

**PROGRESS POWER PROJECT
ENVIRONMENTAL IMPACT
ASSESSMENT SCOPING REPORT**

Progress Power Limited

Progress Power Project Environmental Impact Assessment Scoping Report

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LIST OF ABBREVIATIONS

ACC	Air Cooled Condenser
AGI	Above Ground Installation
AES	Annual Energy Statement
BAP	Biodiversity Action Plan
BAT	Best Available Technique
BGS	British Geological Survey
BPD	Building Proximity Distance
CCGT	Combined Cycle Gas Turbine
CCR	Carbon Capture Readiness
CCS	Carbon Capture and Storage
CEMP	Construction Environmental Management Plan
CERC	Cambridge Environmental Research Consultants
CHP	Combined Heat and Power
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
DBA	Desk Based Assessment
DECC	Department for Energy and Climate Change
DEFRA	Department for Environment, Food & Rural Affairs
DCO	Development Consent Order
DMP	Development Management Policies
DPD	Development Plan Document
EA	Environment Agency
EADF	Eye Airfield Development Framework
EC	European Community
EfW	Energy from Waste
EclA	Ecological Impact Assessment
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
ELV	Emission Limit Value
EMR	Electricity Market Reform
ES	Environmental Statement
ESA	Environmentally Sensitive Area
EU	European Union
GT	Gas Turbine

HER	Historic Environment Record
HRSG	Heat Recovery Steam Generator
IDB	Internal Drainage Board
IED	Industrial Emissions Directive
IEMA	Institute of Environmental Management and Assessment
IGE	Institute of Gas Engineers
IoA	Institute of Acoustics
IPC	Infrastructure Planning Commission (Now abolished and references to "IPC" should be read as "PINS" or "the Secretary of State", as appropriate.
IPPC	Integrated Pollution Prevention and Control
Km	Kilometres
kV	Kilovolt
LCPD	Large Combustion Plant Directive
LTS	Local Transmission System
M	Metres
m ²	Metres Squared
Mm	Millimetres
MOC	Minimum Offtake Connection
MWe	Mega Watt Electrical
MWth	Mega Watt Thermal
NGC	National Grid Company
NGET	National Grid Electricity Transmission
NO _x	Nitrous Oxides
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NNSR	Nearest Noise Sensitive Receptor
NTS	National Transmission System
NVC	National Vegetation Classification
PA 2008	Planning Act 2008
PIG	Pipeline Inspection Gauge
PINS	The Planning Inspectorate
PPL	Progress Power Ltd.
PPP	Progress Power Project
PTF	Pig Trap Facility
RGE	Reciprocating Gas Engine
ROV	Remotely Operable Valve

SBRC	Suffolk Borough Records Centre
SCGT	Simple Cycle Gas Turbine
SCR	Selective Catalytic Reduction
SEC	Sealing End Compound
SINC	Site of Importance for Nature Conservation
SoS	Secretary of State
SO _x	Sulphur Oxides
SPV	Special Purpose Vehicle
SWMP	Site Waste Management Plan
UK	United Kingdom
UK-D	United Kingdom Distribution
UK-T	United Kingdom Transmission
WFD	Water Framework Directive
WPL	Watt Power Ltd.
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

SECTION 1

INTRODUCTION

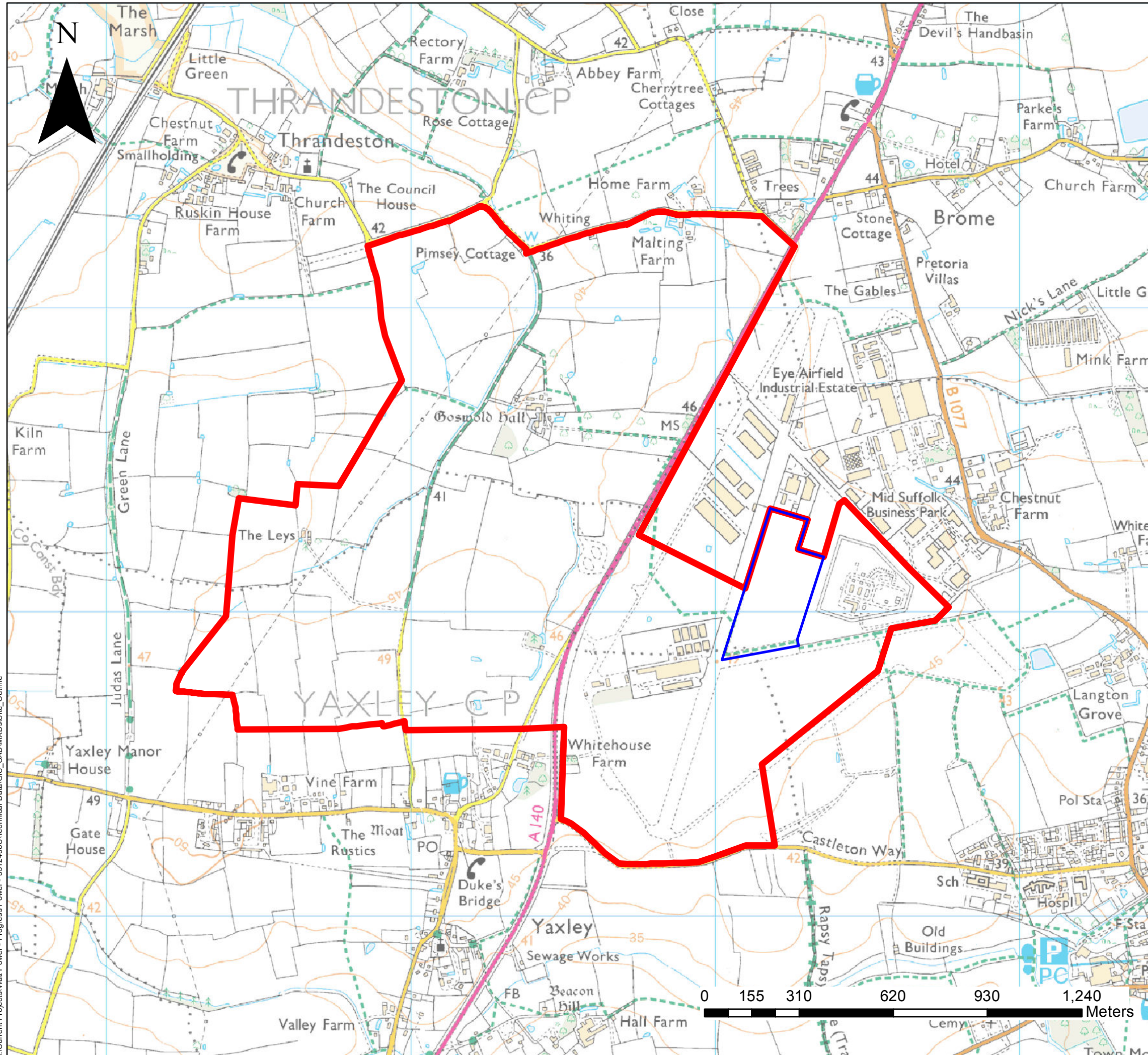
1 INTRODUCTION

1.1 Overview

- 1.1.1 This document presents the Environmental Impact Assessment (EIA) Scoping Report for the Progress Power Project (PPP). This Scoping Report has been prepared by Parsons Brinckerhoff Ltd on behalf of Progress Power Limited (PPL).
- 1.1.2 PPL is promoting a new thermal generating station on land at Eye Airfield Industrial Estate located in Eye mid-Suffolk, East Anglia, England (approximate grid reference 613239, 275109) (Power Generation Plant). The site location is shown in Figure 1.
- 1.1.3 The Power Generation Plant will be designed to provide an electrical output of up to 299 Megawatts Electrical (MWe) and would be fuelled by natural gas.
- 1.1.4 The Power Generation Plant constitutes a Nationally Significant Infrastructure Project (NSIP) under the terms of the Planning Act 2008 (PA 2008) and therefore an application for a development consent order (DCO) is proposed to be made to the Secretary of State (SoS) (the DCO application).

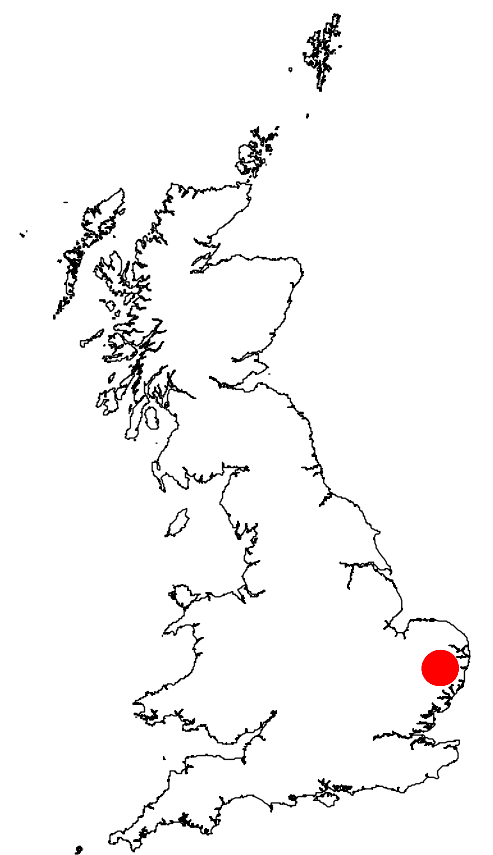
1.2 The Proposed Development

- 1.2.1 The three main elements of the Progress Power Project would comprise:
- A gas fired power generating station capable of providing up to 299 MWe (referred to as the '**Power Generation Plant**');
 - A new Electrical Connection (referred to as the '**Electrical Connection**') to export power from the Power Generation Plant to the National Grid; and
 - A new gas pipeline connection (referred to as the '**Gas Connection**') to bring natural gas to the Power Generation Plant from the National Gas Transmission System (NTS).
- 1.2.2 The Power Generation Plant, Gas Connection and Electrical Connection together are referred to as the '**Progress Power Project or PPP**' and are all required for the generation of electricity and the subsequent export of that electricity to the National Grid. The DCO application may include the whole of the PPP.



Legend

- Project Red Line Boundary
- Power Generation Plant Boundary



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Site Location

DOCUMENT REF: PB	SITE DESIGN VERSION: v1	DATE: 13/05/2013
BAR SCALE 1: 12,500 @ A3		
DRAWN BY: AG	CHECKED BY: CL	APPROVED BY: AG



Figure 1

I:\Current Projects\Wat Power - Progress Power - 3512438\Technical Data\GIS_CAD\MXD\Sites\Site_Outline

1.2.3 The three key elements which make up the PPP are described below:

Power Generation Plant

1.2.4 The Power Generation Plant would comprise of the following principal elements required for the generation of electricity:

- Gas / steam turbines;
- Stack(s);
- Cooling equipment;
- Workshops and store;
- Water tanks;
- Administration and control buildings;
- Gas receiving station;
- Auxiliary boiler; and
- Miscellaneous buildings and associated equipment.

1.2.5 All of the above elements would be located within the proposed Power Generation Plant site boundary shown [outlined in red] on Figure 1 and are integral aspects of the NSIP. A potential layout of these main plant items is shown in Figure 2. Further details on their size and function are given in Section 3.3 of this Report.

Gas Connection

1.2.6 The Gas Connection would comprise a new gas pipeline which would connect the Power Generation Plant with Feeder 5 of the NTS, which runs northeast to southwest from Stowmarket, via the compressor station that is located immediately to the east of the Power Generation Plant site.

1.2.7 Currently, there are five connection options available to PPL, which are being further considered for their suitability. The connection options will be further refined and the options narrowed to a single connection route prior to submission of the DCO application.

1.2.8 The potential route corridor options currently under consideration for the Gas Connection are shown on Figure 3 and Inserts 4 - 8. Further details of the potential connection route options are provided in Section 3.4 of this report.

Electrical Connection

- 1.2.9 There are currently a number of options available for the Electrical Connection to export power from the Power Generation Plant to the National Grid. These options comprise a new 400 kV electricity export cable, either in the form of an underground cable or overhead line. In either case, the cable/line would run from the Power Generation Plant site to an existing 400 kV overhead line situated approximately 1.5km to the west of the site.
- 1.2.10 A new substation and switchyard would also be required. This infrastructure would either be situated within the Power Generation Plant site, or alternatively, adjacent to the overhead line connection point. Should an underground export cable option be progressed, then a new sealing end compound (SEC) would also be required. This would be constructed at the point where the underground cable emerged to facilitate its connection to the overhead line.
- 1.2.11 Specific route corridor options have not been identified for an underground Electrical Connection at present, and options are being investigated within the Opportunity Area to the west of the A140 shown on Figure 3 and Insert 9. Specific options will be explored and further refined to a single connection prior to submission of the DCO Application. Similarly, options for the substation, switchyard, and any SEC infrastructure will be considered and selected prior to the submission of the application. Further details are given in Section 3.5 of this report.
- 1.2.12 At present, the route options for a potential overhead line connection are still being determined, but it is anticipated these will be within the footprint of the Opportunity Area.

1.3 Need for and Benefits of the Project

- 1.3.1 This section briefly summarises why the PPP is needed and how it would contribute towards ensuring greater reliability of electricity supply in the UK.
- 1.3.2 The Overarching National Policy Statement for Energy (NPS EN-1) sets out national policy for energy infrastructure and is part of a suite of National Policy Statements (NPS) designated to guide the examination and determination of DCO applications.
- 1.3.3 NPS EN-1 re-affirms the transitional role of new gas generation, and confirms that a diverse energy mix is required and that there is a significant need for new energy generation infrastructure to replace capacity that will be lost through the closure of existing large plant. Indeed it states that the decision-maker *'should start with a*

presumption in favour of granting consent to applications for energy NSIPs' (paragraph 4.1.2).

- 1.3.4 Furthermore, NPS EN-1 also sets out the national policy position on new Electrical Connection infrastructure (Section 3.7). It concludes that: *...there is an urgent need for new electricity transmission and distribution infrastructure (and in particular for new lines of 132 kV and above) to be provided. The IPC should consider that the need for any given proposed new connection or reinforcement has been demonstrated if it represents an efficient and economical means of connecting a new generating station to the transmission or distribution network, or reinforcing the network to ensure that it is sufficiently resilient and has sufficient capacity (in the light of any performance standards set by Ofgem) to supply current or anticipated future levels of demand. (Paragraph 3.7.10)*
- 1.3.5 NPS EN-1 therefore establishes the general need case for energy NSIPs, including gas generation. This has been preceded and followed by other government policy and evidence, some of which is summarised below to provide further context.
- 1.3.6 To ensure that there is reliability of supply, it is government policy that the electricity generation mix needs to incorporate a balance of technologies that continuously and reliably produce stable and controllable power and that within this scenario, gas-fuelled electricity generating technologies can play a significant role. Thus in the second Annual Energy Statement (AES) (November, 2011), the Department of Energy and Climate Change (DECC) directed the need to build new power generation infrastructure. In line with this requirement, DECC acknowledged the need for gas to continue to feature strongly in the energy mix, and also stated that while it is important that businesses play their part in the transition to a low-carbon economy, it is also important to remain competitive.
- 1.3.7 These statements are supported by the more recent Gas Generation Strategy, released by DECC in December 2012¹. The Strategy sets out the important role that gas generation—as a reliable, flexible source of electricity—will play in any future generation mix, supporting a secure, low-carbon and affordable electricity system. It states that *“Gas currently forms an integral part of the UK’s generation mix and is a reliable, flexible source of electricity. Using gas as a fuel in our power stations currently provides a significant proportion of our electricity generation (around 40% in 2011)”*.

¹ http://www.decc.gov.uk/en/content/cms/meeting_energy/oil_gas/gasgenstrat/gasgenstrat.aspx#

- 1.3.8 Moreover, it states that “Modelling detailed in the strategy suggests that as much as 26 GW of new gas plant could be required by 2030, in part to replace older coal, gas and nuclear plant as it retires from the system. It also indicates that in 2030 we could need more overall gas capacity than we have today, although operating at lower load factors. The modelling shows that gas could play a more extensive role, with higher load factors, should the 4th Carbon Budget be revised upwards” (Executive Summary).
- 1.3.9 The paper also presents scenarios which indicate that up to 41 GW of new gas generation capacity will be needed by 2030 to underpin long term electricity supplies and provide back-up to nuclear and wind generation at times of peak demand.
- 1.3.10 In October 2012, Ofgem (the electricity and gas regulatory body) prepared a report entitled ‘Electricity Capacity Assessment’ which was submitted to the SoS and estimates a set of plausible electricity capacity margins that could be delivered by the market over the next four years and the associated risks to security of supply.
- 1.3.11 One of the key findings of the Ofgem report is that electricity de-rated capacity margins will decrease significantly from the current historically high levels. In parallel, the risk of electricity customer disconnections will appreciably increase from near zero levels. This is primarily because of a significant reduction in electricity supplies from coal and oil plants which are due to close under European environmental legislation.
- 1.3.12 With the large number of wind turbines that are now providing electricity to the National Grid and the increasing number of solar farms being proposed, both of which represent an intermittent power supply, there is significant consideration being given to the need for flexible power on the network. Parsons Brinckerhoff’s “Powering the Future” report² which maps the route to a low carbon economy, has predicted that up to 9,000 MW of flexible power would be needed by 2050 to help stabilise the National Grid due the intermittent supply, in particular from offshore wind.
- 1.3.13 Given the above, there is therefore a clear and significant requirement for further capacity to meet the projected need for both base load (i.e. continuously operational) and reactive/flexible generation. A dedicated gas fired plant at the Power Generation Plant site could allow for the rapid provision of reserve capacity to the National Grid, or provide a

² Powering the Future, Mapping our low carbon path to 2050, Parsons Brinckerhoff, 2010

constant supply of reliable electricity generation, thus playing a role in meeting the energy requirements of the UK going forward.

1.4 The Developer

- 1.4.1 The Developer of the proposed PPP is PPL. PPL is the Special Purpose Vehicle (SPV) which has been set up to develop the PPP and supporting infrastructure.
- 1.4.2 PPL has been established by Watt Power Limited. (WPL). WPL has been established to develop flexible gas fired generation assets to support the UK Government drive to a low carbon economy. Stag Energy provides the resources through a management services agreement with WPL. Stag Energy was founded in 2002 and the company draws on a depth of experience with a team that has created and delivered over 10,000 MW of power generation and related infrastructure projects across the globe, of which, 2,500 was delivered in the UK.
- 1.4.3 Similarly, Stag Energy provides resources to the Gateway Storage Company Ltd, which is developing an offshore salt cavern gas storage facility in the East Irish Sea. The project has been consented by the UK Government and the local planning authority (Barrow-in-Furness Borough Council, Cumbria) (for further information on the project visit: www.gatewaystorage.co.uk).
- 1.4.4 WPL is committed to the development of assets to support the UK Government drive to a low carbon economy. PPL recognises the need to balance commercial issues with the environmental benefits and concerns of energy projects and believes this can be responsibly delivered at a local level.
- 1.4.5 PPL is also committed to acting in a socially and environmentally responsible manner. As part of this policy, they will seek the views and concerns of the local community and have regard to them in the application proposals. The PPP and supporting infrastructure will be designed and developed to high quality, safety and environmental standards.
- 1.4.6 For further details on the developer, please visit: <http://www.progresspower.co.uk> or <http://www.wattpowerltd.co.uk>

1.5 The Consenting Regime and EIA Process

The Planning Act 2008

- 1.5.1 In England and Wales, an onshore electricity generating station is considered to be a NSIP if its generating capacity is more than 50 MWe. As the proposed Power Generation Plant will have a generating capacity of up to 299 MWe, it will be classified as a NSIP under Part 3, Section 14(1)a and Section 15(2) of the PA 2008. Under Part 4, Section 31 of the PA 2008, development consent is required for development that is or forms part of a NSIP. It is PPL's intention to submit the DCO application to the SoS in due course.
- 1.5.2 Section 37 of the PA 2008 governs the content of an application for a DCO, including the requirements for the necessary accompanying documents.
- 1.5.3 The consenting process under the PA 2008 has been designed to ensure that the public, local authorities and interest groups are provided the opportunity to get involved and for their views to be given due regard, whilst also reducing the overall time required to obtain permission for nationally significant infrastructure by establishing the national needs case for such infrastructure through the publication of NPSs.
- 1.5.4 Further information on the application process for NSIPs and other information about PINS can be found at their website:

<http://infrastructure.planningportal.gov.uk/application-process/planning-inspectorate-role/>

Requirement for an EIA and Notification under Regulation 6(1)(b)

- 1.5.5 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations) impose procedural requirements, in particular, the carrying out of EIA in relation to applications for DCOs. All development in Schedule 1 (Schedule 1 development) requires EIA. Development in Schedule 2 (Schedule 2 development) requires EIA if it is likely to have significant effects on the environment.
- 1.5.6 The definition of Schedule 1 development includes thermal generating station with a thermal output of 300 MW or more (Schedule 1(2)(a)).
- 1.5.7 Although, as described above, the Power Generation Plant will have an electrical output of up to 299 MWe, the thermal output of the plant will

be of the order of 400-950 MW (depending on the final technology choice) and therefore an EIA will be required under the EIA regulations.

- 1.5.8 Thermal output is commonly defined as the amount of 'useable heat', which is produced as part of the process of the combustion of fuel. Only a part of this useable heat can be converted to electrical energy which is why this is a larger value than electrical output.
- 1.5.9 This Report therefore constitutes formal notification to the SoS under Regulation 6(1)(b) of the EIA Regulations that PPL proposes to provide an Environmental Statement (ES) in respect of the DCO application. PPL understands that PINS will notify consultation bodies as required in accordance with Regulation 9(1)(a) of the EIA Regulations.
- 1.5.10 Section 5(2)(a) of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, require that, where applicable, the ES required pursuant to the EIA Regulations, together with any scoping or screening opinions or directions, must accompany the DCO application.

Additional Consent Options for the Gas and Electrical Connections

- 1.5.11 The Gas Connection is integral to the Power Generation Plant and can be included in the DCO application. The Electrical Connection may also be included, however, it may be desirable for programme reasons to obtain separate consents for it (the Gas Connection will be part of the DCO application in all cases). It is PPL's intention to confirm its consenting approach in light of the identification of the preferred corridor routes through the Opportunity Area for the Electrical Connection.
- 1.5.12 PPL confirms that all components of the PPP included in the DCO application will be assessed (including cumulative impacts). If the Electrical Connection is separately consented, and therefore not included in the DCO application, PPL proposes to include information in the ES insofar as it's available on the indicative works required for an Electrical Connection. The aim of this is to allow the SoS to understand if there are likely to be constraints and to allow for an assessment of cumulative impacts.
- 1.5.13 For the purposes of EIA Scoping, PPL seeks views on the scope of assessments for all elements of the PPP and also on the proposed approach to the Electrical Connection if it is separately consented.

Consultation Strategy

- 1.5.14 A well designed consultation strategy will allow all potentially affected parties to comment on and input into the planning and development process. PPL will ensure that all representations made during the consultation process are considered carefully and, where appropriate, taken account of prior to submission of the DCO.
- 1.5.15 The PA 2008 and the associated secondary legislation set out the provisions for consultation with relevant parties prior to the submission of a DCO application to the SoS. As part of this legislation, a Statement of Community Consultation (SoCC) will be agreed with the relevant local authorities before being published. The SoCC will set out how PPL intends to consult with the local community in accordance with Section 47 of the PA 2008. The document will also set out how and when PPL intends to provide opportunities for the community to access the Preliminary Environmental Information Report (PEIR) which will be prepared in due course.
- 1.5.16 In addition, and in accordance with Section 42 of the PA 2008, PPL will also consult with the relevant local authorities, other statutory consultees, and persons with an interest in any land that is affected by the DCO application. The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) list the statutory consultees.
- 1.5.17 Consultees, including members of the community, will be able to submit representations throughout the pre application stage and PPL will take account of representations made. The outputs generated from the formal statutory consultation undertaken in accordance with Sections 42 and 47 of the PA 2008 will be summarised in a consultation report, submitted with the DCO application.
- 1.5.18 PPL recognises that the SoS has a duty under Regulation 8(6) of the EIA Regulations to consult widely before adopting a scoping opinion. A full list of the bodies consulted by the SoS under Regulation 9(1)(a) will accompany the Scoping Opinion provided to PPL in accordance with Regulation 9(1)(b). It is also noted by PPL that whilst the SoS's list may inform PPL's future consultation, it should not be relied upon for that purpose. PPL is familiar with PINS Advice Note 3 '*Consultation and notification undertaken by the Planning Inspectorate*' (May 2012).
- 1.5.19 Before formal statutory consultation can start, it is a requirement under Section 46 of the PA 2008, for PPL to notify the SoS of its intention to commence formal consultation, and in doing so provide adequate information on which it intends to commence that consultation.

- 1.5.20 PPL has already commenced some early informal (i.e. non statutory) consultation, and, where relevant, the outcome of these consultations has informed this Report.
- 1.5.21 To date, discussions and pre planning advice and have been received from Mid Suffolk District Council, Suffolk County Council, the EA, and Natural England.
- 1.5.22 Comments on this Report are invited, relating to the possible significant environmental effects of the PPP and the proposed assessment methodologies presented in this document. Comments are also invited on any other issues that should be addressed and any sources of information that may be relevant to the EIA.
- 1.5.23 Responses should be sent within 28 days of receipt of this scoping request to PINS at the address below.

The Planning Inspectorate
National Infrastructure Directorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

1.6 Purpose of the Document

- 1.6.1 This document sets out the proposed scope and content of the EIA to support the DCO application and the method by which it is intended to be carried out. It has been prepared to support a request for a Scoping Opinion from the SoS under Regulation 8 of the EIA Regulations.
- 1.6.2 In view of the above, and on behalf of the SoS, PINS is requested to provide a Scoping Opinion on the possible significant environmental effects of all elements of the PPP, the proposed methodologies to assess the impacts, and the proposed structure of the ES (as presented in Sections 4 and 5 of this document). Views are also requested on the proposed treatment of the Electrical Connection (described above) in the EIA should it be consented separately.
- 1.6.3 PINS and consultees are also invited to highlight any additional issues that they believe should be addressed within the EIA, and to identify any sources of information that may be of interest to PPL and the EIA team.
- 1.6.4 This Report also represents PPL's formal notification to the SoS under Regulation 6(1)(b) of the EIA Regulations. PPL confirms that it

proposes to provide an ES in respect of the DCO application. PPL hereby requests that the SoS acknowledge the Regulation 6 notification and confirm that the proposed development is EIA development, in accordance with Regulation 4(2)(a) of the EIA Regulations.

1.7 Content of Scoping Report

1.7.1 This Scoping Report has been prepared in distinct sections to allow the reader to fully understand the project background, the purpose of the document, the regulatory framework in which the Scoping Report has been prepared, and the proposed methodology for undertaking the EIA. The document is set out as follows:

- **Section 1** Comprises a description of the developer, a brief description of the PPP, an introduction to the consenting regime, the need for and benefits of the project, and the consultation strategy;
- **Section 2** Provides a brief description of the planning policy background and regulatory framework in which the Scoping Report has been prepared;
- **Section 3** Provides a more detailed project description, including a description of the Power Generation Plant, Gas Connection, Electrical Connection and the Power Generation Plant site and surrounding area.
- **Section 4** Provides a high level overview of the proposed scope of the EIA and lists each of the technical sections that will be included in the assessment process.
- **Section 5** Describes the content and assessment methodology of each of the impact sections in detail.

SECTION 2

REGULATORY AND POLICY BACKGROUND

2 REGULATORY AND POLICY BACKGROUND

2.1 Introduction

- 2.1.1 This section of the Scoping Report outlines the main regulatory and policy framework that is relevant to the proposed PPP.
- 2.1.2 Relevant EU directives are considered first, at a high level.
- 2.1.3 This section also gives an overview of the current and emerging policies relevant to the PPP at the national, regional and local levels as they relate to the consideration of the likely scope of EIA.
- 2.1.4 Further description of the planning policy background and its relevance to the PPP will be provided in the Planning Statement, which will be produced as a separate document to support the DCO application. A summary of the impacts of the proposed PPP on relevant and important planning policy will be discussed more fully within the ES and other documents submitted for examination in support of the draft DCO.

2.2 European Union (EU)

- 2.2.1 Current EU directives of particular relevance to the PPP with respect to environmental requirements are as follows:
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive)**
- 2.2.2 The EIA Directive ensures that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation. The Directive sets the thresholds for projects that require an EIA (as stated in Section 1.5) and also outlines the impacts on the environment to be assessed in the EIA process.
- Directive 2003/35/EC of 26 May 2003 (the Public Participation Directive).**
- 2.2.3 The Public Participation Directive implements the obligations arising from the Århus Convention and amends the EIA Directive and the Integrated Pollution Prevention and Control (IPPC) Directive (see 2.2.4 below) to improve public participation.

Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (the Industrial Emissions Directive (IED))

2.2.4 In December 2007 the EU adopted a Proposal for a Directive on industrial emissions (IED). The IED recasts seven existing directives related to industrial emissions, in particular Directive 2008/1/EC of 15 January 2008 concerning integrated pollution prevention and control (the IPPC Directive) and Directive 2001/80/EC of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants (the Large Combustion Plant Directive (LCPD)), into a single legislative instrument to improve the permitting, compliance and enforcement regimes adopted by Member States. However, the general principles of the IPPC Directive and the LCPD Directive described below are retained and will remain relevant to the PPP.

2.2.5 The purpose of the IPPC Directive was to achieve integrated prevention and control of pollution arising from certain potentially polluting processes and to ensure a high level of protection for the environment taken as a whole. Measures were laid down to prevent or, where that is not practicable, to reduce emissions in the air, water and land with the introduction of emission limit values (ELV) and best available techniques (BAT). With regard to power projects, combustion installations with a rated thermal input exceeding 50 MW are subject to the IPPC Directive. The IPPC Directive is transposed into UK legislation via the Environmental Permitting (England and Wales) Regulations 2010 (as amended) and the IED is to be transposed through amendments to the Environmental Permitting (England and Wales) Regulations 2010. An Environmental Permit will be required for the operation of the Power Generation Plant.

2.2.6 The purpose of the LCPD was to limit the emissions of certain pollutants into the atmosphere from large combustion processes. The LCPD applied to combustion plants with a rated thermal input equal to or greater than 50 MW. The emissions of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and particulates were subject to the stringent ELVs stipulated in the LCPD. The LCPD requirements for new plant are implemented in the UK regulations by the Environmental Permitting (England and Wales) Regulations 2010.

Directive 1992/43/EEC of 21 May 1992 on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive)

2.2.7 The aim of the Habitats Directive is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora. Measures taken pursuant to this Directive by the Member States are designed to maintain or restore, at conservation status,

natural habitats and species of wild fauna and flora of community interest whilst also taking into account economic, social and cultural requirements and regional and local characteristics. The Conservation of Habitats and Species Regulations 2010 implement the Habitats Directive in England and Wales.

Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds (the Birds Directive)

- 2.2.8 The Birds Directive provides a comprehensive scheme for the protection of wild bird species naturally occurring within the EU. The Directive places great emphasis on the protection of habitats suitable for supporting endangered and migratory species, introducing a system of Special Protection Area designation to protect important habitats. The Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 implement the requirements of the Birds Directive in England and Wales.

Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe (the Ambient Air Quality Directive)

- 2.2.9 Council Directive 96/62/EC on ambient air quality assessment and management (the Air Quality Framework Directive) described the basic principles of how air quality should be assessed and managed in the Member States. Subsequent 'Daughter Directives' introduced numerical limits, thresholds and monitoring requirements for a variety of pollutants including oxides of nitrogen and sulphur dioxide to guarantee that there are no adverse effects with regard to human health. The Air Quality Standards Regulations 2010 give effect, in England and Wales, to the Ambient Air Quality Directive.

2.3 Overview of Decision Making under the Planning Act 2008 & Policy Context

- 2.3.1 The Power Generation Plant is categorised as a NSIP and will be determined by the SoS under the regime established by the PA 2008.
- 2.3.2 As set out in NPS EN-1 (Overarching National Policy Statement for Energy), 'this NPS, when combined with the relevant technology-specific energy NPS, provides the primary basis for decisions' (Paragraph 1.1.1) and the decision-maker 'should start with a presumption in favour of granting consent to applications for energy NSIPs' (paragraph 4.1.2).
- 2.3.3 Decisions must also be taken by the SoS having regard to the local impact report and any other matters which the SoS '*thinks are both important and relevant to its decision*' (paragraph 1.1.1), which may

include the Development Plan Documents or other documents in the Local Development Framework.

- 2.3.4 The DCO application will be examined by PINS with the decision made by the SoS.

2.4 National Policy Statements

- 2.4.1 The Planning Act 2008 required new policy to inform decisions on NSIPs in England and Wales. Policy for such infrastructure is set out in National Policy Statements (NPS). Those that are relevant to the consideration of the DCO application are:

- The Overarching National Policy Statement for Energy (NPS EN-1);
- The National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (NPS EN-2);
- NPS EN-4 National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines; and
- NPS EN-5 National Policy Statement for Electricity Networks Infrastructure.

- 2.4.2 NPS EN-1 Overarching National Policy Statement for Energy contains government policy on energy and energy infrastructure development, representing the needs case for any proposal for an energy NSIP.

- 2.4.3 NPS EN-1 recognises that there is a significant need for new energy infrastructure. It states that pending plant closures in the UK will reduce available capacity by 22 GW by 2020 as a result of tightening environmental legislation and older power stations approaching the end of their useful life (paragraphs 3.3.7 to 3.3.9).

- 2.4.4 NPS EN-1 also sets out guidance on the consideration of alternatives when developing a new energy generation project (paragraphs 4.4.2-4.4.3) and guidance relating to criteria for 'good design' of new developments (Section 4.5).

- 2.4.5 Specific guidance on good design is also provided in NPS EN-2, including that "applicants should demonstrate good design particularly in respect of landscape and visual amenity (...) and in the design of the project to mitigate impacts such as noise and vibration, transport impacts and air emissions."

- 2.4.6 In Section 4.6 of EN-1 the consideration of Combined Heat and Power (CHP) is denoted as an assessment principle in itself and references to other guidance and viability considerations are set out. It is stated that

applicants should consider CHP from the earliest point and it should be a criterion for site selection (paragraph 4.6.7).

2.4.7 Section 4.8 of NPS EN-1 also sets out how applicants and the SoS should take the effects of climate change into account when developing and consenting NSIPs. Paragraph 4.8.11 requires any adaptation measures to be based on the latest set of UK Climate Projections, the Government's latest UK Climate Change Risk Assessment (when available) and in consultation with the EA.

2.4.8 Other assessment principles that are particularly likely to be relevant to energy NSIPs are set out as follows in EN-1 (relevant paragraph numbers given in brackets):

- Pollution control (4.10): describes the relationship with other regimes (e.g. Environmental Permitting) which is essentially that the decision maker should be satisfied that 'potential releases can be adequately regulated under the pollution control framework' without unacceptable cumulative impacts arising.
- Safety (4.11) and Hazardous Substances (4.12): describes the relationship with other regimes and the general requirement that the decision maker will need to be satisfied that they are complied with.
- Health (4.13): requires that an assessment of potential health impacts is made in relation to each element of the project, such as in relation to air quality, waste or noise and describing the relationship with other regimes, stating at 4.13.5 that where separate air quality regulations are (or will be) satisfied then the decision maker is likely to consider these effective mitigation, whereas for noise or other aspects it will take account of health concerns when setting requirements.
- Nuisance and amenity (4.14): the relationship with common law nuisance, statutory nuisance, and the importance to be attached by the SoS to their consideration during the determination process, are set out.
- Security (4.15): government policy is set out as being 'to ensure that, where possible, proportionate protective security measures are designed into new infrastructure projects at an early stage in the project development' with documentary requirements and relationships to other guidance set out.

2.4.9 As well as generic assessment principles, EN-1 also identifies a generic list of impacts which could arise from an energy NSIP. These specific topics include ecology, landscape, noise and socio-economics.

These topics have been discussed in more detail when describing the assessment of impacts in Section 5 of this Scoping Report.

- 2.4.10 NPS EN-2 outlines considerations and factors relating to site selection and design for developers for fossil fuel generating stations, although it states that these concerns must be considered by the applicant, and that: '*...the Government does not seek to direct applicants to particular sites for fossil fuel generating stations.*'
- 2.4.11 NPS EN-4 sets government policy on the relevant considerations and factors that should be taken into account as to route selection for developers for gas supply infrastructure and gas pipelines, along with likely impacts of their construction, commissioning and operation.
- 2.4.12 NPS EN-5 provides the primary basis for decisions taken by PINS on applications it receives for electricity networks infrastructure, the relevant considerations and factors that should be taken into account related to route selection for developers, along with likely impacts of their construction, commissioning and operation.

2.5 National Planning Policy Framework for England (NPPF) - 2012

- 2.5.1 The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. National policy statements form part of the overall framework of national planning policy, and are material consideration in decisions on planning applications.
- 2.5.2 The NPPF sets sustainable development at the core of its guidelines. Policies set in paragraphs 18-219, taken as a whole constitute the Government's view of what sustainable development in England means in practice for the planning system.
- 2.5.3 The NPPF focuses its interpretation of sustainable development into three dimensions: economic, social and environmental.
- 2.5.4 A set of 12 'Core planning principles' are also set out in the NPPF. Paragraph 17 states that planning should '*support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy).*'
- 2.5.5 As part of delivering a sustainable development, the NPPF presents 13 different thematic titles setting out distinct ways in which Government expects planning and developers to achieve the 12 core land use

planning principles. The most relevant of these 13 titles to this development have been listed below:

- Building a strong, competitive economy (1)
- Supporting a prosperous rural economy (3)
- Promoting sustainable transport (4)
- Requiring good design (7)
- Promoting healthy communities (8)
- Meeting the challenge of climate change, flooding and coastal change (10)
- Conserving and enhancing the natural environment (11)
- Conserving and enhancing the historic environment (12)

2.6 Local Planning Policy

Mid Suffolk District Council Local Development Framework (LDF)

2.6.1 The Local Development Framework (LDF) is a portfolio created by the Council that contains the local planning documents for the District. Of the documents contained in this portfolio, the most relevant are the DPDs including the Core Strategy DPD which provide formal, adopted objectives and policies that will be used to guide future development in the District over the plan period.

Core Strategy DPD^{3 4}

2.6.2 The Mid Suffolk Core Strategy DPD was adopted in September 2008. This document is the key DPD and 'sets out the vision, objectives, spatial strategy and core policies that will guide development across the district until 2025 and beyond'. The Core Strategy and other LDF documents are key components in the delivery of the Community Strategy (2004) for the District, particularly those elements that relate to the development and use of land. Following a review carried out in late 2012, the adopted Core Strategy DPD should be read in conjunction with the 'Core Strategy Focused Review (December 2012)'.

³ <http://www.midsuffolk.gov.uk/assets/UploadsMSDC/Economy/Strategic-Planning-Policy/LDF/Adopted-Core-Strategy/Core-Strategy-with-CSFR-label-and-insert-sheet-07-01>

⁴ <http://www.midsuffolk.gov.uk/assets/UploadsMSDC/Economy/Strategic-Planning-Policy/LDF/Core-Strategy-FR/CSFR-adopted-December-2012.pdf>

2.6.3 The 'Overall Spatial Vision' of the Core Strategy DPD states: 'By 2021 the East of England will be realising its economic potential and providing a high quality of life for its people, including by meeting their housing needs in sustainable inclusive communities. At the same time it will reduce its impact on climate change and the environment, including through savings in energy and water use and by strengthening its stock of environmental assets.'

2.6.4 The following objectives of the Core Strategy DPD relate to the PPP:

- Core Strategy Objective SO 1 – To protect, manage, enhance and restore the landscape, biodiversity and geodiversity of the District.
- Core Strategy Objective SO 2 – To seek to improve water quality and reduce pollution to the wider environment.
- Core Strategy Objective SO 3 – To respond to the possible harm caused by climate change Mid Suffolk will seek to minimise its carbon footprint, by encouraging a shift to more sustainable travel patterns. In particular the Council will address congestion and pollution and ensure that all new development minimises its carbon emissions, and carbon consumption and is adapted to future climate change.
- Core Strategy Objective SO 4 – To protect, manage, enhance and restore the historic heritage / environment and the unique character and identity of the towns and villages by ensuring that new developments are appropriate in terms of scale and location in the context of settlement form and character.
- Core Strategy Objective SO 5 – Reinforce the vitality and viability of local shops, schools, services, recreating and community facilities in towns and key service centres and primary villages.
- Core Strategy Objective SO 7 – To support sustainable communities by locating development where it will enable people to access jobs and key services, such as education, health, recreation and other facilities recognising and respecting the diversity in the function and character of Mid Suffolk's towns, key service centres and primary and secondary villages and countryside.
- Core Strategy Objective SO 11 – To support the growth of the local economy and rural regeneration in ways which are compatible with environmental objectives, and which deliver increased prosperity for the whole community.

Suffolk County Waste Core Strategy Development Plan Document (2011)

- 2.6.5 Eye Airfield Industrial Estate is identified as one of three areas of search for a Strategic Residual Waste Treatment Facility under Policy WCS4 of the Waste Core Strategy DPD. The area of search is large, at 81.35 ha of which, it is stated, 5 ha would be needed for the facility, plus access arrangements.

Saved Local Plan policies and emerging Development Management Policies

- 2.6.6 The Development Management Policies (DMP) have yet to be developed by the Council. Development was put on hold due to other LDF commitments and changes in staff resources.
- 2.6.7 In the meantime a number of Saved Policies of the Mid Suffolk District Council Local Plan (1998) continue to be used for determining planning applications until replaced by development management / site allocations DPDs. Those of potential relevance to the PPP include Policies E2 (Industrial uses on allocated sites) and E3 (Warehousing, storage, distribution, and haulage depots). It should be borne in mind that paragraphs 214-215 of the NPPF (2012) require that pre-2004 local planning policies are only applied insofar as they accord with the NPPF.
- 2.6.8 It is understood that when finalised and adopted, the Development Management Policies will set out the proposed approach and detailed policies for controlling development and delivering the vision, objectives and core policies in the Core Strategy. As such, it will play a role in determining planning applications. Work is ongoing on developing joint Development Management Policies between Babergh and Mid Suffolk District Council.

Eye Airfield Development Framework (February 2013 post- consultation draft)

- 2.6.9 Whilst not yet possessing formal status within the LDF, the draft EADF seeks to provide the Council's interpretation of the Core Strategy and other policies as they relate to Eye Airfield and provide additional baseline information. The intention is to guide investment and provide a framework for the Council's consideration of planning proposals for development as they come forward.
- 2.6.10 The status of the EADF and its role in development management will partly depend on the delivery mechanism chosen by the Mid Suffolk District Council.

- 2.6.11 Reflecting the Mid Suffolk Core Strategy, the Framework reconfirms Eye Airfield's importance as an employment area, providing jobs in manufacturing, as well as logistics and other B1, B2 and B8 uses. Different areas of the site are proposed for varying types of development, including; business, residential, energy, 'common'/open space, allotments and agricultural. An indicative masterplan showing the arrangement of proposed land uses is provided.
- 2.6.12 The EADF has been informed by various stages of consultation with local businesses, land owners, stakeholders and residents. A number of aspirations were identified during consultation including:
- development that is sustainable and landscape led;
 - the creation of on-site energy generation opportunities for new business;
 - a focus on improving skills for young people, including establishing links to local secondary schools.
- 2.6.13 The centre of the site has been proposed for energy producing developments, which should be 'appropriate provided they meet environmental criteria that ensure a good quality of life for all around them'.

2.7 Other Relevant Policy and Guidance

- 2.7.1 The following are considered to be potentially relevant policy and guidance in considering the potential impact of the PPP:
- The Electricity Market Reform (2012);
 - Natural Environment White Paper (2012);
 - Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2011);
 - The UK Climate Change Risk Assessment (CCRA) (2012);
 - Gas Generation Strategy (2012); and
 - Suffolk Growth Strategy (2013).
- 2.7.2 A comprehensive review of potentially relevant policy and evidence will be undertaken during the pre application process.
- The Electricity Market Reform (2012)**
- 2.7.3 The Electricity Market Reform (EMR) has been developed to meet three main objectives:
- Ensuring the future security of electricity supplies;

- Driving the decarbonisation of electricity generation; and
- Minimising costs to consumers.

- 2.7.4 These measures are designed to provide both technical and economic encouragement for an increase in the development of low carbon technologies.
- 2.7.5 In terms of the proposed PPP, one of the most relevant aims of the EMR is to provide '*... a mechanism to support security of supply, if needed, in the form of a Capacity Market*'.
- 2.7.6 Although the EMR focuses heavily on the need for decarbonisation, there is also a strong focus on the need for security of supply and a mix of energy generation technologies on line at any one time. The EMR also recognises that gas fired power generation will continue to play a crucial role in the UK energy mix going forward.
- 2.7.7 The Energy Bill will be the primary piece of legislation to come about as a result of the EMR although it is currently at Committee Stage in the House of Commons. The Energy Bill seeks to enact the key drivers that are necessary to achieve the recommendations set out in the EMR.

Natural Environment White Paper (2012)

- 2.7.8 This document outlines the Government's vision for the natural environment over the next 50 years. The paper makes the case that a healthy, properly functioning natural environment is the foundation of sustained economic growth, prospering communities and personal wellbeing.
- 2.7.9 The paper focuses on protecting and improving the UK's natural environment, encouraging a green economy, the importance of reconnecting with people and nature and refers to International and EU leadership on these matters.

Biodiversity 2020: A strategy for England's wildlife and ecosystem services

- 2.7.10 This document builds on the Natural Environment White Paper for England and provides a comprehensive picture of how England is implementing local international and EU commitments. It sets out the strategic direction for biodiversity policy for the next decade on land, rivers, lakes and the sea.

The UK Climate Change Risk Assessment (2012)

- 2.7.11 This report sets out the main priorities for adaptation in the UK under a number of key themes identified in the CCRA 2012, including; infrastructure, business, natural environment and industry. It describes the policy context, and action already in place to tackle some of the risks in each area. It highlights the constraints of the CCRA analysis and provides advice on how to take account of the uncertainty within the analysis.

Gas Generation Strategy (2012)

- 2.7.12 The Gas Generation Strategy sets out the Government's view on the need for gas energy generation and how the UK will address barriers to help build investor confidence and encourage the new capacity that the government will need over the coming years. It sets out the required work to maintain gas supply security and ensure that the best use of this natural resource is implemented.

Suffolk Growth Strategy (2013)

- 2.7.13 The Suffolk Growth Strategy seeks to help develop a 'coordinated economic strategy which sets out how Suffolk will create more, higher value, high skill jobs and increase wealth across the county'.
- 2.7.14 The Strategy also analyses strengths and weaknesses of the Suffolk economy, places a spotlight on the challenges and opportunities ahead and defines how the county, district and borough councils will work together with local partners to create the right conditions for business growth.
- 2.7.15 The Strategy identifies the Energy Industry as a key area for growth and job production.

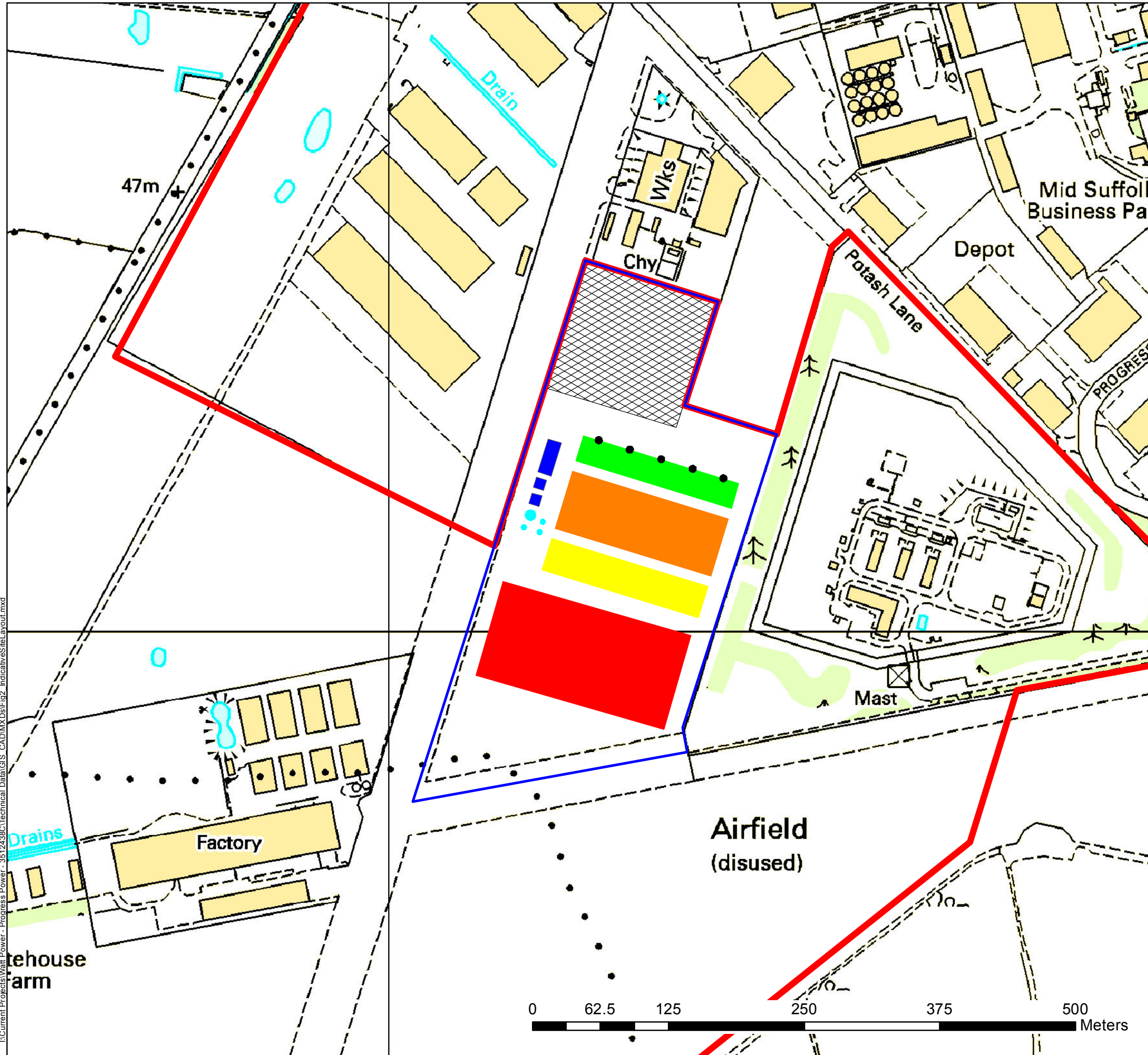
SECTION 3

PROJECT DESCRIPTION

3 PROJECT DESCRIPTION

3.1 Overview of the Development

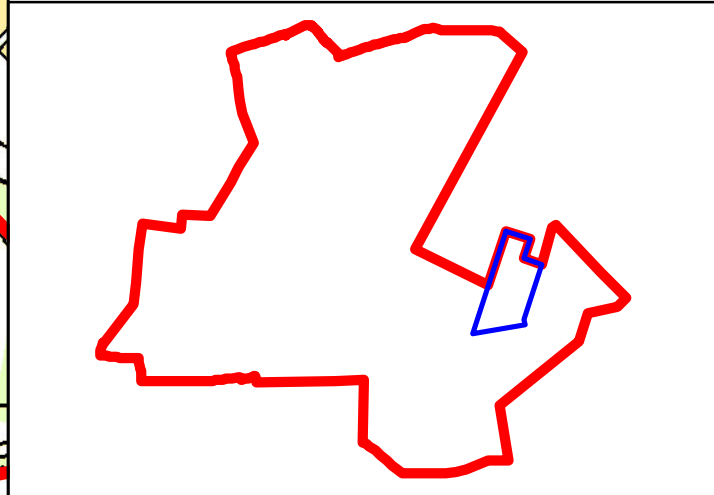
- 3.1.1 The proposed Power Generation Plant would be situated on land within the former World War Two Eye Airfield, approximately 1.7 km north west of Eye village, 1.3 km west of Langton Green and approximately 1.5 km north east of Yaxley, Mid Suffolk. The approximate site grid reference is 613239, 275109. The Power Generation Plant would be located on land currently in agricultural use.
- 3.1.2 The Gas Connection would run from the Power Generation Plant connecting into Feeder 5 on the gas NTS which runs to the south and east of the site. This connection route will be between 200m and 2km in length dependant on the final route. Further details of the potential routes are provided in Section 3.4.
- 3.1.3 The Electrical Connection would connect the Power Generation Plant to a new substation located either within the Power Generation Plant site, or adjacent to the 400 kV infrastructure located approximately 1.5km west of the site, and which runs between the Bramford and Norwich Main substations.
- 3.1.4 If the substation is constructed on site, power will be exported to the National Grid via a 400 kV line (overhead or underground), to a SEC at the 400 kV infrastructure.
- 3.1.5 If the substation is located off site, it would be constructed by National Grid Company (NGC), while the connection between the Power Generation Plant site will be constructed as part of the project as a 400kV underground cable or overhead line.
- 3.1.6 Figure 2 shows a potential plant layout and likely maximum site extent for the Power Generation Plant, while Figure 3 shows potential Gas Connection route corridor options and opportunity area of the Electrical Connection.



Legend

- Project Red Line Boundary
- Power Generation Plant Boundary
- ACC Area
- Admin Buildings
- Stacks
- AIS Area
- GT ST Area
- Heat Recovery
- Water Tanks
- Laydown_area

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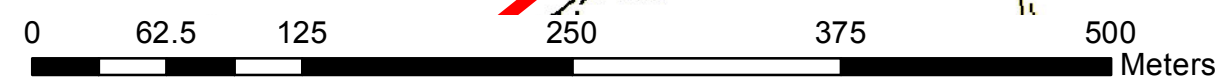


Indicative Site Layout

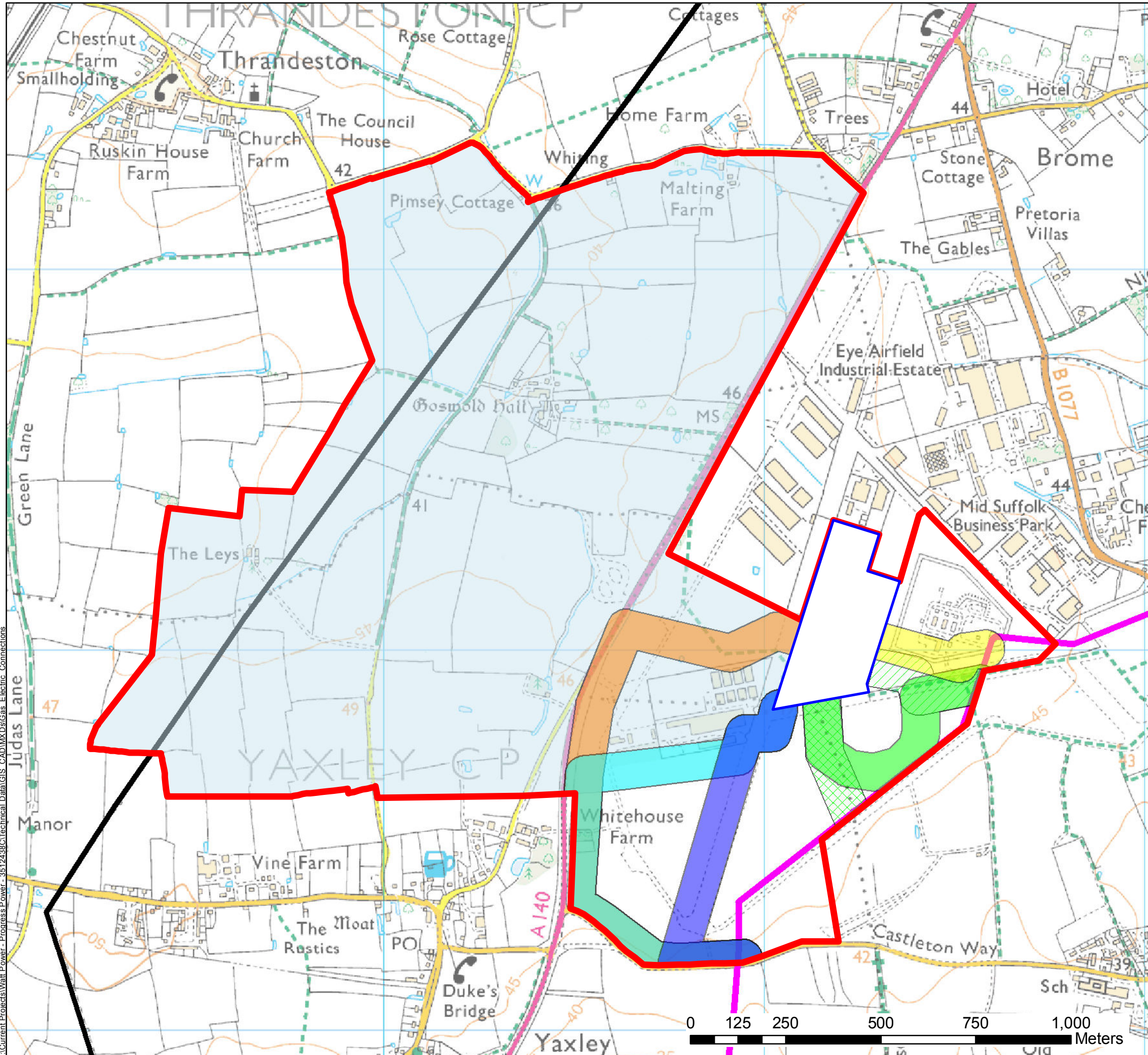
DOCUMENT REF: PB	SITE DESIGN VERSION: v1	DATE: 03/05/2013
BAR SCALE 1: 3,500 @ A3		
DRAWN BY: AG	CHECKED BY: CL	APPROVED BY: AG



Figure 2



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- Legend**
- RedLine Boundary
 - Power Generation Plant Boundary
 - Gas Connection Route Corridor Option 1
 - Gas Connection Route Corridor Option 2
 - Gas Connection Route Corridor Option 2a
 - Gas Connection Route Corridor Option 2b
 - Gas Connection Route Corridor Option 3
 - Gas Connection Route Corridor Option 4
 - Gas Connection Route Corridor Option 5
 - Electrical Connection Opportunity Area
 - 400kV Overhead Line
 - Gas Feeder 5

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Gas & Electrical Connection Options

DOCUMENT REF: PB	SITE DESIGN VERSION: v1	DATE: 03/05/2013
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PARSONS BRINCKERHOFF | Figure 3

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3.2 Site and Surroundings

- 3.2.1 The site for the Power Generation Plant is situated within the Eye Airfield industrial area and covers an area of approximately 10 ha. The Eye Airfield area accommodates several industrial parks, including: Brome Industrial Estate (to the north), Eye Airfield Industrial Estate (to the north-east), Mid Suffolk Business Park (to the east) and Oaksmere Business Park (to the west). The site is situated within a larger triangular area directly to the east of the former 'main runway' and north of the former SW-NE runway.
- 3.2.2 The site is entirely within the jurisdiction of Mid Suffolk District Council. The Council area includes Stowmarket Urban District, Gipping Rural District, Hartismere Rural District and Thedwastre Rural District. These areas comprise a mixture of urban, semi-urban and rural communities.
- 3.2.3 The Power Generation Plant site and immediate surrounding area is characterised by the remnants of the airfield, including the runway and the access roads. Buildings that once formed part of the airfield have been replaced by industrial units accommodating various industrial activities including a power generation facility (the 12.7 MW Eye Chicken Litter Power Plant) and a gas compressor station. Additionally, there are two large wind turbines (Roy Humphrey Group wind farm) <200 m to the north west of the proposed development area. Two more wind turbines have received planning permission and these will be constructed to the south of the site at Baldwin Farm.
- 3.2.4 The proposed area for development is comprised of greenfield agricultural land surrounded by a belt of trees to the east. Much of the land found within the site is available for industrial development and is being promoted as such by Mid Suffolk District Council.
- 3.2.5 The site is accessed from a private road to the south, Potash Lane, which in turn connects to Castleton Way, via the former main runway. Castleton Way provides connectivity to either from the B1077 to the east and the A140 to the west. The A140 is the main road between Norwich and Ipswich (each some 30 km away) and provides onward connectivity to the A14, about 20 km to the south. The A140 runs approximately 360 m north from the site boundary at its closest point. The closest point of the B1077 to the site is approximately 460 m east.
- 3.2.6 The road network in the vicinity of the Power Generation Plant can be seen in Figure 1.
- 3.2.7 The Broads ESA (Environmentally Sensitive Area) is located to the north and east of the site. To the north, the ESA is approximately 2.7 km from the site perimeter, while it lies approximately 1.1 km from the

sites eastern edge. Burgate ancient and semi-natural woodland is located approximately 5.5 km west of the site. The Pennings Local Nature Reserve is located approximately 2.3 km to the south east.

- 3.2.8 The closest residential receptors include;
- Residential properties located to the east, north of Eye and adjacent to the B1077 (\approx 480 m from the closest point of the site);
 - Residential properties located to the south west of the site adjacent to Old Norwich road (\approx 700 m from the closest point of the site);
 - Farm located to the north west of the site (approximately 810 m from the closest point of the site); and
 - Houses and static holiday homes to the north of the site, adjacent to the B1077 (\approx 750 m from the closest point of the site).
- 3.2.9 The land within the Eye Airfield has been designated as a Strategic Site for development by Mid Suffolk District Council. As stated earlier in Section 2.6, a draft Framework for the future Development of Eye Airfield has been produced (the draft EADF). The EADF includes an indicative masterplan for the Airfield and has been developed after stakeholder engagement at various stages during its production. The EADF seeks to encourage residential, business, energy production/waste management, 'common'/open spaces, recreational, allotment and agricultural developments.
- 3.2.10 The area indicatively identified for energy generation development within the EADF is approximately 10 ha, of which approximately 5 ha would be used for the Power Generation Plant.

3.3 Description of the Power Generation Plant Options

- 3.3.1 The Power Generation Plant will be designed to provide a total output of up to 299 MWe (gross capacity) at rated site conditions.
- 3.3.2 The choice of plant and technology have not yet been finalised and are still the focus of ongoing technical studies. Plant choice will also be driven by the outcome of the EMR (previously discussed in section 2 of this Report). Further studies will ensure that the most suitable plant is selected for the site taking into consideration local constraints and the ultimate operational regime of the plant. However, it is known at this stage that the project would either comprise a Combined Cycle Gas Turbine (CCGT) plant, a Simple Cycle Gas Turbine (SCGT) plant or a reciprocating gas ignition engine (RGE) plant. Additionally, under certain circumstances it may be that two types of technology are used at the site at any one time. The ability to utilise CHP to supply local users with waste heat from the plant is also being investigated, as

outlined later in this Section of the Report. A description of how each of these technologies operate and the key differences between them are provided below.

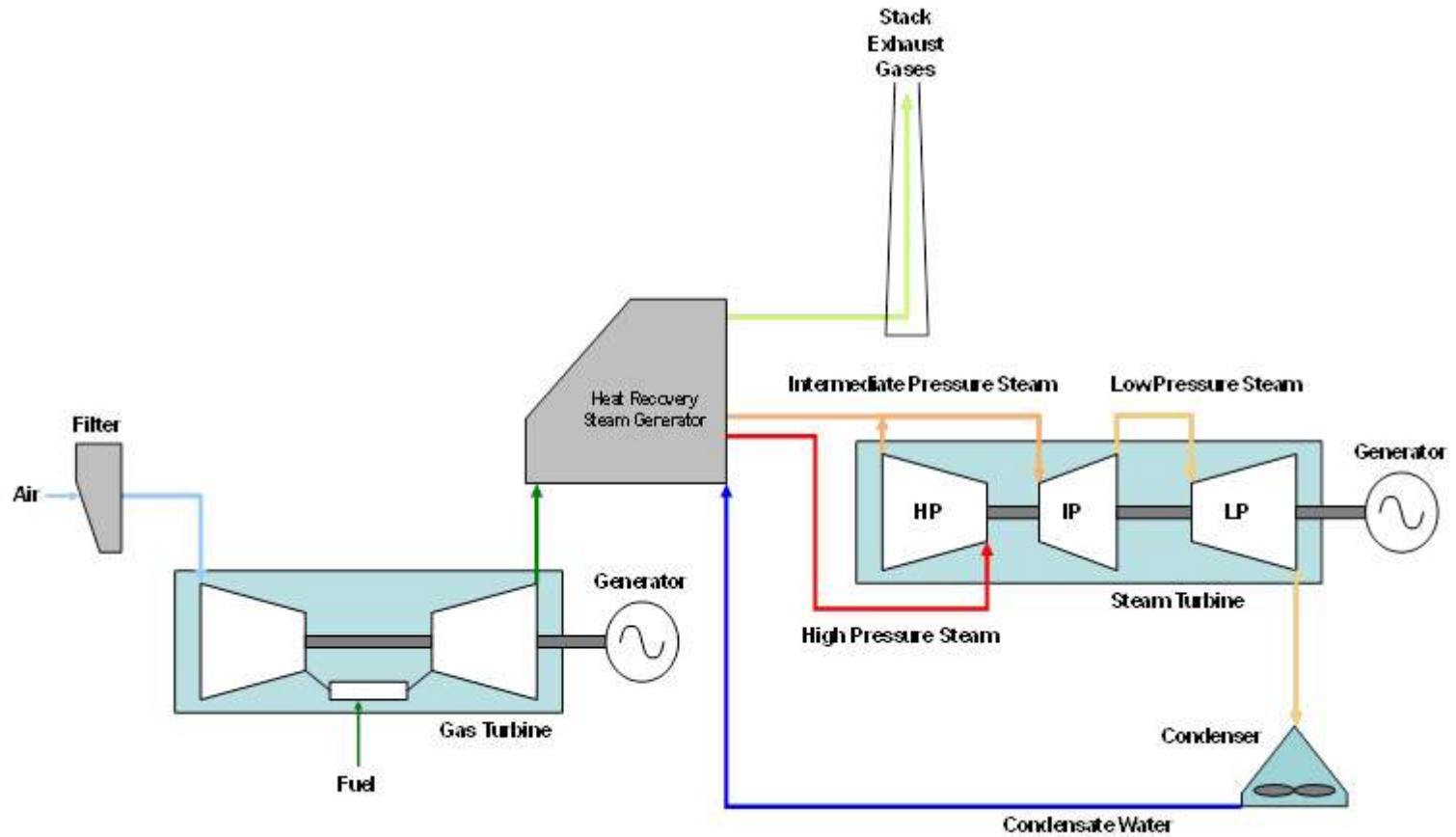
- 3.3.3 Although the choice of plant may vary, the scope and methodology of the EIA, as set out in Sections 4 and 5 of this Report will not differ significantly between different plant and technology choices. There will be some key differences between the plant configuration for each technology type (e.g. water usage and stack height) and where these will impact on the assessment methodology, this has been drawn out below.
- 3.3.4 Additionally, it is noted that no matter which technology choice is selected, they are all able to fit within the Power Generation Plant site boundary shown in Figures 1 and 2. All of the potential technology choices would also fall within identified 'maximum adverse' scenarios for potential environmental impacts which will be assessed as part of the EIA. A range of indicative dimensions of main plant items are provided in Table 3.1 below, which may be reduced depending upon the outcome of further studies and consultation, and depending upon final design and plant choices. .

CCGT Plant

- 3.3.5 If a CCGT plant is chosen for the Power Generation Plant, the configuration of the plant would comprise of a gas turbine(s) (GT) fuelled by natural gas, a heat recovery steam generator(s) (HRSG) utilising heat from the GT exhaust gases, and a steam turbine plant with associated condensing system.
- 3.3.6 Natural gas is burnt in the combustors of each GT, utilising the air that is compressed by the compressor section of the GT. The hot gases expand through the turbine section of the GT to drive the compressor section and to generate electricity. The hot exhaust gases are then routed through the HRSG to generate steam, which in turn is used to generate electricity via the steam turbine plant.
- 3.3.7 After the useful heat has been extracted from the exhaust gases in the HRSG, the flue gas enters the stack where it rises to be released to atmosphere at height for dispersion. A bypass stack may be employed between the GT and the HRSG to allow for simple cycle (GT only) operation where required.
- 3.3.8 Spent steam leaving the steam turbine plant passes to a condenser where it is condensed. The resultant condensate is returned to the HRSG for reuse as boiler feed water, closing the water/steam cycle.

- 3.3.9 The gas turbines would be equipped with standard proven emissions control technology, which would limit the production of NO_x to ensure that the plant meets all relevant guidelines and legislation.
- 3.3.10 Natural gas in the UK (where sulphur content in the gas is generally negligible) is a clean burning fuel and does not produce the particulate or sulphur emissions associated with burning coal; consequently flue gas cleaning equipment is not required.
- 3.3.11 To achieve the condensing of the spent steam, dry air cooling utilising an Air Cooled Condenser (ACC) is proposed. This cooling system results in significantly lower water usage by the plant than if cooling towers were employed.
- 3.3.12 In utilising an ACC, the spent steam leaving the steam turbine passes through ductwork to the top of the ACC, where it is distributed to a multiplicity of tubes for condensation. Ambient air is forced past the tubes by motor-driven fans and the heat of the condensation process is transferred to the air. The use of an ACC means that there is no need for cooling towers or a once-through cooling water system, thereby minimising the plant's net water consumption and water abstraction requirements.
- 3.3.13 An ACC is typically taller and narrower than an equivalent duty forced draught cooling tower, but it bears no risk of visible plume formation from the cooling system.
- 3.3.14 Insert 1 shows a simple schematic of CCGT operation.

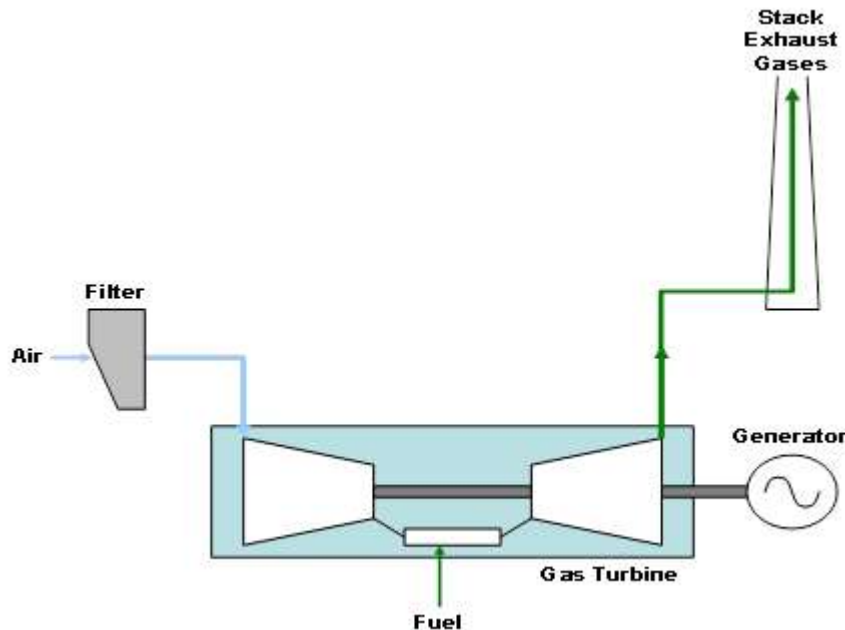
Insert 1- Schematic of CCGT Operation



SCGT Plant

- 3.3.15 In essence, the configuration of a simple cycle gas turbine (SCGT) plant consists of the front end of a CCGT plant. SCGT plants usually use aero-derivative GTs, primarily because of their suitability to frequent starts, high SCGT efficiency and high-availability maintenance options.
- 3.3.16 As with CCGT plants, natural gas is burnt in the combustors of each GT, utilising the air that is compressed by the compressor section of the GT. The hot gases expand through the turbine section of the GT to drive the compressor section and to generate electricity. However, the hot exhaust gases are then routed directly to the stack, which contains a silencer to reduce noise pollution.
- 3.3.17 The stack for an SCGT plant is usually significantly shorter than the main stack of a CCGT plant because the flue gases are much hotter and therefore do not typically require the same height needed for adequate dispersion.
- 3.3.18 The gas turbines would be equipped with standard proven emissions control technology, which limits the production of NO_x to a maximum of 50 mg/Nm³ (corrected to 15% O₂ dry). Whether by water injection or dry low emission combustors, these techniques represents BAT for limiting emissions of NO_x to atmosphere from gas turbines without the addition of chemical solutions, such as selective catalytic reduction using ammonia.
- 3.3.19 Once again, natural gas in the UK (where sulphur content in the gas is generally negligible) is a clean burning fuel and does not produce the particulate or sulphur emissions associated with burning coal; consequently flue gas cleaning equipment is not required.
- 3.3.20 Since no cooling is required for the condensing of steam, the cooling requirements of SCGT plants are significantly lower than for CCGT plants. The auxiliary cooling requirements (for lubrication oil, etc.) would be met via dry air cooling through the use of fin-fan coolers.
- 3.3.21 Insert 2 shows a simple schematic of SCGT operation.

Insert 2 - Schematic of SCGT Operation



Reciprocating Gas Engine Plant

- 3.3.22 The configuration of a large Reciprocating Gas Engine (RGE) plant is similar to that of an SCGT plant. It consists of modular reciprocating gas engine generator units, typically below 20 MW each, which operate using the ignition of gaseous fuels and air in a specific mix which causes motion of a piston to generate electricity. New plants generally have a high net plant electrical efficiency of over 45%, which is greater than any SCGT plant, although lower than a CCGT plant (typical efficiency of 55-60%). Full plant output is maintained over a range of ambient temperatures and barometric pressures (altitudes).
- 3.3.23 Natural gas is burnt in the cylinders of the multi-cylinder RGEs, utilising the air that is first pressurised by the turbo charger(s) of each RGE and then compressed by the pistons. Four-stroke, medium-speed, lean-burn gas engines that utilise either spark ignition or pilot injection to initiate combustion are employed. In the case of pilot injection, a small quantity of compression ignition fuel (such as diesel) is required. As a result of the piston being utilised to compress the combustion air and gas fuel mixture, there is a low gas fuel supply pressure requirement.
- 3.3.24 The size of the stacks for an RGE plant is similar to that for a SCGT plant even though the exhaust gas flow rate of the RGE plant is lower than the equivalent SCGT plant. This is because the flues from several engines are combined into a single stack-like structure. The flue gas

temperature is slightly lower but of a similar order to aeroderivative GTs and thus stack heights are generally similar to SCGT plants.

- 3.3.25 Gas engines produce a higher amount of NO_x than GTs, up to 500 mg/Nm³ (corrected to 5% O₂ dry). Therefore, for the PPP there may be a requirement to install Selective Catalytic Reduction (SCR) to treat the engine exhaust gas to reduce the NO_x emissions to required levels.
- 3.3.26 Once again, natural gas in the UK (where sulphur content in the gas is generally negligible) is a clean burning fuel and does not produce the particulate or sulphur emissions associated with burning coal; consequently flue gas cleaning equipment (beyond that of SCR, potentially) is not required.
- 3.3.27 Since no cooling is required for the condensing of steam, the cooling requirements of RGE plants are significantly lower than for CCGT plants. The auxiliary cooling requirements (for lubrication oil, jacket cooling, etc.) are met via dry air cooling through the use of fin-fan coolers.
- 3.3.28 Unlike SCGT plants, there is no potential for boosting power output using water injection, so the total plant water requirement is negligible.

Laydown Area

- 3.3.29 A laydown area for the storage of plant and equipment during construction will be incorporated within the redline boundary of the Power Generation Plant shown in Figures 1 and 2. It is not proposed that additional land will be required for a separate laydown area.

Dimensions

- 3.3.30 Table 3.1 provides indicative dimensions for the main plant items which would be present at the Power Generation Plant site,
- 3.3.31 Figure 2 shows a typical arrangement of how these plant items may be sited.

Table 3.1 – Indicative Dimensions of Main Plant Items

<i>Plant Item</i>	<i>Minimum Dimensions (m)</i>	<i>Maximum Dimensions (m)</i>
Stacks (dimension)	30 (height) 10 (diameter) (SCGT)	90 (height) 10 (diameter) (CCGT).
Stacks (number)	1 main stack (CCGT)	Up to 5 stacks and 5 bypass stacks (SCGT)
Gas turbine (plant housing dimensions)	55 (length) x 38 (width) x 20 (height) (CCGT). 1 gas turbine plant housing	55 (length) x 120 (width) x 20 (height) (SCGT). 1 gas turbine plant housing incorporating several gas turbine units.
HRSG (plant housing dimensions)	N/A as only required for CCGT.	38 (width) x 24 (length) x 20 (height) (CCGT)
ACC / Cooling (plant housing dimensions) (All technology choices).	150 (width) x 30 (width) x 20 (height)	150 (width) x 30 (width) x 20 (height)
Water tanks (All technology choices).	10 (diameter) x 10 (height) for each tank. Maximum of 3 tanks.	10 (diameter) x 10 (height) for each tank. Maximum of 3 tanks.
Administration / workshop / control building (All technology choices).	40 (length) x 10 (width) x 15 (height)	40 (length) x 10 (width) x 15 (height)
Gas receiving station (All technology choices)	30 (width) x 30 (length) x 10 (height)	30 (width) x 30 (length) x 10 (height)
Switchyard	50 (length) x 50 (width) (Gas insulated).	200 (width) x 200 (length) (Air insulated).

- 3.3.32 Maximum Power Generation Plant site dimensions will be in the order of 2.4ha, which is enough space to fit in all of the technologies considered.

Construction, Operational and Decommissioning Timescales

- 3.3.33 Construction and commissioning of the PPP will take approximately 12 to 36 months, depending on the final choice of plant technology selected.
- 3.3.34 The main works associated with the construction phase would be the removal of hardstanding, excavation and site levelling for new foundations, potential piling (if required) and the laying of the Gas Connection and Electrical Connection.
- 3.3.35 The construction of RGE / SCGT plant would most likely involve the least site preparation and construction time, as the units are often available as complete packaged units which can be delivered to the site and installed relatively quickly. The construction period for a CCGT plant could be significantly longer (of the order of 36 months) as more tailored plant items are required which will require on-site assembly, as well as more permanent structures and larger quantities of pipework and interconnections.
- 3.3.36 The Power Generation Plant will be designed to have an operational life of 25 years, after which time it will be decommissioned or re-powered depending on the nature of the electricity market and energy mix at the time. For the purposes of the EIA, it will be assumed that the Power Generation Plant will be decommissioned.
- 3.3.37 Decommissioning would comprise the removal of all Power Generation Plant items and restoration of the Power Generation Plant site to a similar condition as to when the site was taken over by PPL. It is likely that some underground structures, including the Electrical and Gas Connections may be left in situ to avoid any adverse environmental impacts associated with their removal. Due regard would be paid to all best practice guidelines on the decommissioning of projects which are relevant at the time. Where possible, items of plant would be re-cycled or re-used.

Carbon Capture Readiness (CCR) and Carbon Capture and Storage (CCS)

- 3.3.38 The PPP will be designed to provide a total output of up to 299 Megawatts Electrical (MWe) (gross capacity) at rated site conditions. Directive 2009 /31/EC on the Geological Storage of Carbon Dioxide (CO₂) requires an amendment to Directive 2001/80/EC (Large

Combustion Plant Directive) and subsequently Directive 2010/75/EU (the Industrial Emissions Directive) such that member states are to ensure that operators of all combustion plants with an electrical output of 300MWe or more have assessed the feasibility of; storage sites, transport facilities and economic considerations of the capture of CO₂ produced as a result of the combustion process.

- 3.3.39 As this does not apply to plants which are sized below 300MWe, in the context of the PPP it is not necessary to assess the viability of CO₂ capture and this is not considered further in this Report.

Combined Heat and Power (CHP)

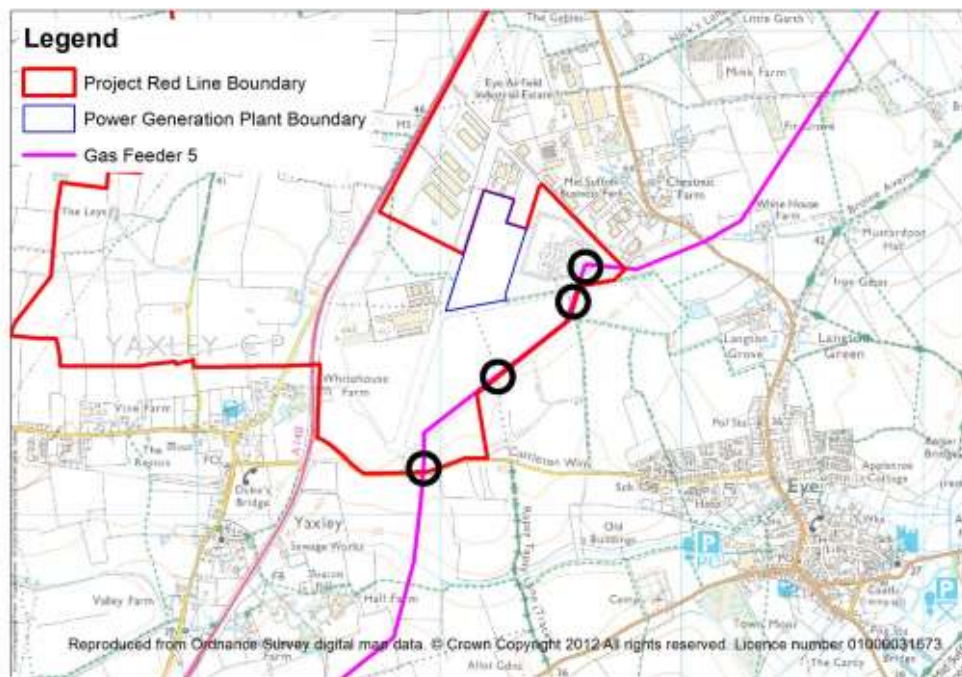
- 3.3.40 Plants which have a CHP capability supply power to the National Grid, but also supply heat to local businesses through a direct connection to waste heat / steam produced as part of the combustion process. As noted at section 4.6 of NPS EN-1, the UK Government seeks that applicants give early consideration to CHP viability.
- 3.3.41 Given that it is possible that the Power Generation Plant would be designed to operate as a flexible plant, which could be called upon to operate at any time of the day, the heat production available for an off-taker cannot be defined with any certainty.
- 3.3.42 Notwithstanding these constraints, CHP has not been ruled out and is still the subject of active ongoing consultations and investigation to confirm its technical and economic potential, in the light of other planned development at the Industrial Estate and a further update and assessment as necessary will be provided in the DCO application, in accordance with Section 4.6 of NPS EN-1 (Consideration of Combined Heat and Power (CHP)).

3.4 Description of the Gas Connection and Corridor Options

- 3.4.1 The UK National Grid Gas system is split into two parts, the NTS and the LTS (Local Transmission System).
- 3.4.2 The NTS represents the infrastructure designed to transmit gas large distances around the country, these are generally large diameter pipelines (> 24"/600mm) operating at high pressure (~70barg). The NTS is the backbone of the UK gas infrastructure and as such does not reach all points of mainland Britain; the load driven extremities are covered by the LTS.
- 3.4.3 The LTS distributes the gas supply from the NTS to the locations where the load requirement is required, these are generally smaller pipelines (< 24"/600mm diameter) operating at lower pressure (< 50barg).

- 3.4.4 A Gas Connection Feasibility study was undertaken for the PPP in April 2013. The purpose of the study was to define and evaluate the options available for connecting the Power Generation Plant to a suitable source of fuel gas, and provide a recommendation on the most appropriate option for this connection.
- 3.4.5 Preliminary pipeline calculations were performed, including Maximum Operating Pressure of the system, Maximum Incidental Pressure, Pipe Nominal Diameter, Design Factor, Wall Thickness, Minimum Building Proximity Distance and Area Classification;
- 3.4.6 A Crossing / Risk Register has been prepared for each potential corridor routing. A Level 1 Route Study has been performed for this report, which has analysed a specified relevant area of interest for archaeological, natural and built environment issues having regard to considerations raised in NPS EN-4.
- 3.4.7 Four connection points have been identified as being potentially suitable locations to connect into the NTS infrastructure. These options connect to Feeder 5, a 600mm high pressure steel pipeline that passes from Yelverton to Stowmarket. No suitable connections were identified to the LTS.
- 3.4.8 The Location of Feeder 5 and the possible connection location options are shown below in Insert 3.

Insert 3 - NTS Feeder 5 Connection Options

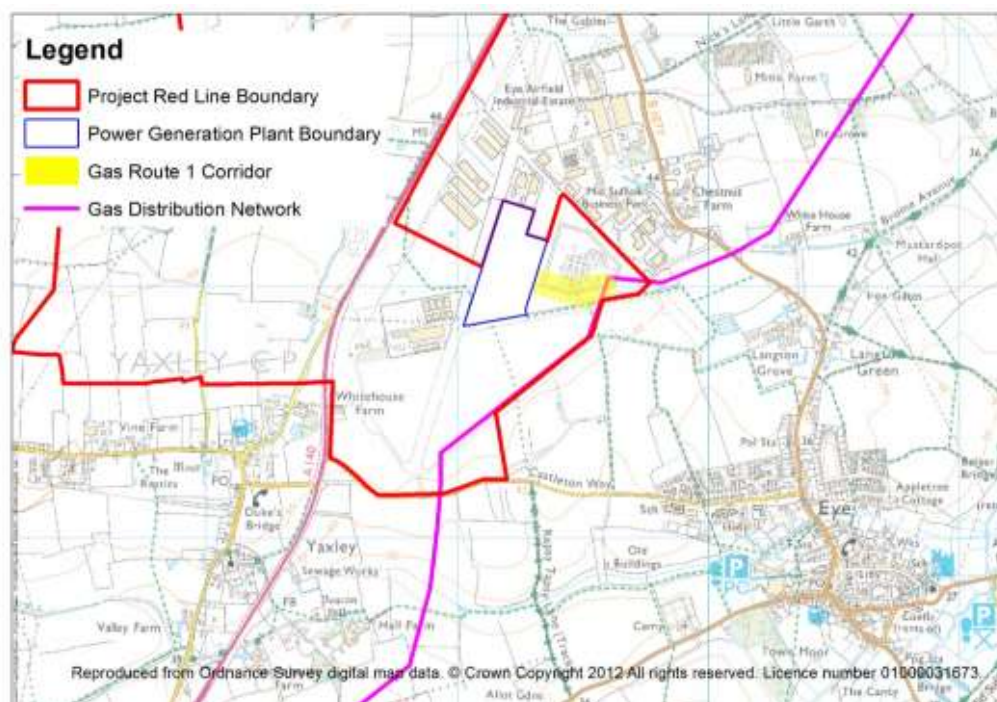


- 3.4.9 Discussions with NGC have confirmed that presently there is currently enough capacity in Feeder 5 to accommodate the loads associated with the development of a 299 MWe plant at Eye.
- 3.4.10 There are five route corridor options that are potentially suitable to connect into the four points shown in Insert 3. The routes have been selected to include a minimal amount of crossings (water, road and rail) over the shortest feasible distance. Preliminary route calculations have suggested that a steel pipeline 200 mm nominal outside diameter with a standard wall thickness of 6.4 mm would be appropriate for this project, the easement on the pipe would be between 10 – 30 m, and would be buried to a minimum depth of 1.1 m.

Gas Connection Corridor Option 1

- 3.4.11 The 1st route corridor option (Route 1) shown in Insert 4 is approximately 0.1 km in length including no major crossings of any type.
- 3.4.12 The pipeline begins at the Power Generation Plant site heading east out of the site directly into the NGC Gas Compressor Station located adjacent to the site.
- 3.4.13 This option provides the shortest possible route and potentially has the least impact on the area and surrounding environment, but could have further technical complications.

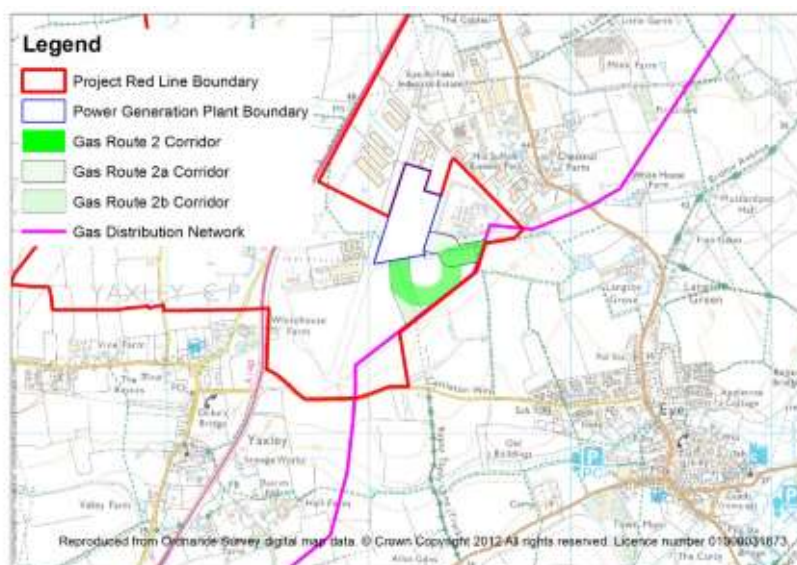
Insert 4 - Gas Connection Corridor Option 1



Gas Connection Corridor Option 2

- 3.4.14 The 2nd route corridor option (Route 2) shown in Insert 5 is approximately 0.6 km in length and contains just 1 minor road crossing.
- 3.4.15 The route begins at the south edge of the Power Generation Plant site, immediately crossing the access track that borders to southern edge of the site, and entering the agriculture field to the south. From here, the route would pass around the south of the consented wind turbine before traversing west, along the northern edge of the field and terminating south of the Gas Compressor Station where a new Above Ground Installation (AGI) would be situated outside of the NG land holding, on the south side of the access track.
- 3.4.16 This route is required in case it is not possible to connect directly into the Gas Compressor Station from the west, and is designed to ensure a safe working distance from the proposed wind turbines that are likely to be constructed to the south of the project site in the near future.
- 3.4.17 There are two minor variations on this route, which are also being considered and are shown in Insert 5 below. The first variation (2a) passes through the NG land, but then crosses the access track to the south, to connect into a new AGI as described above. The second (2b) exits the Power Generation Plant site to the south, immediately crossing the access track and passing a safe distance between the two consented wind turbines to connect into the distribution network at a separate connection point along the southern edge of the agricultural field.

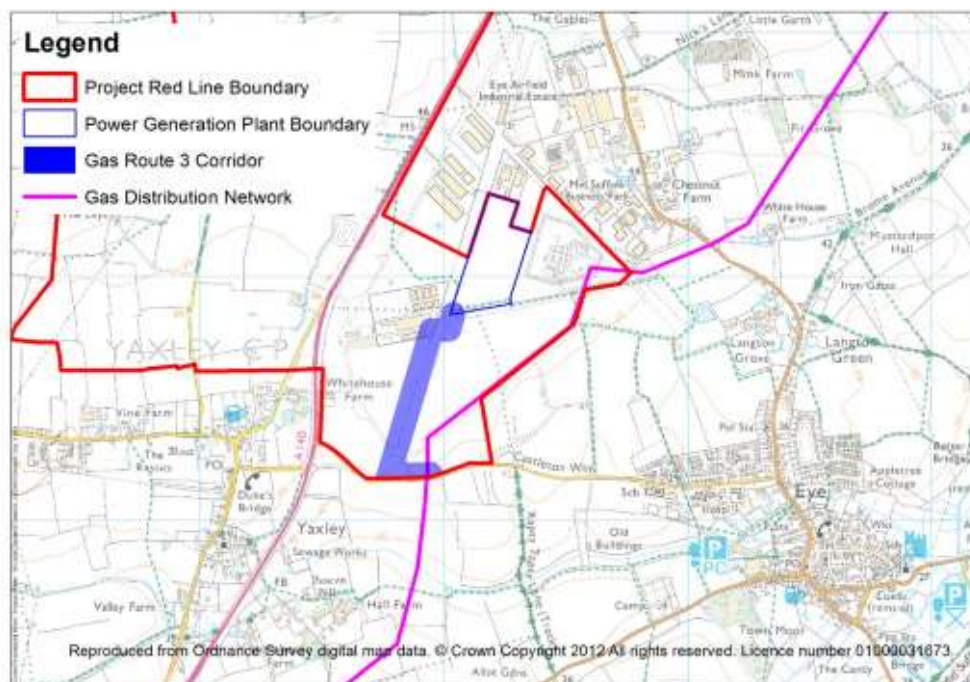
Insert 5 - Gas Connection Corridor Option 2



Gas Connection Corridor Option 3

- 3.4.18 The 3rd route corridor option (Route 3) shown in Insert 6 is approximately 850 m in length and includes 2 minor road crossings.
- 3.4.19 The route begins at the south west corner of the Power Generation Plant site, immediately crossing Potash Lane. The route then follows the western edge of Potash Lane to its southern extent, from where it crosses back over the road north of Castleton Way. Heading east for a further 150 m, the route enters a agricultural field and would terminate at a new AGI.
- 3.4.20 This route is designed to ensure a safe working distance from the proposed wind turbines that are likely to be constructed to the south of the project site.

Insert 6 - Gas Connection Corridor Option 3

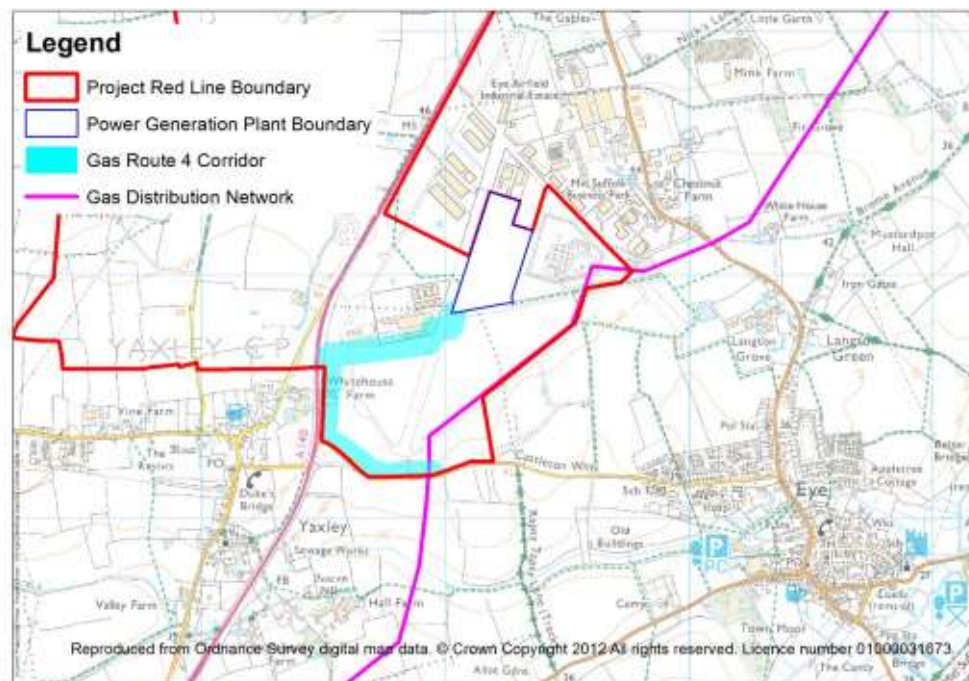


Gas Connection Corridor Option 4

- 3.4.21 The 4th route corridor option (Route 4) shown in Insert 7 is approximately 1.5 km in length and includes just 2 minor road crossings.
- 3.4.22 The route begins at the south west corner of the Power Generation Plant site, immediately crossing Potash Lane. The route would then traverse west, along the northern edge of the agricultural field located

west of Potash Lane, crossing a small track and continuing west until it meets the A140. At this point the route turns south to follow the eastern edge of the A140 until it meets Castleton Way. From here the route heads east, along the southern edge of the agricultural field, crossing Potash Lane again before entering the field to the north of Castleton Way where a new AGI would be situated.

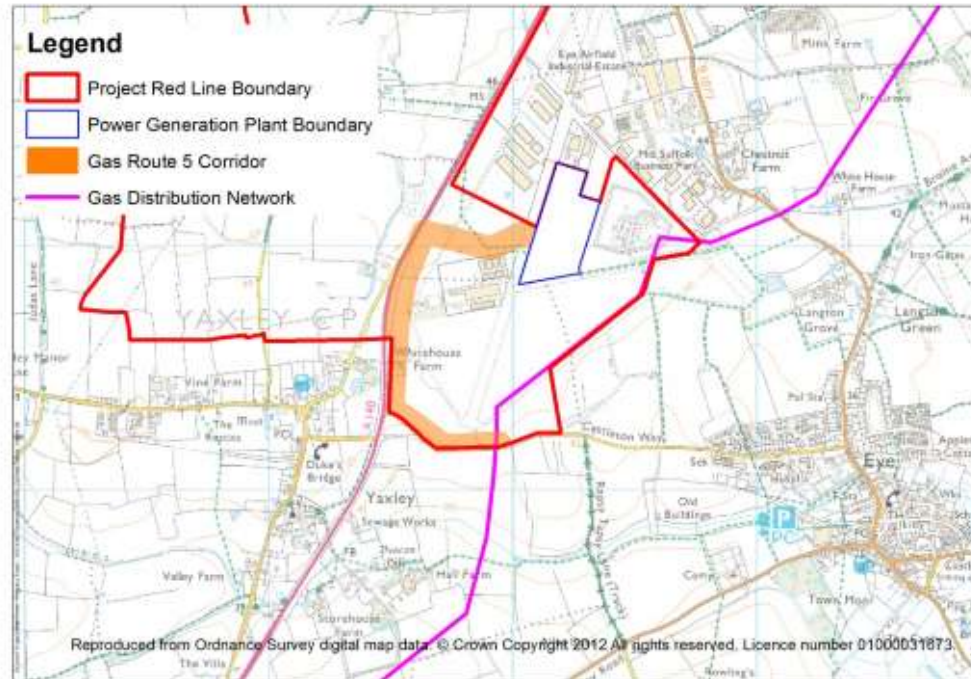
Insert 7 - Gas Connection Corridor Option 4



Gas Connection Corridor Option 5

- 3.4.23 The final route corridor option (Route 5) shown in
- 3.4.24 Insert 8 is approximately 1.6 km in length and includes 2 minor road crossings.
- 3.4.25 The route would exit the Power Generation Plant Site from its western boundary and head west, immediately crossing Potash Lane. It would continue west, to the north of the SpeedDeck Building Systems Limited buildings, before heading south approximately 30 m east of the A140. Heading south along the western edge of the fields that border the A140, the route continues for approximately 650 m before turning east, north of Castleton Way. From here the route heads east, along the southern edge of the agricultural field, crossing Potash Lane again, before entering the field to the north of Castleton Way where a new AGI would be situated.

Insert 8 - Gas Connection Corridor Option 5



3.4.26 All of these route corridors are shown together on Figure 3. It is noted that Figure 3, and the above plans show large buffers or potential areas in which each route may be developed. This is due to the fact that no detailed studies have yet been undertaken to assess constraints. However, following more detailed studies, the route choices will be refined as the project progresses and the options narrowed to a single route corridor option.

3.4.27 Connection to the NTS at any high pressure pipeline would require two above ground facilities to be installed, a Minimum Offtake Connection (MOC) facility, which would be owned by NGC, and a PIG Trap Facility (PTF) which will be owned by PPL. The two facilities would contain the following pieces of equipment.

The MOC (approximately 30x30m) would contain:

- Remotely Operable Valve (ROV);
- Control and Instrumentation Kiosk;
- Electrical supply kiosk.

PTF (approximately 30x23m) would contain:

- PIG launching facility;

- Emergency Control Valve;
- Isolation Valve;
- Control and Instrumentation Kiosk
- Electrical supply kiosk.

3.4.28 Termination of the Gas Connection would be at a PTF on the Progress Power Generation Plant site. This facility would contain the following equipment:

- PIG receiving facility;
- Isolation Valve; and
- Control and Instrumentation Kiosk.

3.4.29 The gas pipeline would be designed, constructed and tested to comply with the Institute of Gas Engineers' (IGE) Recommendations on Transmission and Distribution Practice – IGE/TD/1: Edition 5, 2009 - Steel Pipelines and Associated Installations for High Pressure Gas Transmission (IGE/TD/1).

3.4.30 The standard gas pipeline wall thickness would comply with the requirements of IGE/TD/1, which defines the minimum safe separation distance between a high pressure gas pipeline and normally inhabited buildings / major roads / major railways. This minimum safe separation distance is known as the Building Proximity Distance (BPD). If normally inhabited buildings / major roads / major railways are closer than 1 BPD (i.e. the gas pipeline is in an area where additional protection is required), thicker wall steel pipe (known as proximity pipe) would be used. The exact locations and lengths of where thicker wall steel pipe will be used will be confirmed throughout the assessment and detailed design stages.

3.4.31 The gas pipeline would be buried to a depth of cover which is in accordance with recognised industry standards. For example, depths of cover would be:

- No less than 1.2 m in agricultural land;
- No less than 2 m under road crossings; and
- No less than 1.7 m under water crossings.

3.5 Description of the Electrical Connection Opportunity Area

3.5.1 A new connection would be required to allow electricity generated by the Power Generation Plant to be exported to the electricity transmission network.

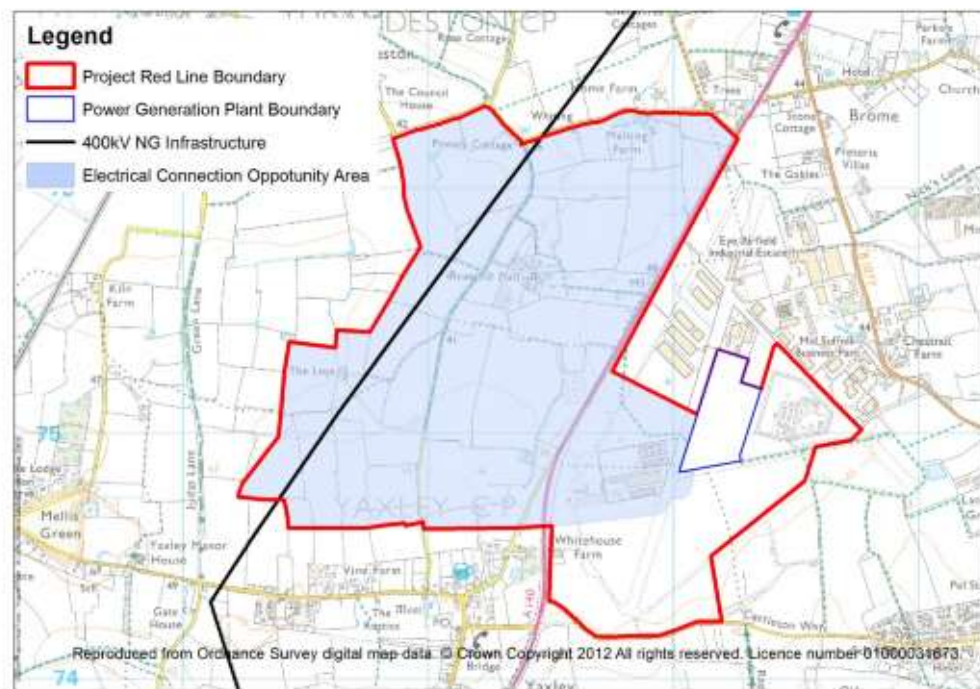
- 3.5.2 A grid connection assessment was undertaken for the Power Generation Plant site in April 2013. The assessments analysed the transmission and distribution grid connection options and determined the available thermal and fault level capacity on the electrical network. Discussions were also held with the NGC.
- 3.5.3 Following discussions with NGC it is proposed that the most suitable point of connection for the PPP is a new substation to be located along the line of the existing 400 kV overhead line that runs between Bramford and Norwich Main substations.
- 3.5.4 At present, specific route corridor options for an underground cable or overhead line that would be suitable to connect into the 400 kV overhead line located to the west of the Power Generation Plant site, have not yet been identified.
- 3.5.5 An Opportunity Area has been identified to the west of the Power Generation Plant site in which it is likely that the electrical connection route corridors will be situated, and investigations to identify specific routes are ongoing. All potential routes will be selected to include a minimal amount of crossings (water, road and rail) over the shortest feasible distance to minimise potential environmental impacts, as well as visual impacts on local sensitive receptors. Further details of the specific routes being considered will be provided to consultees when they are available.
- 3.5.6 The Opportunity Area for the Electrical Connection is shown in Figure 3 and described below.
- 3.5.7 Indicative routes for potential overhead lines have not yet been finalised, but would likely fall within the overall footprint of the Opportunity Area. If an overhead line is required, it is also likely that the tower heights would range between 35 m and 60 m depending on final design requirements, each standard span would be approximately 360 m, and the substation height would be limited to 12.5 m.

Electrical Connection Opportunity Area (Underground or Overhead)

- 3.5.8 Routes for the Electrical Connection, be it underground or overhead, will likely pass under or over the area to the west of the Power Generation Plant site, that has been identified as the 'Opportunity Area' (Insert 9).
- 3.5.9 This area is made up primarily of agricultural farm land, with a number of small watercourses, ponds, hedgerows and fences. It is dissected north to south by the A140, and bordered to the north and south by the

villages of Thrandeston and Yaxley respectively. The area is crossed by a number of public rights of way and also contains a number of standalone farms and residential properties, all of which will be carefully considered in the final route of the connection.

Insert 9 - Electrical Connection Opportunity Area



3.6 Site Selection / Design Evolution

- 3.6.1 The choice of the Power Generation Plant site for the development of a 299MWe gas fired power station has been the subject of feasibility studies undertaken by PPL over a number of months. Over 600 sites have been assessed for their suitability of supporting the development of a project of this size. These site selection studies have assessed a number of relevant factors, such as those set out in paragraph 4.4.1 of NPS EN-1, in considering a suitable location for the development of a plant of this size and type.
- 3.6.2 NPS EN-2 also outlines considerations and factors influencing site selection by developers for fossil fuel generating stations, although it states that these concerns must be considered by the applicant, and that: *'...the Government does not seek to direct applicants to particular sites for fossil fuel generating stations.'*
- 3.6.3 Some of the factors included in the selection of the site at Eye are:

- It is within an area identified as being potentially suitable for energy infrastructure (draft EADF);
- It is in close proximity to a suitable Electrical Connection point;
- It is in close proximity to a suitable Gas Connection point;
- It is in an industrial setting surrounded by other power generation plant (wind turbines and Energy From Waste plant), thereby limiting potential impacts on landscape and visual amenity of surrounding areas;
- It has a well developed road network and site access; and
- There is more than adequate space to develop the Power Generation Plant.

3.6.4 As stated in Section 3.2 of this Report, the final plant technology choice has not yet been determined and is the ongoing subject of more detailed engineering and design studies. These studies will ensure that the most suitable plant will be chosen for the site, taking into consideration design and environmental considerations, amongst others.

3.6.5 Similarly, the final route of the Gas Connection has not yet been determined, and is the subject of ongoing studies. A feasibility study for the Gas Connection has already been undertaken which has narrowed down the potential connection options to two separate locations on the NTS Feeder 5, with a possible five different route corridors to tie in to these connection points.

3.6.6 The final choice of Gas and Electrical Connection route corridors will be selected following further consultation and a more thorough assessment of constraints and environmental impacts.

3.6.7 A more detailed appraisal of the site selection process and design evolution will be set out in the ES.

SECTION 4

SCOPE AND STRUCTURE OF THE EIA

4 SCOPE AND STRUCTURE OF THE EIA

4.1 Introduction

- 4.1.1 This section describes the proposed scope and structure for the EIA that will be undertaken to support the DCO application.
- 4.1.2 The key output of the EIA process is the ES, which sets out the predicted significant environmental effects of the proposed development. The ES will enable PINS and consultees, and ultimately the SoS, to understand the environmental impacts of the proposal.
- 4.1.3 Schedule 4 of the EIA Regulations states that the ES should describe, in particular, the environmental effects on: 'Population, fauna, flora, soil, water, air, climatic factors, material assets, including architectural and archaeological heritage, landscape and the inter-relationship between the above factors'. The structure proposed in this document seeks to address all of these requirements.
- 4.1.4 The EIA will be undertaken in full accordance with the EIA Regulations. Impacts arising during the construction, operation and decommissioning will all be considered, as will cumulative impacts with other existing and planned developments in the area. The Gas and Electrical Connections will be considered in the EIA. For ease and clarity, the Gas and Electrical Connections will be considered in separate sections to the Power Generation Plant. The Gas Connection will likely be included in the DCO application and will be fully assessed in the EIA. The Electrical Connection will be fully assessed if it forms part of the DCO application and, even if is separately consented, indicative information will be included in the ES. In any event, any cumulative impacts which may arise from developing the Gas and Electrical Connections at the same time as the Power Generation Plant will also be assessed.

4.2 Overall ES Structure

- 4.2.1 Table 4.1 sets out the proposed structure of the main ES document. A number of supporting documents will also be submitted to the SoS as part of the DCO application. These are summarised in Table 4.2.

Table 4.1 - Proposed ES structure

Section	Description
Introduction	<p>Providing:</p> <ul style="list-style-type: none"> • A brief introduction to the Developer; • A high level description of the PPP; • A description of the consenting regime; and • A description of the purpose and structure of the ES.
Project Description	<p>Detailed description of the PPP and how the different aspects (i.e. Power Generation Plant, Electrical Connection* and Gas Connection) are interconnected / interrelated.</p> <p>Also provides a detailed description of the Gas and Electrical* Connections and route corridor(s).</p> <p>Outline of the proposed construction methods and indicative programme, including working hours etc.</p>
Site Description	<p>To describe the site settings and surroundings of the development site, including for the Gas and Electrical* Connections.</p>
Project Development and Alternatives	<p>To include a description of:</p> <ul style="list-style-type: none"> • Site selection; • Alternative generating capacities; • Alternative layout / design options; and • Assessment of alternatives for the Gas and Electrical Connection* route corridors.
EIA Assessment Methodology	<p>Detailing the assessment methodology that the EIA has followed.</p>

Section	Description
ES- Main Impact Sections	<p>This sub-section would present the results of the EIA that has been undertaken.</p> <p>Accordingly, the following sub –sections would be provided:</p> <ul style="list-style-type: none"> • Planning Policy Context • Air Quality; • Noise and Vibration; • Ecology; • Water Resources • Geology and Soils including ground conditions and land use; • Landscape and Visual; • Waste; • Traffic and Infrastructure; • Cultural Heritage / Archaeology; • Socio-Economics; and • Cumulative Assessment.
Environmental Report – Electrical Connection	<p>Providing a detailed assessment of the environmental impacts of the Electrical Connection. The structure will be as set out above for the Power Generation Plant, although impacts relating to EMF may be included. Following discussion with consultees, some aspects may be scoped out.*</p>
Environmental Report – Gas Connection	<p>Providing a detailed assessment of the environmental impacts of the Gas Connection. The structure will be as set out above for the Power Generation Plant, although following discussion with consultees, some aspects may be scoped out.</p>
Assessment of the NSIP and Connections	<p>Conclusion drawing together the previous three sections.</p>
Indirect / Secondary and Cumulative Impact Assessment	<p>This Section would present the results of the indirect / secondary and cumulative impact assessment of the overall PPP.</p>
ES Volume 2	<p>Containing technical appendices</p>
ES Volume 3	<p>Containing all figures associated with the ES.</p>

Section	Description
Non-Technical Summary	Providing a summary of the main findings of the ES in easy to understand, non-technical language.

* Note that if the Electrical Connection is not included in the DCO application then indicative information will be provided.

Table 4.2 – Supporting Environmental Documents to the DCO Application

Document Name	Description
Design and Access Statement	Provides details on the main access and egress routes to the site and the design process and philosophy that have been followed in developing the project.
Flood Risk Assessment	Providing details on the risk to the site from flooding and risks elsewhere that could be caused by the development.
Planning Statement	Describing the planning policy background and demonstrating that the project has been developed in compliance with the relevant NPSs and other relevant and important considerations.
Climate Change / Sustainability Assessment	Providing details on the sustainability of the proposed project.
Consultation Report	Consolidating all consultations that have taken place throughout the project, and how issues raised have been addressed.
Statement to Inform / Habitat Regulations Assessment	Depending on the potential for impacts on designated European sites, a Habitat Regulations Assessment or Statement to inform a Habitat Regulation Assessment may be required. This will draw on the Ecology chapter of the ES (described in Section 5.5 below).

SECTION 5

DETAILED DESCRIPTION OF ES IMPACT SECTIONS

5 DETAILED DESCRIPTION OF ES IMPACT SECTIONS

5.1 Introduction

5.1.1 This section provides a description of the proposed methodology that will be used when producing the ES. It addresses each separate section of the ES in turn and describes the current understanding of the baseline conditions and the potential impacts and assessment methodology for each discipline that will determine the likely significant environmental effects of the PPP. Potential mitigation measures have also been identified where appropriate, although these will be set out in detail in the ES and will ensure that the project complies with current legislation and best practice guidance. Consultees are invited to comment on the methodologies within their scoping responses.

5.1.2 Each section deals with the Power Generation Plant, then the Gas Connection (which will be consented alongside the Power Generation Plant) followed by the Electrical Connection. The Electrical Connection may be consented separately to the Power Generation Plant and the Gas Connection. If this is the case then that Electrical Connection would be assessed as required. The below sections should therefore be read in this light.

5.1.3 The sections described are set out in the following list:

- Air Quality (5.3);
- Noise and Vibration (5.4);
- Ecology (5.5);
- Water Resources (5.6);
- Geology, Ground Conditions and Agriculture (5.7);
- Landscape and Visual (5.8);
- Waste Management (5.9);
- Traffic, Transport and Access (5.10);
- Cultural Heritage and Archaeology (5.11);
- Socio-economics (5.12); and
- Cumulative Impacts (5.13).

5.2 Significance Criteria

5.2.1 The significance of environmental effects resulting from the construction, operation and decommissioning of the PPP will generally be assessed in the ES using a series of matrices. These will be

developed to describe the sensitivity of receptors which have the potential to be impacted by the development and the magnitude of any impacts that are likely to arise. The magnitude of impact and sensitivity of receptor will be cross referenced to give an overall significance of effect for any potential impact. Where it is not possible to quantify impacts, qualitative assessments will be carried out, based on available knowledge and professional judgement.

- 5.2.2 In order to provide a consistent approach and enable comparison of impacts upon different environmental components, the assessments will generally follow the structure and use the terminology outlined below in Tables 5.1 – 5.3. However, it is noted here that for some sections, significance criteria may need to differ depending on the conditions encountered at the site. The criteria will therefore be subject to further discussion with statutory consultees. Each technical chapter of the ES will clearly identify and explain any specific criteria used.
- 5.2.3 Potential mitigation measures described in the ES will include embedded mitigation through design/standard control measures (which will be used to produce an initial assessment of impact) and further specific mitigation which will be required (which will be taken into account to produce an assessment of residual impacts).

Table 5.1 – Determining Receptor Sensitivity

Sensitivity	Example
Very High	Internationally designated site (e.g. Ramsar / SPA / World Heritage Site).
High	Nationally designated site (SSSI), / designated Landscape (e.g. NP) / principal aquifer / main watercourse / human health.
Medium	Regionally designated ecology / heritage site / secondary aquifer / minor watercourse
Low (or lower)	Locally designated ecology / heritage site; area of hardstanding / brownfield land / industrial site / low ecological value.
Negligible	No sensitivity to change

Table 5.2 – Determining Magnitude of Impact

<i>Magnitude</i>		<i>Example</i>
Major	Adverse	A permanent or long term adverse impact on the integrity and value of an environmental attribute or receptor
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality.
Moderate	Adverse	An adverse impact on the integrity and/or value of an environmental attribute or receptor, but recovery is possible in the medium term and no permanent impacts are predicted.
	Beneficial	Benefit to, or addition of, key characteristics, features, or elements or improvement of attribute quality.
Minor	Adverse	An adverse impact on the value of an environmental attribute or receptor, but recovery is expected in the short- term and there would be no impact on its integrity.
	Beneficial	Minor benefit to, or addition of key characteristics, features or elements; some beneficial impact on attribute or a reduction in the risk of a negative impact occurring.
Negligible	Adverse	Very minor loss
	Beneficial	Very minor benefit
No Change		No change would be perceptible, either positive or negative.

Table 5.3 – Determining Significance of Effect

		Magnitude of Impact				
		<i>No Change</i>	<i>Negligible</i>	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>
Receptor Sensitivity	<i>Very High</i>	Neutral	Slight	Moderate	Large	Very Large
	<i>High</i>	Neutral	Slight	Moderate	Large	Large
	<i>Medium</i>	Neutral	Slight	Slight	Moderate	Large
	<i>Low</i>	Neutral	Slight	Slight	Slight	Moderate
	<i>Negligible</i>	Neutral	Neutral	Neutral	Neutral	Neutral

5.3 Air Quality

Introduction

Power Generation Plant

- 5.3.1 The air quality assessment of the ES will assess baseline conditions (air quality in the local and regional area surrounding the plant), stack emissions from the plant (quantifying concentrations of emissions) and the most appropriate stack height to achieve adequate dispersion of these emissions. It will also assess localised air quality impacts caused during construction and decommissioning.
- 5.3.2 The main emissions associated with the combustion of natural gas at the proposed Power Generation Plant are NOx and CO. Additionally, the construction and decommissioning phases of the project have the potential to impact on localised air quality, principally through the generation of dust and the release of NOx and CO from exhaust fumes from increased traffic movements.
- 5.3.3 However, the concentrations of any pollutants released from the plant will meet the requirements of the IED. Furthermore, mitigation measures such as flue gas abatement (if deemed necessary) and damping down of stockpiles in dry and windy conditions will mean that any impacts are likely to be sufficiently limited.

Gas and Electrical Connections

- 5.3.4 This section of the ES will also assess the baseline conditions along each of the proposed gas and electrical routes. As there are no emissions associated with the operation of gas or Electrical

Connections, there will be no need to access the impacts of these elements during operation. However, this section will assess localised air quality impacts caused during construction and decommissioning.

Baseline

Power Generation Plant

- 5.3.5 Existing ambient air quality and baseline conditions will be reviewed using available air quality monitoring data and the most recent local authority publications under their duties under the Environment Act 1995, including particular consideration of designated Air Quality Management Areas, any relevant previous studies undertaken in the area, the location of sensitive receptors (including designated ecological sites) and other significant sources of emissions.
- 5.3.6 In the vicinity of the Power Generation Plant site, other significant sources of emissions are considered to be limited to the thermal power station located immediately to the north of the proposed site location. Further consultation will be sought with the relevant Local Authority and the EA to determine a definitive list of significant emissions sources to consider as part of the assessment of air quality.
- 5.3.7 The existing air quality concentrations at sensitive ecological sites will be obtained from the Department for Environment Food and Rural Affairs (DEFRA) (<http://uk-air.defra.gov.uk/>). The existing acid and nutrient nitrogen deposition rates will be obtained from the UK Air Pollution Information System (UK APIS) (<http://www.apis.ac.uk/>).
- 5.3.8 The main ecological receptors that have the potential to be impacted by NO_x emissions (and ultimately nitrogen deposition) from the Power Generation Plant owing to their proximity are considered to be:
- The Broads ESA– located approximately 2.7 km to the north west of the closest point of the site and on the south east side of the site, at approximately 1.1 km.
 - Burgate ancient and semi-natural woodland – located approximately 5.5 km west of the site; and
 - The Pennings Local Nature Reserve – located approximately 2.3 km south east of the closest point to the site.
- 5.3.9 The closest residential receptors to the site that may also be potentially affected by pollutant dispersion and deposition include:
- Houses located to the east, north of Eye and adjacent to the B1077 (approximately 480 m from the site);

- Houses located to the south west of the site adjacent to Old Norwich road (approximately 750 m from the site);
- Farm located to the north west of the site (approximately 810 m from the site); and
- Houses and static holiday caravans to the north of the site, adjacent to the B1077 (approximately 750 m from the site).

5.3.10 The emerging draft EADF indicates that new residential areas may be capable of being accommodated within the Airfield complex. As such it is expected that if developed, these also have the potential to be affected by emissions from the Power Generation Plant. The two allocated areas for residential development within the Eye Airfield are located 840 m and 900 m to the southeast of the site boundary. Similarly, potential plans to the north of the site include a care home that would be located approximately 440 m from the site boundary.

Gas Connection

5.3.11 As for the Power Generation Plant, ambient air quality and baseline conditions will be reviewed using available air quality monitoring data and the most recent local authority publications under their duties under the Environment Act 1995, including particular consideration of designated Air Quality Management Areas, any relevant previous studies undertaken in the area, the location of sensitive receptors (including designated ecological sites) and other significant sources of emissions.

5.3.12 Given that all proposed Gas Connection route corridors are within close proximity to the Power Generation Plant, no other significant sources of emissions have been identified and thus all potential sources are considered to be the same as for the Power Generation Plant.

5.3.13 As there would be no emissions from the Gas connections, there is no potential for NO_x to impact upon local ecological or residential sites, and the only air quality implications will be associate with the potential creation of dust during construction and decommissioning.

Electrical Connections

5.3.14 The assessment methodology of baseline conditions for the Gas Connection routes would be appropriate to use for the Electrical Connections.

Assessment

Power Generation Plant

- 5.3.15 The magnitude and risk of emissions of dust during the construction and decommissioning phases will be assessed in accordance with *Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance* (IAQM, 2012), as will the impact of emissions from the increased number of construction vehicles using the methodology prescribed in the Department for Transport “*Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3, Part 1: Air Quality*” and the associated *DMRB Screening Method*, developed by the Highways Agency. The significance of the potential impacts identified will be determined based on the sensitivity of the identified receptors within the potential zones of influence outlined in the IAQM Guidance.
- 5.3.16 The air quality assessment for the operational phase of the project will follow the EA documents Horizontal Guidance Note H1 – Annex (f): Air Emissions and the EA Air Quality Modelling and Assessment Unit (AQMAU) “*Air dispersion modelling report requirements (for detailed air dispersion modelling)*”. The conversion of NO_x to NO₂, as applicable for the protection of human health under the UK Air Quality Standards Regulations 2010, will adopt the approach outlined in the AQMAU Guidance Note ‘*Conversion Ratios for NO_x and NO₂*’ (2006).
- 5.3.17 The atmospheric emissions from the Power Generation Plant will be quantified by obtaining information from relevant plant suppliers. Where two or more suppliers are being considered, a realistic worst case scenario will be used to ensure flexibility. However, only plant that meets national emissions limits will be considered.
- 5.3.18 The atmospheric dispersion modelling will be performed using the Cambridge Environmental Research Consultants (CERC) Air Dispersion Modelling Software (ADMS 4.2). An air dispersion model will be set up that will consider the affects of terrain and buildings (as appropriate to the location of the plant), together with the most recent available meteorological data covering a consecutive five year period (e.g. 2008 to 2012, inclusive) in accordance with current guidance.
- 5.3.19 To assess a realistic worst case scenario, the plant will be modelled running at base load, continuously for 24 hours a day, 365 days a year, for a total of 5 years.
- 5.3.20 The exact study and detailed methodology will also be discussed with relevant statutory consultees.

- 5.3.21 The modelling assessment will estimate the mass flow rates of NO_x and CO at sensitive receptors using the emission limits as specified in Part 2 of Annex V to the IED. Initial screening runs will be undertaken to determine an acceptable stack height suitable for adequate dispersion based on predicted maximum short term and long term ground level concentrations. Detailed atmospheric dispersion modelling will then be undertaken on the basis of the selected stack height.
- 5.3.22 The results of the detailed dispersion modelling will be presented as isopleths, and compared with background levels and relevant Standards / Guidelines (i.e. the Air Quality Standards Regulations 2010). Direct comparison will be made between the long-term and short-term process contribution from the Power Generation Plant, the predicted environmental concentrations of relevant substances (i.e. process contribution plus background levels) and the limits and objectives within the relevant Air Quality Standards Regulations. Where appropriate, the significance of the potential impact will be determined using the criteria set out in the '*Development Control: Planning for Air Quality*' (EPUK, 2010) in conjunction with the EA Horizontal Guidance Note H1 – Annex (f). The abatement of emissions will be discussed in relation to application of Best Available Techniques, in accordance with the EA Sector Guidance Note for Combustion Activities (EPR 1.01) and the UK position with regards to the on-going review of the EU IPPC Reference Document on BAT for Large Combustion Plants. Should additional mitigation prove to be necessary, the severity of impact, frequency of emission and the resultant environmental risk associated with any residual impact will be examined.
- 5.3.23 Changes in air quality levels for nitrogen oxides will be assessed with respect to ecology for the European and nationally designated habitat sites within 10 km of the Power Generation Plant (including, not necessarily limited to, those identified above). The non-statutory habitat sites within 2 km of the Power Generation Plant will also be considered. An assessment of the increased deposition of both nutrient nitrogen and acid due to nitrogen will also be carried out at the statutory (both EU and UK) designated sites in accordance with the methodologies described in the EA AQMAU AQTAG 06 *Technical Guidance on detailed modelling approach for an appropriate assessment for emissions to air*.
- 5.3.24 It is considered that there will not be any noticeable odours associated with the operation of the Power Generation Plant at or beyond the boundary of the Power Generation Site and therefore it is not considered necessary to undertake a detailed assessment of odour.

Gas Connection

- 5.3.25 The operation of the Gas Connection will not produce any emissions. As stated above the only implication that this element of the project will have on air quality is the potential generation of dust during construction and decommissioning. This dust is unlikely to have any impact upon any local residential or ecological receptors.
- 5.3.26 Nonetheless, the assessment for this element of the work will follow the same methodology as that used for assessing construction impacts for the Power Generation Plant.

Electrical Connection

- 5.3.27 The operation of the Electrical Connection will not produce any emissions. As stated above, the only implication that this element of the project will have on air quality is the potential generation of dust during construction and decommissioning. This dust is unlikely to have any impact upon any local residential or ecological receptors.
- 5.3.28 Nonetheless, the assessment for this element of the work will follow the same methodology as that used for assessing construction impacts for the Power Generation Plant.

Potential Mitigation Measures

Power Generation Plant

- 5.3.29 Embedded mitigation measures that will be employed as part of the construction phase of the project will incorporate standard best practice working methods and will include; for example, the covering / damping down of stockpiles during dry or windy conditions to limit dust generation and damping down of any demolition activities which have the potential to create large amounts of dust. A Construction Environmental Management Plan (CEMP) will also be drafted which will set out best practice methods of limiting dust on site during construction.
- 5.3.30 During operation, embedded mitigation measures will include incorporating a stack of sufficient height to achieve adequate dispersal of pollutants and flue gas cleaning equipment will be used to ensure that all emissions are within concentrations permitted by legislation and guidance.
- 5.3.31 The need or otherwise for further, project specific mitigation measures will be addressed during the EIA.

Gas Connection

- 5.3.32 Mitigation to reduce dust during construction and decommissioning of the Gas Connections will be the same as those employed during the construction of the Power Generation Plant, including the use of standard best practice working methods and will include; for example, the covering / damping down of stockpiles during dry or windy conditions to limit dust generation and damping down of any demolition activities which have the potential to create large amounts of dust

Electrical Connection

- 5.3.33 Mitigation to reduce dust during construction and decommissioning of the Electrical Connections will be the same as those for the Gas Connection as described above

5.4 Noise and Vibration

Introduction

Power Generation Plant

- 5.4.1 In accordance with Section 5.11 of NPS EN-1, a noise and vibration assessment will be undertaken and reported in the ES. This will consider all of the potential noise and vibration impacts caused by the construction, operation and decommissioning of the Power Generation Plant on sensitive receptors in and around the vicinity of the site. It will be undertaken in accordance with the most relevant national and local standards and guidelines.

Gas Connections

- 5.4.2 Once operational, the Gas Connection will not generate any noise, and thus it will only be necessary to consider noise impacts during construction and decommissioning. This assessment will consider all potential noise and vibration on sensitive receptors along each of the proposed route corridors, and will be undertaken in accordance with the most relevant national and local standards and guidelines.

Electrical Connections

- 5.4.3 Assuming that the Electrical Connection be via an underground, buried cable, the connection will not generate any noise during operation. Consequently, as above, it will only be necessary to consider noise impacts during construction and decommissioning. In this case, the assessment will consider all potential noise and vibration on sensitive receptors along each of the proposed route corridors, and will be

undertaken with reference to the same relevant national and local standards and guidelines.

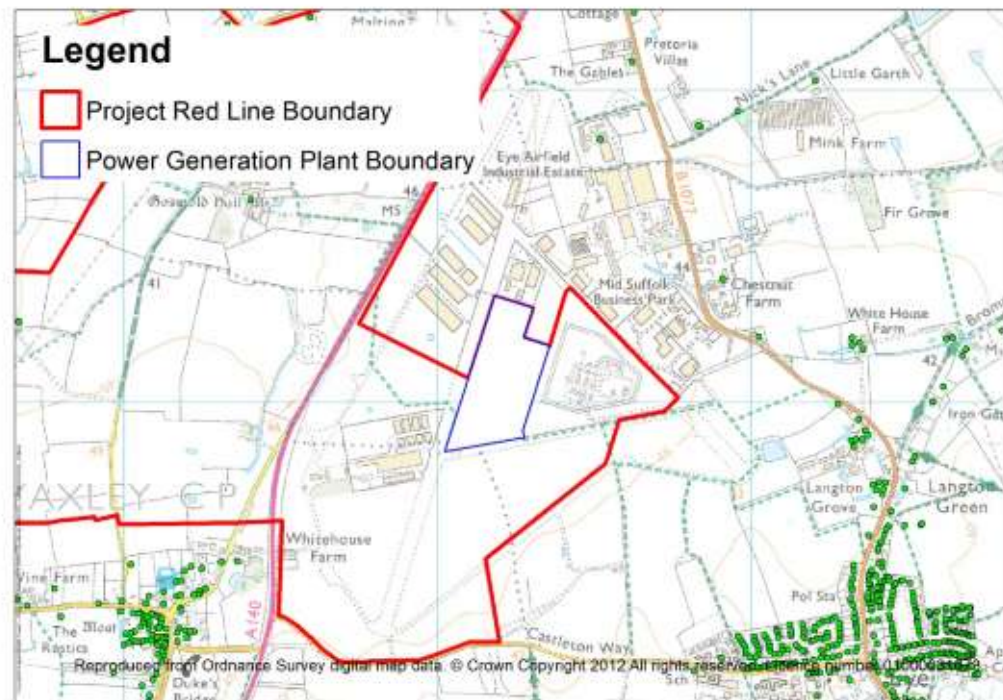
- 5.4.4 In the case that the Electrical Connection is via an Overhead Line, there is potential that noise will emanate from the line during operation in the form of a low frequency 'hum'. In which case the noise assessment of the Electrical Connection will consider all of the potential noise and vibration impacts caused by the construction, operation and decommissioning of the line on sensitive receptors along the total length of the route corridor. It will be undertaken in accordance with the most relevant national and local standards and guidelines.

Baseline

Power Generation Plant

- 5.4.5 The Power Generation Plant will be sited within part of the former Eye Airfield. The area within the Eye Airfield located immediately adjacent to the development site is made up primarily of industrial units. To the north of the site a thermal power plant is in operation with two wind turbines in proximity to the north west of the site and another two wind turbines to be built to the south/south east. These developments have the potential to produce significant sources of background noise.
- 5.4.6 The closest residential areas to the site, as shown on Insert 10, are located approximately 480 m to the east of the site. There are also numerous houses located to the south west of the site adjacent to Old Norwich road (approximately 750 m from the closest point of the site). There is also a farm located to the north west of the site (approximately 810 m from the closest point of the site) and a cluster of homes to the north of the site, adjacent to the B1077 (approximately 820 m from the closest point of the site).
- 5.4.7 As indicated earlier, emerging proposals to develop parts of the Eye Airfield could see the creation of residential clusters approximately 840 m and 910 m to the southeast of the Power Generation Plant. Similarly, potential plans to the north of the site include a care home which would be located approximately 450 m to the closest point of the Power Generation Plant.

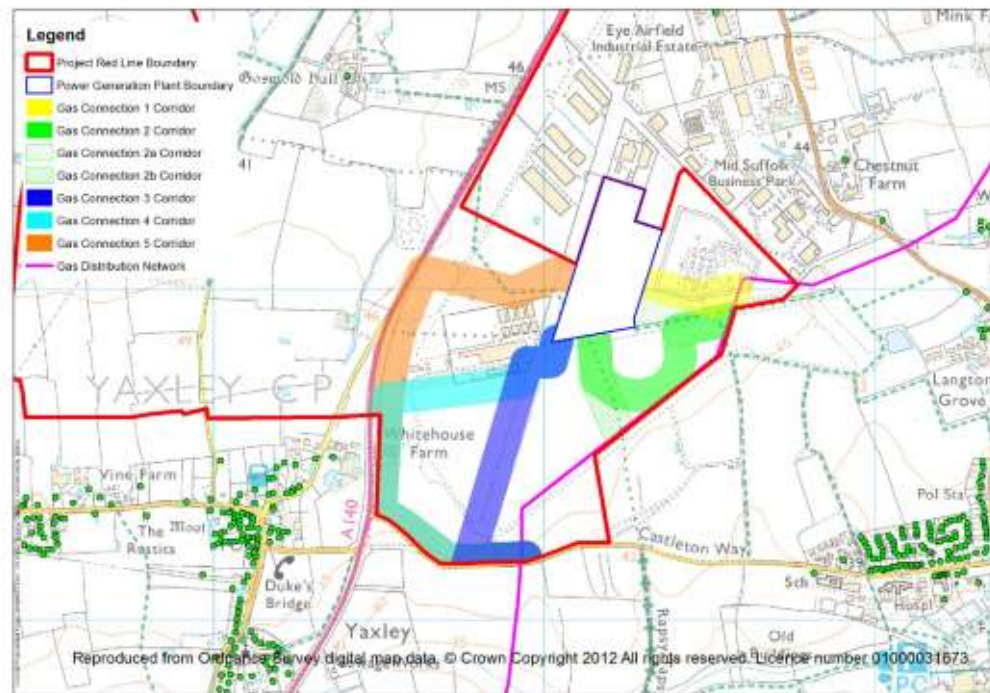
**Insert 10 - Residential Properties Located Around the Power
Generation Plant Site**



Gas Connections

- 5.4.8 Each of the Gas Connection route corridors are located within the former Eye Airfield, immediately south, west or east of the Power Generation plant. As such, the Gas Connection route corridors have the same base line conditions to those described above.
- 5.4.9 However, as the Gas Connection route corridors radiate outwards from the site, the closest residential areas are somewhat closer than those described above, as shown on Insert 11. To the east, the closest residential properties are located approximately 450 m from Corridor 1, whereas properties to the south west of the Air Field are within 125 m of Corridors 3, 4 and 5. The farm to the North West, is located 570 m from Corridor 5, and the cluster of properties to the North is located 1 km from Corridors 1 and 5.
- 5.4.10 The residential properties developed as part of the emerging proposals of the Eye Airfield could be sited approximately 800 m and 1 km to the southeast of Gas Connection Route Corridors 3, 4, and 5, while the plans to the north of the site including a care home could be located approximately 1.4 km to the closest point on Gas Connection Route Corridor 1.

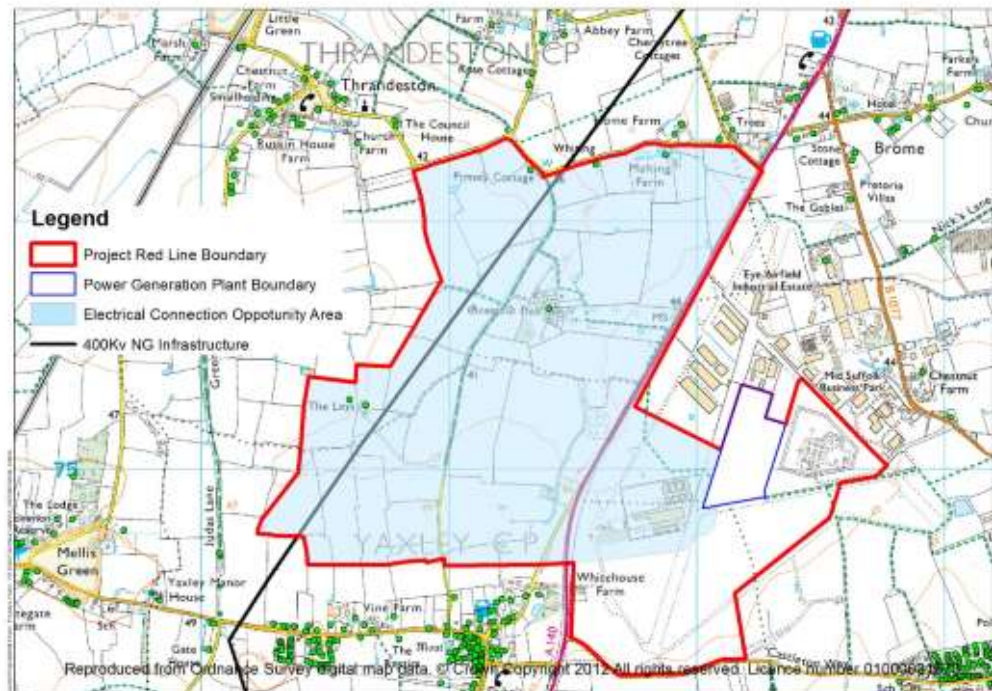
**Insert 11 - Residential Properties Located Around the Proposed
Gas Route Corridor Options**



Electrical Connection

- 5.4.11 All of the Electrical Connection options will be located to the west of the Eye Air Field, within the identified Opportunity Area in-between the residential centres of Yaxley and Thrandeston.
- 5.4.12 The closest residential properties to this area include those located within the Villages of Yaxley and Thrandeston, and a number of isolated properties, including; The Leys, Boswold Hall, Pimsy Cottage, Whiting, and Malting Farm..

**Insert 12 - Residential Properties Located Around the Proposed
Electrical Route Opportunity Area**



Assessment

Power Generation Plant

- 5.4.13 A construction noise and vibration assessment of the Power Generation Plant will be undertaken following the guidance in British Standard (BS) 5228: 2009.
- 5.4.14 The assessment of construction impacts will be undertaken as a desk study and shall involve:
 - Identification of construction activities that produce significant noise and vibration;
 - Identification of sensitive receptors within 100 m of construction activities;
 - Prediction of noise and vibration using the methodology contained within BS5228 2009.
- 5.4.15 The exact construction methodology is unlikely to be defined until the construction contractor is appointed, which is likely to be after the DCO application is submitted. However, in the absence of this data, an outline construction programme will be developed based on knowledge

and experience of other similar developments. Additionally, the typical make up of construction equipment at each stage of the project programme will be ascertained in the same way. For ground improvement works (e.g. piling) the noise assessment will pay due regard to the ground conditions at the site. Where uncertainties exist, realistic worst case assumptions will be used.

- 5.4.16 The quantification of impacts shall be undertaken by comparison with agreed project criteria / limits either from previous schemes and relevant guidance / standards such as BS5228, BS6472 & BS7385, or local legislative requirements. The desk study shall outline suitable measures for the mitigation of construction impacts, and an assessment of residual impacts.
- 5.4.17 Operational noise will be assessed using the methodology set out in BS 4142:1997 'Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'. This method predicts the likelihood of complaints about noise from industrial developments. It uses the following criteria to predict the likelihood of complaints:
- The greater the difference the greater the likelihood of complaints;
 - A difference of around +10 dB or more indicates that complaints are likely;
 - A difference of around +5 dB is of marginal significance; and
 - If the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely.
- 5.4.18 The noise assessment will also be undertaken in accordance with BS 7445: 2003 'Description and measurement of environmental noise' Parts 1 to 3. BSI. BS 7445 defines and prescribes best practice during recording and reporting of environmental noise. It is inherently applied in all instances when making environmental noise measurements.
- 5.4.19 It is proposed that the study area for the noise assessment of operational effects shall be defined as the region within 1 km of the Power Generation Plant. All sensitive receptors, such as residential properties, hospitals, schools, etc. within the study areas shall be identified in the assessment.
- 5.4.20 A Baseline Noise Survey would then be undertaken in the vicinity of the proposed site to establish the current baseline noise levels. The locations for the Baseline Noise Survey (i.e. locations of the Nearest Noise Sensitive Receptors (NNSR)) will be agreed in advance with the local Environmental Health Officer (EHO).

- 5.4.21 For the purposes of this Report, it is proposed that four NSR locations will be assessed, consistent with ESs for similar projects in the UK.
- 5.4.22 The closest NSRs to the Power Generation Plant site, and therefore suggested locations for undertaking baseline modelling are the residential properties closest to the development. These include:
- A property on the east of the B1077 – approximately 480 m east of the site.
 - A property adjacent to Old Norwich road – approximately 750 m south west of the site.
 - Properties / Holiday Park on the west of the B1077 – approximately 750 m north from the site.
 - A property on the west of the A140, adjacent to an auxiliary of this road – approximately 800 m west from the site.
- 5.4.23 Noise monitoring will be undertaken during both daytime and night time periods.
- 5.4.24 Following baseline noise measurements, a noise model will be produced using Cadna software (3-dimensional noise propagation software) which will model the measured baseline levels at NSR, together with sound power levels of proposed plant (obtained from relevant suppliers). Where sound power levels for proposed plant are not available, suitable data will be substituted, although a realistic worst case scenario would always be considered. The noise model will highlight the main noise sources and the associated noise levels at the NSR locations.
- 5.4.25 Contour plots will be produced clearly showing noise levels at the site, NSR and surrounding areas.
- 5.4.26 If the model shows that there is potential for a significant effect to be generated by noise from any of the sensitive receptors, the level of noise mitigation that would be required would be specified, and measures that could be used to achieve this level of mitigation will be incorporated into the model, to provide a 'with mitigation' scenario.
- 5.4.27 The ES section would be compiled using the Institute of Acoustics (IoA) / Institute for Environmental Management (IEMA) draft document "Guidelines for Noise Impact Assessment". The operation of the Gas Connection and any underground Electrical Connection is not anticipated to cause any increase in background noise. However, the methodology described above for assessing construction impacts for the Power Generation Plant will also be applied for the construction phase of the Gas and Electrical Connections.

Gas Connection

- 5.4.28 The assessment methodology for the construction and decommissioning phase of the Power Generation Plant would be appropriate to use for the Gas Connection.

Electrical Connection

- 5.4.29 Assuming that the Electrical Connection is an underground cable, the assessment methodology for the construction and decommissioning phase of the Power Generation Plant would be appropriate to use for the Electrical Connection.

- 5.4.30 If an overhead line is considered, a further assessment will be carried out to assess the impact of potential hum. This method will follow that for the operational phase of the Power Generation Plant.

Potential Mitigation Measures

Power Generation Plant

- 5.4.31 During construction, potential mitigation measures could include the use of quietest possible construction equipment and only undertaking construction activities during certain hours. The CEMP will also set out best practice methods of limiting noise on site during construction.
- 5.4.32 During operation, mitigation measures could include the use of silencers on the loudest plant items, and, if necessary the provision of noise screens.

Gas Connection

- 5.4.33 The mitigation for the construction and decommissioning phase of the Power Generation Plant would be appropriate to use for the Gas Connection.

Electrical Connection

- 5.4.34 Assuming that the Electrical Connection is an underground cable, the mitigation methodology for the construction and decommissioning phase of the Power Generation Plant would be appropriate to use for the Electrical Connection.
- 5.4.35 If an overhead line is considered, mitigation measures could include the provision of noise screens.

5.5 Ecology**Introduction****Power Generation Plant**

- 5.5.1 This Section of the ES will address the potential impacts of the Power Generation Plant on sensitive ecological receptors. It would summarise the results of Phase 1 extended habitat surveys and any Phase 2 protected species surveys. It would also outline any mitigation measures considered necessary.

Gas and Electrical Connections

- 5.5.2 These Sections of the ES will address the potential impacts of the gas and Electrical Connections on sensitive ecological receptors. They would summarise the results of Phase 1 extended habitat surveys and any Phase 2 protected species surveys that have been undertaken along the lengths of each proposed route corridor, and would also outline any mitigation measures considered necessary.

Baseline**Power Generation Plant and Gas Connection**

- 5.5.3 Currently, the area proposed for development of the Power Generation Plant is free of buildings and dense vegetation. Adjacent to the north of the proposed Power Generation Plant site, there is a thermal generating power station, along with a two wind turbine wind farm located to the north west and with two more turbines to be built in the south and south east. Immediately to the east of the site a belt of trees surround the area separating it from an existing gas compressor facility. To the west of the area the landing strip of the former airfield separates the development area from an existing industrial site. The Airfield sits within semi-natural surroundings, characterised by a mixture of industrial buildings, agricultural fields bordered by mixed plantation woodland and hedgerow / screen planting.
- 5.5.4 The Gas Connection would run to the south of the Power Generation Plant site and connect with Feeder 5. All of the gas pipeline would be undergrounded, albeit that there would be some minor above ground structures (as described in Section 3.4 of this Report). Any one of the five potential route corridors, as described in Section 3.4 of this Report, would encounter broadly similar conditions. They would run through the Eye Airfield and then across a series of agricultural fields. A Phase I Habitat and Ecological Scoping Survey was undertaken at Eye Airfield by Parsons Brinckerhoff (Appendix A), building on the Draft Phase I

Habitat and Ecological Scoping Survey carried out by Mid Suffolk District Council in October 2011 The purpose of the survey was to:

- Identify the main habitats present at the site;
- Identify the sensitive ecological receptors (e.g. statutory designated sites) in the vicinity of the site;
- Assess the potential of the site to support protected species; and
- Provide recommendations for further assessment works (e.g. Phase 2 Protected Species Surveys).

5.5.5 On the basis of the survey work the report recommends that further work in respect of bats, great crested newts, nesting birds and wintering birds is undertaken in the form of a Phase II Survey. The document suggests that mitigation for these species may be required prior to the start of development works.

5.5.6 The survey also states that provision for precautionary mitigation before and during development works is also recommended to take into account the potential presence of badger and BAP species such as brown hare.

5.5.7 The survey site covered approximately 250 ha of land, including the disused airfield and its surrounding areas (industrial and agricultural land). Twenty nine statutory designated sites were identified within the 10 km search radius. Two of these are of international importance and seven of national importance. The remainder of the statutory designated sites are ancient woodland. Two non-statutory designated sites were noted within the 2 km search radius. Records were received for a number of protected and notable species within the search area including bats, birds, amphibians, invertebrates and plants.

5.5.8 The closest of these internationally and nationally designated sites are 8 km, north-west of the proposed Power Generation Plant site.

5.5.9 The Draft Phase I Habitat Survey states that data obtained from Suffolk Borough Records Centre (SBRC) include the known records for 24 species of birds within 3 km of the survey site. There are records for 3 species listed on Schedule 1 of the Wildlife Countryside Act, 1981: Barn Owl, King Fisher and Skylark (a BoCC⁵ Red listed species) which have been recorded within the survey area.

⁵ Red list – Red list species are those: That are Globally Threatened according to the IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and have not shown a substantial recent recovery.

- 5.5.10 According to the survey bird species observed in the area or heard include; grey partridge (Red listed), blackbird, great spotted woodpecker, green woodpecker, herring gull, lesser black-backed gull and starling.
- 5.5.11 The buildings surrounding the Power Generation Plant site are suboptimal for nesting birds, although occasional nesting by species such as starling and house sparrow cannot be ruled out. It is expected that birds will find suitable habitats in mature trees, shrubs, mixed species hedgerows, open pasture and rough grassland. The open pasture and rough grassland field boundaries are likely to support species such as skylark and grey partridge during the breeding season.
- 5.5.12 In order to assess which species are present within the Power Generation Plant site and surroundings, further survey work for nesting birds at the appropriate time of the year will be carried out as part of the EIA.
- 5.5.13 The main habitats of ecological interest for the Power Generation Plant site are the hedgerows, scrub and plantation woodland which lie along the northern and eastern site boundaries and immediate surrounds. These areas provide nesting and foraging habitat for birds, and commuting and foraging opportunities for bats. The arable field is considered to be of low ecological value, although further survey work is necessary to determine the presence of ground nesting birds such as skylark. The preliminary assessments for the surrounding ponds (Habitat Suitability Index) indicate further survey work is required to determine the presence or likely absence of great crested newts. The collective habitats on-site are considered sub-optimal for badger and no signs were noted during the survey. However, a nearby road kill noted in the Phase 1 habitat survey confirmed presence in the wider area.
- 5.5.14 The main habitats of ecological interest for the Gas Connections include hedgerows, scattered trees and tree lines. The trees are not considered suitable for bat roosting purposes, although may still be of some foraging interest. Similarly, the hedgerows and tree lines provide feeding opportunity along with potential dispersal routes for bats. The vegetation also provides suitable nesting and foraging habitat for birds. The arable footprint is considered sub-optimal for badgers and no signs were noted during the survey. The wider site surrounds support potentially suitable ponds for great crested newts which require further detailed survey work.

Electrical Connections

- 5.5.15 At present, less is known about the specific habitats within the vicinity of the Electrical Connection route corridors, as Phase 1 habitat surveys

are currently ongoing. It is likely that the Electrical Connection would be undergrounded across an area of agricultural land to the west of the Power Generation Plant site, although there is potential that this connection could be via an overhead line.

5.5.16 Given the close proximity to the Power Generation Plant and Gas Connection route corridors, it is expected that the main habitats of ecological interest will be similar to those for the Gas Connection. However, Phase 1 habitat surveys are currently underway to ensure that all habitat types are appropriately considered and Phase 2 habitat surveys will be carried out where necessary should specific habitats be identified.

5.5.17 At present, it is anticipated that Phase 2 surveys for the following species will be carried out along the Electrical Connection route corridor options. The following list is not definitive, and will be updated following the completion of the Phase 1 surveys of this area.

- Bats
- Great Crested Newts
- Breeding and Over Wintering Birds
- Badgers

Assessment

Power Generation Plant

5.5.18 NPS EN-1 requires that 'Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity' (paragraph 5.3.3). Furthermore, that 'the applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests' (paragraph 5.3.4) and demonstrate that 'opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats' (paragraph 5.3.18).

5.5.19 NPS EN-1 also requires that lighting effects will be considered on sensitive ecological receptors.

5.5.20 Based on the results of the extended Phase 1 Habitat Survey, there is a recommendation to undertake the following Phase 2 protected species surveys at the Power Generation Plant site:

Bats

- 5.5.21 Within the extended Phase 1 Habitat Survey, the boundaries of the Power Generation Plant site and immediate surrounding areas were identified as suitable for bat commuting and foraging purposes. It is therefore recommended that three activity surveys are undertaken across the entire Power Generation Plant site during optimal survey period for bats (April to September) to identify which bat species are using the site and to investigate how they are using the different habitats for roosting, feeding, foraging, commuting and socialising wherever possible. All surveys will be undertaken by licensed bat workers and experienced bat surveyors equipped with bat detectors and recording devices. The surveys will also be undertaken in accordance with best practice guidelines (Bat Conservation Trust, 2012).

Breeding and wintering birds

- 5.5.22 The vegetated boundaries of the Power Generation Plant site are suitable for a wide range of nesting and foraging birds. Although the development footprint does not extend into these areas, consideration should still be given to the potential impact of the development proposals on bird populations. The arable field is also suitable for ground nesting birds such as sky lark. Further wintering and breeding bird surveys are therefore recommended to inform the EclA. Breeding bird surveys will be undertaken between April – July and wintering bird surveys will be undertaken between November and January.

Great crested newts

- 5.5.23 Preliminary pond surveys (Habitat Suitability Assessment) indicated that there are a number of ponds surrounding the Power Generation Plant site which are potentially suitable for great crested newts. Although the assessment is not precise enough to determine presence or absence alone, it does provide an indication that the habitat conditions are capable of supporting this species. An additional 4 surveys are therefore necessary in the spring period to ascertain presence or absence. In the instance of great crested newts being present, 2 further surveys (also undertaken during the spring) are necessary to complete a population estimate.

Badgers

- 5.5.24 No signs of badger were noted during the survey. The Power Generation Plant site is considered to be sub-optimal for badgers due to the flat topography and lack of vegetative cover. However, previous biological records and evidence of road kill emphasise that badgers are

present in the wider surrounding area. Occasional through passage cannot therefore be completely discounted for the site and basic mitigation policies are recommended.

Site of Importance for Nature Conservation (SINC)

- 5.5.25 A method statement will be produced for all works that might impact on the neighbouring Progress Industrial Estate Sites of Importance for Nature Conservation (SINC) Site of Importance for Nature Conservation (SINC) to protect the designating features of the SINC from adverse affects from the development of the Power Generation Plant.
- 5.5.26 Based on the current Power Generation Plant layout (Figure 2), it is considered that there is not a requirement for Phase 2 protected species surveys for National Vegetation Classification (NVC), reptiles or invertebrates. However if there any changes to the proposed layout that resulted in development areas encroaching into areas with the potential to support these species, further methodology would be provided to and discussed with statutory consultees.

Gas Connection

- 5.5.27 Extended Phase 1 Habitat Surveys have been undertaken along potentially suitable Gas Connection route corridors. The results of the Phase 1 surveys have identify the requirement for Phase 2 protected Species Surveys for; Bats, Breeding and Overwintering Birds, Great Crested Newts, and Badgers.
- 5.5.28 Following the completion of the Phase 2 Protected Species Surveys, reports will be produced, detailing the extent to which the species are present, the likely impacts that the Gas Connection will have on the species and habitats and the potential mitigation measures that could be employed to reduce impacts to an acceptable level.
- 5.5.29 Assessment and reporting will follow guidelines as set out in the Guidelines for Ecological Impact Assessment (EcIA) (IEEM, July 2006).

Electrical Connection

- 5.5.30 Extended Phase 1 Habitat Surveys will be undertaken along potentially suitable Electrical Connection route corridors. The corridors will encompass a suitable buffer either side of the proposed routes to account for small variations in the final route (micrositing) and to account for the 'working width' (i.e. the area required for vehicle movements and laydown of equipment). The surveys will be undertaken using the same methodology and aims as for the Power

Generation Plant site and will help to define the final route corridor choices.

- 5.5.31 The results of the Phase 1 surveys would identify the requirement for Phase 2 protected Species Surveys. As yet, the need, or otherwise for specific surveys cannot be determined with any certainty.
- 5.5.32 Following the completion of the Phase 2 Protected Species Surveys, reports will be produced, detailing the extent to which the species are present, the likely impacts that the PPP will have on species and habitats and the potential mitigation measures that could be employed to reduce impacts to an acceptable level.
- 5.5.33 Assessment and reporting will follow guidelines as set out in the Guidelines for Ecological Impact Assessment (EcIA) (IEEM, July 2006).

Appropriate Assessment

- 5.5.34 The proposed Power Generation Plant could have a potential impact on a number of designated sites within the surrounding area, including those of national and international significance. The extent of this impact cannot however be fully assessed at this early stage until further details with regards to the proposals are provided.
- 5.5.35 A Habitat Regulations Assessment (HRA) Screening Exercise is, however considered likely to be required for the two sites of international importance, Redgrave & Lopham Fens (RAMSAR, SSSI, NNR) and Waveney & Little Ouse Valley Fens SAC. Both sites are located c.4 km to the north-west of the proposed power plant site.

Potential Mitigation Measures

Power Generation Plant, Gas and Electrical Connections

- 5.5.36 Embedded mitigation measures to limit impacts on ecology and biodiversity could include ensuring that no construction or vegetation clearance takes place within breeding bird season or during other sensitive ecological seasons. If necessary, further, specific mitigation measures will include the consideration for provision of new habitat to suitably replace any habitat areas which are permanently lost through development of the Power Generation Plant, Gas Connection, or Electrical Connection.

5.6 Water Resources

Introduction

Power Generation Plant

- 5.6.1 This section of the ES will describe the potential impacts resulting from the development of the Power Generation Plant on local water quality. The Section will provide a brief summary of the main issues and risks posed to and from flooding. However, these will be assessed in detail through a separate Flood Risk Assessment, submitted as a separate dedicated document as part of the DCO application. Additionally, potential impacts on hydrogeology will be assessed as part of the section describing geology, contamination and ground conditions (outlined in Section 5.7 of this Scoping Report).
- 5.6.2 The supply of water for construction of the PPP will ultimately be the responsibility of the principal construction contractor. In addition, the discharge of any effluents during construction, including site drainage, will also be the responsibility of the principal construction contractor who will be required to reach agreement with the EA, Internal Drainage Board (IDB) and the local sewerage undertakers with regards to detailed methods of disposal. Standard good working practices should ensure that any impacts due to water discharging from the site would be insignificant.
- 5.6.3 At present, it is assumed that the Power Generation Plant will utilise air cooling, substantially reducing water intake, as described in Section 3.3 above. During natural gas firing, the only process water required on a day-to-day basis would be that for make-up to the HRSG system (should CCGT plant be chosen).
- 5.6.4 Small quantities of water (blowdown) will be discharged to avoid the build-up of impurities in the HRSG steam/water cycle. The blowdown is virtually pure water containing very small quantities of various chemicals that are used to prevent corrosion and scaling in the system.

Gas and Electrical Connections

- 5.6.5 Separate sections of the ES will describe the potential impacts resulting from the development of the Gas and Electrical Connections on local water quality and as above its impact of Flood Risk and Ground Water will be assessed in separate sections.

5.6.6 As there is no requirement for water usage during the operation of the Gas and Electrical (buried or overhead) Connections, the only consideration of water resources will be during the construction period, and will follow the same principles as those described for construction of the Power Generation Plant.

Baseline

Power Generation Plant

5.6.7 Surface water bodies in the vicinity of the Power Generation Plant will be identified and described along with their importance. Based on an initial, high level assessment, the main water bodies are considered to be;

- Three ponds located next to Parke's Farm approximately 1.5 km north east of the Power Generation Plant site boundary;
- Two ponds located north at approximately 2.5 km north of the Power Generation Plant site boundary;
- One reservoir located at approximately 770 m east of the Power Generation Plant site boundary; and
- One pond located at approximately 525 m west of the Power Generation Plant site boundary.
- One small drain or watercourse approximately 750 m south west of the Power Generation Plant site boundary.

5.6.8 As part of further baseline assessment, abstraction points and licences in the area will be investigated and summarised, and the potential impact on these abstractions will be qualified.

5.6.9 Historical maps would be studied to identify the course of any former watercourses which may have been undergrounded or culverted in the past and which could be impacted.

Gas Connection

5.6.10 The proposed Gas Connection route corridors all exit the Power Generation Plant site, and cross the middle or south of the Eye Airfield Site. Based on the initial investigation, Gas Connection Route Corridors 3, 4, and 5 will all pass parallel to and within close proximity of this watercourse. However, it is not anticipated that any of the proposed Gas Connection routes will need to cross this, or any other water bodies.

Electrical Connection

- 5.6.11 The proposed Electrical Connection would exit the Power Generation Plant site to the west into the Opportunity Area where it would cross the A140 and agricultural fields prior to connecting into the 400 kV infrastructure.
- 5.6.12 The Opportunity Area contains a number of waterbodies, ponds and ditches which will be carefully considered during the process of identifying the route for the Electrical Connection. The design process will aim to reduce crossings or interactions with watercourses as much as possible.

Assessment

Power Generation Plant

- 5.6.13 NPS EN1 recognises the need for EIA to account for the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment (paragraph 5.15.2).
- 5.6.14 NPS EN1 Paragraph 5.2.7 also states that the ES should describe any potential eutrophication impacts.
- 5.6.15 The Water Resources ES chapter would be undertaken using a risk based approach to determine the level of potential impacts but will also use a Source–Pathway-Receptor model to identify which receptors could realistically be impacted by a given action.
- 5.6.16 All aspects of supply, demand and disposal of water and process effluents will be addressed for the construction, operational and decommissioning phases of the project.
- 5.6.17 Any potential sources of pollution that have the potential to impact on surface water bodies will be identified.
- 5.6.18 The disposal of surface water drainage and the process effluents to the sewage system will be discussed with a view to maximising the opportunities for water recovery and re-use as far as is practicable.
- 5.6.19 Potential discharge locations for site surface waters and process waste waters will be identified and a site drainage plan which may incorporate a sustainable drainage system (SuDS) will be discussed at a high level.
- 5.6.20 In terms of the Power Generation Plant there are not anticipated to be any impacts on the water bodies listed above. The majority of them are a significant distance from the site and therefore will not be directly

impacted during construction. It is not anticipated to directly abstract or discharge water to or from any of these sources during construction, operation or decommissioning of the Power Generation Plant.

- 5.6.21 Where projects are away from, or unlikely to interact with any water courses, it is likely that a Water Framework Directive (WFD) Report will not be required and it may be scoped out. However, if the EA does state that a WFD Report is required, this will need to be incorporated. An assessment for the WFD Report would involve consideration of the WFD Status of surrounding water bodies. The WFD Report would need to be approved by the EA and would form an Appendix to the ES.

Gas Connection

- 5.6.22 The assessment methodology for the Power Generation Plant would be appropriate to use for the Gas Connection, and as above, it is not anticipated that there will be any impacts on the water body identified as the proposed gas routes will run parallel to the water body, and thus will not need to cross it.
- 5.6.23 As above, although there is no intention for the Gas Connection to cross this water course, as the route will be passing within a short distance, it may be considered necessary for a WFD report to be produced and agreed with the EA.

Electrical Connection

- 5.6.24 Assuming that the electrical connection will be in the form of an underground cable, all of the proposed electrical connection route corridors cross or pass within close proximity to waterbodies. As such, assessment of the potential impact will be carried out following the same methodology as described above, and if necessary, a WFD assessment report will be produced and agreed.
- 5.6.25 If an overhead line is used to export power from the Power Generation Plant, there will be no need for any water crossings or interaction with water bodies of any kind.

Potential Mitigation Measures

Power Generation Plant

- 5.6.26 Potential embedded mitigation measures which will be included during the construction of the Power Generation Plant to limit impacts on water quality include siting of stockpiles a minimal distance from watercourses to avoid pollution runoff and adhering to best practice working guidelines to avoid spillages near watercourses.

- 5.6.27 Additionally, during construction and operation, silt traps and oil interceptors would be placed in any drains on site. No untreated surface or waste waters would be allowed to drain to drainage ditches or watercourses during construction or operation. SuDS would be used if found to be required.
- 5.6.28 The British Standard Code of Practice for Earthworks BS 6031:2009 contains detailed methods that should be considered for the general control of drainage on construction sites. Further advice is also available in the British Standard Code of Practice for Foundations BS 8004: 1986. These will be taken into account.
- 5.6.29 All aqueous process effluents will be discharged via the plant drainage systems and will be in accordance with EA limits. The use of biocides will be optimised to ensure that the least amount possible is required.
- 5.6.30 All oil and chemical storage tanks and areas where drums are stored will be surrounded by an impermeable bund. Single tanks will be within bunds sized to contain 110 per cent of capacity and multiple tanks or drums will be within bunds sized to contain the greater of 110 per cent of the capacity of the largest tank or 25 per cent of the total tanks contents.
- 5.6.31 During operation, the EA will set limits on the quality of water that is discharged from the site under the Environmental Permit. The need, or otherwise for further, specific mitigation measures will be determined through the EIA process.

Gas Connection

- 5.6.32 All proposed mitigation measures identified for the Power Generation Plant will be considered for the construction and decommissioning periods of the Gas Connection depending on the findings of the impact assessment.

Electrical Connection

- 5.6.33 All proposed mitigation measures identified for the Power Generation Plant will also be considered for the construction and decommissioning periods of the Electrical Connection depending on the findings of the impact assessment.
- 5.6.34 As it is possible that an underground electrical route may need to cross a water body, various crossing techniques will also be considered. These may include horizontal directional drilling, particularly for larger water bodies, or temporary bunding and over-pumping where flows are lower.

5.7 Geology, Ground Conditions and Agriculture

Introduction (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.7.1 This section of the ES will detail the baseline geological and hydrogeological conditions of the Power Generation Plant site and outline the potential environmental impacts of the proposed Power Generation Plant, Gas and Electrical Connection corridors on these resources. It will also detail the baseline conditions in terms of ground and ground water contamination and the risks posed to human health (particularly future site users). It will also consider any impacts that the project may have on the physical geological, soil or agricultural resource, through e.g. removal of rare geology, sterilisation of mineral assets, removal of good quality agricultural land or disturbance of sites designated for their geological importance and significance.
- 5.7.2 The main potential impact from the development of the Power Generation Plant, Gas Connection and Electrical Connection in terms of geology and land quality is likely to be the potential sterilisation of good quality agricultural land.

Baseline

Power Generation Plant

- 5.7.3 It is understood that the area proposed for the Power Generation Plant has remained as undeveloped agricultural land throughout its history and is currently used as arable agricultural land bordered by scrub and a belt of trees.
- 5.7.4 Key past and present developments in the vicinity of the Power Generation Plant that could have had an impact on geology and ground contamination include:
- Former Eye Airfield runways and fuel storage facilities within the disused airfield;
 - The existing 12.7 MW Eye Power Plant located immediately to the north of the proposed PPP site.
- 5.7.5 British Geological Survey (BGS) maps indicate that the superficial geology underlying the Power Generation Plant site is composed of Diamicton (lowestoft formation), while the underlying hard rock geology is characteristic of peat, sand and gravel and calcereous tufa.

Gas Connection

- 5.7.6 The proposed routes of the Gas Connection all pass through the Eye Airfield site and along roads / across agricultural fields what are within the former Airfield footprint and would have been subject to the same impact on geology and ground contamination as the Power Generation Plant site; namely the runway and fuel storage facilities.
- 5.7.7 British Geological Survey (BGS) maps indicate that the superficial and hard rock geology underlying the Gas Connection route corridors is the same as that underlying the Power Generation Plant.

Electrical Connection

- 5.7.8 The Electrical Connection, be it buried or overhead, will initially run through the Eye Airfield site, and will be subject to the same impact on geology and ground contamination as the Power Generation Plant site and Gas Connection Corridors.
- 5.7.9 West of the A140, in the Opportunity Area, the connection would pass over or under arable agricultural land that it is understood to have remained unchanged throughout its history, and is thus considered to be 'Green Field'.
- 5.7.10 British Geological Survey (BGS) maps indicate that the superficial and hard rock geology underlying the Opportunity Area is the same as that underlying the Power Generation Plant.

Assessment

Power Generation Plant

- 5.7.11 Assessment will be underpinned by the DEFRA/EA publication Contaminated Land Report 11, 2004, "Model Procedures for the Management of Land Contamination" and associated subsequent guidance.
- 5.7.12 The assessment approach will be undertaken with a clear understanding of the following:
- Previous land uses – through a review of historical maps;
 - Underlying ground conditions – through a review of BGS maps, and a review of previous site investigations (where available) and Coal Authority Report if necessary;
 - Existing physical baseline conditions through a site walkover survey and review of a Landmark Envirocheck Report.

- 5.7.13 The Landmark Envirocheck Report for the site will identify groundwater vulnerability, sites designated for geological importance, details of any previous pollution events at the site or surrounding area, details of landfills, waste management sites and COMAH sites within the site and surrounding area and historical maps.
- 5.7.14 A conceptual site model approach will be used to assess the risks posed by contaminants to sensitive receptors using a source, pathway receptor model, based on the following:
- **Source** – potential source of contamination.
 - **Pathway** – means by which contamination can reach and impact upon a receptor.
 - **Receptor** – that which may be adversely affected by the presence of contamination.
- 5.7.15 Desk studies will identify potential environmental and geotechnical liabilities associated with the development of the site, including an assessment of potential impacts of previous uses of the site and surrounding area. These desk studies are important if any potential environmental and geotechnical risks are to be identified, and a focussed and cost efficient intrusive investigation is to be designed (if required).
- 5.7.16 In undertaking the desk studies, all available information on the sites and surrounding areas will be reviewed to establish local ground conditions and the environmental settings. Furthermore, consultation will be held with the relevant Local Authorities and the EA to obtain any other environmental records available for the project sites and to further refine the assessment methodology.
- 5.7.17 A site walkover will be undertaken, covering the project site and immediate surrounding areas. This will ensure all potential source, pathway and receptor linkages for potential contamination issues have been identified.
- 5.7.18 Based on the findings of the desk studies, site walkovers and preliminary risk assessment, recommendations will be provided for any further intrusive investigation work thought to be necessary to satisfy current Standards / Guidance and fill any data gaps identified to fully inform the assessments of environmental and geotechnical risks / liabilities.
- 5.7.19 Using the information obtained suitable remediation strategies would be developed that could be implemented to render the site ready for development as appropriate.

- 5.7.20 These would include estimates of the types and volumes of waste material that will need to be removed from the sites prior to development.

Gas and Electrical Connections

- 5.7.21 The assessment methodology of the Power Generation Plant would be appropriate for use on both the gas and Electrical Connection route corridors and will be followed as described above.
- 5.7.22 Additionally, an assessment will be made of the amount of agricultural land, if any, that may become sterilised as a result of the development of the Gas and Electrical Connections.
- 5.7.23 Should an overhead Electrical Connection route be considered, the same methodology will be used, although it is considered likely that the potential impact on Geology, Ground Conditions and Agriculture would be significantly less than for a buried connection.

Potential Mitigation Measures

Power Generation Plant

- 5.7.24 Embedded mitigation measures will include adherence to good practice guidelines and could involve, for example,
- Any additional soil materials that are to be imported to the sites will be required to have certification of their chemical concentrations to ensure that contaminative materials are not being introduced to the area.
 - In order to further limit disturbance, the site access tracks will be constructed first to allow movement of vehicles around the site on areas of soft-standing.
 - Any vegetation, topsoil and subsoil will be removed to expose a suitable sub-grade. Any soils, sub-soils or aggregate suitable for reuse will be stockpiled on impermeable liners.
 - Soils which are to be reused onsite will be tested for contamination and geotechnical suitability. This will form part of a site waste management plan (SWMP) which will be drafted prior to construction and will focus on the re-use, recycling and reduction of waste spoil.
 - Surface water, perched waters or groundwater from dewatering operations will not be discharged to surface water, foul or surface water drains without the appropriate consents from the local water or sewage company and / or the EA.

- The disposal of this effluent will be the responsibility of the contractor. If necessary, this water will be tanked off-site for disposal at a suitable facility.
- All foundations will be appropriately specified to resist chemical attack from soils or groundwater.
- Foundations will also be designed so as not to present a preferential pathway for contaminant migration, if present at the Power Generation Plant site.

5.7.25 Further, specific mitigation measures could include, for example, remediation of the site, removal of contamination hotspots or further site characterisation and will be determined during the EIA.

Gas and Electrical Connections

5.7.26 Embedded mitigation measures for the gas and Electrical Connections (buried or overhead) are likely to be the same as for the Power Generation Plant.

5.8 Landscape and Visual Impact

Introduction

Power Generation Plant

5.8.1 This section of the ES will describe the potential impacts that the Power Generation Plant, could have on landscape elements and sensitive visual receptors in the surrounding area.

5.8.2 This Section will establish the following:

- A clear understanding of the Power Generation Plant and its wider landscape setting, identifying its landscape character, resources, value and sensitivity to the proposed development;
- An assessment of the composition, character and aesthetic value of views from visual receptors including occupiers of residential properties and people using amenity landscapes, and the sensitivity of views;
- The nature of the different development scenarios and mitigation measures; and
- The likely significant direct and indirect effects of the proposal on the landscape resource (i.e. landscape elements and character) and on visual receptors.

5.8.3 The buildings of the Power Generation Plant will be finished in a manner which will have regard to the views of community and

stakeholder consultation to minimise the impact with respect to the landscape. Attention will be paid at all times to aspects of good design that can be incorporated into the project to minimise visual impacts and identify reasonable mitigation where possible and appropriate in line with NPS EN-1. Consideration will also be given to the potential impacts of lighting arising from the Power Generation Plant and measures will be put forward to limit the amount of offsite light spill.

Gas Connection

- 5.8.4 It is not anticipated that the Gas Connection will give rise to any significant visual impacts, as it will be undergrounded for the majority of its length. However, a thorough assessment of the AGI will be undertaken and reported in a similar format as described above.

Electrical Connection

- 5.8.5 As for the Gas Connection is not anticipated that a buried Electrical Connection would give rise to any significant visual impacts, as it is likely that it will be undergrounded for the majority of its length.
- 5.8.6 However, there is potential that an overhead line may be used to export the electricity from the Power Generation Plant to the National Grid. If this is the case, a full landscape and visual impact assessment will be undertaken in line with EN-1 and the additional guidance set out in EN-5, ensuring that the assessment conforms to all of the 'Holford Rules' as far as possible.
- 5.8.7 Furthermore, whether the Electrical Connection takes the form of an underground cable or an overhead line, some element of above ground infrastructure will be required where the connection joins the National Grid infrastructure, be it a new substation or SEC.
- 5.8.8 Irrespective of the type of connection, a full visual impact assessment of this infrastructure will be carried out following the guide lines set out in EN-1 and EN-5

Baseline

Power Generation Plant

- 5.8.9 Land surrounding the Power Generation Plant site is characterised by a mixture of industrial units, agricultural land and tree belts. The A140 runs approximately 360 m north from the site boundary at its closest point whilst the closest point of the B1077 to the site is approximately 460 m to the east. The closest residential receptors to the site include

- A property on the east of the B1077 – approximately 480 m east of the site.
- A property adjacent to Old Norwich road – approximately 750 m south west of the site.
- Properties on the west of the B1077 – approximately 750 m north from the site.
- A property on the west of the A140, adjacent to an auxiliary of this road – approximately 800 m west from the site.

5.8.10 The area immediately surrounding the proposed Power Generation Plant is characterised by industrial development, two wind turbines (soon to be four) and the existing Eye Power Plant. Surrounding this area, the Mid Suffolk Business Park is located to the east with the Airfield Industrial Park located to the north and the Brome Industrial Estate located north of the latter. It is expected that the development will be compatible with these existing surroundings. Residential areas and agricultural landholdings compose the area surrounding the mentioned industrial areas. It is appreciated that there is the potential for the project to have impacts on the landscape character and visual amenity of wider surrounding area. As such, a great proportion of the assessment will focus on potential impacts to this more rural setting.

Gas Connection

5.8.11 All of the Gas Connection Route Corridor options are located within the emerging EADF footprint, and as such, share many of the same baseline conditions as the Power Generation Plant.

5.8.12 The only notable difference in these conditions are the distances to the closest residential receptors, which are presented below for each of the proposed Gas Connection AGIs. Each of the AGI locations have been numbered 1 to 4, from north to south along Feeder No 5.

- **AGI 1:** Closest residential properties located 370 m to the northeast off the B1077.
- **AGI 2** Closest residential properties located 500 m to the northeast off the B1077.
- **AGI 3:** Closest residential properties located 680 m to the southeast off Millfield.
- **AGI 4:** Closest residential properties located 660 m to the northwest off Old Norwich Road.

Electrical Connection

- 5.8.13 The Opportunity Area is characterised by a mixture of industrial units, agricultural land and tree belts, and any potential routes would terminate within open agricultural land. The closest residential properties to this area include those located within the Villages of Yaxley and Thrandeston, and a number of isolated properties, including; The Leys, Boswold Hall, Pimsy Cottage, Whiting, and Malting Farm.
- 5.8.14 Should an overhead line Electrical Connection be considered, the visual impact would be considerably greater, and it would likely be visible from number of viewpoints.
- 5.8.15 As a route corridor through the Opportunity Area has not yet been established, it is not possible to state with any certainty where the closest receptors may be, however, it is likely that it would be visible to residential properties within the Opportunity Area and beyond, and likely to include some areas of Eye, Brome, and Wortham.

Assessment

Power Generation Plant

- 5.8.16 NPS EN-1 states that National Parks, together with the Broads and Areas of Outstanding Natural Beauty (AONBs), have been confirmed by the Government as having the highest status of protection in relation to landscape and scenic beauty. Where decisions may directly affect such areas, paragraph 5.9.9 requires the SoS to have regard to the statutory purposes of the potentially affected area/s. The statutory duties are provided for in Section 11A(2) of the National Parks and Access to the Countryside Act 1949 (National Parks), Section 17A of the Norfolk and Suffolk Broads Act 1988 (The Broads) and Section 85 of the Countryside and Rights of Way Act 2000 (AONBs).
- 5.8.17 NPS EN-1 confirms that the duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. EN-1 confirms '*That the aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints*' (paragraph 5.9.12).
- 5.8.18 Additionally, Paragraph 5.9.13 of EN-1 states that the fact that a proposed project is visible from within a designated area should not in itself be a reason for refusing consent.

- 5.8.19 With respect to the landscape and visual impacts 'of thermal combustion generating stations, the IPC [decision maker] should presume that the adverse impacts would be less if a hybrid or direct cooling system is used and that developers will use BAT [best available techniques] (paragraph 5.9.4)' EN-2 notes that '*It is not possible to eliminate the visual impacts associated with a fossil fuel generating station*' and so mitigation will be reducing such impacts as practicable (paragraph 2.6.5).
- A desk review of all relevant documents and landscape planning policy and guidance;
 - A field survey to assess baseline landscape character and visual amenity;
 - A description of the key features associated with the development that has the potential to alter the characteristics of the landscape and visual baseline;
 - Appropriate generic and site specific mitigation that is reasonable and possible;
 - Assessment of the predicted significance of residual effects on the landscape resource / character and visual amenity and compliance with landscape policy; and
 - An assessment of cumulative impacts arising from the proposal, in combination with other proposed large scale industrial developments in the locality, as discussed later in the Cumulative Impacts section of this Report.
- 5.8.20 The landscape assessment will be undertaken using methodology set out in the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment, 3rd Edition, 2013) ("Landscape Institute's Guidelines")
- 5.8.21 The following stages are undertaken in the assessment:
- Desk study and preliminary site survey;
 - Baseline assessment (consisting of desk study, field survey and reporting);
 - Assessment of effects on landscape character;
 - Assessment of effects on visual amenity; and
 - Conclusions on significant landscape and visual amenity effects.
- 5.8.22 The 'Landscape Appraisal and Strategy Document (2162-D10_C)' which forms part of the EADF provides relevant baseline information and will be considered when carrying out the landscape assessment.

- 5.8.23 Initially, a Zone of Theoretical Visibility (ZTV) plan will be generated using specialist software. The ZTV will show a maximum theoretical visibility of the project across the surrounding area. The ZTV will be based solely on topography and proposed height of the plant envelope, and any overhead line towers, should an overhead electrical connection be pursued. No allowance will be made for intervening screening vegetation or buildings, although in practice this tends to have a substantial mitigating effect.
- 5.8.24 A desk top review of all relevant landscape planning policy will be undertaken. Particular attention will be paid to Areas of Outstanding Natural Beauty, Areas of High Landscape Value, popular tourist spots and viewpoints, and Public Rights of Way.
- 5.8.25 The Power Generation Plant will be discussed in detail including dimensions of the larger buildings, the stack heights, and any other ancillary infrastructure that may have an impact on the landscape.
- 5.8.26 To assist in the impact assessment, a site visit will be made by a qualified Chartered Landscape Architect, who will assess the study area in detail. Additionally, and following engagement with relevant stakeholders, a selection of photomontages will be taken from key sensitive viewpoints (e.g. residential receptors, designated ecological sites, cultural heritage assets, key rights of way).
- 5.8.27 Photomontages would be produced with reference to 'Photography and photomontage in landscape and visual impact assessment Landscape Institute Advice Note 01/11'.
- 5.8.28 An appropriate number and choice of viewpoints will be selected for the actual assessment. It is proposed that up to nine photomontages would be produced to illustrate the development from key views. Suggested viewpoint locations for photomontages are:
- View from the B1077 at Victoria Hill, Eye and approximately 800 m east of the PGP site
 - View towards the site from the public footway running east/west along the south of the Airfield.
 - View from the northern edge of residential properties along Highfield – approximately 800 m south east of the PGP site
 - Castleton Way, close to Hartismere School in Eye.
 - New Road and north of the junction to the A140 – approximately 1.0 Km north of Eye Airfield.

- Rectory Road, east of the junction to the B1077 and approximately 1.3 Km north east of the PGP site.
- The Parish Church of Saint Margaret, Thrandeston – approximately 2 Km north east of the PGP site.
- View from Mellis Road – approximately 2 Km south east of Eye Airfield
- Top of Eye Castle – approximately 1.7 km to the south east of the site.

5.8.29 The photomontages will show a representation of how the proposed Power Generation Plant would be viewed within the landscape and will be used to inform the assessment of the impact of the development.

Gas Connection

5.8.30 Given that the majority of the Gas Connection will be underground, the landscape and visual impact assessment for this element of the work will focus solely on the impact of the AGI.

5.8.31 This will follow the methodology described above and will be carried out in parallel, where possible, using the same view point locations and incorporating both elements of the project on photomontages where they will be visible in the same view.

Electrical Connection

5.8.32 As for the Gas Connection, if the underground Electrical Connection is carried forward, then the LVIA for this element of the work will focus solely on the cumulative impact of the substation or sealing end compound.

5.8.33 If an overhead line is taken forward, the assessment will follow the standard LVIA methodology as described above, but will make reference to the Holford and Horlock rules where appropriate,

Potential Mitigation Measures

Power Generation Plant

5.8.34 During construction and decommissioning, embedded mitigation measures could include the careful consideration of siting of stockpiles and cranes to avoid detrimental impacts on the visual amenity of closest receptors.

5.8.35 During operation, the main embedded mitigation measures will be the careful siting and arrangement of plant. The final architectural design of

the buildings will be carefully considered to provide a high standard of visual amenity, given practical and economic constraints.

- 5.8.36 The external structures will be designed such that there will be minimal deterioration in the appearance over time.
- 5.8.37 Further, detailed mitigation measures could include the consideration for on site or off-site screen planting to screen views of the Power Generation Plant.
- 5.8.38 Due regard will be paid to NPS EN-1, EN-2, and EN-5 and the guidance they provide on 'good design'.

Gas Connection

- 5.8.39 The mitigation for the Gas AGI is anticipated to be the same as that described above for the Power Generation Plant.

Electrical Connection

- 5.8.40 Regardless of if an underground or overhead electrical connection is progressed, mitigation will follow principles of good design as described in EN-5; for an overhead line this would include:
- avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if total mileage is somewhat increased in consequence;
 - avoid smaller areas of high amenity value or scientific interest by deviation, provided this can be done without using too many angle towers, i.e. the bigger structures which are used when lines change direction;
 - other things being equal, choose the most direct line, with no sharp changes of direction and thus with fewer angle towers;
 - choose tree and hill backgrounds in preference to sky backgrounds wherever possible. When a line has to cross a ridge, secure this opaque background as long as possible, cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees;
 - prefer moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees;
 - where country is flat and sparsely planted, keep the high voltage lines as far as possible independent of smaller lines, converging routes, distribution poles and other masts, wires and cables, so as to avoid a concentration of lines or "wirescape"; and

- approach urban areas through industrial zones, where they exist; and when pleasant residential and recreational land intervenes between the approach line and the substation, carefully assess the comparative costs of undergrounding.

5.9 Waste Management

Introduction

Power Generation Plant

- 5.9.1 There are three main phases of the development of the Power Generation Plant where solid waste arisings will occur; these are: construction, operation and decommissioning.
- 5.9.2 During construction and decommissioning for the Power Generation Plant, it is likely that wastes such as concrete, inert builders rubble, spoil and scrap metal will be produced.
- 5.9.3 Solid waste from the Power Generation Plant during operation is considered to be minimal and will be both non-hazardous and hazardous in nature. The wastes produced during the operational phase include used air filters, scrap metal, used insulation material, general office waste, and other miscellaneous wastes. Small quantities of water (blowdown) will be discharged to avoid the build-up of impurities in the HRSG steam/water cycle. The blowdown is virtually pure water containing very small quantities of various chemical that are used to prevent corrosion and scaling in the system.

Gas and Electrical Connections

- 5.9.4 For the Gas and Electrical Connections, waste is only anticipated during the construction and decommissioning phases and is likely to be limited to concrete, inert builders rubble, spoil and scrap metal.

Baseline

Power Generation Plant

- 5.9.5 Currently the Power Generation Plant site is occupied by previously undeveloped agricultural land. The main works associated with the development of the Power Generation Plant will be levelling of the site, covering in hardstanding and the installation of modest foundations.
- 5.9.6 These activities will involve the generation of waste, some of which will need to be safely removed from site.

Gas Connection

- 5.9.7 The possible routes for the Gas Connection will be through the agricultural fields and tracks of the disused Eye Airfield
- 5.9.8 The laying of the Gas Connection will primarily involve the excavation of a trench and backfilling with spoil (although drilling techniques may be used where the route crosses under roads.
- 5.9.9 These activities will involve the generation of waste, some of which will need to be safely removed from site.

Electrical Connection

- 5.9.10 The possible routes an underground Electrical Connection will be through the agricultural fields and tracks of the disused Eye Airfield, continuing west across the A140 and through agricultural fields of the Opportunity Area.
- 5.9.11 The laying of the underground Electrical Connection will primarily involve the excavation of a trench and backfilling with spoil (although drilling techniques may be used where the route crosses under roads or watercourses).
- 5.9.12 If an overhead line is installed, the amount of earthworks would be reduced, although significant excavations would be required for the installation of foundations to support the overhead line towers.
- 5.9.13 These activities will involve the generation of waste, some of which will need to be safely removed from site.

Assessment (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.9.14 The waste management assessment will involve a desk based assessment (DBA) including the following elements:
- Identification of relevant legislation, sources of information and local strategies and plans;
 - Consideration of solid waste arising during the construction, operational and decommissioning phase of the Power Generation Plant, Gas and Electrical Connections; and
 - Demonstrating compliance with the waste hierarchy (e.g. reduce, reuse, recycling, recovery and/or disposal) when managing all wastes.
- 5.9.15 The assessment of the impacts will include:

- Consideration of any relevant consultee responses / requirement;
- An estimation of the likely construction and operational waste arisings;
- An assessment of the potential impact of the estimated construction and operational waste arisings in the context of baseline conditions and local infrastructure capacity;
- Identification and consideration of any best practice measures (to minimise or eliminate waste and the adverse effects caused by waste) that will be adopted as mitigation. Also looking at where reprocessed materials could be used on site;
- An assessment of the significance of projected waste arisings following mitigation. Demonstrating how mitigation will reduce the impacts/effects of the waste arisings;
- An assessment of the cumulative impacts with other proposed and operational schemes; including the EPL poultry litter fuelled generating plant and logistics warehouses of the Mid Suffolk Business Park.

Potential Mitigation Measures (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.9.16 The main embedded mitigation measure which will be employed during the construction, operational and decommissioning phases will be to minimise the production of waste where practical. Wherever possible, waste materials will be re-used or recycled. This will be achieved partly through the SWMP.
- 5.9.17 Further, specific mitigation measures, if necessary, will be determined through the EIA.

5.10 Traffic, Transport and Access

Introduction

Power Generation Plant, Gas Connection and Electrical Connection

- 5.10.1 The main impacts of the PPP on traffic, transport and access will occur during construction. The construction traffic is expected to consist mainly of vehicles for the transport of construction personnel to and from Power Generation Plant, Gas Connection Route and Electrical Connection Route. The construction period (as stated in Section 3.3 of this Report) is likely to be between 12 and 36 months depending on the final choice of technology.

- 5.10.2 There will also be a number of other transport movements during construction including civil works traffic, mechanical works traffic and heavy/abnormal loads. Total vehicles (heavy goods vehicles, light goods vehicles, cars) peak movements will vary depending on the phase of construction and the activities which are being undertaken on site.
- 5.10.3 The transport of abnormal loads, which may lead to delays and cause inconvenience to other road users, would be timed following consultation with the relevant authorities to minimise disruption to the other road users.
- 5.10.4 Normal operation will naturally result in much fewer traffic movements than those associated with construction and will be associated with personnel required for operation and maintenance of the Power Generation Plant, Gas Connection and Electrical Connection. As such, during operation no significant increase in traffic in the area of the site is expected, and no effect on local traffic patterns and infrastructure would therefore be anticipated.

Baseline

Power Generation Plant and Gas Connection

- 5.10.5 It is likely that access to the Power Generation Plant and Gas Connection Route Corridor would be via the A140, entering the site from the south, via Castleton Lane and Potash Lane.

Electrical Connection

- 5.10.6 It is likely that access to the Electrical Connection Corridor would be via the A140, Mellis Road through Yaxley, or Mellis Road through Thrandeston. There is also the possibility that a new access road may need to be constructed along the route corridor, with main access of the A140.

Assessment (Power Generation Plant, Gas and Electrical Connections)

- 5.10.7 NPS EN 1 states that 'In relation to transport impacts, following full assessment the need for travel plans or other demand management or other mitigation should be considered particularly for the construction phase (5.13.6), and the decision maker should consider the feasibility and cost effectiveness of such measures (paragraph 5.13.8, EN-1)'.
- 5.10.8 The assessment will be undertaken in accordance with the "*Guidance on Transport Assessment*" published by the Department for Transport

and will gauge the likely impact of the proposed PPP on the local road network.

- 5.10.9 Comparisons between existing traffic flows and estimates of likely traffic flows on potentially affected roads will be made. It will then be established whether significant effects are likely. This will take into account: the sensitivity of receptors; the resources likely to be affected; any potential for disruption to local routes; and, any changes in the composition of traffic. If considered necessary, traffic surveys would be undertaken which would further quantify the number of vehicle movements on the existing road network in the vicinity of the site.
- 5.10.10 The majority of the proposed access routes are 'main roads' that do not have pavements for pedestrian use. Nonetheless, the traffic assessment will also take full account of the potential impact on pedestrians, and will ensure that pedestrians and other road users (cyclists) are not cut off from amenity areas as a result of the works.
- 5.10.11 The proposed assessment requires consideration of the following: access and construction routes and the types of vehicles used; local highway and rail networks; existing traffic flows; current traffic generation; road traffic accident information; predicted traffic trends; local highway improvements and planned works; and, potential receptors.
- 5.10.12 Discussions will be held with the Highways Agency, Suffolk County Council, and Mid Suffolk District Council to identify any existing issues relating to traffic in the area. Information will also be sought on future projects in the area that could give rise to a significant cumulative impact when considered in conjunction with the Power Generation Plant, Gas and Electrical Connections.

Potential Mitigation Measures (Power Generation Plant, Gas and Electrical Connections)

- 5.10.13 The main potential impacts on traffic movements are likely to be associated with the construction phase of the development. During construction, opportunities for reducing traffic movements will be explored, such as car share schemes, shift working (i.e. not all construction traffic arriving at site at once) or the use of minibuses through the production of a Travel Plan for the construction and operational phases of the PPP.

5.11 Cultural Heritage and Archaeology

Introduction

Power Generation Plant

- 5.11.1 This Section of the ES will provide an assessment of the significance of the archaeological and cultural heritage assets present at the site of the Power Generation Plant and its immediate environs, and the likely significant effects that the construction, operation and decommissioning of the Power Generation Plant may have on these resources.

Gas and Electrical Connection

- 5.11.2 Separate Sections of the ES will be produced which describe the likely significant effects that the Gas and Electrical Connections may have on the archaeological resource present along the connection route corridors.
- 5.11.3 The objectives of these assessments are to:
- Describe the survival and extent of any archaeological features that may be disturbed by the construction, operation and decommissioning of the Power Generation Plant, Gas Connection and Electrical Connection;
 - Provide an assessment of the importance of these assets;
 - Assess the likely scale of any impacts on the archaeological and cultural heritage resource posed by the construction, operation and decommissioning of the Power Generation Plant, Gas Connection and Electrical Connection;
 - Outline suitable mitigation measures to prevent, reduce and where possible offset any significant adverse effects; and
 - Provide an assessment of any residual effects remaining after mitigation.

Baseline

Power Generation Plant

- 5.11.4 The site of the proposed Power Generation Plant has been developed as an industrial estate, following the closure of the WW2 air field and is currently occupied by a mixture of modern industrial and older military buildings and agricultural land, with some tree belts.
- 5.11.5 The Eye Airfield also accommodates a number of original military buildings. In terms of cultural heritage interest, the Airfield itself is of

course a heritage site. The Airfield is bound on the west by the line of a former Roman road. Most of the runways still survive, together with a lych-gate, 50 hardstandings, two T2-type hangars, a Nissen hut and various other buildings. All of these are mentioned within the Historic Environment Record (HER). Several listed buildings and conservation areas are in the vicinity of the Airfield, including Eye and Thrandeston Conservation Areas. Within Eye, there are several Grade I Listed buildings included within a cluster of buildings in the vicinity of the junction of Castleton Way and Victoria Hill (the B1077).

5.11.6 Scheduled Ancient Monuments within 2 km of the Power Generation Plant site include:

- St Mary's Church – approximately 1.3 km north of the site boundary;
- Moated site immediately south east of St Mary's Church (approximately 1 km east of the northern tip of the airfield);
- Eye Castle – approximately 2 km from centre of the site;
- Remains of Eye Priory at Abbey Farm (Eye Priory Guest House): 2 km south east of the site;

5.11.7 There are likely to be some large structures associated with the development of the Power Generation Plant which may be visible from these listed buildings. However, the development of the Power Generation Plant would not alter the already industrial make up of the site and surrounding area, and it is not anticipated that the project would impact on the immediate setting or appreciation of these buildings.

5.11.8 During construction, the main potential impacts on any archaeological and cultural heritage assets, will be the potential disturbance of buried archaeological remains, both known and unknown.

5.11.9 The presence of previously unknown archaeological assets present on the Power Generation Plant site should not be ruled out due to areas of undisturbed ground.

Gas Connection

5.11.10 The possible route corridors of the Gas Connection will run under agricultural land / adjacent to the runway at Eye Airfield.

5.11.11 There remains the potential for the Gas Connection to impact on the buried archaeological resource, as it is likely that it will be constructed in previously un-developed agricultural land.

Electrical Connection

- 5.11.12 The possible route corridors of the Electrical Connection will run over / under agricultural fields and crossing the main A140 road.
- 5.11.13 In the wider vicinity of the proposed project, there are other Scheduled Monuments, which may be impacted by the Electrical Connection, including:
- Scole Roman Settlement – 4 km north east from the site;
 - Barn at Rook Hall – 2.5 km south from the centre of the site; and
 - Moated Site at Gate Farm – 4 km south east.
- 5.11.14 Should an overhead electrical connection be considered, further consideration to the setting of these heritage sites will be given, considering the potential impact from pylons.
- 5.11.15 There remains the potential for the Electrical Connection to impact on the buried archaeological resource, as it is likely that it will be constructed in previously un-developed agricultural land.
- 5.11.16 There are likely to be large items of plant involved in the construction of all aspects of the PPP (e.g. cranes). However, these would be temporary structures, and given the distance from sensitive receptors (e.g. listed buildings) they are not anticipated to impact on the setting of these assets.
- 5.11.17 The main potential impacts during operation are therefore likely to be those on the setting of above ground assets resulting from the Power Generation Plant and potentially from overhead lines / pylons from the Electrical Connection if this is constructed above ground.

Assessment

Power Generation Plant

- 5.11.18 NPS EN-1 states that in relation to the setting of heritage assets, the decision maker 'should treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the IPC [decision maker] should weigh any negative effects against the wider benefits of the application' (paragraph 5.8.18, EN-1).
- 5.11.19 Initially, a DBA will be undertaken, and will include the following detailed searches:

- The National Heritage List for England contains an archive for the historic environment of England and hosts an online search facility;
 - Historic Mapping; and
 - Conservation Areas and Historic Landscape Characterisation.
- 5.11.20 The DBA will be undertaken in accordance with ‘Standard and Guidance for Archaeological Assessments’ (Institute for Archaeologists, 2011).
- 5.11.21 It is proposed that initially, searches are limited to 1 km for HER entries.
- 5.11.22 As part of the DBA, a site inspection would be undertaken in order to identify any previously unknown archaeological features and their condition. During the site inspection a detailed photographic record would be maintained.
- 5.11.23 At this stage, no intrusive investigations are proposed for cultural heritage or archaeological purposes, although this will be confirmed (or otherwise) based on the findings of the DBA, and in consultation with the English Heritage and Mid Suffolk District Council. Should intrusive investigations be necessary, their scope would be agreed with the Planning Archaeologist through a Written Scheme of Investigation (WSI).
- 5.11.24 In order to gather baseline setting data, and to undertake an assessment of the potential impacts that the development may have on the setting of any above ground remains, selected heritage assets will be visited. This will follow an initial study making reference to the results of desk-based research, and the ZTV including searches of the records listed above. Assets will be visited where this initial study indicated potential for significant impacts. Both the asset and its surrounding area will be visited to identify third locations that might be relevant to the asset’s setting.
- 5.11.25 For the purposes of the setting study, the following assets will be considered:
- Scheduled Monuments;
 - Listed Buildings;
 - Registered Parks and Gardens;
 - Registered Battlefields;
 - World Heritage Sites;

- Any other non-scheduled building which is considered to be important in terms of cultural heritage and archaeological significance.
- 5.11.26 It is proposed that the search area for these assets will be limited to 5 km from the centre of the proposed Power Generation Plant, as, based on experience of similar developments, significant impacts on setting are unlikely to occur beyond 5 km. However, should significant impacts be identified at 5 km, then the search area would be expended accordingly.
- 5.11.27 NPS EN-1 states in relation to the setting of heritage assets that the decision maker 'should treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the IPC [decision maker] should weigh any negative effects against the wider benefits of the application' (paragraph 5.8.18, EN-1).
- 5.11.28 The following factors are also considered to be relevant when assessing impacts upon setting:
- Visual Dominance;
 - Scale;
 - Intervisibility;
 - Vistas and Sight Lines;
 - Movement and Light; and
 - Unaltered settings.
- 5.11.29 The DBA will form the baseline data for the Cultural Heritage and Archaeology Section of the ES. The ES Section will discuss the nature and location of all cultural heritage and archaeological sites within the Scheme Area. Further to this, the ES will provide an assessment of the significance of any impacts to the cultural heritage and archaeology sites. Where necessary, recommendations will be made for a mitigation strategy to preserve in-situ any significant archaeological assets. The ES will also include a mitigation strategy for any significant impacts to listed buildings and other above – ground assets.

Gas and Electrical Connections

- 5.11.30 It is proposed that the same assessment methodology is used for assessing potential impacts of the Gas and Electrical Connections.

Potential Mitigation Measures (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.11.31 Prior to construction the nature and extent of archaeology present at the site and surrounding areas should have been established. However, should any archaeological remains be found during construction, work will be halted and advice sought from the Council archaeologist.
- 5.11.32 During operation, there may be an opportunity to provide screen planting, should the development give rise to any adverse impacts on above ground heritage assets.

5.12 Socio-economics

Introduction (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.12.1 At its peak, the construction workforce is expected to employ between 150 and 250 personnel depending on the type of technology chosen. Whilst subject to procurement rules it is anticipated that as much as possible of this workforce will be recruited locally.
- 5.12.2 Operation of the Power Generation Plant would require up to 30 full time staff (for CCGT operation) although for other technology choices this number would be of the order of 10 to 15. There may be further indirect jobs for contracted engineering staff during regular maintenance shutdowns and regular maintenance of the Gas and Electrical Connections.
- 5.12.3 A recent Report by Ernst and Young entitled "Powering the UK – Investing for the future of the Energy Sector and the UK" has estimated that direct employment in the energy sector *".....grew from 83,000 to 137,000 between 2008 and 2011, with growth of 6% between 2010 and 2011. The indirect employment benefit is over three times the direct benefit bringing the total number of jobs supported by the sector to around 655,000"*.
- 5.12.4 Local companies may provide further unskilled and semi-skilled services to the development during operations and it is anticipated that new jobs may be created on the basis of the levels of permanent staff in these local service industries. There may also be periodic requirements for ground maintenance, ad hoc plant maintenance and annual plant maintenance creating additional economic activity.
- 5.12.5 The total capital cost of the Power Generation Plant is anticipated to be of the order of £200 million. Up to approximately 35% of this will be

construction, civils and fabrication work which would be open to tender from companies in the area (if CCGT technology is chosen).

- 5.12.6 During construction, those workers not from the local area would require places to stay, and regular sustenance, delivering knock on benefits to local businesses and services.
- 5.12.7 In addition, the PPP would also represent an additional income source to the local economy during the operational phase in terms of local employment and the use of local services and suppliers.
- 5.12.8 PPL will investigate, with key stakeholders, a method for providing benefits to the local community which go beyond the creation of jobs.

Baseline (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.12.9 The area surrounding the PPP has a long history of agriculture. Historically, the Eye Airfield and surrounding Business Park and Industrial Parks were areas of land used for agriculture.
- 5.12.10 Mid Suffolk district was formed on the 1st of April 1974. It has a total of 122 parishes and towns covering an area of 871.1 squared km.
- 5.12.11 The population for 2011 was estimated to be 97,100 ranking 241st out of 326 English Districts.
- 5.12.12 82.1 % of the total population are in employment compared to a 76.7% estimate for the rest of Great Britain⁶.
- 5.12.13 Job Seekers Allowance in Mid Suffolk District amounts to 1,127 people, representing 1.9% of the population compared to 3.9% for the rest of Great Britain⁷.
- 5.12.14 The employment structure of Mid Suffolk District is dominated by the services sector, accounting for 68.1% of the total labour force whilst construction and manufacturing account for 10.1% and 15.3% respectively⁸.
- 5.12.15 The 'Overall Spatial Vision' of the Core Strategy DPD of Mid town of Suffolk District Council states that: 'By 2021 the East of England will be

⁶ <https://www.nomisweb.co.uk/reports/lmp/la/2038431856/report.aspx#tabrespop>

⁷ <https://www.nomisweb.co.uk/reports/lmp/la/2038431856/report.aspx#tabrespop>

⁸ <https://www.nomisweb.co.uk/reports/lmp/la/2038431856/report.aspx#tabrespop>

realising its economic potential and providing a high quality of life for its people, including by meeting their housing needs in sustainable inclusive communities. At the same time it will reduce its impact on climate change and the environment, including through savings in energy and water use and by strengthening its stock of environmental assets.'

- 5.12.16 Core Strategy Objective SO 5 – Reinforce the vitality and viability of local shops, schools, services, recreating and community facilities in towns and key service centres and primary villages.
- 5.12.17 Core Strategy Objective SO 7 – To support sustainable communities by locating development where it will enable people to access jobs and key services, such as education, health, recreation and other facilities recognising and respecting the diversity in the function and character of Mid Suffolk's towns, key service centres and primary and secondary villages and countryside.
- 5.12.18 Core Strategy Objective SO 11 – To support the growth of the local economy and rural regeneration in ways which are compatible with environmental objectives, and which deliver increased prosperity for the whole community.
- 5.12.19 Core Strategy Objective SO 11 – To support the growth of the local economy and rural regeneration in ways which are compatible with environmental objectives, and which deliver increased prosperity for the whole community.

Assessment Methodology (Power Generation Plant, Gas Connection and Electrical Connection)

- 5.12.20 NPS EN-1 states that in relation to socio-economic impacts '*the assessment should consider all relevant socio-economic impacts*' (paragraph 5.12.3, EN-1) such as tourism, influxes of workers, and cumulative impacts.
- 5.12.21 There is currently no established EIA methodology for the assessment of socio-economic impacts. To assess the socio-economic impacts the "Guidelines and Principles for Social Impact Assessment" (May 1994) produced by the Interorganizational Committee on Guidelines and Principles for Social Impact Assessment will be used.
- 5.12.22 The socio-economic impact of the PPP will be addressed for the construction, operational and decommissioning phases. The socio-economic make-up of the area surrounding the PPP will be described and the likely impacts on this baseline will be assessed.

- 5.12.23 The study area will extend to cover the immediate area of Mid Suffolk and the wider area of eastern England, in order to assess the likely effects that may be experienced within the local community.
- 5.12.24 The methodology for the socio-economic impact assessment will be based on the collection of a wide range of data and information from published materials, plus consultation with the local authority and key stakeholders. Key information to be consulted will include:
- Population characteristics (population dynamics);
 - Community and institutional structures (employment, training, skills and qualifications, economic investment, business development and equal opportunities);
 - Individual and family changes (perceptions of risk, attitudes towards the project, social well-being); and
 - Community resources (security, access to local amenities including the canal and Public Rights of Way (PRoWs)).

Potential Project Enhancements

- 5.12.25 During construction, operation and decommissioning, an effort will be made to use local goods and services, wherever possible.

5.13 Cumulative Assessment

- 5.13.1 In line with the EIA Regulations, the EIA will take into account other existing and planned developments (currently within the planning system) in the area of the proposed site, and will consider the cumulative impacts associated with these developments in conjunction with the PPP.
- 5.13.2 The EIA for the Power Generation Plant will consider the cumulative impacts of the construction, operation and decommissioning of the Power Generation Plant, Gas and Electrical Connections, noting that the Electrical Connection may or may not be consented under the Planning Act 2008 regime together with the Power Generation Plant and Gas Connection.
- 5.13.3 At present, we foresee that the following developments will be considered as part of the cumulative assessment:
- The existing and proposed wind farms (Roy Humphrey and Baldwin Wind Farm respectively) developed to north of the proposed PPP site and to the south east of the proposed site respectively;

- The existing Power Plant immediately north of the proposed site for the PPP; and
- The Gas Compressor Station located adjacent to the proposed PPP site to the east.

5.13.4 PPL expect to identify any other developments in the area which should be considered in consultation with the relevant local planning authorities.

APPENDICES

Appendix A: Phase 1 Habitat Survey

**EXTENDED PHASE 1 HABITAT
SURVEY: PROGRESS POWER
PROJECT**

*Power Generation Plant
and Gas Connection Route Corridor*

Draft

Extended Phase 1 Habitat Survey: Progress Power Project


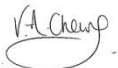
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List of Abbreviations

BAP	Biodiversity Action Plan
GCN	Great crested newt
HSI	Habitat Suitability Index
LNR	Local Nature Reserve
LWS	Local Wildlife Site
NBIS	Norfolk Biodiversity Information Services
PGP	Power Generation Plant
PPP	Progress Power Project
RNR	Roadside Nature Reserve
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SSSI	Site of Special Scientific Interest
SPA	Special Protection Area
SBRC	Suffolk Biological Records Centre

EXECUTIVE SUMMARY

Parsons Brinckerhoff was commissioned by Progress Power Limited to undertake a preliminary ecological study in respect of a proposed new thermal generating station on land at Eye Airfield Industrial Estate located in Eye, mid-Suffolk (referred to as the 'Power Generation Plant (PGP)'). The PGP will be designed to provide an electrical output of up to 299 Megawatts Electrical (MWe) and would be fuelled by natural gas. As such, it will require a new electrical connection to export power from the PGP to the National Grid (referred to as the 'Electrical Connection') and a new gas pipeline to bring natural gas to the Power Generation Plant from the National Gas Transmission Network (referred to as the 'Gas Connection'). The Power Generation Plant (PGP), Gas Connection and Electrical Connection together are referred to as the Progress Power Project (PPP). This report deals only with the PGP and Gas Connection Route corridors (GCRC), with the electrical connection route corridors considered in a separate report.

The ecological study comprised an Extended Phase 1 Habitat survey, badger survey and great crested newt (GCN) Habitat Suitability Index assessment (HSI). The survey area included the footprint of the proposed Power Generation Plant and an indicative route for the Gas Connection (this route is subject to further review and will be refined at a later date).

A desk study was undertaken to review records of protected / notable species and habitats within a defined search area. The search radius was 10 km from the site boundary for all statutory designated sites and bat records, 2 km for non-statutory designated sites, and 1 km for all other protected / notable species. As the indicative routes proposed for the Gas and Connection will later be refined, separate desk studies were carried out for the proposed PGP site and the Gas Connections.

Twenty nine statutory designated sites were identified within the 10 km search radius, although only two of these are of international importance and seven of national importance. The remainder of the statutory designated sites are ancient woodland. Two non-statutory designated sites were noted within the 2 km search radius. Records were received for a number of protected and notable species within the search area including bats, birds, amphibians, invertebrates and plants.

A Phase 1 Habitat Survey was undertaken on 28th March 2013. This assessed the ecological value of the PPP site, namely the proposed footprints of the Power Generation Plant and associated Gas Connections, and recorded any protected habitats and evidence of / potential for any protected or notable species on site or within the relevant surrounding area.

The survey area comprises an arable landscape, with hedgerows, dense scrub, scattered trees and hardstanding along the respective arable boundaries, with a small linear plantation to the east. Industrial areas are located on the far side of these features to the north, east and west, with further arable land around the remaining aspects. The A140 road is located to the west of both sites.

A badger survey was also undertaken alongside the Phase 1 Habitat survey on 28th March 2013. The survey footprint extended 30 m beyond the proposed PGP site and Gas Connection Route Corridor boundaries where access and visibility allowed. The methodology was based on the standard approach detailed in Surveying Badgers (Harris et al., 1989). Particular emphasis was placed on locating badger setts and signs of territorial activity.

No badger setts or signs of badger activity were noted during the survey of the proposed Power Generation Plant or GCRC. No evidence of latrines, pathways or snuffle holes was found along the arable margins or accessible grassland areas beyond the site boundary. No badger pathways were similarly discovered although the presence of a nearby roadkill indicates badgers are active in the wider area. Occasional through passage cannot therefore be entirely discounted from either site.

A GCN HSI was also carried out at the same time of the Phase 1 Habitat survey to determine the

likelihood of presence within the immediate surrounds of the PGP and Gas Connection Route Corridors. Twenty-six ponds within 500 m of the combined footprint of the proposed PGP and associated Gas Connections were surveyed on 28th March 2013.

The Habitat Suitability Index assessment (HSI) is a tool which enables an assessment of the likelihood of a water body to support GCN. It incorporates 10 suitability indices (SI), all of which are factors thought to affect GCN. The results of the pond HSI indicate that the PGP site and Gas Connection Route Corridor holds some potential for GCN.

The terrestrial habitat is considered to be sub-optimal for the species although the surrounding pond density is considered to be conversely strong. The occurrence of this species cannot therefore be discounted without further survey.

Seven ponds / ditches (ponds 4, 6, 7, 8, 9, 13, and ditch 14) were considered to score sufficiently high to warrant further survey. Four GCN surveys are required to determine presence / likely absence from those suitable ponds within 250 m of the PGP and Gas Connection Route Corridors. Two further surveys will be required in addition to these to complete a population assessment if GCN are found to be present.

In addition, Phase 2 species surveys are also recommended for breeding birds, wintering birds and bats in order to determine presence / absence, levels of activity and species diversity. The results of the Phase 2 surveys will be required in order to inform the detailed design of the proposals and an assessment of impacts resulting from the proposed these two elements of the PPP.

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Overview

1.1.1 Parsons Brinckerhoff was commissioned by Progress Power Limited to undertake a preliminary ecological study in respect of a proposed new thermal generating station on land at Eye Airfield Industrial Estate located in Eye, mid-Suffolk (referred to as the 'Power Generation Plant'). The Power Generation Plant will be designed to provide an electrical output of up to 299 Megawatts Electrical (MWe) and would be fuelled by natural gas. As such, it will require a new electrical connection to export power from the Power Generation Plant to the National Grid (referred to as the 'Electrical Connection') and a new gas pipeline to bring natural gas to the Power Generation Plant from the National Gas Transmission Network (referred to as the 'Gas Connection'). The Power Generation Plant, Gas Connection and Electrical Connection together are referred to as the Progress Power Project (PPP). This report deals only with the PGP and gas connection route corridors, with the electrical connection route corridors considered in a separate report.

1.1.2 The ecological study comprised an Extended Phase 1 Habitat survey, badger survey and great crested newt (GCN) Habitat Suitability Index assessment (HSI). A previous survey of the site and wider surrounds was undertaken by Lloydbore Landscape and Ecology in 2011¹. The results and findings of this have been taken into consideration within this report where appropriate and applicable.

1.1.3 The purpose of the Extended Phase 1 Habitat survey was to document the baseline ecological conditions, identify any designated sites, and ascertain the likely presence of protected / notable species that would require further, more detailed (Phase 2) surveys. The aim of the badger survey was to determine the presence or likely absence of badger activity within the immediate surrounds of the PPP site. Similarly, the HSI was carried out to assess the likelihood of GCN presence and determine the need for further survey work.

1.1.4 The survey area included the footprint of the proposed Power Generation Plant and an indicative route for the Gas Connections. The Power Generation Plant footprint is considered unlikely to change whereas the indicative route for the Electrical and Gas Connections is subject to further review. The indicative route also only forms part of the entire connection at this stage, and therefore additional surveys will be undertaken once the design is later refined.

1.2 Site Context

1.2.1 The proposed Power Generation Plant and associated Gas Connections are both located approximately 1.5 km north-west from the centre of Eye village, mid-Suffolk. The approximate central grid reference of the Power Generation Plant is TM 132 751.

Power Generation Plant

1.2.2 The proposed site for the Power Generation Plant is situated within an arable field. The immediate surrounds include hedgerows, hardstanding and the former Eye Airfield runway which bounds the western perimeter. Industrial areas are located on the far side of these features to the north, east and west, with further arable land around the remaining aspects. The A140 road is located approximately 400 m to the west of the Power Generation Plant site.

¹ Lloydbore Ecology and Landscape (2011) Draft Phase 1 Habitat and Ecological Scoping Survey. Unpublished.

Gas Connection

1.2.3 The indicative route surveyed for Gas Connection follows the former Eye Airfield runway and extends across arable fields (as detailed within Figure 07). Eye Airfield Industrial Estate is located to the north of the route with arable fields to the east, south and west. The A140 is located approximately 20 m from the nearest point of the proposed Gas Connection. Castleton Way is also located a short distance, approximately 60 m from the southern end of the Gas Connection.

1.3 **Planning and Legislation Context**

1.3.1 Relevant wildlife and countryside legislation have been used along with planning policy guidance and local and national Biodiversity Action Plans (BAP) to inform this assessment. Their context and applicability is explained as appropriate in the relevant sections of the report and additional details are presented in Appendix A.

1.3.2 The key articles of relevance are:

- The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations);
- The Wildlife and Countryside Act 1981, as amended (WCA);
- The Countryside and Rights of Way (CRoW) Act 2000;
- The Natural Environment and Rural Communities (NERC) Act 2006;
- National Planning Policy Framework (NPPF) 2012;
- The Protection of Badgers Act 1992;
- The Hedgerow Regulations 1997;
- The UK Biodiversity Action Plan (UK BAP); and
- Suffolk Biodiversity Action Plan (Suffolk BAP).

SECTION 2

METHODOLOGY

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to review records of protected / notable species and habitats within a defined search area. The search radius was 10 km from the site boundary for all statutory designated sites and bat records, 2 km for non-statutory designated sites, and 1 km for all other protected / notable species.

2.1.2 As the indicative routes proposed for the Gas Connections will later be refined, separate desk studies were carried out for the proposed Power Generation Plant site and the Gas Connection route corridors. The respective search radii were considered suitable for the scale and type of the proposed developments.

2.1.3 The designated sites included within this search were as follows:

- Special Areas of Conservation (SAC);
- Special Protection Areas (SPA);
- Ramsar Sites;
- Sites of Special Scientific Interest (SSSI);
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR);
- Ancient Woodlands;
- Sites of Nature Conservation Importance (SNCI);
- Local Wildlife Sites (LWS); and
- Roadside Nature Reserves (RNR).

2.1.4 The following data sources were used, contacted and / or reviewed:

- Suffolk Biological Records Centre (SBRC);
- Norfolk Biodiversity Information Services (NBIS);
- National Biodiversity Network (NBN) Gateway²;
- Multi Agency Geographic Information for the Countryside (MAGIC)³;
- Mid Suffolk District Council Local plan⁴;
- UK Biodiversity Action Plan (UK BAP)⁵; and
- Suffolk Biodiversity Action Plan (Suffolk BAP)⁶.
- Lloydbore Landscape and Ecology (2011) Draft Phase 1 Habitat and Scoping Report⁷

2 <http://data.nbn.org.uk/>

3 <http://magic.defra.gov.uk/>

4 <http://www.sholland.gov.uk/environment/plandev/localplan/>

5 <http://jncc.defra.gov.uk/default.aspx?page=5155>

6 <http://www.glnp.org.uk/partnership/nature-strategy/>

2.2 Phase 1 Habitat Survey

2.2.1 A Phase 1 Habitat survey was undertaken on 28th March 2013. This assessed the ecological value of the proposed footprint of the Power Generation Plant and the indicative route of the Gas Connections, and recorded any protected habitats and evidence of / potential for any protected or notable species on site or within the relevant surrounding area.

2.2.2 The Extended Phase 1 Habitat survey followed standard methodology published by the Joint Nature Conservation Committee (JNCC)⁸. This methodology is a standardised technique for rapidly obtaining baseline ecological information over a large area of land. All habitat types present on site were recorded on Phase 1 Habitat Maps and dominant plant species were recorded in accordance with standard nomenclature⁹.

2.2.3 In accordance with best practice, the standard survey methodology was extended to consider and include all protected / notable fauna and habitats suitable to support them¹⁰. Any incidental records or evidence of species were target noted on a separate map and each habitat was evaluated for its potential to support protected or notable species.

2.3 Badger Survey

2.3.1 A badger survey was undertaken on 28th March 2013. The survey footprint extended 30 m beyond the proposed Power Generation Plant and Gas Connection boundaries where access and visibility allowed. The methodology was based on the standard approach detailed in *Surveying Badgers* (Harris et al., 1989¹¹). Particular emphasis was placed on locating badger setts and signs of territorial activity.

2.3.2 The following field signs were sought during the survey:

- Setts - comprising either single isolated holes or a series of holes, likely to be interconnected underground;
- Dung pits / latrines - badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrines) are typically found along territory range boundaries;
- Paths - between setts or leading to feeding areas;
- Scratching posts - at the base of tree trunks;
- Snuffle holes - small scrapes where badgers have searched for invertebrates, earthworms and plant tubers;
- Laying up sites - bundles of grass and other vegetation where badgers may sleep above ground;
- Hairs; and

⁷ Lloydbore Ecology and Landscape (2011) Draft Phase 1 Habitat and Ecological Scoping Survey. Unpublished.

⁸ *Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit.* Joint Nature Conservation Committee, Peterborough.

⁹ Stace, C. (1997) *New Flora of the British Isles; Second Edition.* Cambridge University Press, Cambridge.

¹⁰ *Institute of Ecology and Environmental Management (2012). Guidelines for Preliminary Ecological Appraisal; Revised 2nd Edition July 2012.*

http://www.ieem.net/data/files/Resource_Library/Technical_Guidance_Series/GPEA/GPEA_July2012_web.pdf

¹¹ Harris, S., Cresswell, P. and Jefferies, D. (1989) *Surveying Badgers.* The Mammal Society Publication No. 9. Mammal Society.

- Paw prints.

2.3.3 Any setts present on site were categorised in accordance with the nationally recognised sett classification criteria as either main, annexe, subsidiary or outlier. Summary definitions for these categorisations are presented in Table 2.1 below.

Table 2.1: Sett Categories

Sett Category	Description
Main	A main sett has several entrance holes with high levels of activity, including large spoil mounds, fresh excavated earth, well marked paths and usually a fresh latrine present. There is often evidence of discarded bedding, which may indicate breeding.
Annexe	Close to a main sett and usually clearly linked to the nearby main sett by well-worn paths. Normally active with several holes, although with some holes displaying less obvious signs of badger activity.
Subsidiary	Generally less than five entrance holes and at least 50 m from a main sett and without obvious linking paths. The usage of the holes can be very variable and they are often much less consistently in use than those of main or annexe setts.
Outlier	Usually consist of a single or double hole with varying levels of activity.

2.3.4 The level of usage of all badger setts was also classified as A, B or C, where possible and appropriate. Details of these categories are presented in Table 2.2.

Table 2.2: Definition of Badger Sett Usage

Level of Usage	Description
Well used (A)	Badger holes generally clear of all vegetation, litter or debris, except where bedding has been left in the entrance. They are likely to show signs of wear at the entrance or new digging.
Partly used (B)	Leaves or twigs in badger entrance holes, which have not been cleared by regular use, although may be brought into regular use with relatively little clearance.
Disused (C)	Badger holes show no signs of recent use, often partly or wholly blocked and may require considerable digging or cleaning to re-open.

2.3.5 There is no established standard or recognised approach for evaluating the nature conservation importance of badgers and their social groups. The presence of badgers within any proposed development therefore requires careful consideration and there are several factors to address in the nature conservation evaluation process. This includes the presence, number and size of active badger setts, which can provide some indication of badger density and potential number of badger clans, extent of foraging and availability of suitable habitat for badger dispersal.

2.4 **Great Crested Newt Habitat Suitability Index Assessment**

2.4.1 Twenty-six ponds within 500 m of the combined footprint of the proposed power plant and associated gas infrastructure were surveyed on 28th March 2013.

2.4.2 The Habitat Suitability Index assessment (HSI) is a tool which enables an assessment of the likelihood of a water body to support GCN¹². It incorporates 10 suitability indices (SI), all of which are factors thought to affect GCN, as detailed in Table 2.3 below.

Table 2.3: HSI suitability indices

Suitability indices	Description
SI ₁	Geographic location
SI ₂	Pond area
SI ₃	Permanence
SI ₄	Water quality
SI ₅	Shade
SI ₆	Waterfowl
SI ₇	Fish
SI ₈	Pond count
SI ₉	Terrestrial habitat
SI ₁₀	Macrophytes

2.4.3 Each variable is assessed separately and then mathematically combined in the following formula, $HSI = (SI_1 * SI_2 * SI_3 * SI_4 * SI_5 * SI_6 * SI_7 * SI_8 * SI_9 * SI_{10})^{1/10}$ to provide the geometric mean, which is a numerical index between 0 and 1. A lower score indicates a less suitable habitat whereas a higher score represents optimal conditions favourable for GCN as detailed in Table 2.4 below. There is a positive correlation between the scores and the resulting incidence of GCN observed in ponds. However, whilst the HSI can be used to help inform the likelihood of presence or absence it is not sufficiently precise to allow conclusion that a higher score confirms presence and likewise a lower score absence. HSI is therefore used as a guide to help determine the need for further GCN surveys.

Table 2.4: Categorisation of the HSI scores

HSI	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

2.5 Survey Limitations

2.5.1 A number of botanical species could have been missed during the Phase 1 Habitat survey as this was undertaken outside the main flowering season. However, the conditions and time of year were conversely suitable for mapping broad habitat

¹² Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000) *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10(4), 143-155

categories and therefore this limitation is not considered to negatively affect the overall integrity of the survey.

- 2.5.2 Access constraints also limited the extent of land outside of the site boundary which could be included within the survey. Most notably, this affected the Phase 1 Habitat survey of land beyond the eastern perimeter of the proposed Power Generation Plant site, and 14 ponds within the HSI survey. However, any gaps in the survey information were compensated for using available desktop information to help make informed decisions. Although this is not a direct substitute for field surveys, this is not considered to be a significant limitation due to the availability and quality of aerial photographs and OS maps in order to inform the need for GCN surveys.

SECTION 3

RESULTS

3 RESULTS

3.1 Desk Study

Statutory Designated Sites

3.1.2 The desk study identified the presence of 29 statutory designated sites within 10 km of the proposed PGP site and Gas Connection Route Corridor (GCRC)(see Appendix D), as follows:

International Importance

- Redgrave & Lopham Fens (RAMSAR, Site of Special Scientific Interest [SSSI], National Nature Reserve [NNR]), located c. 8 km north-west of the proposed PGP site and GCRC ; and
- Waveney & Little Ouse Valley Fens Special Area of Conservation (SAC), located c. 8 km north-west of the PGP site and GCRC .

National Importance

- Shelfanger Meadows (SSSI) is located c.8 km to the north-west of the PGP site and GCRC ;
- Gypsy Camp Meadows, Thrandeston (SSSI), located c. 3 km to the north-west of the PGP site and GCRC ;
- Major Farm, Braiseworth (SSSI), located c. 2 km south of the PGP site and GCRC ;
- Hoxne Brick Pit (SSSI), located c. 5 km east of PGP site and GCRC ;
- Westhall Wood & Meadow (SSSI), located c. 10 km west of the PGP site and GCRC ;
- Wortham Ling (SSSI), located c.6 km north of the PGP site and GCRC ; and
- Burgate Wood (SSSI, Ancient Woodland), located c. 5 km west of PGP site and GCRC .

Regional and Local Importance

- The Pennings, Eye Local Nature Reserve (LNR), located 2 km south-east of the PGP site and GCRC ;
- Royden Fen (LNR), located c. 5 km north-west of the PGP site and GCRC
- Aspall Wood (Ancient Woodland), located c. 10 km south-west of the PGP site and GCRC ;
- Brickiln Farm Wood (Ancient Woodland), located 7 km north-east of the PGP site and GCRC ;
- Calke Wood (Ancient Woodland), located c. 10 km west of PGP site and GCRC ;
- Coldham Wood (Ancient Woodland), located c.5 km east of PGP site and GCRC ;
- Depperhaugh Wood (Ancient Woodland), located c.7 km east of the PGP site and GCRC ;

- Duchess Wood (Ancient Woodland), located c.4 km south-west of the PGP site and GCRC ;
- Gittin Wood (Ancient Woodland), located c.6 km west of the PGP site and GCRC ;
- Great Wood (Ancient Woodland), located c.5 km north of the PGP site and GCRC ;
- Highfield Wood (Ancient Woodland), located c. 7 km north-east of the PGP site and GCRC ;
- Hoxne Wood (Ancient Woodland), located c.5 km east of the PGP site and GCRC ;
- Little Wood (Ancient Woodland), located c.7 km south-east of the PGP site and GCRC ;
- Olivers Wood (Ancient Woodland), located c.10 km north-east of the PGP site and GCRC ;
- Stubbings Wood (Ancient Woodland), located c. 6 km west of the PGP site and GCRC ;
- The Slades (Ancient Woodland), located c.8 km east of the PGP site and GCRC ;
- Thorpe Wood (Ancient Woodland), located c. 7 km north-east of the PGP site and GCRC ;
- No Name (grid reference TM 177 801) (Ancient Woodland), located c. 7 km north-east of the PGP site and GCRC ;
- No Name (grid reference TM 177 806) (Ancient Woodland), located c.7 km north of the PGP site and GCRC ; and
- No Name (grid reference TM 204 711) (Ancient Woodland), located c.8 km south-east of the PGP site and GCRC .

Table 3.1: Statutory Designated Sites within 10 km

Name	Designation	Description	Distance from the Power Generation Plant	Distance from Gas Connections
Redgrave & Lopham Fens	RAMSAR, SSSI, NNR	The site (124.92 ha) comprises a large area of spring-fed valley fen at the headwaters of the River Waveney. It supports a number of different fen communities from <i>Molinia</i> based grasslands, mixed sedge fen to reed dominated fen. Aquatic plants include bladderwort (<i>Utricularia vulgaris</i>), fen pondweed (<i>Potamogeton. Coloratus</i>) and Charophytes, all of which are indicators of unpolluted, low fertility spring water. The site also supports rich invertebrate base and is the only British	8.1 km	8.5 km

		locality for the fen raft spider (<i>Dolomedes plantarius</i>).		
Waveney & Little Ouse Valley Fens	SAC	The site (193.18) supports two Annex I habitats which are the primary reason for the designation. This comprises <i>Molinia</i> meadows on calcareous, peaty or clayey silt-laden soils <i>Molinia caerulea</i> and calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> . The site also supports Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>) which is also another primary reason for the designation as an Annex II species.	8.1 km	8.5 km
Shelfanger Meadows	SSSI	The site (10.7 ha) lies within the tributary valley of the River Waveney and is one of the most important areas of unimproved grassland in Norfolk. The site is considered to be an outstanding example of traditionally managed, herb rich hay meadows. The grassland has been annually cut for several hundred years ensuring a rich diversity of species with unusual flora present. The marshy grassland has also developed seepage zones where springs emerge on the valley side.	7.5 km	7.9 km
Gypsy Camp Meadows, Thrandeston	SSSI	The site (2.46 ha) is one of the few remaining wet meadows in Suffolk. The site supports a base rich marsh with sharp flower rush (<i>Juncus acutiflorus</i>), marsh marigold (<i>Caltha palustris</i>) and carnation sedge (<i>Carex oabucea</i>) and wetter alluvial meadow with lesser pond sedge (<i>C. Acutiformis</i>) and marsh arrow-grass (<i>Triglochin palustris</i>). Drainage ditches intersect the entire site adding further botanical diversity.	2.6 km	2.9 km
Major Farm, Braiseworth	SSSI	The shallow sloping site (1.2 ha) is a damp and species-rich unimproved hay meadow. The sward supports a wide diversity of grasses and herbs. The meadow is bounded by a mature hedgerow with oak (<i>Quercus</i> spp.) and ash (<i>Fraxinus excelsior</i>) standards. The meadow also supports a rare native black poplar (<i>Populus nigra</i>).	2.5 km	1.8 km

Hoxne Brick Pit	SSSI	The site (1.27 ha) is designated for geological reasons.	4.3 km	4.9 km
Westhall Wood & Meadow	SSSI	The site (42.3 ha) is the largest remaining intact hornbeam dominated woodland in Suffolk. It supports ancient coppice with standards of pedunculate oak (<i>Quercus robur</i>) and hornbeam (<i>Carpinus betulus</i>). The site also supports a large unimproved species-rich meadow which is poorly drained. The meadow supports a variety of plants typical of both calcareous clay and calcareous loam pastures.	10 km	9.5 km
Wortham Ling	SSSI	The site (51.3 ha) supports important lowland dry heath and acid grassland communities. Heather (<i>Calluna vulgaris</i>) is abundant across the dry heath with grasses sparsely distributed in-between. The dry acid grassland is dominated sheep's fescue (<i>Festuca ovina</i>) with only occasional heather. Damper areas also support purple moor-grass (<i>Molinia caerulea</i>), ponds, ditches and hollows.	5.8 km	6.2 km
Burgate Wood	SSSI, Ancient Woodland	The site (30.5 ha) is a good example of oak-hornbeam woodland. It is ancient with coppice with standards. The ground flora is diverse and includes several indicating species of ancient woodland, one of which Lungwort (<i>Pulmonaria officinalis</i>) is considered to be rare. The site is moated with a massive woodbank and ditch around most of the perimeter.	5.2 km	4.7 km
The Pennings, Eye	LNR	Located along the River Dove, most of the site is managed as a hay meadow.	2 km	2 km
Royden Fen	LNR	The valley fen is spring fed, with deep peat soils that are permanently water-logged.	5 km	5.5 km
Aspall Wood	Ancient Woodland	Ancient and semi-natural woodland.	10.1 km	9.6 km
Brickiln Farm Wood	Ancient Woodland	Ancient and semi-natural woodland.	6.2 km	6.9 km
Calke Wood	Ancient Woodland	Ancient and semi-natural woodland.	10.4 km	10 km
Coldham Wood	Ancient Woodland	Ancient and semi-natural woodland.	5.6 km	5.8 km
Depperhaugh	Ancient	Ancient and semi-natural	7.6 km	7.9 km

Wood	Woodland	woodland.		
Duchess Wood	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	4.2 km	3.6 km
Gittin Wood	Ancient Woodland	Ancient and semi-natural woodland.	6 km	5.6 km
Great Wood	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	5 km	5.7 km
Highfield Wood	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	6.6 km	7.2 km
Hoxne Wood	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	6.4 km	6.7 km
Little Wood	Ancient Woodland	Ancient and semi-natural woodland.	7.3 km	7.2 km
Olivers Wood	Ancient Woodland	Ancient and semi-natural woodland.	9.5 km	10.1 km
Stubbings Wood	Ancient Woodland	Ancient and semi-natural woodland.	6.3 km	5.8 km
The Slades	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	8.1 km	8.4 km
Thorpe Wood	Ancient Woodland	Ancient and semi-natural woodland and ancient replanted woodland.	6.5 km	7.1 km
No Name (TM 177 801)	Ancient Woodland	Ancient and semi-natural woodland.	6.2 km	6.9 km
No Name (TM 177 806)	Ancient Woodland	Ancient and semi-natural woodland.	6.6 km	7.3 km
No Name (TM 204 711)	Ancient Woodland	Ancient and semi-natural woodland.	7.9 km	7.9 km

Non-statutory Designated Sites

3.1.3

The desk study identified the presence of two non-statutory designated sites within 2 km of the Gas Connection (see Appendix C), as detailed below. No non-statutory sites were found within a 2 km radius of the proposed Power Generation Plant site.

- Mellis Common (County Wildlife Site [CWS]), located c. 1.9 km south of the Gas Connection,
- Braiseworth Wood / Stegall's Wood (CWS and Suffolk Wildlife Trust Reserve), located c.2 km west of the Gas Connection.

Table 3.2: Non-statutory Designated Sites within 2 km

Name	Designation	Description	Distance from the Power Generation Plant	Distance from Gas Connection
Mellis Common	CWS	The site (32.67 ha) is an extensive area of common land, supporting a high diversity of flowering plants. The site also features depressions which are waterlogged most years, with a wide range of wetland plants.	> 2 km	1.9 km
Braiseworth Wood / Stegall's Wood	CWS, Suffolk Wildlife Trust Reserve	The site forms part of the Thornham estate and is a typical oak, ash and hazel (<i>Corylus avellana</i>) woodland. The woods are believed to have been planted 100 – 200 years ago.	> 2 km	2 km

UK BAP and Suffolk BAP Priority Habitats

Power Generation Plant

- 3.1.4 Two UK and Suffolk BAP priority habitats, deciduous woodland and traditional orchard, were identified within a 2 km radius of the Power Generation Plant site. Two orchards are located approximately 900 m and 1.6 km north-west of the site and another is located 1.7 km south-west. Five deciduous woodlands are found to the north and south of the site, the nearest of which is located 1.2 km south of the site around Eye village. The locations of the UK BAP priority habitats are presented within Appendix D.

Gas Connections

- 3.1.5 Deciduous woodland and traditional orchard were the only UK and Suffolk BAP priority habitats within 2 km of the Gas Connections site. Three orchards are located within the search radius, the closest of which is approximately 1 km south-west of the site. Six deciduous woodlands are found to the north, east, south and west of the site, the nearest being approximately 600 m south-west. The locations of the UK and Suffolk BAP priority habitats are presented within Appendix D.

Protected and Notable Species

Power Generation Plant

Badger

- 3.1.6 There are no recent records of badgers *Meles meles* within the 1 km search radius.
- 3.1.7 Badgers are protected under the Protection of Badgers Act 1992.

Bats

- 3.1.8 Eight bat species were identified within 10 km of the site as follows: barbastelle (*Barbastella barbastellus*), brown long-eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's (*Myotis daubentonii*), Natterer's (*Myotis*

nattereri), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*) and soprano pipistrelle (*P. Pygmaeus*). Unidentified *Myotis* and *Pipistrellus* spp. records were also present within the search radius.

- 3.1.9 The SBRC hold 10 field records of barbastelle from the woodland areas of Thornham Park. The closest record is approximately 3.7 km to the south-west. There are no records of barbastelle roosts within 10 km of the site.
- 3.1.10 There are 49 records of brown long-eared within the search radius, 29 of which are roosts. All of the records are fairly evenly distributed across the wider site surrounds to the north, east, south and west. The closest record is a roost approximately 1.2 km to the south-west of the site.
- 3.1.11 The SBRC hold 38 common pipistrelle records, seven of which are roosts. These are distributed around all aspects of the site although concentrated around Eye village and Thornham Park. The closest record of activity is approximately 1.4 km to the south-east. All of the roosts are located to the north-west, west and south-west of the site. The closest roost is approximately 6.7 km north-west.
- 3.1.12 SBRC hold two field records of Daubenton's to the south-east and south-west of the site. The closest record is approximately 3.7 km to the south-west. There are no records of roosts within 10 km of the site.
- 3.1.13 There are five field records of Natterer's to the north-west, east and south-east of the site. The closest record is approximately 1.6 km to the south-east. The SBRC hold no records of Natterer's roosts within 10 km of the site.
- 3.1.14 The SBRC hold six records of noctule activity within 10 km of the site. The records are distributed to the east, south-east and south-west, the nearest of which is approximately 1.3 km to the south-east. There are no recorded roosts within the search radius.
- 3.1.15 SBRC hold six field records of serotine to the east and south-west of the site. The closest record is approximately 1.9 km to the south-east. There are no roosts recorded within 10 km of the site.
- 3.1.16 There are 18 records of soprano pipistrelles within 10 km of the site, two of which are roosts. The records are distributed to the north-west, south-east and south-west of the site. The closest record is approximately 3.8 km to the south-west. The two roosts are both found approximately 8.9 km to the north-west and south-west.
- 3.1.17 In addition, NBIS hold a number of records for bats within the 10 km search area; all records from NBIS are located over 6 km from the northern site boundary as this is the closest point of the Norfolk county border from the site.
- 3.1.18 The NBIS records provided include the following records of roosts located between 6 and 10 km from the site:
- Three 'general bat' *Chiroptera* records;
 - One serotine record;
 - Two Natterer's records;
 - One pipistrelle record;
 - Eight common pipistrelle records;

- One soprano pipistrelle record; and
- Seven brown long-eared records.

3.1.19 All UK bat species are protected under the Conservation of Habitats and Species Regulations (2010) as amended and under the Wildlife and Countryside Act (1981) as amended. Various bat species are also listed as priority species on the UK and Suffolk BAPs.

Birds

3.1.20 SBRC hold eight records of six different bird species within 1 km of the site. The most recent of these for each species is presented in Table 3.3 below. Green sandpiper (*Tringa ochropus*) was the only Schedule 1 bird species within the search radius.

3.1.21 All birds are protected under the Wildlife and Countryside Act (1981) as amended, and a number of species are listed as priority species on the UK and Suffolk BAPs.

Table 3.3: Summary of Bird Records within the 1 km Search Area

Species recorded	Latin name	Date of recording	Conservation status
Green sandpiper	<i>Tringa ochropus</i>	2010	Schedule 1, Amber
European turtle dove	<i>Streptopelia turtur</i>	2003	Red, S41, UK & Suffolk BAP
Skylark	<i>Alauda arvensis</i>	2009	Red, S41, UK & Suffolk BAP
Hedge accentor	<i>Prunella modularis</i>	2009	Amber
Northern wheatear	<i>Oenanthe oenanthe</i>	2009	Amber
Yellowhammer	<i>Emberiza citrinella</i>	2009	UK BAP

Schedule 1 = Listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended); Annex 1 = Listed on Annex 1 of the EU Birds Directive (Directive 79/409/EEC); UKBAP = UK Biodiversity Action Plan Priority Species; S41 = Listed on NERC Act Section 41 Species of Principal Importance (SPI); Red = Included in Birds of Conservation Concern (BoCC) Red List; Amber = Included in Birds of Conservation Concern (BoCC) Amber List.

Brown Hare

3.1.22 SBRC hold several records of brown hare (*Lepus europaeus*) to the north, south and east of the site, two of which are located close to the site within Eye Airfield. The nearest record is approximately 600 m to the south of the site. Brown hares are listed as a UK and Suffolk BAP priority species.

Dormouse

3.1.23 There were no records of dormice (*Muscardinus avellanarius*) within the 1 km search radius.

3.1.24 Dormice are protected under the Conservation of Habitats and Species Regulations (2010) as amended and under the Wildlife and Countryside Act (1981) as amended. Dormice are a UK and Suffolk BAP priority species.

Hedgehog

3.1.25 The SBRC hold no recent records of hedgehogs (*Erinaceus europaeus*) within 1 km of the site boundary.

3.1.26 Hedgehogs are a UK and Suffolk BAP priority species.

Herpetofauna

3.1.27 SBRC hold one record of a common toad (*Bufo bufo*) approximately 150 m north of the site. There are no records of any other amphibian species, including great crested newts (GCN) (*Triturus cristatus*), or reptiles within the search area.

3.1.28 GCN are protected under the Conservation of Habitats and Species Regulations (2010) as amended and the Wildlife and Countryside Act (1981) as amended. The common toad and GCN are UK and Suffolk BAP priority species.

3.1.29 The four common native reptiles; grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), and adder (*Vipera berus*) are protected under the Wildlife and Countryside Act (1981) as amended and are all UK and Suffolk BAP priority species.

Invertebrates

3.1.30 There is one record of the bumblebee *Bombus (Thoracombus) ruderarius* within the Millfield allotments, approximately 750 m south-east of the site. The *B. (Thoracombus) ruderarius* is a UK BAP priority species.

Otter

3.1.31 There were no records of otters (*Lutra lutra*) within the 1 km search radius.

3.1.32 Otters are protected under the Conservation of Habitats and Species Regulations (2010) as amended and under the Wildlife and Countryside Act (1981) as amended. Otters are a UK and Suffolk BAP priority species.

Plants

3.1.33 SBRC hold six records of plant species, including lesser pondweed, spreading hedge-parsley (*Torilis arvensis*), imperforate St. John's-wort (*Hypericum maculatum* subsp. *Obtusiusculum*), dwarf spurge (*Euphorbia exigua*), broad-leaved spurge (*E. platyphyllos*) and cat-mint (*Nepeta cataria*) within the 1 km search radius. Spreading hedge-parsley, a UK BAP priority species, is located approximately 150 m north of the site.

Water Vole

3.1.34 There were no records of water voles (*Arvicola amphibius*) within the 1 km search radius.

3.1.35 Water voles are protected under the Wildlife and Countryside Act (1981) as amended and are a UK and Suffolk BAP priority species.

White-clawed Crayfish

- 3.1.36 There were no records of white-clawed crayfish (*Austropotamobius pallipes*) within the search radius.
- 3.1.37 White-clawed crayfish are protected under the Wildlife and Countryside Act (1981) as amended and are a UK and Suffolk BAP priority species. They are additionally afforded protection under the Conservation of Habitats and Species Regulations (2010) as amended, requiring the designation of SACs for its protection, and prohibiting the taking or disturbance of the species in the wild.

Non-native Invasive Plant Species

- 3.1.38 SBRC hold no recent records of invasive plant species within the search area.
- 3.1.39 A number of non-native invasive plant species are listed on Schedule 9 of the Wildlife and Countryside Act (1981) as amended, making it illegal to cause them to spread in the wild.

Gas Connections*Bats*

- 3.1.40 SBRC hold records of eight bat species within 10 km of the site as follows: barbastelle, brown long-eared, common pipistrelle, Daubenton's, Natterer's, noctule, serotine and soprano pipistrelle. Unidentified *Myotis* and *Pipistrellus* spp. records were also present within the search radius along with a small number of records which were not determined to any species level.
- 3.1.41 There are 10 records of barbastelle activity to the south-west within the Thornham Estate. The closest record is approximately 2.9 km from the site. There are no known barbastelle roosts within 10 km of the site.
- 3.1.42 SBRC hold 46 records of brown long-eared around all aspects of the wider site. Twenty-eight of these comprise known roosts, the closest of which is approximately 800 m south of the site within Braiseworth Wood.
- 3.1.43 The SBRC have 46 records of common pipistrelle from the search radius. Seven of these were roosts which are found to the south-west, west and north-west of the site. The closest roost is approximately 7 km north-west.
- 3.1.44 There are three records of Daubenton's activity to the east, south-west and west of the site. The closest record is approximately 3 km south-west within the Thornham Estate. SBRC hold no records of roosts within 10 km of the site.
- 3.1.45 There are nine records of Natterer's to the east, south-east and north-west of the site. Two of these are reported roosts, the closest of which is located approximately 1.7 km to the south-east of the site within Eye village. The second roost is sited further afield, approximately 4.5 km south-east of the site.
- 3.1.46 SBRC hold seven records of noctule to the north, east and south of the site. The closest record is approximately 1.1 km to the south-east. There are no known roosts within the search radius.

- 3.1.47 There are five records of serotine to the east, south and west of the site. The closest record is approximately 1.6 km to the south-east. There are no known roosts within the search radius.
- 3.1.48 The SBRC have 18 hold of soprano pipstrelle within the search radius. Two of these are roosts located approximately 8.6 km south-west and north-west of the site.
- 3.1.49 There are also 11 records of unidentified *Myotis* species, 12 of unidentified *Pipistrellus* spp. and four without any reference to species (*Chiroptera*). Nine of the corresponding pipistrelle records and three of *Chiroptera* records were roosts. These are located to the east, south and west of the site.
- 3.1.50 In addition, NBIS hold a number of records for bats within the 10 km search area; all records from NBIS are located over 6 km from the sites as this is the closest point of the Norfolk county boundary from the sites.
- 3.1.51 The NBIS records provided include the following records of roosts located between 6 and 10 km from the site:
- Two 'general bat' *Chiroptera* records;
 - One serotine record;
 - Two Natterer's records;
 - One pipistrelle record;
 - Seven common pipistrelle records;
 - One soprano pipistrelle record; and
 - Seven brown long-eared records.

Birds

- 3.1.52 SBRC hold eight records of seven different bird species within 1 km of the site. The most recent of these for each species is presented in Table 3.4 below. Green sandpiper was the only Schedule 1 bird species within the search radius.

Table 3.4: Summary of Bird Records within the 1 km Search Area

Species recorded	Latin name	Date of recording	Conservation status
Green sandpiper	<i>Tringa ochropus</i>	2010	Schedule 1, Amber
European turtle dove	<i>Streptopelia turtur</i>	2003	Red, S41, UK & Suffolk BAP
Skylark	<i>Alauda arvensis</i>	2009	Red, S41, UK & Suffolk BAP
Hedge accentor	<i>Prunella modularis</i>	2009	Amber
Northern wheatear	<i>Oenanthe oenanthe</i>	2009	Amber
Spotted flycatcher	<i>Muscicapa striata</i>	2007	Red, S41, UK & Suffolk BAP
Yellowhammer	<i>Emberiza citrinella</i>	2009	UK BAP

Schedule 1 = Listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended); Annex 1 = Listed on Annex 1 of the EU Birds Directive (Directive 79/409/EEC); UKBAP = UK Biodiversity Action Plan Priority Species; S41 = Listed on NERC Act Section 41 Species of Principal Importance (SPI); Red = Included in Birds of Conservation Concern (BoCC) Red List; Amber = Included in Birds of Conservation Concern (BoCC) Amber List.

Brown Hare

- 3.1.53 There are two records of brown hare within the search radius. The nearest record is approximately 500 m east.

Hedgehog

- 3.1.54 The SBRC hold no recent records of hedgehogs within the search radius.

Dormouse

- 3.1.55 There are no records of dormice within 1 km of the site perimeter.

Herpetofauna

- 3.1.56 There is one record of a common toad approximately 850 m north of the site. The SBRC hold no further records of any other amphibian species, including GCN, or reptiles within the search area.

Invertebrates

- 3.1.57 There is one record of the bumblebee *B. (Thoracombus) ruderarius* within the Millfield allotments, approximately 700 m east of the site.

Otters

- 3.1.58 SBRC hold no records of otter within 1 km of the site.

Plants

- 3.1.59 SBRC hold six records of plant species, including lesser pondweed, spreading hedge-parsley, dwarf spurge, broad-leaved spurge, cat-mint and a bramble (*Rubus britannicus*) within the 1 km search radius. There is also one moss record, compact grimmia (*Schistidium confertum*), approximately 700 m south-west of the site.

Water Voles

- 3.1.60 There were no records of water voles within the 1 km search radius.

White-clawed Crayfish

- 3.1.61 SBRC hold no records of white-clawed crayfish within 1 km of the site.

Non-native Invasive Species

- 3.1.62 SBRC hold one record of Japanese knotweed (*Fallopia japonica*) within 1 km of the site. The grid reference is not sufficiently accurate to calculate the approximate distance of the species from the site.

3.2 Phase 1 Habitat Survey

Power Generation Plant

3.2.1 Ten habitats were identified during the Phase 1 Habitat survey of the proposed Power Generation Plant footprint. Further details of each habitat is provided below and presented on a map within Appendix D. Alpha-numeric codes below cross-refer to the JNCC Phase 1 Habitat survey habitat classifications.

Plantation Woodland – A.1.2

3.2.2 The eastern surrounds of the site features a small linear plantation on the far side of a narrow ride. The stand is dominated by sycamore (*Acer pseudoplatanus*) with occasional blackthorn (*Prunus spinosa*) and elder (*Sambucus nigra*) along the nearside edge. The plantation affords nesting and foraging habitat for birds, and potential foraging and dispersal opportunities for bats.

Dense Scrub – A.2.1

3.2.3 The eastern borders and immediate surrounds support dense stands of bramble (*Rubus fruticosus* agg.). A linear strip of bramble runs along the perimeter, with a dense unmanaged stand located nearby beyond the north-eastern corner. Both areas are dominated with bramble, with occasional dog rose (*Rosa canina*) also present.

3.2.4 Small strips of bramble were also found along the dog-legged northern boundary. An adjacent site, which was not accessible for means of survey, also supports the following species around the respective site perimeter: cherry (*Prunus* spp.), dogwood (*Cornus sanguinea*), elder, field maple (*Acer campestre*), hazel and Scot's pine (*Pinus sylvestris*).

3.2.5 The scrub affords valuable nesting and foraging opportunities for birds, and may also be of value to commuting and foraging bats. The habitat is also likely to provide dispersal, foraging and shelter resources to invertebrates and small mammals.

Poor Semi-improved Grassland – B.6

3.2.6 The eastern surrounds of the site supports a small ride which runs north-south on the far-side of the bramble dominated boundary. The sward is short and regularly disturbed by horse traffic. Species along the ride include annual meadow grass (*Poa annua*), cock's foot (*Dactylis glomerata*), common daisy (*Belis perennis*) and perennial rye-grass (*Lolium perenne*). Bryophytes were also frequent within the sward although these were not identified at the time of survey. The surrounding scrub and plantation on either side of the ride provides a sheltered corridor suitable for foraging bats and invertebrates.

Tall Ruderal – C.3

3.2.7 The northernmost part of the site features a large area of tall ruderal vegetation. Species include common nettle (*Urtica dioica*), dock (*Rumex* spp.), hogweed (*Heracleum sphondylium*), mugwort (*Artemisia vulgaris*) and thistle (*Cirsium* spp.), with occasional grasses in-between. The habitat offers foraging opportunities to invertebrates and seed eating birds.

Spoil Heap – I.2.2

- 3.2.8 The south-eastern corner of the site features a large spoil heap which is sparsely covered with grasses and tall ruderal vegetation. The habitat is considered to be of little biodiversity interest due to the present level of vegetation cover.

Arable – J.1.1

- 3.2.9 The site is located within one large arable field recently planted with perennial rye-grass. The narrow margins of the field support a short sward with the following species: annual meadow-grass, cock's foot, common daisy, cranesbill and false oat-grass (*Arrhenatherum elatius*). The field is of little biodiversity interest although may offer suitable habitat for skylark and brown hare.

Amenity Grassland – J.2

- 3.2.10 The northern surrounds of the site feature a short managed sward. These areas are located off-site, within and surrounding the western frontage of the adjacent site. Species within the sward includes annual meadow grass, common daisy, dandelion (*Taraxacum* agg.), perennial rye-grass and ribwort plantain (*Plantago lanceolata*). Areas of amenity grassland are considered to be of little biodiversity interest due to the short height and limited diversity of the sward.

Species-Poor Hedge with Trees – J.2.3.2

- 3.2.11 The doglegged northern boundary features a hawthorn (*Crataegus monogyna*) dominated hedgerow with ash and sycamore standards. An adjoining hedgerow, which connects to the western end of this, is formed from beech (*Fagus sylvatica*) with sycamore standards. These two hedgerows form part of the adjacent site perimeter.
- 3.2.12 A third hedge is located off-site beyond the south-eastern corner. The hedge runs east-west and is dominated by blackthorn with sycamore standards. The hedgerows afford nesting and foraging habitat for birds, and potential commuting and foraging opportunities for bats. The respective field layers are sparsely vegetated and therefore of little biodiversity interest.

Earthbank – J.2.8

- 3.2.13 The northern and southern surrounds of the site support earthbanks which have been installed to restrict vehicular access across the former Airfield site. The earthbanks are vegetated with a mixture of grasses and tall ruderal vegetation including cock's foot, common nettle, perennial rye-grass and thistle. The habitat is considered to be of limited biodiversity interest, although may afford dispersal opportunities to invertebrates and small mammals across the hardstanding areas.

Hardstanding – No reference code

- 3.2.14 The southern and western surrounds of the site feature the former hardstanding runway for Eye Airfield. This habitat is not considered to support any biodiversity interest.

Gas Connections

- 3.2.15 Eight habitats were identified during the Phase 1 Habitat survey of the indicative route surveyed for the Gas Connection Route Corridor. Further details of each habitat is provided below and presented on a map within Appendix C.

Plantation Woodland – A.1.2

- 3.2.16 The middle of the indicative route runs parallel to a small shelter belt plantation. Species within the stand include ash, poplar spp., silver birch and sycamore. A number of semi-mature ash and sycamore trees along the field edge have also been pollarded. The plantation affords nesting and foraging habitat for birds, and potential foraging and dispersal opportunities for bats. The trees are not of sufficient size or stature or with suitable structural damage to otherwise afford bat roosting opportunity.

Scattered Trees – A.3.1

- 3.2.17 The indicative route follows a tree line with scattered scrub underneath to the west of the former runway. Species within these areas include ash, dog rose, elder and Lombardy poplar (*Populus nigra* var. *italica*). The trees offer opportunities to bats, birds and invertebrates, although none are considered of suitable structure for roosting bats.

- 3.2.18 The margins of the A140 support semi-mature English oak and sycamore, affording some level of visual screening. The immediate southern surrounds of the indicative route also support a small number of scattered ash trees. The trees provide suitable nesting and foraging habitat for birds and foraging opportunities for bats although none of these were considered suitable for roosting bats.

Arable – J.1.1

- 3.2.19 The indicative route cuts through and closely borders several arable fields. Species within the respective arable margins include annual meadow grass, cock's foot, dock, false oat grass and ribwort plantain. The arable margins alongside the former runway also support scattered bramble, goat willow (*Salix caprea*) and elder.
- 3.2.20 The arable habitat is considered to be of no biodiversity interest due to the lack of vegetative cover and the level of traffic running through the site. The associated disturbance is likely to discourage brown hare and skylark from using areas which immediately border the former runway. The scattered scrub conversely affords limited opportunity to nesting and foraging birds although is also likely to be impacted by the level of disturbance.

Species-Rich Hedge with Trees – J.2.3.1

- 3.2.21 The indicative route runs along a short hedgerow to the west of the former runway beneath the adjacent factory. Species within the hedge include ash, dogwood, elder, hawthorn, oak and sycamore. The hedge ends approximately halfway along the factory premises and is replaced with a tree line and scattered scrub. The hedge affords nesting and foraging habitat for birds, and commuting and foraging opportunities for bats. The hedges may also provide refuge and foraging resources for invertebrates and small mammals.

- 3.2.22 Species-rich hedgerows are a Suffolk BAP priority habitat. However, the hedgerow is not considered to be of sufficient length or value to qualify as an important hedgerow in accordance with the criteria provided in Appendix C.

Species-Poor Hedge with Trees – J.2.3.2

- 3.2.23 The western edge of the indicative route cuts through a tree line near to the A140. Although this is no longer a hedge, it is likely to have been planted as such in the past. Species within this habitat include English oak and sycamore. The trees are likely to provide nesting and foraging opportunities for birds and potential commuting and foraging habitat for bats.

Species-Poor Intact Hedge – J.2.1.2

- 3.2.24 The southern end of the route features a coppiced poplar hedge, with annual meadow grass, cock's foot, dock and false oat-grass underneath. The habitat provides limited foraging and nesting opportunities for birds.

Earthbank – J.2.8

- 3.2.25 The north of the indicative route cuts through an earthbank which was previously installed to restrict vehicular access on-site. The bank is sparsely vegetated with grasses and tall ruderal vegetation and is therefore considered to be of little biodiversity interest.

Buildings and Hardstanding – J.3.6

- 3.2.26 The indicative routes run along the former runway for Eye Airfield and beside an adjacent factory. This habitat is not considered to support any biodiversity interest.

3.3 **Badger Survey**

Power Generation Plant

- 3.3.1 No badger setts or signs of badger activity were noted on-site or within the immediate surrounds (30 m). The northern and eastern site perimeter supported several potential 'pushes' through the corresponding fence and scrub boundaries, although closer inspection revealed no evidence of badger hairs. Furthermore, no evidence of latrines, pathways or snuffle holes were noted along the arable margins or accessible grassland areas beyond the site boundary.
- 3.3.2 No badger pathways were similarly found in-between the site and a grassland area further afield, which is comparatively more suitable for foraging purposes. The absence of pathways or territorial markers (i.e. latrines) does not of course account for occasional through passage, although it does indicate that any pathway is not in regular use and therefore of particular importance to a local clan.
- 3.3.3 No signs were found along the southern and western boundaries, although due to the width of the hardstanding runway, it should be noted that any dispersal routes would not otherwise be easily discernible. The edges of the runway however support no evidence to indicate regular through passage.
- 3.3.4 After the survey finished, a dead badger was noted approximately 1.5 km south-west of the site along the roadside of the A140. The wider surrounds of the site are therefore known to support badgers.

Gas Connection

- 3.3.5 No badger setts or other signs of activity were found during the survey. No 'push throughs', latrines, snuffle holes or badger tracks were noted along the hedgerow to the west of the site. The ground was relatively soft at the time of survey and therefore evidence of other species such as fox and hedgehog was easily recognisable. The absence of badger prints therefore indicates no recent through passage along the western site boundary.
- 3.3.6 The remaining aspects showed no signs of activity along the former Eye Airfield runway. Any pathways which lead across hardstanding areas could have been overlooked, although no markers were found along the edges and / or corners to indicate this was the case. The site is therefore not considered to support regular badger activity.
- 3.3.7 A dead badger was discovered along the A140 roadside after the survey approximately 1 km south-west of the site. Presence is therefore known within the wider site surrounds.

3.4 Great Crested Newt Habitat Suitability Index Assessment

- 3.4.1 Twenty-six ponds were identified within 500 m of the proposed Power Generation Plant and the indicative route for the Gas Connection. The results of the survey are detailed in Table 3.5 below, with pond locations presented in Appendix D.

Table 3.5: Ponds and Ditches within 500 m

Pond / ditch No.	Description	HSI score	HSI category	Distance from Power Generation Plant	Distance from Gas Connection Route Corridor
1	Small pond within arable field, far side of A140, no access	0.72	Good	450 m	> 500 m
2	Balancing pond surrounded by amenity grassland	0.64	Average	280 m	> 500 m
3	Balancing pond surrounded by amenity grassland	0.73	Good	270 m	> 500 m
4	Small abstraction pond within adjacent site, no access	0.6	Average	110 m	> 500 m
5	Small pond bordering B1077	0.62	Average	440 m	> 500 m
6	Small pond within arable field, no access	0.60	Average	270 m	240 m
7	Abstraction pond used for fire fighter training, no access	0.75	Good	190 m	160 m
8	Large pond surrounded by woodland and amenity grassland, far side of A140, no access	0.74	Good	> 500 m	240 m
9	Ditch surrounded by woodland, far side of A140, no access	0.67	Average	> 500 m	180 m
10	Small pond surrounded by hardstanding and rough grassland, far side of A140, no access	0.51	Below average	> 500 m	290 m
11	Medium sized field pond, far side of A140	0.71	Good	> 500 m	270 m
12	Small shaded field pond, far side of A140, no access	0.66	Average	> 500 m	320 m
13	Fishing pond on the far side of the A140	0.67	Average	> 500 m	250 m
14	Ditch connected to pond 13, far side of A140	0.60	Average	> 500 m	150 m
15	Ditch connected to pond 13, far side of A140, no access	0.72	Good	> 500 m	310 m
16	Stream in-between Yaxley and Eye	0.71	Good	> 500 m	320 m

Pond / ditch No.	Description	HSI score	HSI category	Distance from Power Generation Plant	Distance from Gas Connection Route Corridor
17	Rectangular pond surrounded by raised concrete edges, no access	0.5	Below average	180 m	470 m
18	Balancing pond surrounded by amenity grassland	0.64	Average	300 m	500 m
19	No longer present	N/A	N/A	N/A	N/A
20	Shaded ditch bordering B1077	0.55	Below average	340 m	> 500 m
21	No longer present	N/A	N/A	N/A	N/A
22	Ditch along A140, no access	0.52	Below average	470 m	280 m
23	Ditch beside Castleton Way	0.57	Below average	> 500 m	120 m
24	Short ditch surrounding industrial buildings, no access	0.52	Below average	330 m	100 m
25	Short ditch surrounding hardstanding area, on the far side of A140, no access	0.64	Average	380 m	> 500 m
26	Ditch along A140, no access	0.59	Below average	350 m	> 500 m

Power Generation Plant

3.4.2

There are 14 ponds / ditches within a 500 m radius of the site, three of which are located within 250 m. The results of the HSI indicate most of the ponds / ditches are either 'Below Average' or 'Average', with only three ponds / ditches scoring as 'Good'. A summary of the HSI categories for all ponds / ditches within a 250 m and 500 m radius of the site is provided in Table 3.6 below.

Table 3.6: HSI Category for Ponds / Ditches within 250 m and 500 m

Distance from Power Generation Plant site	No. of ponds / ditches within each HSI category				
	Poor	Below Average	Average	Good	Excellent
0 – 250 m	0	1	1	1	0
250 m -500 m	0	4	5	2	0

Gas Connection

3.4.4

There are 16 ponds / ditches within a 500 m radius of the site, eight of which are located within 250 m. The results of the HSI indicate the ponds / ditches range from 'Below Average' – 'Good', with no ponds / ditches scoring as 'Poor' or 'Excellent'. A summary of the HSI categories for all ponds / ditches within a 250 m and 500 m radius of the site is provided in Table 3.7 below.

Table 3.7: HSI Category for Ponds / Ditches within 250 m and 500 m

Distance from Gas Connection Route Corridor	No. of ponds and ditches within each HSI category				
	Poor	Below Average	Average	Good	Excellent
0 – 250 m	0	2	4	2	0
250 m -500 m	0	3	2	3	0

SECTION 4

DISCUSSION AND RECOMMENDATIONS

4 DISCUSSION AND RECOMMENDATIONS

4.1 Statutory and Non-Statutory Designated Sites

4.1.1 The proposed Power Generation Plant could have a potential impact on a number of designated sites within the surrounding area, including those of national and international significance. The extent of this impact cannot however be fully assessed at this early stage until further details with regards to the proposals are provided.

4.1.2 A Habitat Regulations Assessment (HRA) Screening Exercise is, however considered likely to be required for the two sites of international importance, Redgrave & Lopham Fens (RAMSAR, SSSI, NNR) and Waveney & Little Ouse Valley Fens SAC. Both sites are located c.8 km to the north-west of the proposed power plant site.

4.2 UK and Local BAP Habitats

4.2.1 There are no UK BAP habitats on-site or within the immediate surrounds. The site supports a small length of species-rich hedgerow, a Suffolk BAP priority habitat bordering the proposed Gas Connection Route Corridor. However, this is not considered to be of sufficient length or value to be classified as an important hedgerow in accordance with the criteria provided in Appendix B. Further assessment of likely impacts will be required once detailed proposals are available.

4.3 Protected Species and / or Species of Conservation Importance

4.3.1 The results of the desk-study and Phase 1 Habitat survey highlighted the potential presence of several protected / notable species either on-site or within the immediate environs. This includes badgers, bats, birds, brown hare, GCN and hedgehogs. All of these species, excluding badgers which have already been surveyed for and brown hare and hedgehog which are considered to be widespread in the surrounding area, could place ecological constraints on the development proposals.

4.3.2 Detailed targeted Phase 2 surveys have therefore been recommended to confirm the presence / likely absence, distributions and abundances of each species (please see Table 4.1 for a summary). This information should subsequently be used to inform the detailed site layout / design and impact assessment, and detail avoidance or mitigation measures required.

Badgers

4.3.3 The PPP site is considered to be largely unsuitable for the purpose of sett construction as the topography is flat with little vegetative cover. The soils are also formed from seasonally wet clay, creating a risk of flooding for any sett present. Conversely, the wider surrounds of the PPP site are considered more suitable, with woodland cover to the east, south-east and south-west. The topography is still fairly flat within these areas although there is sufficient variation to be otherwise considered suitable.

4.3.4 No signs of badgers were noted during the survey and the SBRC held no records within 1 km of the site. However, a dead badger was noted south of the PPP site alongside the A140 roadside. Badgers are therefore known to be present within the wider surrounds of the PPP site. The absence of signs on-site indicates there is no regular through passage, although occasional dispersal cannot be entirely discounted. General mitigation recommendations to account for this low level of risk are detailed below:

- Any temporarily exposed pipe must be capped so that badgers cannot gain entry;
- Chemicals on-site must be stored and locked in a bunded metal container, inaccessible to badgers; and
- All site excavations and trenches must either be covered overnight or have a basic ramp fitted to enable any animals that fall within to easily find means of escape.

Bats

- 4.3.5 SBRC hold a large number of bat records for the surrounding area, with eight different species identified within the 10 km search radius. The records also detail roosts for brown long-eared, common pipistrelle, Natterer's and soprano pipistrelle.
- 4.3.6 The habitats on-site are not considered suitable for roosting. There are a number of scattered trees present, although these are not deemed to be structurally suitable to afford roosting opportunities. Similarly, the nearby plantation off-site is not of sufficient age or stature to support suitable features for bats.
- 4.3.7 The vegetated boundaries of the PPP site are likely to provide commuting and foraging potential for bats. Although the green infrastructure which connects the PPP site to the wider surrounds is considered to be fairly poor, there remains opportunity for some passage and feeding activity on-site. Therefore, further survey work is required in order to determine the level of activity on-site.
- 4.3.8 In accordance with best practice, three activity surveys are recommended over the course of spring, summer and autumn.

Birds

- 4.3.9 The SBRC hold only a small number of records surrounding either site, although this is not likely reflect the true species assemblage of the area. The SBRC held one record of a Schedule 1 species within the search area, although the site itself does not support suitable marsh or riparian habitats for green sandpiper. The remainder of the species highlighted within the records are considered either likely or probable to occur on-site.
- 4.3.10 The site supports a number of habitats such as hedgerows, scrub, scattered trees, and arable fields, all of which are likely to be of value to nesting birds. Further survey work is therefore considered necessary in order to accumulate further information for assessment and mitigation design. Basic mitigation recommendations have been listed below:
- Any vegetation clearance works should not be undertaken within the nesting bird season (generally accepted to be March – August inclusive although annual fluctuations in weather conditions can change this); and
 - Any suitable habitats to be lost should be replaced within the site with native and locally appropriate species.

Dormouse

- 4.3.11 The PPP site lies within the geographic range of dormice and strong populations are known to exist within Suffolk. However, there are no records of dormouse within the

search radius. The PPP site is furthermore considered to be unsuitable due to the limited availability and connectivity of suitable scrub or hedgerow habitat. The surrounding road and industrial infrastructure also forms a major dispersal barrier. As a result, the PPP site is not considered to be sufficiently well connected to the wider area to support this species. Dormice are therefore considered absent from the PPP site.

Hedgehog

4.3.12 The SBRC held no recent records of hedgehogs, although footprints were found along the arable margin of the indicative route surveyed for the proposed GCRCs. This species is therefore likely to be present across the margins of the whole PPP site, as the perimeter habitats are considered suitable for both shelter and foraging. Basic mitigation is therefore recommended for this species below:

- Any vegetation clearance works should be carried out in a careful manner with caution exercised as to the potential presence of hedgehogs.

Herpetofauna

4.3.13 The results of the pond HSI indicate that the PGP and GCRCs holds some potential for GCN. The terrestrial habitats are considered to be sub-optimal for the species due to the lack of vegetative cover and structure which would otherwise provide opportunity for feeding, shelter and refuge. The pond density in the surrounding area is, however relatively high, and therefore the occurrence of this species cannot be discounted without further survey.

4.3.14 It is also unclear at this early stage whether the A140 represents a potential migratory barrier. Although the daytime traffic load for this single carriageway road is high, this considerably drops over night when amphibians are active. The A140 is therefore likely to hamper rather than prohibit dispersal altogether.

4.3.15 Three ponds were identified within 250 m of the proposed Power Generation Plant site, and eight within 250 m of the GCRCs. However, three of these (pond 17 and ditches 23 and 24) are considered to be 'Below Average' and are not recommended for further survey. Seven remaining ponds / ditches (ponds 4, 6, 7, 8, 9, 13, and ditch 14) were considered to score sufficiently high to warrant further survey.

4.3.16 The SBRC hold one record of a common toad within 1 km of the PGP site and GCRCs, although no records of GCN or reptiles. The absence of reptile records is unlikely to accurately portray the true distribution of these within the surrounding area, although the habitats on-site are considered to be largely unsuitable for this species group. No further survey or mitigation is therefore considered necessary for reptiles.

4.3.17 Four GCN surveys are required to determine presence / likely absence from those suitable ponds within 250 m of the PGP site and GCRCs. Two further surveys will be required in addition to these to complete a population assessment if GCN are found to be present.

Invertebrates

4.3.18 There is one invertebrate species record within the search radius, *B.(Thoracombus) ruderarius*. This species of bee is not considered likely to occur on-site as it is associated with tall grasslands that are only cut or grazed intermittently, and tussocky

grassland and scrub. There are no habitats on-site which are considered of particular value to warrant further invertebrate survey.

Otters

- 4.3.19 SBRC held no records of otters, although the species is likely to be present within the wider site surrounds along the River Waveney. The nearby fishing pond on the far side of the A140 is also likely to attract otters to the local area. The likelihood of presence on-site however is considered to be extremely low as the PGP site and GCRCs do not support sufficient dispersal routes or vegetative cover for sheltering / refuge purposes. The species is therefore considered absent from the PGP site and GCRCs.

Plants

- 4.3.20 There are seven notable plant species records within 1 km of the PGP site and GCRCs. A number of these are associated with habitats that are found on-site such as hedgerows and field margins, although none were noted during the Phase 1 Habitat survey. Spreading hedge parsley is an endangered plant which prefers heavy calcareous clay loams and the margins of fields sown with winter cereals. The likelihood of this occurring on-site is therefore considered to be extremely low and no signs were noted during the survey. No further botanical survey or mitigation is therefore considered necessary.

Water Voles

- 4.3.21 There are no records of water voles within the search radius, and the PGP site and GCRCs do not support any suitable habitat for this species. The nearby ditches off-site are also considered unsuitable due to a shallow water depth and short length. Water voles are therefore considered absent from the PGP site and GCRCs.

White-clawed Crayfish

- 4.3.22 SBRC hold no records of white-clawed crayfish within 1 km of the PGP site and GCRCs. Furthermore, no suitable habitat for this species is present on-site and therefore this species is considered absent from the site and immediate environs.

Non-native Invasive Plant Species

- 4.3.23 No non-native invasive plant species were noted within the survey footprint of the PGP site and GCRCs. There is one record of Japanese knotweed within 1 km of the PGP site and GCRCs although the accompanying grid reference is not sufficiently precise to detail the exact location of this in relation to the PGP site and GCRCs. Non-native invasive plant species are considered likely to be absent from the PGP site and GCRCs. No further survey or mitigation is therefore deemed necessary.

4.4 **Recommended Surveys**

- 4.4.1 The following Phase 2 species surveys detailed within Table 4.2 are recommended as a result of the Phase 1 Habitat survey findings. It is recommended generally, that the information provided in this report and the subsequent Phase 2 species survey reports be used to inform the detailed design, with the aim of minimising impacts on the ecological receptors identified as far as possible.

- 4.4.2 Due to significant changes to the indicative Gas Connection and Electrical Connection after the Phase 1 Habitat Survey was undertaken, further Phase 1 Habitat Survey work is required to collect baseline ecological information for the revised footprint of both connections. Furthermore, due to scale of the changes and the original design of the desk study, it is recommended that this is also updated in respect of the amendments as specified within Table 4.1.
- 4.4.3 Further Phase 2 species survey work may also be required for the revised connections depending on the results of the Phase 1 Habitat Survey.

Table 4.1: Recommended Phase 1 Habitat Survey

Species	Survey required	Survey requirement and timing
Phase 1 Habitat Survey (including updated desk study) for the revised Gas and Electrical Connections	Yes	No seasonal constraint.

Table 4.2: Recommended Phase 2 Surveys*

Species	Survey required	Survey requirement and timing
Bats (activity survey)	Yes	Three surveys, one visit per season – spring, summer and autumn (April – September inclusive)
Breeding bird survey	Yes	Three surveys undertaken April - June
Wintering bird survey	Yes	Four surveys carried out October - March
Brown hare	No	N/A
Dormouse	No	N/A
Great crested newt survey	Yes	Four surveys to determine presence, two additional surveys to complete population assessment if newts are found. Surveys carried out mid-March to mid-June, half of which must be completed between mid-April and mid-May.
Hedgehog	No	N/A
Invertebrates	No	N/A
Otter	No	N/A
Plants (NVC)	No	N/A
Reptiles	No	N/A
Water vole	No	N/A
White-clawed crayfish	No	N/A
Non-native invasive plant species	No	N/A

*Based on the original site plan as detailed within Figure 07.

APPENDIX A

RAW GCN HSI DATA

Pond ref	1	2	3	4	5	6	7	8	9	10	11	12	13
SI1 - Location	1	1	1	1	1	1	1	1	1	1	1	1	1
SI2 - Pond area*	0.7	0.4	0.8	0.05	0.95	0.3	1	0.9	0.4	0.05	0.6	0.6	
SI3 - Pond drying	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.1	0.9	0.9	0.9
SI4 - Water quality	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
SI4 - Shade	1	1	1	1	0.1	0.2	1	1	0.5	1	1	1	1
SI6 - Fowl	0.67	0.67	0.67	0.67	1	1	1	0.67	0.67	1	0.67	0.67	0.67
SI7 - Fish	0.67	0.67	0.67	0.67	1	1	1	0.67	0.67	1	0.67	0.67	0.67
SI8 - Ponds	1	1	1	1	1	1	1	1	1	1	1	1	1
SI9 - Terr'I habitat	0.67	0.33	0.33	0.67	0.67	0.33	0.33	0.67	0.67	0.67	0.67	0.33	0.33
SI10 - Macrophytes	0.3	0.3	0.6	0.7	0.3	0.5	0.3	0.3	0.7	-	0.3	0.3	0.3
HSI	0.72	0.64	0.73	0.60	0.64	0.60	0.75	0.74	0.69	0.51	0.71	0.66	0.67

*Any pond area larger than 1250m has been omitted from the HSI in accordance with ARG advice ()

** Not discernible from aerial photographs

Pond ref	14	15	16	17	18	19	20	21	22	23	24	25	26
SI1 - Location	1	1	1	1	1	N/A	1	N/A	1	1	1	1	1
SI2 - Pond area*	0.4	0.6	-	0.5	0.4	N/A	0.3	N/A	0.2	0.5	0.2	0.4	0.4
SI3 - Pond drying	0.9	0.9	0.9	0.9	0.9	N/A	0.1	N/A	0.1	0.1	0.1	0.9	0.1
SI4 - Water quality	0.67	0.67	0.67	0.67	0.67	N/A	0.67	N/A	0.67	0.67	0.67	0.67	0.67
SI4 - Shade	0.3	1	1	1	1	N/A	0.2	N/A	1	1	1	1	1
SI6 - Fowl	0.67	1	1	1	0.67	N/A	1	N/A	1	1	1	0.67	1
SI7 - Fish	0.67	1	1	1	0.67	N/A	1	N/A	1	1	1	0.67	1
SI8 - Ponds	1	1	1	1	1	N/A	1	N/A	1	1	1	1	1
SI9 - Terr'I habitat	0.67	0.33	0.33	0.01	0.33	N/A	0.67	N/A	0.33	0.33	0.33	0.33	0.33
SI10 - Macrophytes	0.3	0.3	0.3	0.3	0.3	N/A	0.9	N/A	0.3	0.3	0.3	0.3	-
HSI	0.60	0.72	0.73	0.50	0.64	N/A	0.55	N/A	0.52	0.57	0.52	0.64	0.59

* Any pond area larger than 1250m has been omitted from the HSI in accordance with ARG advice note ()

** Not discernible from aerial photographs

APPENDIX B

SUMMARY OF RELEVANT LEGISLATION

SUMMARY OF LEGISLATION AND GUIDANCE FOR NOTABLE AND PROTECTED SPECIES AND HABITATS IN THE UK 2010

Introduction

The following Appendix sets out details of legislation within the UK and how this legislation applies to particular species groups. The key pieces of international and national legislation are described after which specific legislation pertaining to species or species groups are described in turn.

International and national legislation

EC Habitats Directive

In 1992 the then European Community adopted Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive. The main aim of the EC Habitats Directive is to promote the maintenance of biodiversity by requiring member states to introduce protection for these habitats and species of European importance. The mechanism for protection is through designation of Special Areas of Conservation (SACs), both for habitats and for certain species listed within Annex II. There are a number of species listed within Annex II of the Habitats Directive that are present within the UK; these include four lower plant species, nine higher plant species, six species of molluscs, six species of arthropods, eight species of fish, two species of amphibian, and nine species of mammal.

The Bern Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) came into force in 1982. The principal aims of the Convention are to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix 3. To this end the Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1000 wild animal species.

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS) was adopted in Bonn, Germany in 1979 and came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix 1 of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix 2 of the Convention), and by undertaking co-operative research activities.

Convention on Biological Diversity

The Convention on Biological Diversity (Biodiversity Convention or CBD) was adopted at the Earth Summit in Rio de Janeiro, and entered into force in December 1993. It was the first treaty to provide a legal framework for biodiversity conservation. Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principle mechanism for the legislative protection of wildlife in Great Britain. However it does not extend to Northern Ireland, the Channel Islands or the Isle of Man. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') and the European Union Directives on the Conservation of Wild Birds (79/409/EEC) and Natural Habitats and Wild Fauna and Flora (92/43/EEC) are implemented in Great Britain.

Conservation of Habitats and Species Regulations 2010, as amended

In the UK the Council Directive 92/43/EEC has been transposed into national laws by means of the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended), and the Regulations (Northern Ireland) 1995 (as amended). The Regulations came into force on 30 October 1994, and have been amended several times. Subsequently the Conservation of Habitats and Species Regulations 2010 was created which consolidates all the various amendments made to the 1994 Regulations in respect of England and Wales and is commonly known as the 'the Habitats Regulations'. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

The Regulations contain five Parts and four Schedules, and provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Other Legislation**Deer Act 1991**

The Deer Act 1991 protects deer from poaching, taking or killing of certain deer in close season, taking or killing deer at night, and the use of prohibited weapons for the trapping or killing of deer.

Wild Mammals (Protection) Act 1996

The Act protects wild mammals from malicious or intentional harm.

Species and Habitat Specific Legislation**Plants**

Wild plants are protected under Section 13 of the Wildlife and Countryside Act 1981 (as amended). It prohibits the unauthorised intentional uprooting of any wild plant species and forbids any picking, uprooting or destruction of plants listed on Schedule 8 of which there are over 150.

The Conservation of Habitats and Species Regulations 2010 have nine plants listed within Annex IV these are; shore dock, (*Rumex rupestris*), killamey fern (*Trichomanes speciosum*), early gentian (*Gentianella anglica*), lady's slipper (*Cypripedium calceolus*), creeping marshwort (*Apium repens*), slender naiad (*Najas flexilis*), fen orchid (*Liparis loeselii*), floating-leaved water plantain (*Luronium natans*), and yellow marsh saxifrage (*Saxifraga hirculus*). It is an

offence to deliberately pick, collect cut, uproot or destroy any protected plant, or keep, transport, sell, or exchange, any live or dead such plant species, this applies to all stages of its life cycle.

Invasive Species

Schedule 9, Section 14 of the Wildlife and Countryside Act (1981, as amended) prohibits the introduction into the wild of any species that is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state, or any species of the 69 plants listed on Schedule 9.

The frequently encountered invasive species within proposed development sites include Japanese knotweed (*Fallopia japonica*); Giant hogweed (*Heracleum mantegazzianum*); Himalayan balsam (*Impatiens glandulifera*); Floating pennywort (*Hydrocotyle ranunculoides*); New Zealand pygmyweed (*Crassula helmsii*); Rhododendron (*Rhododendron ponticum*); and certain hybrids of the above, some species may be native yet are listed for conservation purposes.

Plant or soil material contaminated by Japanese knotweed that is to be discarded is considered to be a 'controlled waste' under the Environmental Protection Act 1990 (EPA 1990). It is an offence to deposit, treat, keep, or dispose of controlled waste without a licence. Furthermore knotweed that has been cut down and removed must be received by an authorised person to be disposed of correctly. A licence can be obtained from the Environment Agency (EA). The release or planting of a listed species in the wild can be permitted under a licence granted by the relevant statutory body.

Fungi

There are five species of fungi protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). These include the sandy stilt puffball (*Battarrea phalloides*), royal bolete (*Boletus regius*), and the hedgehog fungus (*Hericium erinaceus*). It is an offence to pick, uproot, trade in, or possess for the purpose of trade, any species listed under schedule 8.

Invertebrates

A number of invertebrates such as stag beetles (*Lucanus cervus*), silver studded blue butterfly (*Plebejus argus*) or white letter hairstreak (*Stymondia w-album*) are fully protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended). This legislation makes it illegal to intentionally kill, injure, or take a protected invertebrate, or to damage, destroy, or obstruct access to any structure or place used for shelter or protection by such a species; and disturb any protected species occupying such a structure or place.

Three invertebrates are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010, the large blue butterfly (*Maculinea arion*), fisher's estuarine moth (*Gortyna borelii lunata*), and lesser whirlpool ram's-horn snail (*Anisus vorticulus*). It is an offence deliberately to kill, capture, or disturb a listed species, or to damage or destroy the breeding site or resting place of such an animal.

Amphibians

There are four widespread amphibian species, common frog (*Rana temporaria*), common toad (*Bufo bufo*), palmate newt (*Lissotriton helveticus*), and smooth newt (*Lissotriton vulgaris*). All of the four widespread species receive partial protection

under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) making it an offence to offer them for sale or trade.

Great Crested Newts, Natterjack Toads and Pool Frogs

Great crested newts (*Triturus cristatus*) (GCN) and natterjack toads (*Epidalea calamita*) are fully protected under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) of the Wildlife and Countryside Act (1981, as amended) and the Conservation of Habitats and Species Regulations 2010. Reintroduced populations of 'native' pool frogs (*Pelophylax lessonae*), currently restricted to one site in Norfolk, also receive the same protection. It is illegal to possess a protected species (alive or dead), deliberately capture, injure or kill, to intentionally or recklessly disturb, or to deliberately take or destroy the eggs of these protected species. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by these protected species'. All life stages of each species' are afforded the same level of protection.

In order to undertake any activity which would otherwise result in any of the above offences being committed, it may be necessary to obtain a European Protected Species (EPS) licence from the relevant statutory body (Natural England (NE), Countryside Council for Wales (CCW) or Scottish Natural Heritage (SNH)). It is possible to undertake surveys which would otherwise involve unlawful acts, such as disturbance, by obtaining a survey license which provides authorisation for scientific and educational purposes

Reptiles

The four common reptile species, adder (*Vipera berus*), grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*), are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) against deliberate and/or intentional killing, injuring and trade.

If common reptile species are found to be present or considered potentially present within a proposed development site. To ensure that no subsequent offence will be committed a precautionary method of working (written by a suitably qualified ecologist) and submitted to the relevant authority may be required to enable works to proceed with limited risks of offences being caused.

Birds

All birds, their nests and eggs are protected by the Wildlife and Countryside Act (1981, as amended). It is an offence to intentionally kill, injure, or take any wild bird, or take or destroy an egg of any wild bird. It is also an offence to damage or destroy the nest of any wild bird (whilst being built, or in use). Therefore, clearance of vegetation within the site boundary, or immediately adjacent to the site during the nesting season could result in an offence occurring under the Act. The bird breeding season can be taken to run between the 1 February and 31 August and is subject to geographical and seasonal factors. There are 79 species of birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Barn Owls

Barn owls (*Tyto alba*) are listed as 'Amber' status under the Birds of Conservation Concern (BoCC) and are categorised as a species of European Conservation Concern. The Barn Owl is given the highest level of legal

protection possible under Schedule 1 of the Wildlife and Countryside Act 1981. It is therefore illegal to kill, injure or take a barn owl, or to take or destroy its eggs. It is also illegal to intentionally or recklessly take, damage, or destroy the nest of any wild bird while it is in use or being built, release or allow the escape of a barn owl into the wild or possess any bird (dead or alive) or part of bird without a licence which is obtainable through the country agencies (EN, SNH, and CCW).

Mammals

All wild mammals are protected under the Wild Mammals (Protection) Act 1996 from certain cruel acts; and for connected purposes. It is an offence to mutilate, kick, beat, nail, or otherwise inflict unnecessary suffering on any wild mammal.

Badgers

Badgers (*Meles meles*) are protected under the Protection of Badgers Act (1992) and the Wildlife and Countryside Act (1981, as amended). As such it is an offence to wilfully take, kill, injure or ill-treat a badger, or possess a dead badger or any part of a badger. Under the Act their setts are also protected against obstruction, destruction, or damage in any part.

Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England takes this definition to include seasonally used setts.

Work that may disturb badgers or their setts is illegal without a development licence from the relevant statutory body (NE, CCW, SNH). As a precautionary principle, a buffer distance between a badger sett and the works will be determined, based upon guidance from an appropriately experienced ecologist. This buffer distance should be based upon the size and activity levels at the sett, the topography between the sett and the works and the nature of the works.

Bats

All native UK bat species are fully protected by UK law under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) and Schedule 6 of the Wildlife and Countryside Act (1981, as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. It is illegal to deliberately capture, injure or kill a bat or to intentionally or recklessly disturb bats. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a bat.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH). Works or mitigation activities involving interference with bats or bat shelters must be carried out by a licensed bat worker.

Dormice

Dormice (*Muscardinus avellanarius*) are protected under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) of the Wildlife and Countryside Act (1981, as amended) and are listed in Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Under the current legislation it is illegal to intentionally or deliberately kill, injure or capture dormice, deliberately

disturb dormice (whether in a nest or not); or to damage, or destroy dormouse breeding sites or resting places.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH).

Otters

The otter (*Lutra lutra*) is fully protected under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) of the Wildlife and Countryside Act (1981, as amended) and are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. It is therefore illegal to deliberately capture, injure or kill an otter, possess an otter (dead or alive), or any other part of an otter, or intentionally or recklessly disturb otters. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a holt or other resting place used by an otter.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH).

Water voles

Water voles (*Arvicola amphibius*) are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended). It is an offence to possess, control or sell water voles or to intentionally kill, injure or take water voles. It is also an offence to intentionally or recklessly damage, destroy or obstruct access to a place that water voles use for shelter or protection or disturb water voles whilst using such a place.

A licence is required for catching/handling water voles, or for field surveys that are intrusive or disturbing where the surveyor suspects' water voles are present. A licence can be obtained by applying to the relevant statutory body (NE, SNH, and CCW,). Please note that the legislation does not permit licences to be issued in relation to development of land.

Hedgerows

The Hedgerows Regulations (1997) make provision for the protection of important hedgerows in England and Wales. The regulations affect hedgerows which are 20m or more in length, or connected at both ends to another hedgerow of any length.

They relate to hedgerows which are on, or adjoining land used for the following purposes: agriculture or forestry; the breeding or keeping of horses, ponies or donkeys; common land; village greens; Sites of Special Scientific Interest (which include all terrestrial SACs, NNRs, and SPAs) and Local Nature Reserves. They do not include hedges that is attached to, or marking the boundaries of a private house.

It is an offence to intentionally or recklessly remove or cause or permit another person to remove a hedgerow or intentionally or recklessly remove, or cause or permit another person to remove, a hedgerow which is the subject of a hedgerow retention notice.

Tree Preservation Order (TPO)

Part VIII of the Town and Country Planning Act (1990) and the Town and Country Planning (Trees) Regulations (1999) allows tree preservation orders (TPO) to be made by a Local Planning Authority in respect of trees or woodlands. This prohibits the cutting down, uprooting, topping, lopping, wilful damage, or wilful destruction of a preserved tree. Any tree is eligible for protection, regardless of age, species or size, no trees are automatically protected.

Tree Felling

Up to 5m³ of standing timber can be felled per quarter without requirement for a felling licence provided that no more than 2m³ is sold. There are a number of exemptions, refer to the Forestry Authority Website.

General Guidance on European Protected Species Licence Applications

Should a European Protected Species (EPS) be found on a development site, and where best practice guidance either cannot be followed or is not applicable an EPS licence will be required. The licence permits operations that otherwise would be unlawful and fall outside the Good Practice Guidance, an application for such a licence should be made to the relevant statutory body (NE, CCW or SNH) before any works can proceed. It is also possible to obtain a general licence that may cover an area rather than applying in each individual case for a separate specific/individual licence

Should the survey information be considered insufficient or the statutory body is not satisfied with the application, the licence application may be refused. This could potentially result in significant delays to a project, if not considered in time; however, early consideration of the potential presence of EPS on a site and an assessment of suitable mitigation measures to derogate such possibilities early in a project will negate this potential delay.

APPENDIX C

**CRITERIA FOR CLASSIFYING IMPORTANT
HEDGEROWS**

CRITERIA FOR CLASSIFYING IMPORTANT HEDGEROWS

Subject to regulation 8 (4), hedgerows are important for the purposes of the Hedgerow Regulations (1997) if:

- They have been in existence for 30 years or more; and
- They satisfy at least one of the criteria set out in Part II of Schedule 1 to the Regulations.

The criteria set out in Part II of Schedule 1 of the Hedgerows Regulations (1997) are as follows:

1. The hedgerow marks a boundary, or part of a boundary, of a pre-1820 parish or township.
2. The hedgerow incorporates an archaeological feature which is included in the schedule monuments under section 1 of the Ancient Monuments and Archaeological Areas Act 1979 or recorded in a Sites and Monuments Record.
3. The hedgerow is situated wholly or partly within an archaeological site included or recorded as mentioned above or on land adjacent to and associated with such a site and is associated with any monument or feature on that site.
4. The hedgerow marks the boundary of a pre-1600 estate or manor or is visibly related to any building or feature of such an estate or manor.
5. The hedgerow is an integral part of a field system pre-dating the Inclosure Acts or is part of, or visibly related to, any building or feature associated with such a system.
 - i. The hedgerow contains floral or faunal species that are protected under the Wildlife and Countryside Act (1981) as amended, categorised as 'endangered,' 'extinct,' 'rare,' or 'vulnerable' in Britain or bird species that are categorised as a declining breeder.
 - ii. The hedgerow includes one of the following:
 - a) At least seven woody species listed in Schedule 3 of the Regulations
 - b) At least six woody species and has at least three of the associated features specified below.
 - c) At least six woody species including Black Poplar, Large-leaved Lime, Small-leaved Lime or Wild Service Tree.
 - d) At least five woody species and has at least four of the associated features below.
 - e) In counties of northern England the number of woody species required to meet this criterion is reduced by one.
6. The hedgerow is adjacent to a bridleway or footpath, a road used as a public path or a byway open to all traffic and includes at least four woody species and has at least two of the features;
 - A bank or wall which supports the hedgerow at least one half of its length.
 - A ditch along at least one half of the length of the hedgerow.
 - Gaps which in aggregate do not exceed 10% of the length of the hedgerow.
 - At least an average of one standard tree per 50m of hedgerow. A standard tree, in the case of a single stemmed tree, is defined as one with a diameter of at least 20cm measured at a point 1.3m above natural ground level, or for a

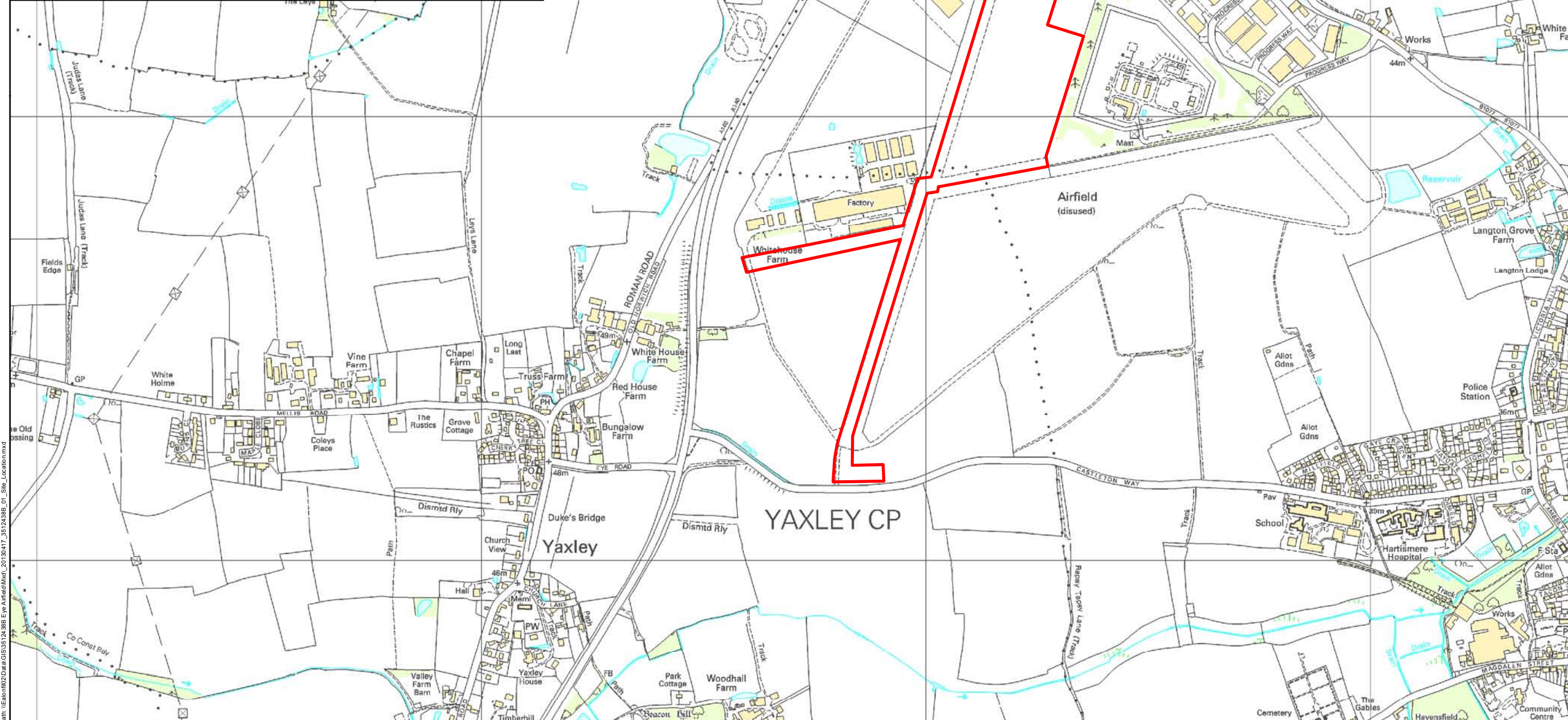
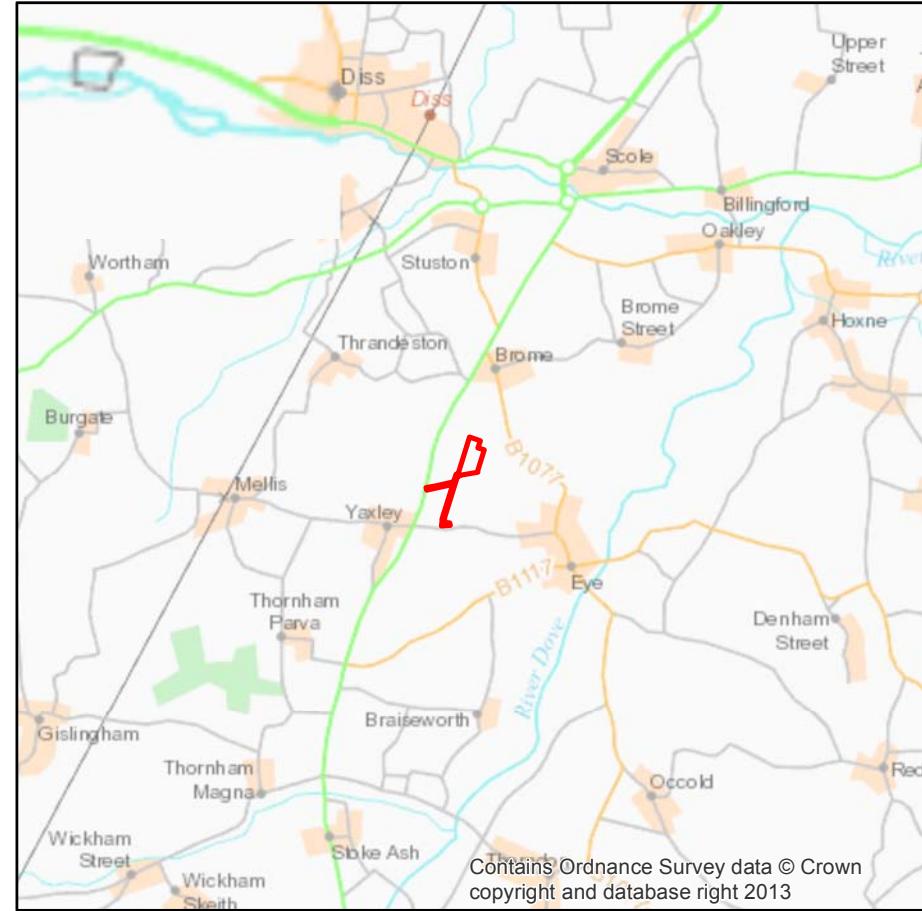
multi-stemmed tree, one with at least two stems whose diameters are at least 15cm measured at a point 1.3m above natural ground level.

- At least three ground flora woodland species (listed in Schedule 2 of the Regulations) within 1m, in any direction, of outermost edges of the hedgerow.
- Connections scoring four points or more, where a connection with another hedgerow counts as one and where a connection with woodland, in which the majority of trees are broad-leaved, or a pond counts as two.
- A parallel hedge within 15m of the hedgerow.

APPENDIX D

FIGURES AND TARGET NOTES

Target Note Number	Target Note
1	'Push-through' noted in fence, no signs of badger hairs or prints within the soft surrounding mud.
2	Standard trees along hedgerow – unsuitable for roosting bats.
3	Tall ruderal area - potential for foraging bats, birds and invertebrates.
4	Dense bramble growing over the top of a fence line - no signs of badger 'push-throughs' along NE boundary.
5	Sycamore plantation off-site – stand not of sufficient stature or supporting any signs of damage to be of value to roosting bats. Adjacent ride suitable for foraging and commuting bats.
6	Vegetated earth bank restricting vehicular access.
7	Large spoil heap covered with ruderal vegetation and grasses with no signs of badger excavation. Small rubble piles present behind.
8	Recently cut area of tall ruderal vegetation and scattered scrub – no signs of badgers.
9	Adjacent buildings off-site – largely unsuitable for roosting bats as constructed from asbestos material. Small area of wooden cladding may be suitable for a smaller / transient roost.
10	Tree line bordering A140 road verge – unsuitable for roosting bats.
11	Scattered ash trees – no structural features suitable for roosting bats.
12	Plantation off-site, with ash, poplar spp., silver birch and sycamore. Semi-mature ash and sycamore pollarded along the field edge. Unsuitable for roosting bats due to sufficient size and stature of stand and absence of structural damage.



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Notes
 Site Boundary

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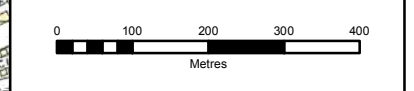
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Drawing Title: **Site Location**

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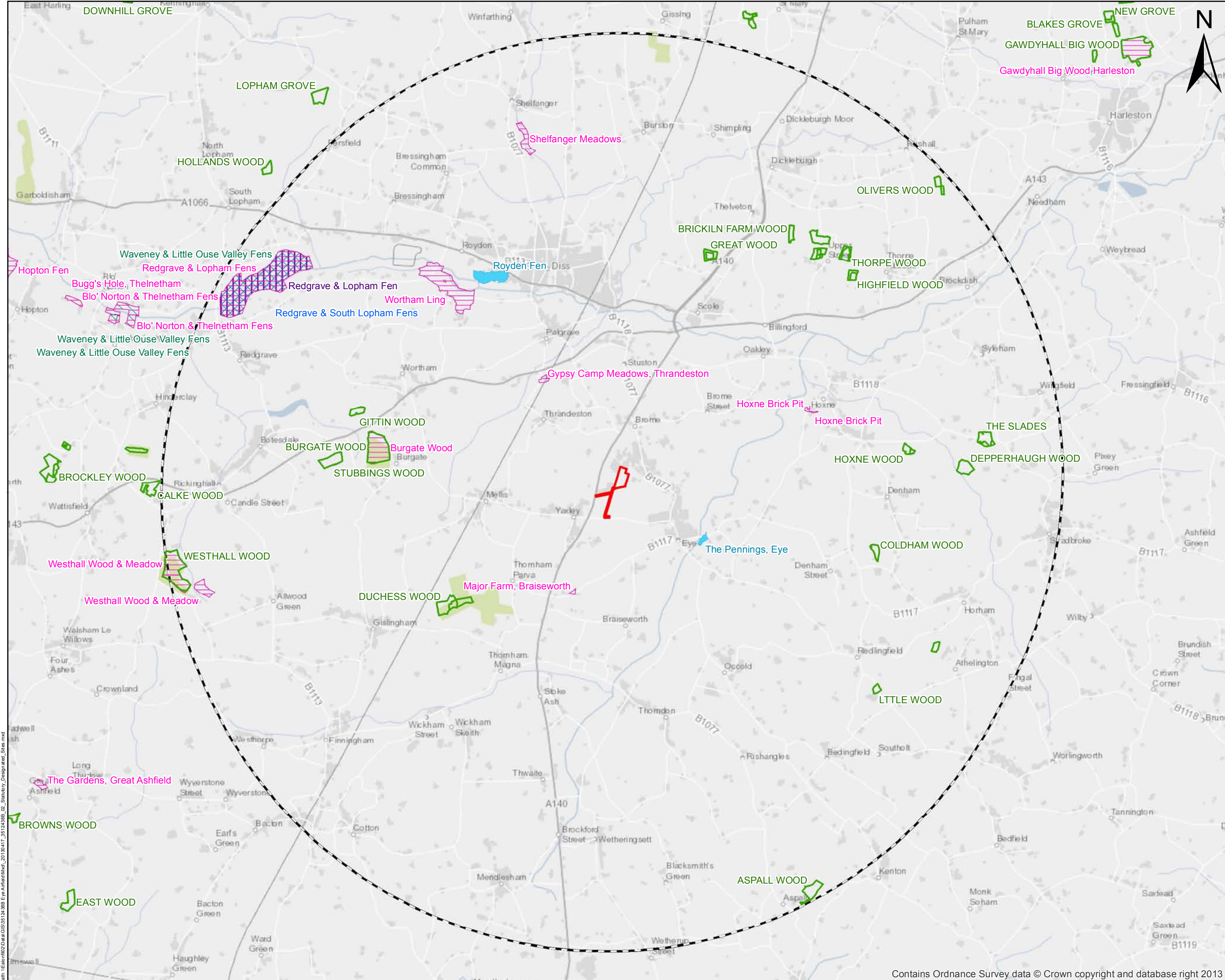
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Notes

- Site Boundary
- 10 km Study Area
- Ancient Woodland
- Site of Special Scientific Interest
- Special Protection Area
- Special Area of Conservation
- Ramsar Site
- National Nature Reserve
- Local Nature Reserve

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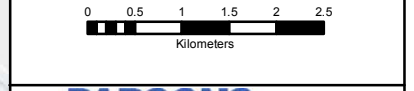
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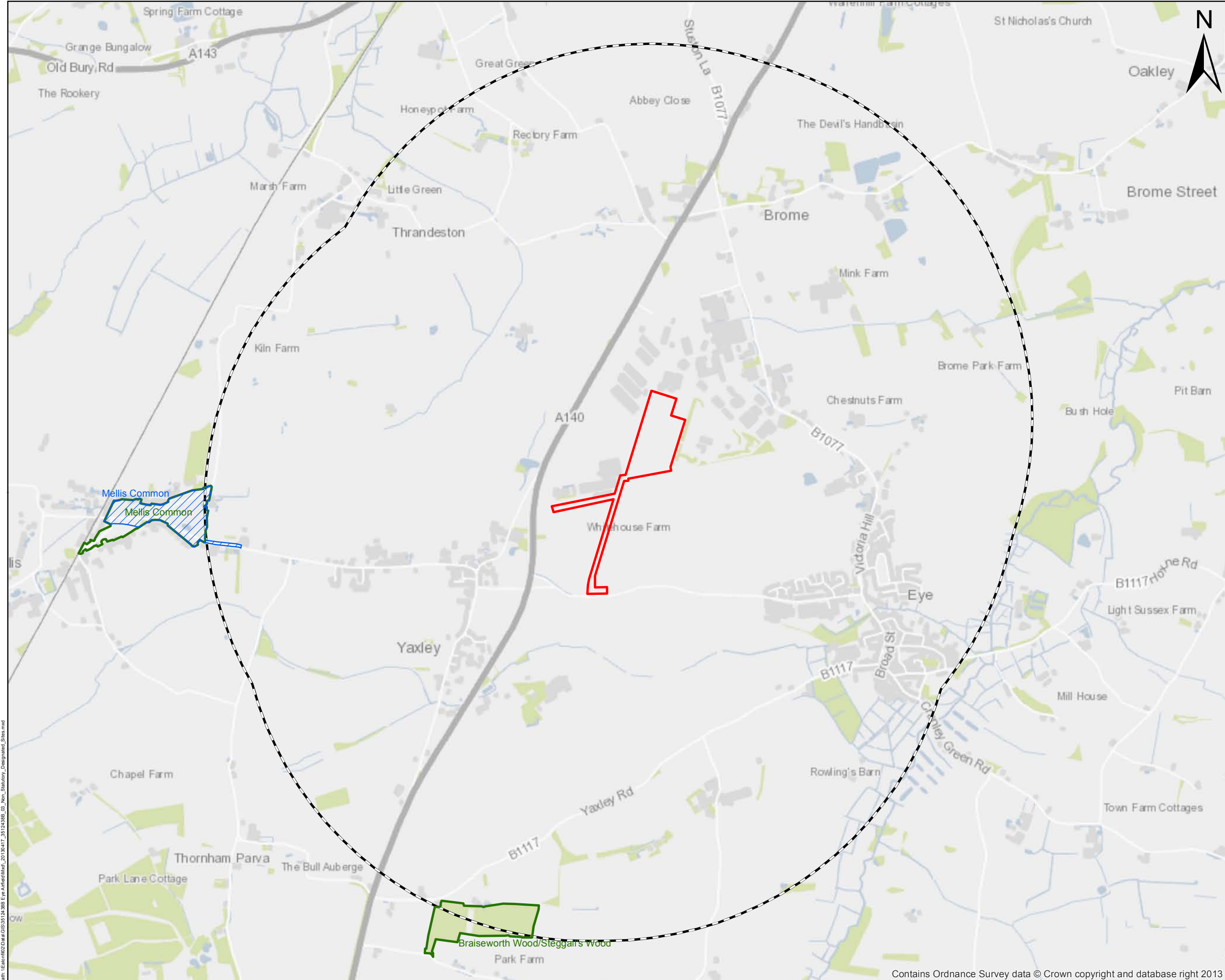
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- Notes
- Site Boundary
 - 2 km Study Area
 - County Wildlife Site
 - Suffolk Wildlife Trust Reserve

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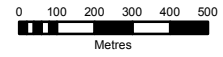
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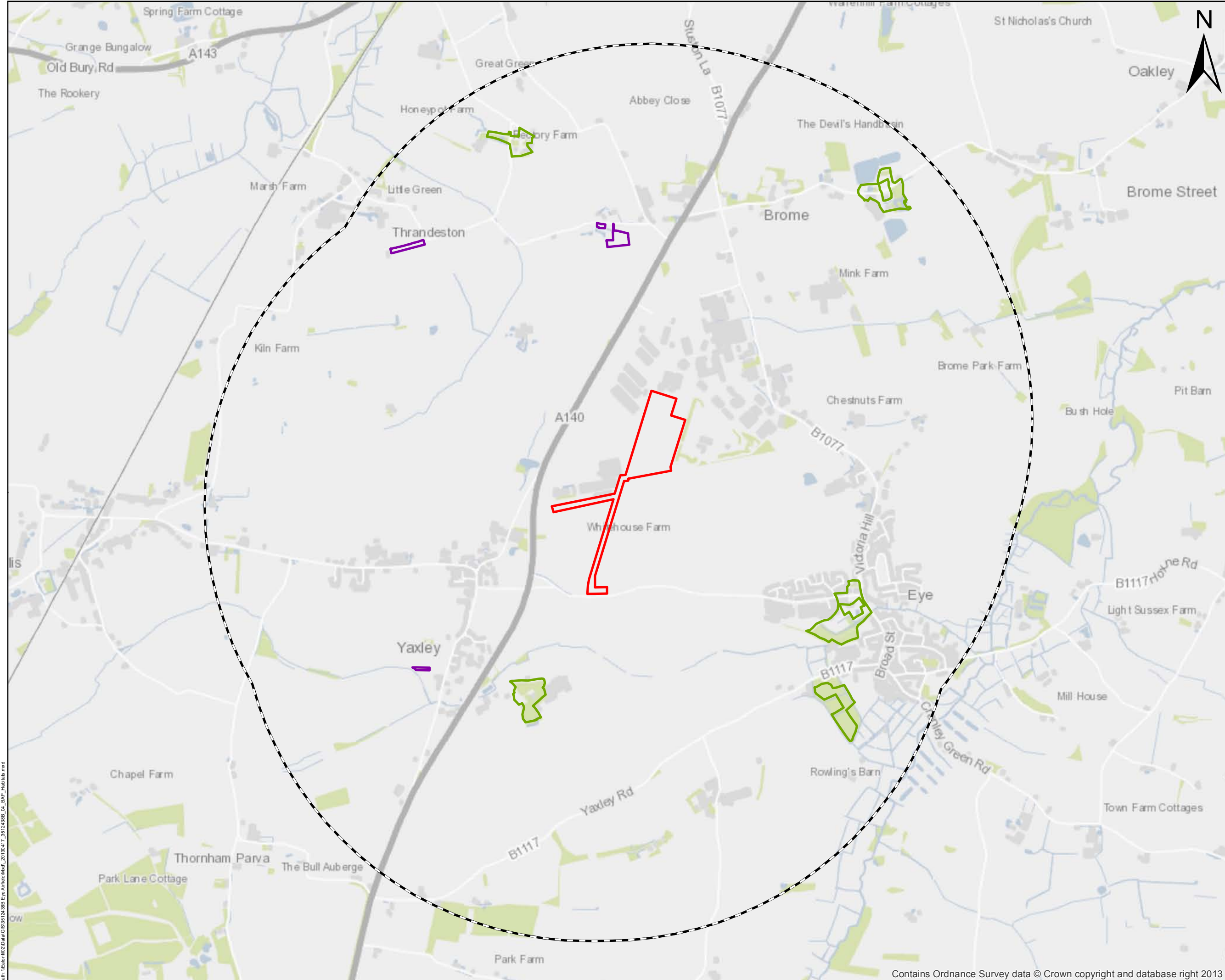
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- Notes
- Site Boundary
 - 2 km Study Area
 - Deciduous Woodland
 - Traditional Orchards

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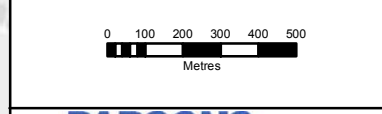
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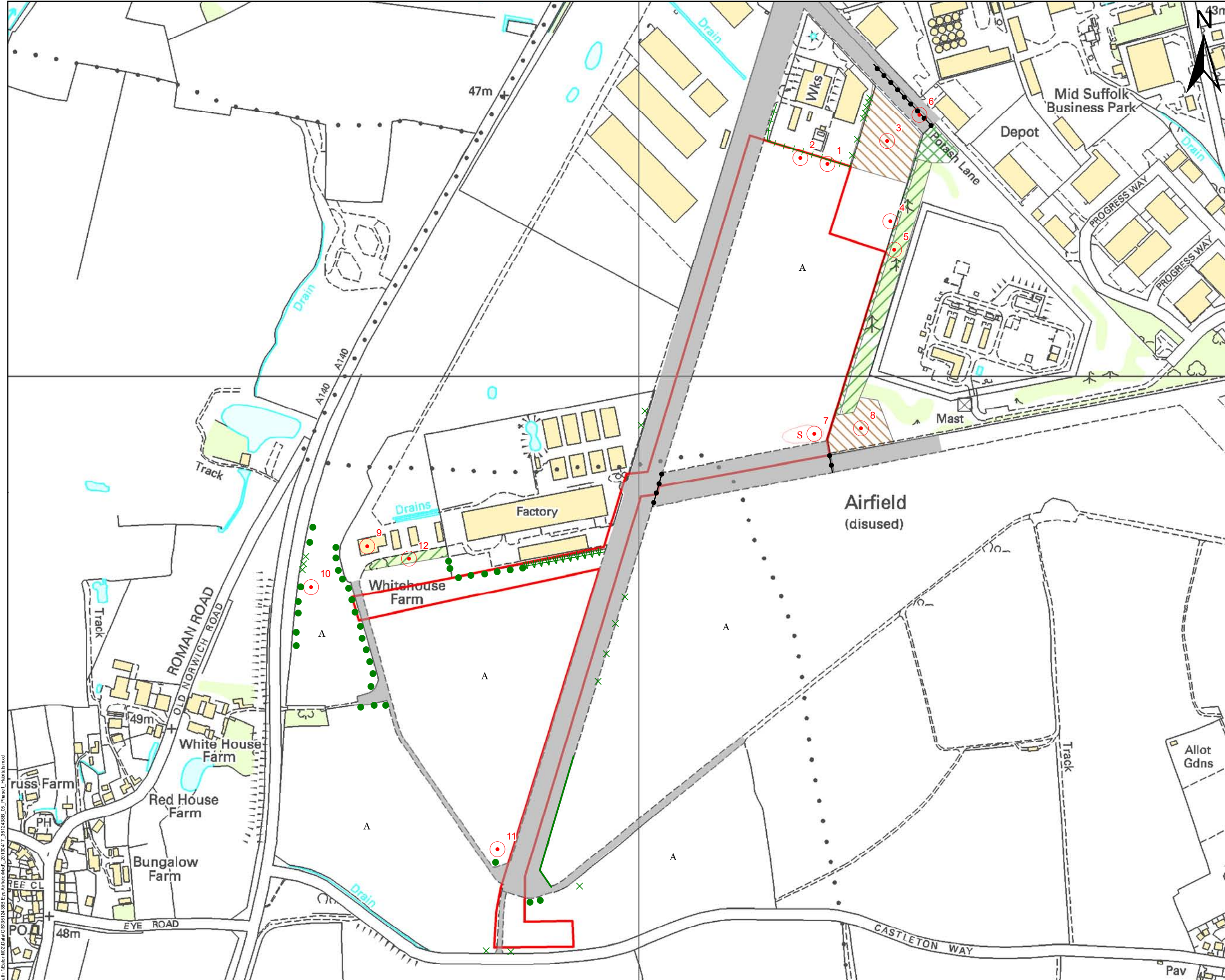
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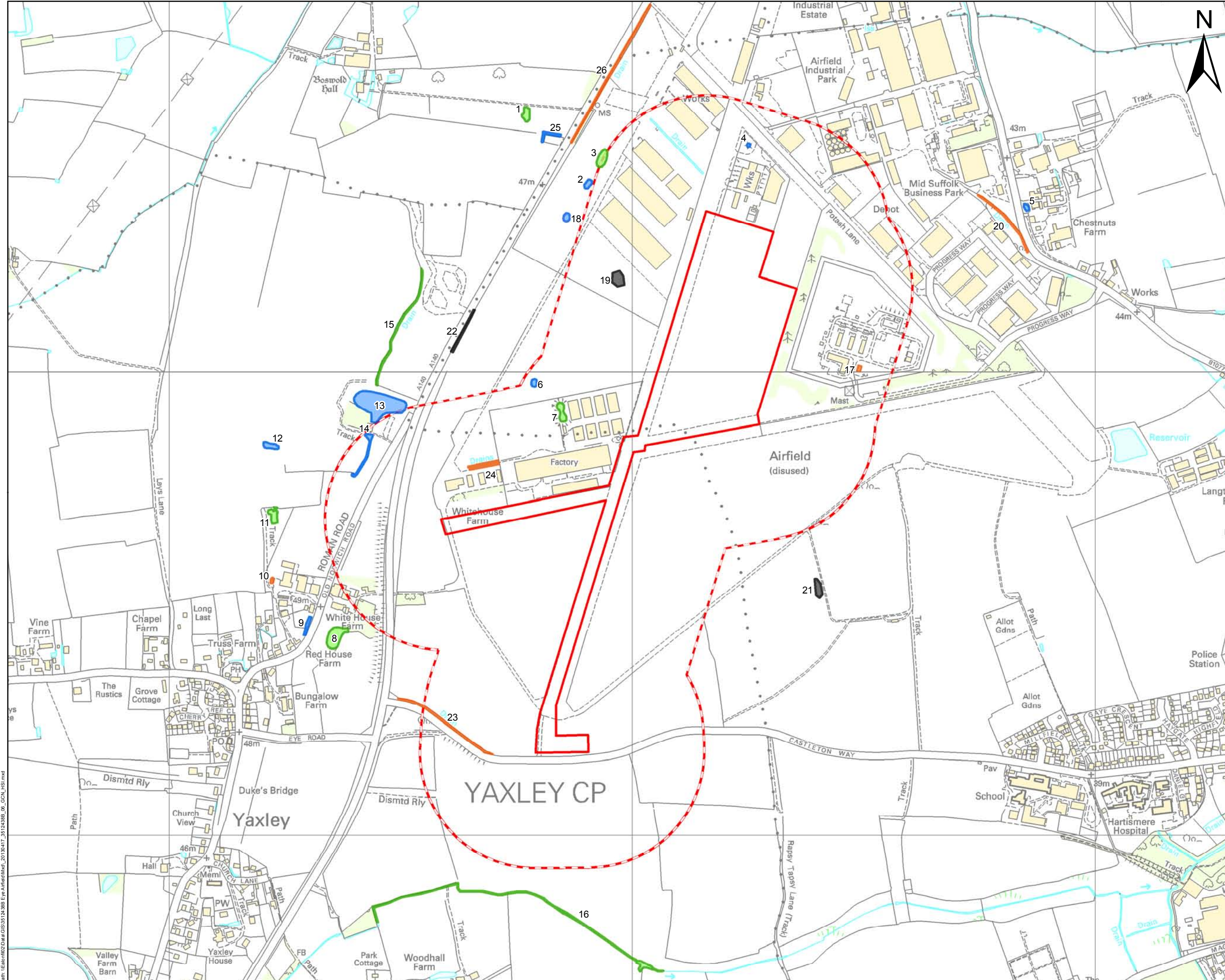
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- Notes
- Site Boundary
 - x Scrub - scattered
 - Broad-Leaved Parkland/scattered trees
 - A Cultivated/disturbed land - arable
 - Target note
 - Earth bank
 - W Hedge with trees - native species-rich
 - + Hedge with trees - species-poor
 - Intact hedge - species-poor
 - ▨ Broadleaved woodland - plantation
 - ▨ Scrub - dense/continuous
 - ▨ Other tall herb and fern - ruderal
 - S Spoil
 - Hardstanding

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Job Title				Eye Airfield		
Drawing Title				Phase 1 Habitats		
Scale at A3				1:5,000		
Drawn				CD		
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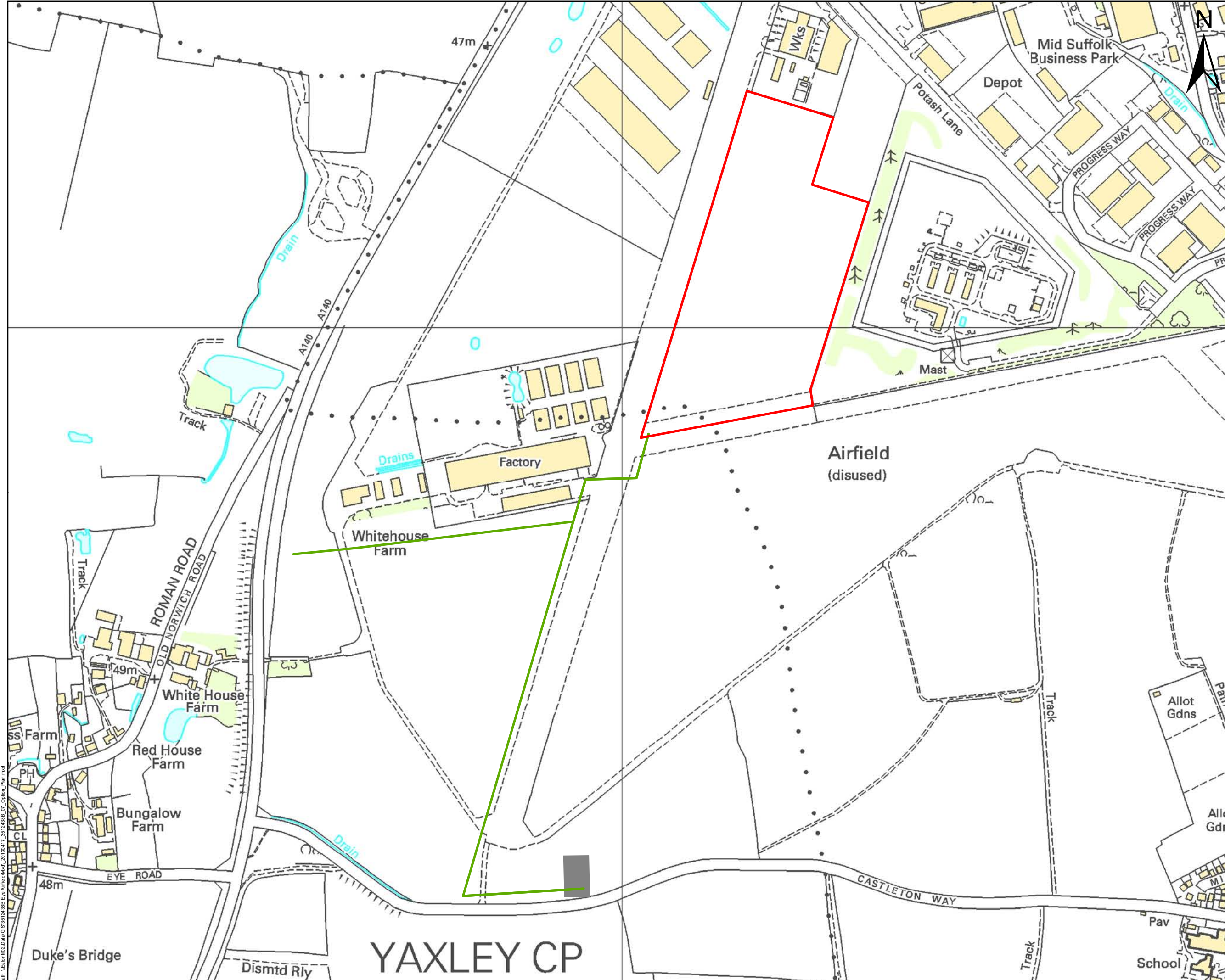


- Notes
- Site Boundary
 - 250 m Study Area
 - 500 m Study Area
- Habitat Suitability Index
- No Longer Exists
 - Below Average
 - Average
 - Good

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- Notes
- Boundary of land subject to Option Agreement
 - Proposed Gas Route Corridors
 - Gas Connection AGI



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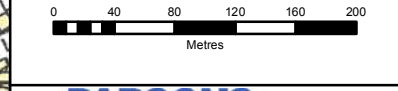
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