence of further buried archaeology. In terms of potential impact on ecology, the Proposed development has the potential for emissions to air, along with noise and light pollution, which have been assessed in detail within the ES (Application Document Refs: 6.1 – 6.4).

- 3.7.4 The Site's context, setting and the above opportunities and constraints have influenced the approach taken by VPI to the selection of the Site and the design of the Proposed Development, as explained in section 6 of this report. It should be considered, however, that the area is already characterised by significant industrial development, and emissions of light and noise, for instance, are already prevalent from the Existing VPI CHP Plant and TLOR.

4. DEISGN FELXIBILITY AND INFORMATION

4.1 Introduction

4.1.1 This section of the DAS explains the flexibility that VPIB has sought to incorporate within the design of the Proposed Development. It also explains the purpose and status of the design information that has been submitted as part of the Application.

4.2 Design flexibility

4.2.1 Construction work on the Proposed Development, assuming that a DCO is granted by the SoS, would not commence until a final investment decision has been made by VPIB and a contractor appointed. Following the award of a contract, the appointed contractor would undertake a number of detailed studies to inform the technology selection for the Proposed Development, including, for example, the turbine, in order to optimise the final layout and design of the OCGT Power Station before proceeding with the discharge of the pre-commencement DCO requirements and starting work at the Site.

4.2.2 Accordingly, aspects of design that have already been determined include:

- selection of a design incorporating a single gas turbine;
- electricity grid and service connections (through the existing infrastructure on the adjacent Existing VPI CHP Plant site); and
- an appropriate stack height.

4.2.3 The following aspects have not yet been determined, therefore options have been included and assessed within the ES:

- the provider of the turbine, therefore the final dimensions of the proposed structures and buildings;
- final stack location within the OCGT Power Station Site; and
- the final route of the new gas pipeline for the Gas Connection.

4.2.4 In order to provide sufficient flexibility and ensure a robust Environmental Impact Assessment ('EIA'), VPIB has adopted the 'Rochdale Envelope' approach to present a worst-case assessment of potential environmental effects of the different parameters of the Proposed Development that have not yet been fixed. Wherever an element of flexibility is maintained, the realistic worst-case impacts have been reported in the ES.

4.2.5 Table 4.1 sets out the maximum building and fixed design parameters that have been assessed. Maximum building heights are given in metres AOD ('m AOD'), based on the upper limit finished ground level (assumed to be 6 m AOD).

Table 4.1: Main structure dimensions

Component	Maximum length (m)	Maximum width (m)	Maximum height (m)	Maximum footprint (m ²)
Single Gas Turbine and Generator	30	20	20	600
Gas Turbine Building	46	25	29	1,150
Exhaust Stack(s)	Up to 12m in diameter		Up to 56m	112
Air Intakes	24	16	40	384
Fin-fan cooler	30	15	17	450
Control room, workshops, stores	35	20	16	700
Demin tank, firewater tank	24m (i.e. diameter)		32	450

4.3 Design Information

4.3.1 The design information that has been submitted as part of the Application is based upon the fixed design details, limits of deviation and the maximum design parameters. This information is set out in Table 4.2 below.

Table 4.2: Design Information submitted as part of the Application

Application Document Ref.	Purpose
Works Plans – Application Document Ref: 4.3	Confirms the extent of the Works Nos. comprised within the Proposed Development, as set out at Schedule 1 of the DCO.
Indicative Generating Station Plan (Sheets 1-3) – Application Document Ref: 4.5	Showing the indicative layout and elevations of the OCGT Power Station.
Indicative Gas Connection Plan – Application Document Ref: 4.6	Showing the route and connection point for the Gas Connection.

Application Document Ref.	Purpose
Indicative Electrical Connection Plan – Application Document Ref: 4.7	Showing the route options and connection point for the Electrical Connection.
Indicative Utilities and Services Connections Plan – Application Document Ref: 4.8	Showing the routes and connections points for the Utilities and Services.
Grid Connection Statement - Application Document Ref: 5.7	Providing detail in respect of the Electricity Connection.
Gas Connection Statement – Application Document Ref: 5.8	Providing detail in respect of the Gas Connection.

4.3.2 Due to the nature of the Proposed Development and the need to incorporate sufficient flexibility within its design, much of the design information that has been submitted as part of the Application is indicative. However, the information that has been provided would feed into the detailed design of the Proposed Development. The mechanisms by which the detailed design of the Proposed Development would be secured are dealt with at section 8 of this report.

5. DESIGN APPROACH AND EVOLUTION

5.1.1 This section sets out the approach that VPIB has taken to the design of the Proposed Development and how the design has evolved throughout the pre-application process

5.2 Design principles

5.2.1 The main design principles adopted by VPIB are set out below:

- Design Principle 1: ensure the design is in keeping the character of the surrounding area;
- Design Principle 2: provide a functional design that makes the best use of the location and provides for efficient generation of electricity;
- Design Principle 3: keep the height of the plant buildings to a minimum where possible to reduce visual impact;
- Design Principle 4: position the main components to minimise environmental impact;
- Design Principle 5: seek opportunities for the management and enhancement of biodiversity;
- Design Principle 6: ensure safe and efficient access to the public highway; and
- Design Principle 7: ensure the approach to design is inclusive.

5.2.2 These principles are references where applicable in the remainder of this section.

5.3 Design approach

5.3.1 The approach that VPIB has taken to the design of the Proposed Development has been informed by the context within which it would be situated, in addition to the opportunities and constraints that are presented by the Site.

5.3.2 The immediate context within which much of the Site sits is formed by the Existing VPI CHP Plant and the TLOR, and is already industrialised in terms of its character and appearance. Given the Site's context and the fact that it is not particularly sensitive from an environmental perspective, VPIB has adopted a functional approach to the design of the Proposed Development, led primarily by technical and engineering considerations (in accordance with Design Principle 1 and 2), but with consideration given to environmental matters where necessary (in accordance with Design Principle 4).

5.3.3 Key elements of the design approach have included the following:

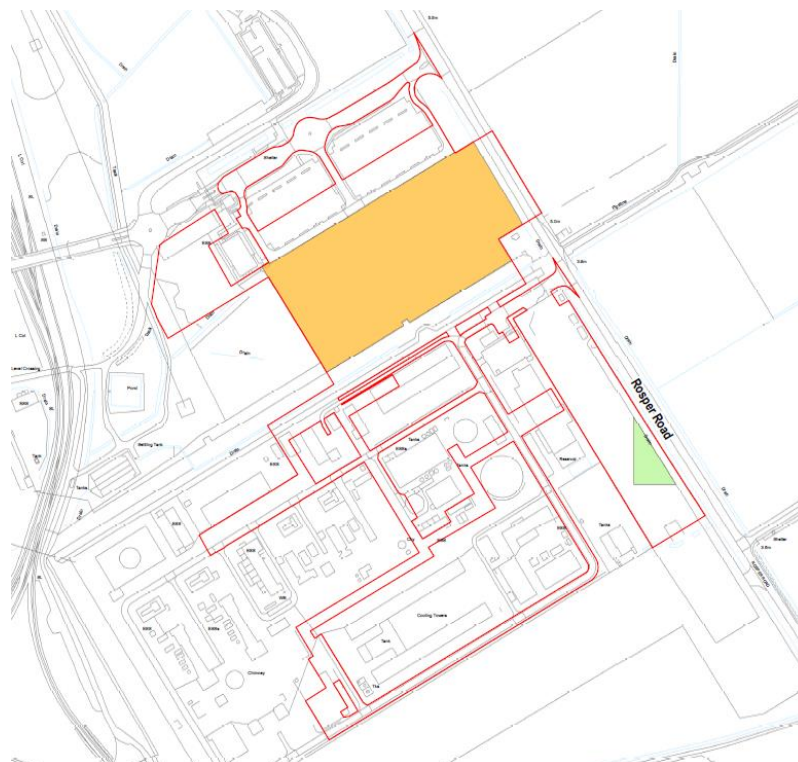
- Locating the OCGT Power Station immediately adjacent to the Existing VPI CHP Plant, where existing electricity and gas connections are available. The short distance has the dual benefit of providing a shorter and more simple construction process, whilst reducing the potential for adverse environmental impacts associated with developing long sections of new overhead electricity line or gas pipeline.

- Fitting the necessary OCGT Power Station components within the Site by locating it on the only part with sufficient space, and where the electricity and gas connections can be easily accessed, i.e. the OCGT Power Station Site.
- Orientating the OCGT Power Station parallel to the Existing VPI CHP Plant to fit with the rectangular shape of the plot comprising the OCGT Power Station Site, which also has the benefit of reducing visual impact on the basis of less protrusion from the Existing VPI CHP Plant Site (in accordance with Design Principle 4).
- Locating the OCGT Power Station in close proximity to existing points of access onto the public highway (Rosper Road) to provide access during construction and operation.

5.3.4 Although the new buildings and structures would be functional in appearance, in terms of scale and massing, they would be far less prominent than the Existing VPI CHP Plant. The latter is of a much larger scale than the Proposed Development; for example, the height of the existing main stack of the Existing VPI CHP Plant is approximately 90 m, as opposed to a maximum of 56 m for the Proposed Development. The height has been optimised to meet emissions dispersion and visual impact criteria (in accordance with Design Principle 3).

5.3.5 Furthermore, notwithstanding that the Site is not particularly sensitive from an environmental perspective, VPIB has sought to locate the main components away from environmentally sensitive areas. This includes not locating any built development in an area of the Site where archaeology has been preserved in-situ (in accordance with Design Principle 4). The area is shown in Figure 5.1 below (coloured green).

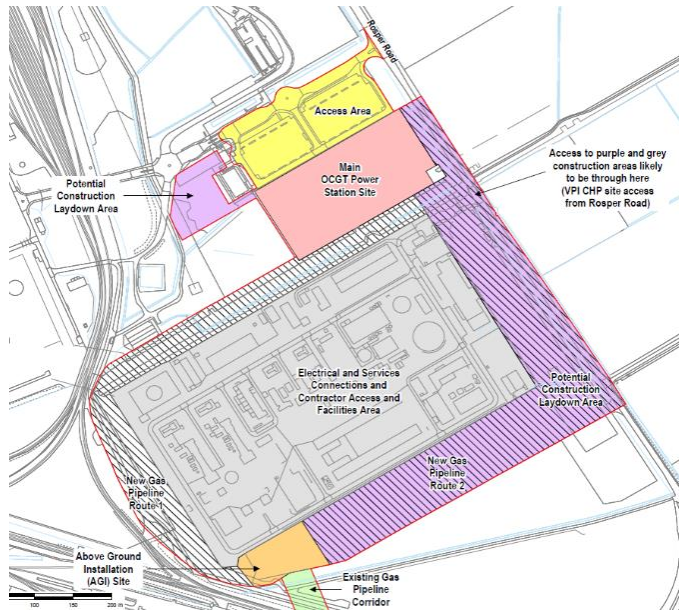
Figure 5.1: In situ archaeology



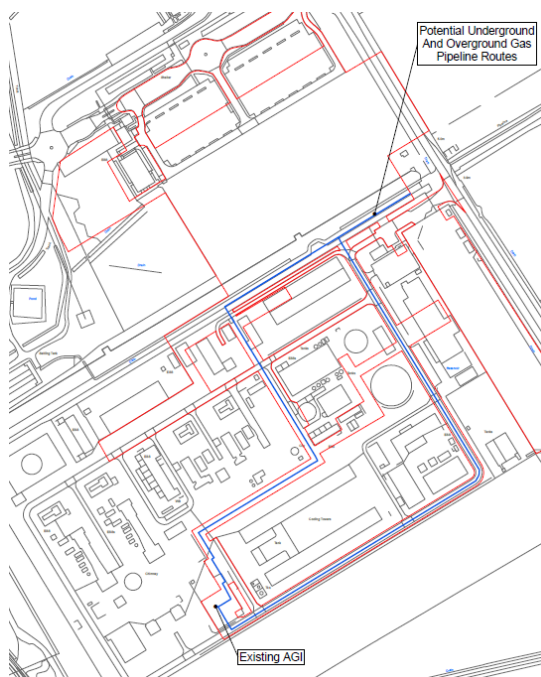
- 5.3.6 VPIB has only proposed construction laydown only in this area and there would not be any requirement for removal of existing surfaces. Furthermore, the area would be marked out and protected from tracking by heavy machinery. The archaeological remains would therefore remain preserved in situ and there would not be any impact upon them. Please refer to ES Volume I, Chapter 13 'Cultural Heritage' for more detail (Application Document Ref: 6.2.13).
- 5.3.7 The approach that has been taken to the design of the Proposed Development is considered appropriate given its context and purpose – to generate and export electricity to the National Grid. It is also important to recognise that this is not a situation where large-scale development is being introduced into an area that is devoid of built development and characterised by a particularly sensitive landscape. The area is allocated by NLC for the provision of industrial type development under Policy CS12 of the North Lincolnshire Core Strategy (2011). NLC has also confirmed in consultation with VPIB that the proposed location of the OCGT Power Station is acceptable in principle. Please refer to the Consultation Report for more detail (Application Document Ref: 5.1).

5.4 Design Evolution

- 5.4.1 The design process for the Proposed Development has been an iterative one. The main focus has been upon the OCGT Power Station and Gas Connection, in view of the fact that much of the necessary infrastructure, including highway access and utilities connections, are already in place – primarily associated with the Existing VPI Plant.
- 5.4.2 As part of the design process a number of options have been considered for the location of the OCGT Power Station, as set out in the 'Design approach' section of this report. The approach and options considered are not repeated here.
- 5.4.3 In terms of the Gas Connection, VPIB originally assessed alternative gas pipeline routes to the east and west of the Existing VPI CHP Site, that would have connected to a new Above Ground Installation ('AGI') to the south of the Existing VPI CHP Site. These routes would require longer sections of gas pipeline and include some undeveloped areas of land; therefore, they have been discounted and are no longer part of the Proposed Development. The discounted routes are shown in Figure 5.2 as New Gas Pipeline Route 1 and 2.

Figure 5.2: Discounted gas pipeline routes



- 5.4.4 Consideration has instead been given to routing the new gas pipeline through the Existing VPI CHP Plant Site to an existing AGI. The benefits of this approach include a shorter section of gas pipeline, avoiding building a new AGI, and routing the pipeline through an operational site – thereby avoiding undeveloped areas.
- 5.4.5 VPIB has retained two gas pipeline routes through the Existing VPI CHP Plant Site. These alternatives in relation to the Gas Connection are not considered to represent any new or different environmental impacts. Selection of the final pipeline route would be made at the detailed design stage. The routes are shown in Figure 5.3.

Figure 5.3: Proposed gas pipeline routes


5.5 Design through consultation

- 5.5.1 VPIB held two extensive phases of consultation for the Proposed Development (in accordance with Design Principle 7). This included a stage of non-statutory consultation (the 'Stage 1 Consultation') held in summer 2018 and a stage of statutory consultation (the 'Stage 2 Consultation') held in winter 2018.
- 5.5.2 The objective of the Stage 1 Consultation was to introduce the Proposed Development and initial proposals, including the options being considered; with the Stage 2 Consultation providing an update on and seeking views on more developed proposals, and advising of the decisions made following the Stage 1 Consultation. Several public exhibition events were held within a 4km radius of the Site for both stages, giving participants (primarily the local community) the opportunity to express their opinions on the proposals/designs whilst helping to inform the decisions made by VPIB in designing the Proposed Development.
- 5.5.3 Following the Stage 1 Consultation VPIB was able to determine a number of design aspects and also confirm where flexibility would be retained, in accordance with the flexibility requirements set out earlier in this report. Samples of exhibitions boards produced for the Stage 1 Consultation and Stage 2 Consultation are included on the following pages.
- 5.5.4 The overall feedback from the local community in relation to the Proposed Development was very supportive and, partially as a result of this, it has not been necessary to make a significant amount of design changes to the Proposed Development. The main changes include adding Requirement 24 to the draft DCO (Application Document Ref: 2.1), which is aimed at promoting employment, skills and training opportunities for local residents. Furthermore, adding a framework Construction Traffic Management Plan ('CTMP') to the Application to address concerns raised by the local community. Please refer to the Consultation report for more detail (Application Document Ref: 5.1).
- 5.5.5 Consultation was also undertaken with technical consultees regarding access issues. This involved entering into discussions with Highways England and the local highway authority (NLC). The outcome of these discussions resulted in, amongst other things, Highways England being added as a named consultee to Requirement 16 of the draft DCO that deals with then provision of a CTMP.

Figure 5.4 Sample exhibition board from Stage 1 Consultation



VPI Immingham OCGT

Proposed new gas-fired power station on land off Rospere Road, South Killingholme, North Lincolnshire

Who is VPI?

VPI owns and operates the existing CHP power plant at to the south of the site proposed for the Project. It is one of the largest CHP plants of its type in Europe, providing both electricity and steam to the adjacent refineries and electricity to the National Grid.

What is Being Proposed?


The Government recognises that there is an urgent need for new electricity generation infrastructure to replace the coal-fired power stations that have closed in recent years and to balance the intermittency of renewables. We are proposing to build a new OCGT power station with a generation capacity of up to 250 MW. This power station is intended to meet short term high electricity demand and support the electricity grid at times when other technologies (e.g. wind and solar) cannot meet demand.

One of the main strengths of this type of plant is its ability to rapidly generate electricity when required and then switch off again. As a consequence of this, the power station is not expected to generate electricity for extended periods but will operate for a limited number of hours per year.

The power station would use Natural Gas as fuel fed by a new pipeline that would run to the south of the existing CHP plant. This pipeline would connect to an existing pipeline at a new small Above Ground Installation (AGI) at this location.

The existing pipeline is also being included in the application so this pipeline can be used and maintained for this Project. No works during construction along the existing pipeline route are being proposed at this time.

The power station would export electricity via a connection to the existing electricity substation within the adjacent CHP plant. No additional overhead transmission lines would be required.



What is an Open Cycle Gas Turbine (OCGT)?

An OCGT is a gas turbine that uses natural gas combusted in air to turn a drive shaft in an electrical generator to produce electricity.

The advantage of an OCGT is that it can be started quickly - in around 5 minutes, and can therefore be used to respond to peaks in electricity demand, such as the morning and evening periods. It can also be used to back up intermittent renewable generation, such as wind and solar.

As more of our power comes from renewable sources, the UK Government recognises that more of these plants are likely to be needed to ensure continuity of electricity supply.

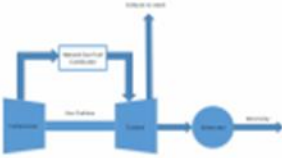


Figure 5.5: Sample exhibition board from Stage 2 Consultation



VPI Immingham OCGT

Proposed new gas-fired power station on land off Rospere Road, South Killingholme, North Lincolnshire

CONSULTATION TO DATE

Stage 1 Consultation

In July and August 2018, VPI consulted the local community and other stakeholders on its initial proposals.

The Stage 1 Consultation provided information on initial proposals for the Project, its purpose, scale and potential layout, key timescales and means of further involvement, and the environmental assessment work that will be carried out for the Project.

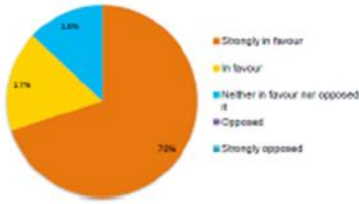
Two public exhibitions were held within the vicinity of the Proposed Development Site at which there was an opportunity to meet members of the project team, ask questions, discuss the proposals and provide comments. 32 people attended the exhibitions.

Comments and feedback from the consultation

Of the 32 people that attended the exhibitions, 23 attendees completed feedback forms. Based on the feedback received, more than 85% of people were either 'strongly in favour' or 'in favour' of the Project.

A range of comments and feedback were received, with the predominant themes being:

- The security of UK energy supplies and the contribution that the proposals would make toward this;
- Employment generation during both construction and operation;
- Environmental benefits and potential impact; and
- Traffic and noise generation.



- Strongly in favour
- In favour
- Neither in favour nor opposed
- Opposed
- Strongly opposed

What has changed since Stage 1?

The following design aspects have been determined:

- Selection of a design incorporating a single gas turbine;
- Electricity grid and service connections (through the existing infrastructure on the adjacent CHP plant site);
- Electricity and service connections (through the existing infrastructure on the adjacent CHP plant site); and
- The location of the AGI and intersection point of the new and existing gas pipelines.

The following aspects have not yet been determined:

- The Supplier of the turbine;
- Final dimensions of the proposed structures and buildings (determined to some extent by the turbine);
- Final stack heights and locations;
- Final layout of some of the buildings and structures;
- Route of the new gas pipeline (either east or west around the existing CHP plant); and
- Final areas for ecological mitigation.





6. DESIGN COMPONENTS

6.1.1 This section of the DAS describes the key design components of the Proposed Development. This includes in relation to use, layout, the amount of development, the scale of the main buildings and structures, appearance and the approach taken to landscaping.

6.2 Use

6.2.1 The Site comprises land that is considered suitable for power generation, in that it is located in an industrial area that has been allocated by NLC for industrial development. The OCGT Power Station Site is currently vacant and has recently been used for spoil storage. There are therefore no compatibility issues when considering the existing and proposed use.

6.2.2 The surrounding uses comprise large-scale industrial development and the Existing VPI CHP Plant. There are therefore no compatibility issues when considering the surrounding uses. It follows that the Proposed Development would not be out of place in a location that is subject to and characterised by the same/similar uses, and that benefits from beneficial local synergies.

6.3 Layout

6.3.1 The main element of the Proposed Development is the OCGT Power Station. The locations for other parts of the Proposed Development, including the Temporary Construction and Laydown and Utilities and Services Connections, have been selected on the basis that they need to be situated close/adjacent to the OCGT Power Station. It follows that the main consideration in determining the layout of the Site has been based upon identifying the most practical and logical location for the OCGT Power Station.

6.3.2 The location and position of the OCGT Power Station within the Site has primarily been determined by the following factors (in accordance with Design Principle 2):

- the location of the existing TLOR access onto Rosper Road;
- the location of the gas and electricity connection points on the Existing VPI CHP Plant Site; and
- the shape and constrained nature of available land within the Site.

6.3.3 The main part of the Site that benefits from sufficient space to accommodate the OCGT Power Station is constrained to the north and south by the Access Site and Existing VPI CHP Plant Site, and to the west and east by Roper Road and the land proposed by VPIB's sister company for the development of a 49.9 MW gas-fired power station (planning permission for which was granted in 2018 (Reference: PA/2018/918)). These constraining factors effectively create a rectangular box, now known as the 'OCGT Power Station Site', in which to position the OCGT Power Station.

6.3.4 The proposed location of the Site is shown in Figure 3.1 earlier in this report. The indicative layout and elevations of the OCGT Power Station is shown in Figures 6.1 and 6.2.

- 6.3.5 The locations and routes proposed for the Gas Connection, Electricity Connection and Utilities and Service Connections are primarily within the Existing VPI CHP Plant Site. The proposed routes have primarily been determined by identifying the most direct passage possible through the Existing VPI CHP Plant Site, following pre-existing infrastructure corridors where possible and avoiding key components. It is notable that two routes are still under consideration for the Gas Connection, as described earlier in this report.
- 6.3.6 The proposed locations and routes proposed for the Gas Connection, Electricity Connection, and Utilities Connection Utilities and Services Connections, are shown in Figures 6.3, 6.4 and 6.5.

Figure 6.1 – Indicative OCGT Power Station layout

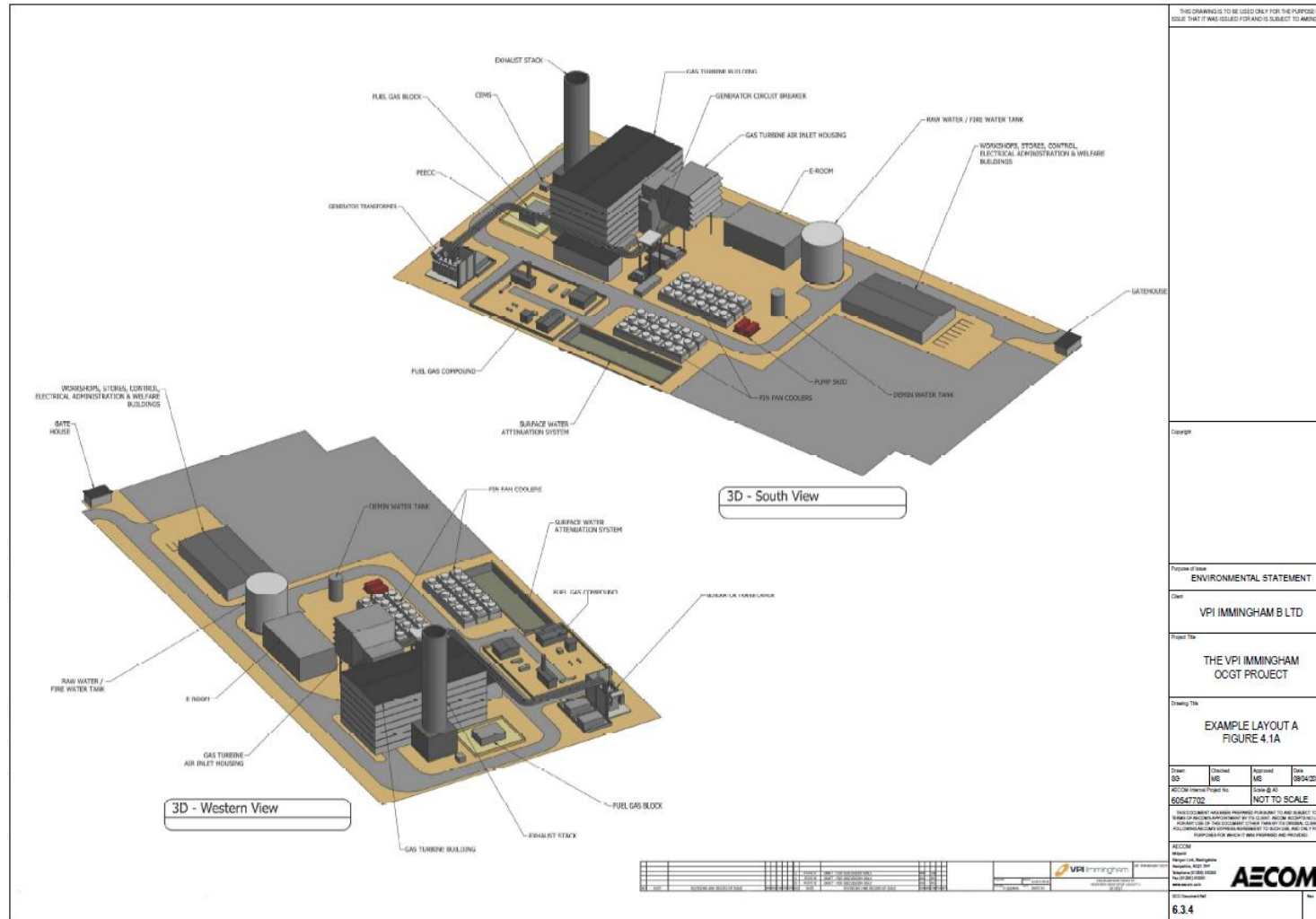


Figure 6.2 – Indicative OCGT Power Station elevations

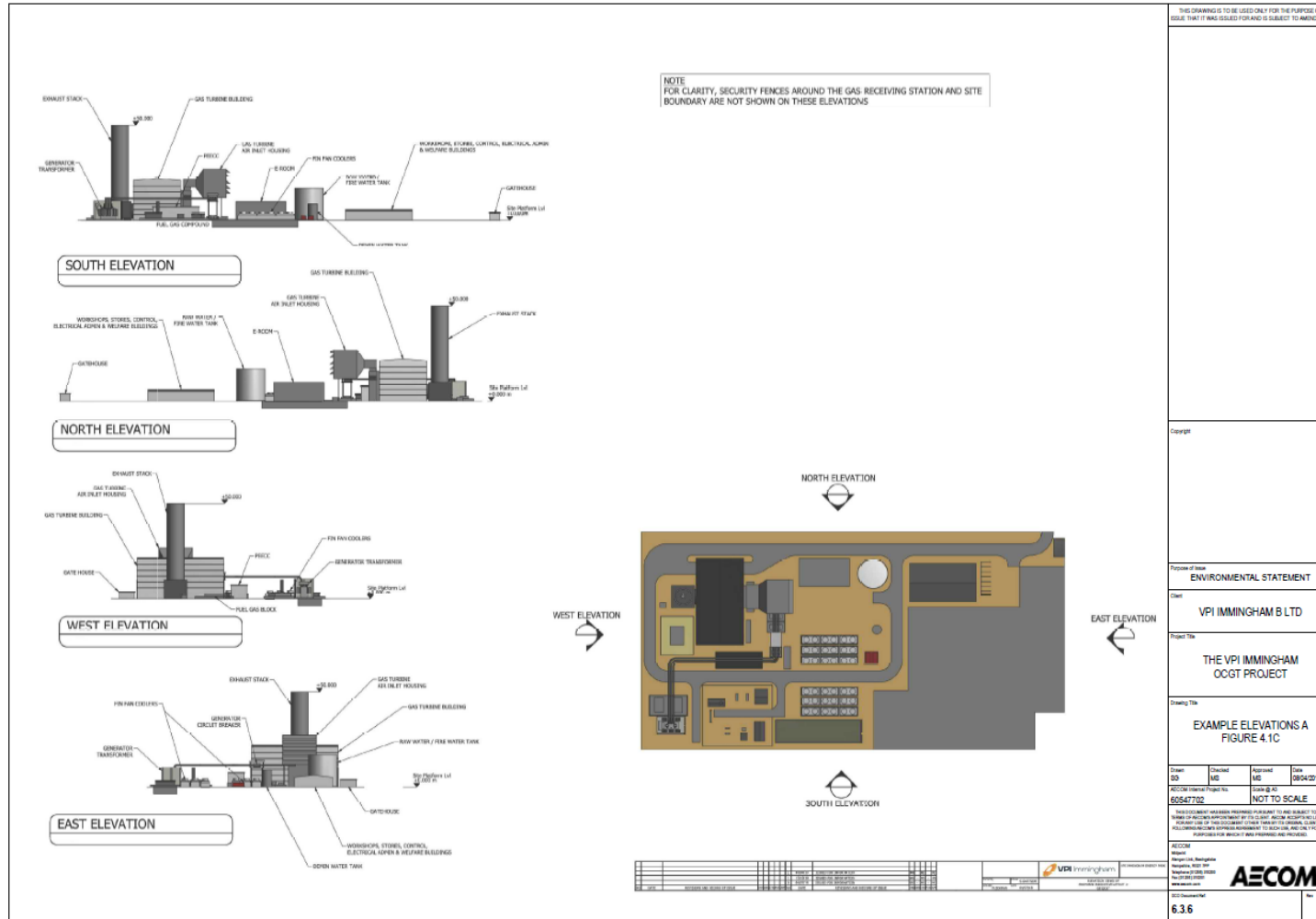


Figure 6.3 – Indicative Gas Connection Plan

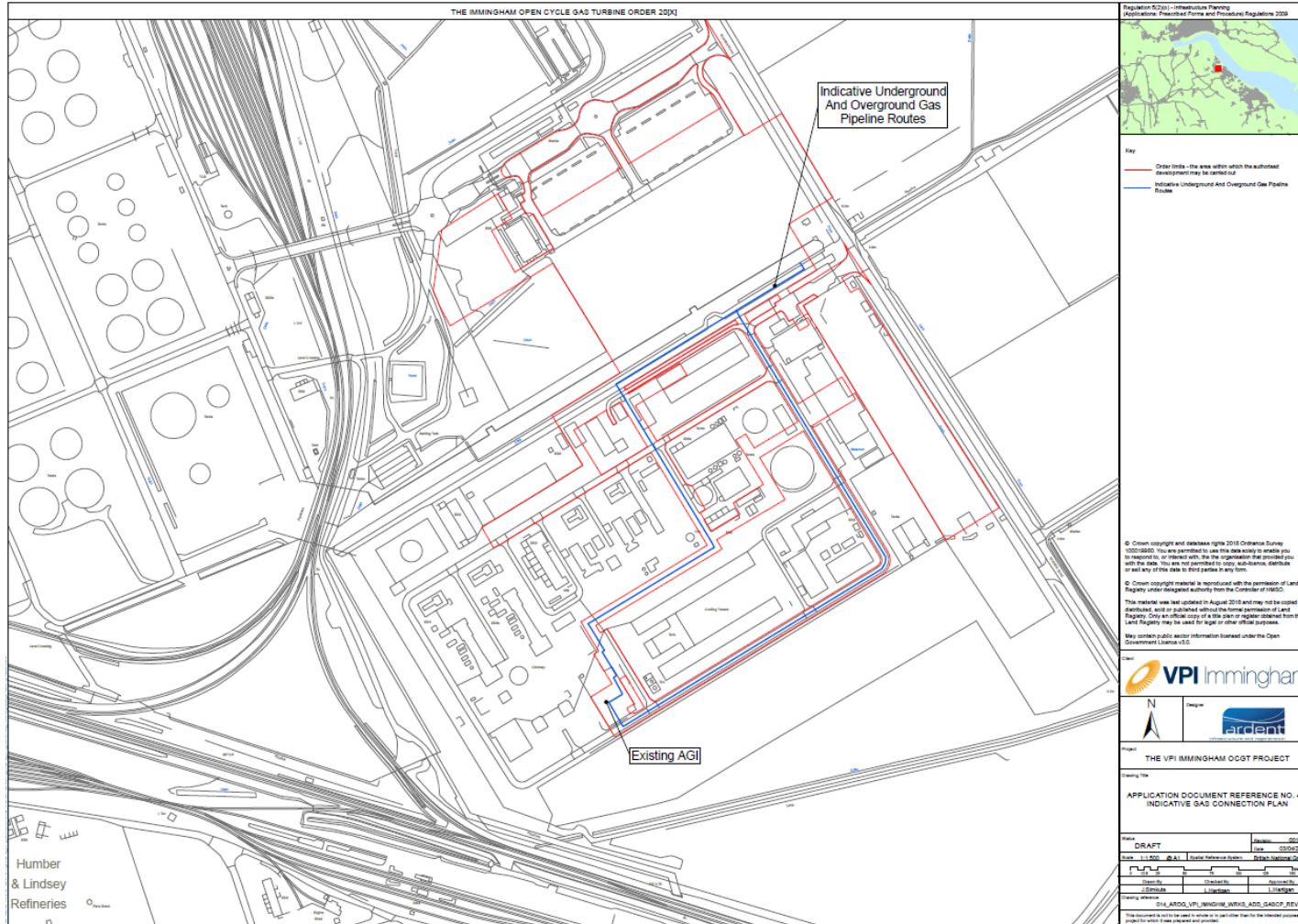


Figure 6.4 – Indicative Electricity Connection Plan

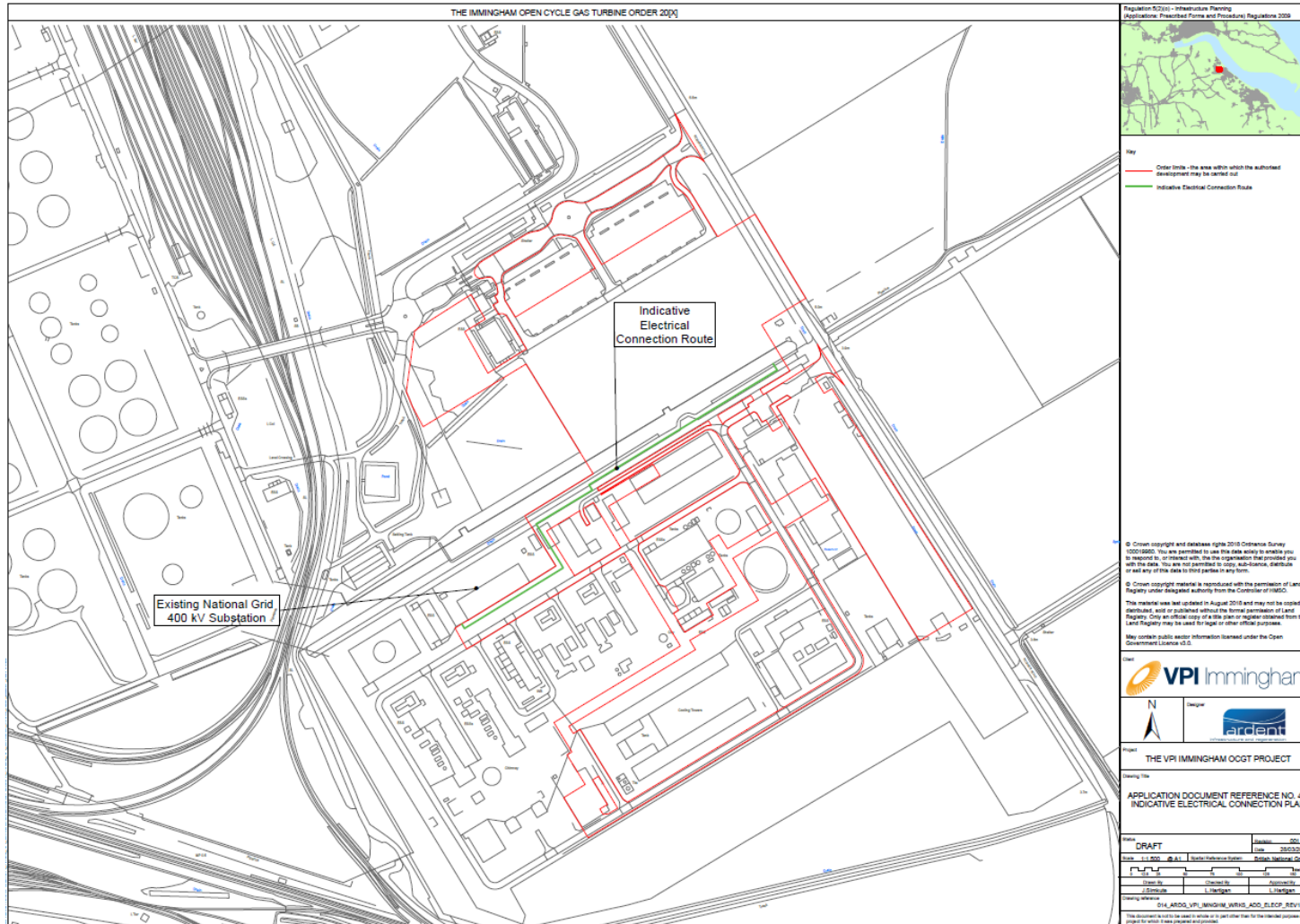
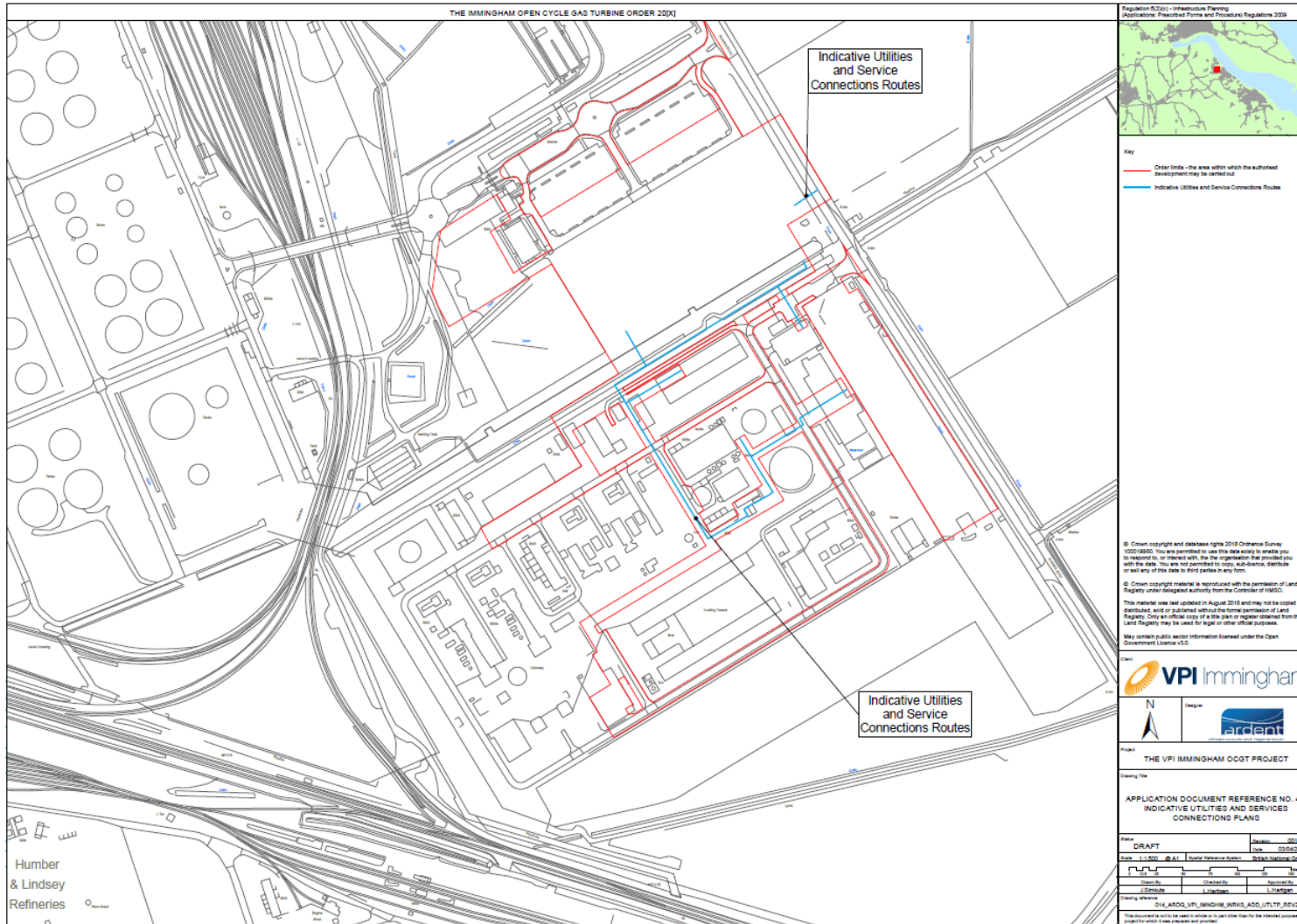


Figure 6.5 – Indicative Utilities and Services Connections Plan



6.4 Amount

- 6.4.1 The amount of development proposed is considered appropriate, due to the location of the Site in an area that is primarily characterised by significant industrial development, including energy generation, oil refineries and port related activities of significantly larger scale than the Proposed Development. The amount and scale of the development will also be much smaller than the Existing VPI CHP Site.
- 6.4.2 The amount of development in terms of the total area of the Site is approximately 11.1 ha. The areas for the main parts of the Site are as follows:
- OCGT Power Station Site – approximately 2.8 ha;
 - Access Site – approximately 2.6 ha;
 - Temporary Construction and Laydown Site – approximately 2.6 ha;
 - Gas Connection Site – approximately 1.3 ha;
 - Electrical Connection Site – approximately 0.6 ha; and
 - Utilities and Services Connections Site – approximately 1.2 ha.
- 6.4.3 The above areas and their extent are shown on the Works Plans (Application Document Ref: 4.3). A number of the areas overlap.

6.5 Scale

- 6.5.1 The scale of the Proposed Development relates to the dimensions (length, width and height) of the main buildings and structures that would be constructed at the Site. Almost all the buildings and structures form part of the OCGT Power Station. The maximum dimensions are set out in Table 4.1 earlier in this report.
- 6.5.2 The largest structure associated with the Proposed Development is the emissions stack, at a maximum height of approximately 56 m. The next largest in terms of height are the air intakes and Gas Turbine Building, at up to 40 m and 29 m respectively. Whilst these structures are not insignificant in scale, they would be far less prominent than those associated with the Existing VPI CHP Plant, which is of a much larger scale than the Proposed Development. For example, the height of the existing main stack is 90, as opposed to a maximum of 56 m for the Proposed Development.
- 6.5.3 The indicative elevations of the OCGT Power Station are shown in Figure 6.2 earlier in this report. Figure 6.6 comprises a computer-generated image ('CGI') of the OCGT Power Station with the Existing VPI CHP Plant in the background, providing an indication of the scale and massing of the of the Proposed Development relative to the significantly larger scale Existing VPI CHP Plant.

Figure 6.6 – CGI Image of the Proposed Development



6.6 Appearance

- 6.6.1 The most visible components of the Proposed Development would be the Gas Turbine Building, exhaust stack, air intakes and fin-fan cooler, i.e. the principle components of the OCGT Power Station. See Table 4.1 earlier in this report for dimensions.
- 6.6.2 The appearance of the OCGT Power Station would be consistent with its industrialised context and has taken design references from the Existing VPI CHP Plant (in accordance with Design Principle 2). While the appearance of the buildings and structures are different to and on a much more modest scale than those of the Existing VPI CHP Plant, they are industrial, reflecting not only their surroundings, but also their purpose to generate electricity (in accordance with Design Principle 2).
- 6.6.3 The main buildings and structures would be simple and functional in form and detailing (in accordance with Design Principle 2), predominantly comprising of steel skeletons covered in appropriate cladding. There are a number of possible cladding solutions and a decision on those to employ would be made at the detail design stage.
- 6.6.4 The detailed design of the Proposed Development, including the design and appearance of buildings and the type and colour of materials to be employed, is secured by Requirement 5 'Detailed design' of the draft DCO (Application Document Ref: 2.1).

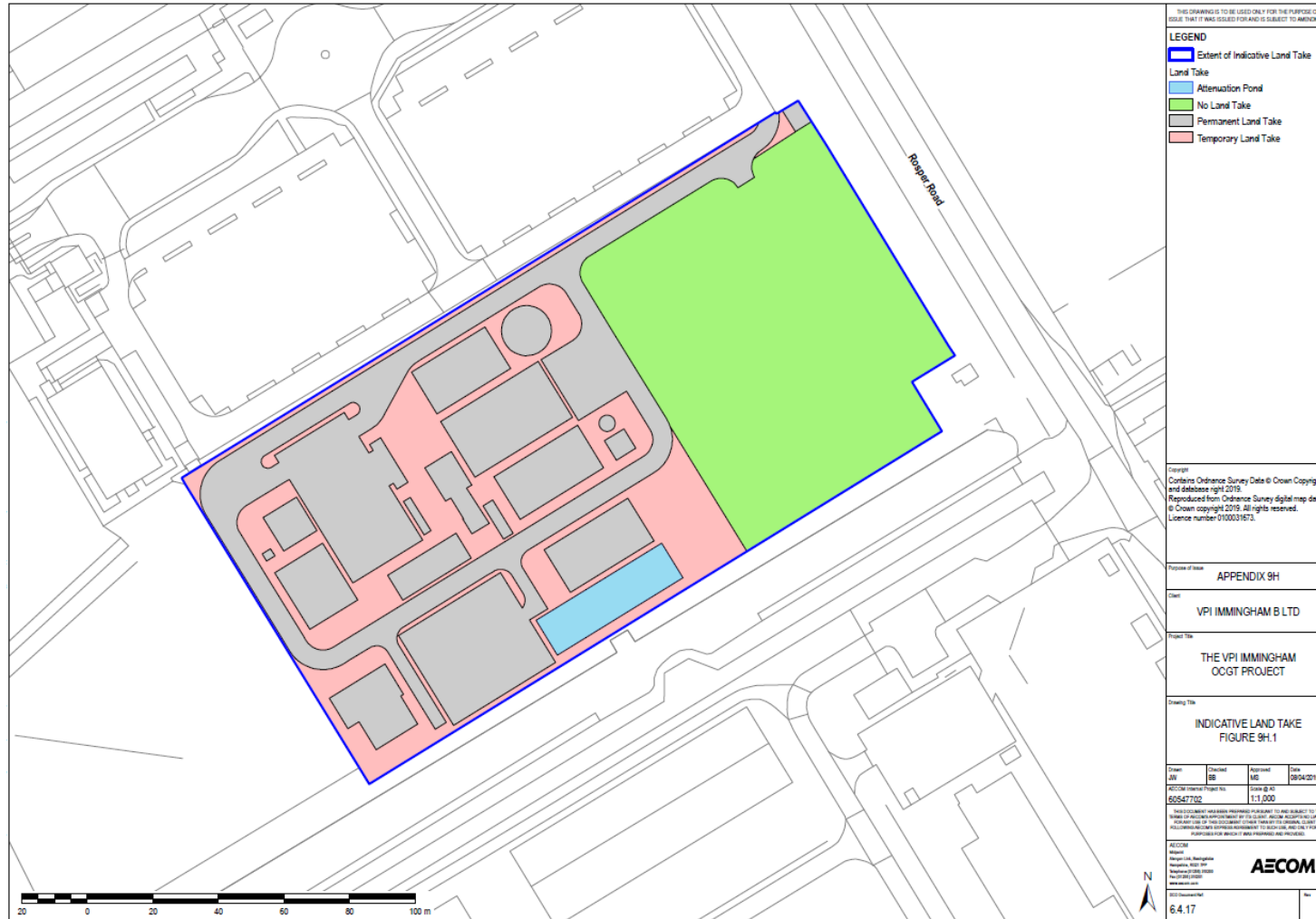
6.7 Landscaping and biodiversity

- 6.7.1 VPIB's approach to landscaping has been informed by reference to the NPSs and other relevant planning policy. Section 2.65 of NPS EN-2 states that:
- "It is not possible to eliminate the visual impacts associated with a fossil fuel generating station. Mitigation is therefore to reduce the visual intrusion of the buildings in the landscape and minimise impact on visual amenity as far as reasonably practicable".*
- 6.7.2 The assessment in the ES (Volume I, Chapter 10 – Application Document Ref: 6.2.10) has not identified any significant effects on landscape receptors. The assessment also has not identified any significant visual effects for receptors at the agreed representative viewpoints. As such, it is anticipated that landscape and visual impact would be primarily minimised through appropriate choice of external finish and colour, i.e. consistent with the adjacent Existing VPI CHP Plant.
- 6.7.3 Furthermore, a framework Biodiversity Enhancement and Management Plan ('BEMP') is included as part of the Application (es Volume III, Appendix 9H – Application Document Ref: 6.4) (in accordance with Design Principle 5).
- 6.7.4 The framework BEMP includes detail of the following:
- protected species mitigation;
 - the location and planting specifications for habitat enhancements;
 - the location and construction specifications for log pile refuges and bird nest boxes;

- long-term management of the habitats;
- any post-construction protected species monitoring (if required); and
- timetables and responsibilities for undertaking the above tasks.

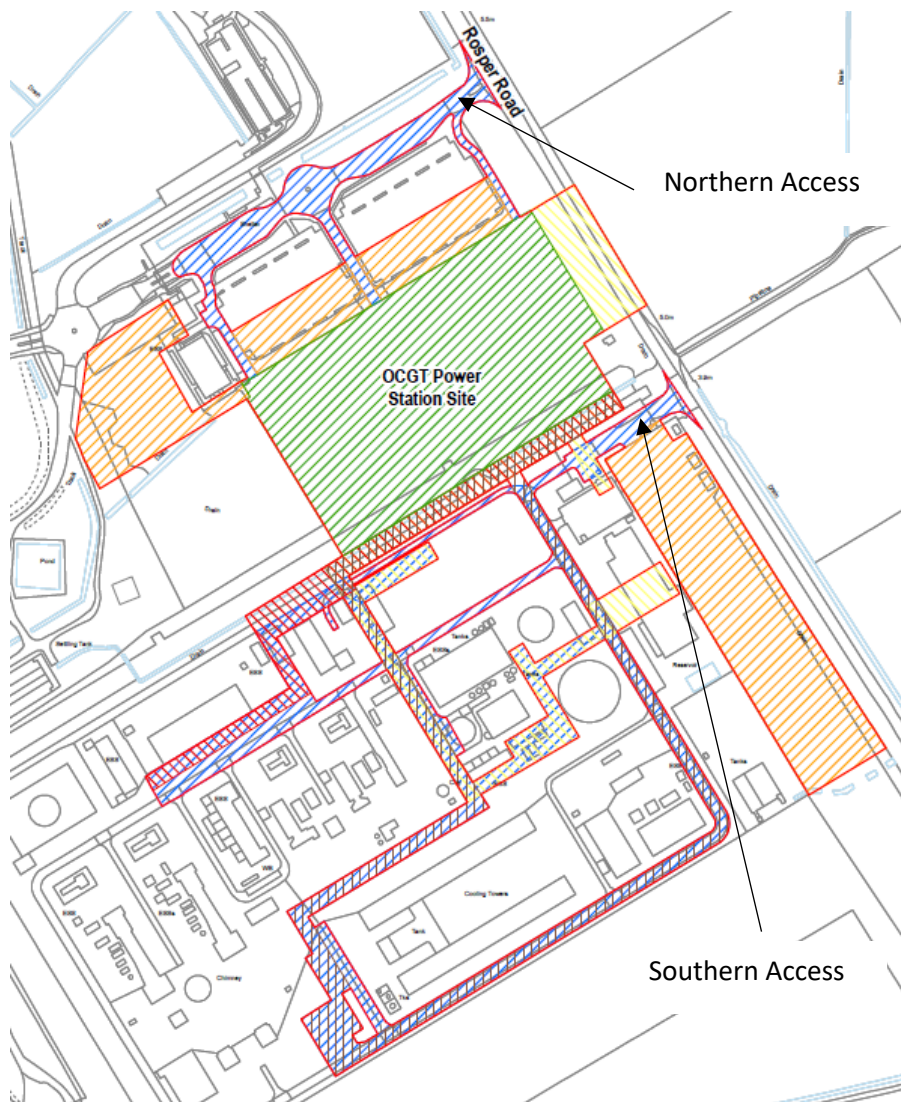
6.7.5 The indicative land take for the biodiversity proposals are illustrated in Figure 6.7. The detailed biodiversity proposals, and the implementation and management/maintenance, are secured by Requirement 6 of the draft DCO (Application Document Ref: 2.1).

Figure 6.7 – Biodiversity proposals



7. ACCESS ARRANGEMENTS

- 7.1.1 The Site benefits from two existing vehicular accesses along its eastern boundary, with each providing a direct entrance/exit onto Rosper Road. The points of access onto Rosper Road are shown in Figure 3.6 earlier in this report. The northern access was originally constructed for and is used by TLOR. The southern was constructed for and is used by the Existing VPI CHP Plant. The accesses are designed to accommodate HGVs and are therefore considered fit for purpose (in accordance with Design Principle 6).
- 7.1.2 The Proposed Development would share the highway accesses with TLOR and the Existing VPI CHP Plant in the following manner:
- During construction, a new internal access road would be constructed to link the different parts of the Site to the highway accesses onto Rosper Road. It is envisaged that the northern access would primarily be used to access the OCGT Power Station Site, with the remaining parts of the Site primarily accessed using the southern access; and
 - During operation, vehicles would primarily utilise the northern access as a means to enter/exit the Site, with the southern access utilised occasionally for maintenance purposes.
- 7.1.3 The proposed parking arrangements consist of dedicated staff/visitor and operatives car parks accessed via existing access off Rosper Road. Car parks would be surfaced and provided with oil interceptors. Further detail on the proposed internal vehicular access roads and vehicle parking is secured by Requirement 5 'Detailed Design' and Requirement 8 'Highway accesses' of the draft DCO (Application Document Ref: 2.1). The proposed access arrangements, including the two highway accesses, are shown in Figure 7.1 (blue hatching).

Figure 7.1: Access arrangements


- 7.1.4 HGVs and other large vehicles accessing the Site would be required to arrive and depart the Site towards the A160 via Rospur Road and Humber Road.
- 7.1.5 The nearest bus stops are located 2.7 km away in South Killingholme (Town Street) and 2.6 km away in Immingham (Manby Road). Rail Stations are located at Habrough (approximately 6.1 km away) and Ulceby (approximately 6km away).
- 7.1.6 For both construction and operational phases, there would be no impacts of any significance to any of the road sections assessed in the ES, a number of traffic management measures would be implemented to further minimise any traffic increases as a result of the Proposed Development. These include a CTMP and Construction Worker Travel Plan ('CWTP') secured by a Requirement 16 and 17 of the draft DCO to minimise the impacts of construction traffic. Framework versions of each document have been submitted as part of the DCO (ES Volume III, Appendix 7B and 7C – Application Document Ref: 6.4).

8. SECURING DETAILED DESIGN

- 8.1.1 Where flexibility is being sought in the design of a development, it is important to ensure that appropriate mechanisms are in place to provide certainty to the SoS, the relevant planning authority and any other relevant bodies, that its detailed design would be in accordance with the fixed design details, limits of deviation and maximum design parameters upon which the EIA has been based.
- 8.1.2 VPIB has therefore drafted the DCO for the Proposed Development (Application Document Ref. 2.1) to ensure that it (the Proposed Development) must be carried out in accordance with the limits of deviation shown upon the Works Plans (Application Document Ref. 4.3), the fixed design details, and the maximum design parameters set out in the ES. The draft DCO includes a number of 'articles' and 'requirements' to secure the detailed design of the Proposed Development. The detailed design of the Proposed Development will not vary beyond the realistic worst-case design parameters set out herein and assessed in the ES. The articles and requirements are summarised in Table 8.1 below.

Table 8.1: DCO Articles and Requirements relating to Detailed Design

Article/Requirement	Topic	Details
Article 3	Development consent etc granted by the Order	Requires the Proposed Development to be constructed in accordance with Schedule 1 to the Order (which sets out the development that may be built) and ties in the areas shown on the Works Plans.
Article 39	Certification of plans etc.'	Requires the Secretary of State to certify certain plans and documents and in effect ensures that the Proposed Development must be carried out in accordance with these documents.
Draft Requirement 5	Detailed design	Requires that details of the siting, design, external appearance and dimensions of all new or modified buildings and structures which are to be retained following commissioning are submitted to and approved by the relevant planning authority. Furthermore, the details approved must be in accordance with the

Article/Requirement	Topic	Details
		parameters defined by the requirement.
Draft Requirement 6	Landscaping and biodiversity protection management and enhancement	Requires that a written landscaping and biodiversity protection management and enhancement plan for each part of the authorised development is submitted to and approved in writing by the relevant planning authority.
Draft Requirement 7	External lighting	Requires details of all permanent external lighting to be submitted to the relevant planning authority for approval.
Draft Requirement 8	Highway accesses	Requires details of any permanent arrangements for vehicular and pedestrian access to and egress from the site to be submitted to the relevant planning authority for approval.
Draft Requirement 9	Means of enclosure	Requires that details of all proposed permanent and temporary fences, walls or other means of enclosure relating to that part are submitted to and approved by the relevant planning authority.
Draft Requirement 10	Surface and foul water drainage	Requires details of all permanent surface and foul water drainage systems to be submitted to the relevant planning authority for approval.

9. CONCLUSIONS

- 9.1.1 This DAS sets out how VPIB has had regard to design and access considerations in designing the Proposed Development. The document explains the design principles and concepts that have been applied to the Proposed Development, and how VPIB has appraised the Site's context and its wider setting, and taken that context into account in the design of the Proposed Development.
- 9.1.2 While flexibility has been sought in the design of the Proposed Development, VPIB has defined design parameters to inform the DAS and upon which to base the EIA in order to ensure that the likely significant effects of the Proposed Development have been robustly assessed and, where necessary, mitigated. VPI has also included appropriate articles and requirements to ensure that the detailed design of the Proposed Development is controlled and secured within the defined design parameters.
- 9.1.3 A structured programme of consultation with key stakeholders has fed back into the evolution and design refinement of the Proposed Development and the illustrative design and access principles that have emerged are in some instances a product of that iterative process.
- 9.1.4 The final design of the Proposed Development is functional, reflecting its purpose to generate electricity and the context within which it would sit.
- 9.1.5 In summary, it is considered that the design and access arrangements for the Proposed Development meet the criteria for 'good design' for energy infrastructure as set out in the relevant NPSs.