Brigg 2 Power Station

Environmental Impact Assessment Scoping Report

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Revision Schedule

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1 Executive Summary

Introduction

1.1 Centrica Brigg Ltd proposes to construct a new 2 GW Combined Cycle Gas Turbine (CCGT) power station adjacent to the existing Glanford Brigg Power Station at Scawby Beck, Brigg, North Lincolnshire.

1.2 An Environmental Impact Assessment (EIA) will be undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009.

Proposed Development

1.3 The proposed development site is shown on Figure 1. The main development site is located to the south of the residential areas of Scawby Beck and Brigg, and to the north of the existing power station. The land has previously been used by British Sugar as a sugar beet factory and associated landfill. The New River Ancholme runs along the eastern boundary of the site and Scawby Beck runs through the northern part of the site.

1.4 An indicative layout for the proposed development is shown on Figure 2. The proposed CCGT power station will comprise four single shaft power units each comprising air cooled condensers, turbine hall, heat recovery steam generator and stack. There will also be associated infrastructure including an administration building, workshop/stores, process water and waste water treatment plants, GIS substation, new access road and flood mitigation ponds. The height of the stacks will be determined by air quality dispersion modelling, and may be up to 100 m high. Buildings will be between 10 and 55 m high.

1.5 Areas have been set aside for future construction of carbon capture and storage (CCS) technology, partly including the site of the existing power station which will reach the end of its nominal design life in 2018.

1.6 A new gas pipeline and electricity lines will also need to be constructed but these will be the subject of separate planning consent applications.

1.7 Centrica is seeking a Development Consent Order (DCO) for the new power station under the terms of section 37 of the Planning Act 2008, which replaces the former route to consent (under the Electricity Act 1989) for new onshore power stations over 50 MW in England and Wales, and other Nationally Significant Infrastructure Projects (NSIPs) as defined by the Planning Act.

1.8 The application for the DCO will be made to the Infrastructure Planning Commission (IPC) or other Government body if (as the new Government has indicated) the IPC is abolished and replaced with another body for handling major infrastructure applications.

1.9 The need for new gas fired power stations to ensure security of UK energy supply as part of a diverse energy mix is set out in Government energy policy including the White Paper 'Meeting the Energy Challenge' (DTI, 2007) and the draft National Policy Statements on Energy and Fossil Fuels (DECC, 2009).

Planning and Environmental Context

1.10 The planning and environmental context of the proposed development site and development has been considered to inform the scoping of the EIA. Key considerations include:

- land allocation for industrial use across part of the proposed development site;
- the historic use of the land and associated ground contamination;
- the land-take of Agricultural Land Classification Grade 3 (good/moderate) land;
- environmental impacts associated with generation of road traffic during construction, but no significant increase in operational traffic;
- nearby watercourses, the New River Ancholme and Scawby Beck;
- underlying principal aquifer and groundwater source protection zone;
- parts of the site lie within Flood Zones 1, 2 and 3a (low, medium and high probability of flooding respectively);
- air and noise emissions from the new power station;
- nearby residential properties, the closest being located in Scawby Beck and Brigg to the north of the proposed development site;
- Silversides Site of Nature Conservation Interest within the north-west area of the site, a local nature conservation designation;
- presence of protected species within the site (surveys to confirm details are currently being undertaken);
- landscape and visual impacts associated with the size and massing of the proposed development within the flat topography of the surrounding land;
- a number of designated and undesignated cultural heritage resources located within the study area including a scheduled monument approximately 30 m to the north of the proposed development site and listed buildings and a conservation area in Brigg; and
- remediation and earthworks could generate significant quantities of waste material.

Proposed Scope of EIA

1.11 Following consideration of the nature of the proposed development, the site and surrounding area, and the potential environmental effects, the following topics have been scoped into the EIA:

- planning policy;
- contaminated land;
- water resources;
- air quality and dust;
- noise and vibration;
- ecology and nature conservation;

- landscape and visual amenity;
- cultural heritage; and
- waste and resource management.

1.12 The following topics have been scoped out of the EIA because no significant environmental effects are predicted to occur:

- socio-economics; and
- agriculture and land use.

1.13 A standalone Flood Risk Assessment, Transport Assessment and Geo-Environmental Assessment will be prepared to support the application for development consent.

1.14 The EIA will be undertaken in accordance with relevant legislation, best practice guidance and standard methodologies.

1.15 Impacts will be considered on the basis of their magnitude, duration and reversibility. Cumulative and combined effects will also be considered where appropriate. Significance will be evaluated on the basis of the scale of the impact and the importance or sensitivity of the receptors, in accordance with standard assessment methodologies (major, moderate, minor and not significant).

1.16 Where significant environmental effects are identified in the assessment process, measures to mitigate these effects will be put forward in the form of recommendations, and agreed with the project team.

1.17 The following assessment scenarios are proposed for the EIA:

- Existing Baseline 2010 (No Development);
- Future Baseline 2033 (No Development);
- Construction 2014 (With Development);
- Opening 2018 (With Development); and
- Operation 2033 (With Development).

1.18 The ES will set out the process followed during the EIA including the methods used for the collection of data and for the identification and assessment of impacts. Any assumptions made will be clearly identified. The main Environmental Statement will be accompanied by a Non Technical Summary in accordance with legislative requirements.

2 Introduction

Background

2.1 Scott Wilson Ltd has been commissioned by Centrica Brigg Ltd to prepare an Environmental Impact Assessment (EIA) Scoping Report for a proposed 2 GW Combined Cycle Gas Turbine (CCGT) power station adjacent to the existing Glanford Brigg CCGT Power Station (see Figures 1 and 2 and Appendix A, photograph 1).

2.2 This Scoping Report considers the environmental context of the site and the potential environmental effects of the proposed development. Potentially significant environmental effects are identified and scoped into the EIA for detailed assessment, and other issues are scoped out. Environmental specialists will work with the design team throughout the EIA and design processes to mitigate significant environmental effects where they are predicted to occur. The final proposed development and findings of the EIA will be reported in an Environmental Statement (ES) under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations).

Scoping Objectives

2.3 The objectives of the scoping process are to:

- consider the nature of the scheme, including its purpose, physical characteristics, land use requirements and alternatives;
- identify and describe the key environmental issues that the EIA should consider;
- identify the environmental issues that are not relevant to the EIA;
- define the extent to which environmental topics need to be investigated including cumulative impacts, and the methodology for assessment; and
- enable consultation with statutory consultees.

3 Description of the Proposed Development

Site Location

3.1 The location and extent of the proposed development site is shown on Figure 1. The site is located to the north of the existing Glanford Brigg Power Station in Scawby Brook, Brigg, approximately 10 km south-east of Scunthorpe town centre and 2 km south of the M180 motorway in North Lincolnshire.

3.2 The New River Ancholme forms the eastern boundary of the site (see Appendix A, photograph 2). The village of Scawby Brook borders the site's north-western boundary and Brigg is located to the north-east. Arable fields surround the site to the east, south and west (see Appendix A, photograph 3). A railway line forms the south-eastern boundary of the proposed development site.

Historic and Existing Site Uses

3.3 The new power station is to be located on land previously owned by British Sugar, much of which was used for the operation of a sugar beet processing factory. British Sugar is understood to have first occupied the site in 1928 and production ceased in the early 1990s.

3.4 The existing power station was opened in 1993 and has an engineering design life of 25 years depending on the prevailing economic situation. Extensive modification was completed in 2001 to improve the station's ability to meet more flexible operational requirements. The existing power station currently generates up to 260 MW and is accessed along a road off the B1206 Scawby Road (see Appendix A, photograph 4).

Site Description

3.5 The site is relatively flat but levels across the site to the north of the existing power station vary as a result of previous landfill operations associated with the sugar beet factory. The existing power station is located on slightly lower land (approximately 2.5-3 m Above Ordnance Datum (AOD). The northernmost part of the development site, to the west of the Glanford Leisure Centre is also slightly lower, approximately 2-3 m AOD. The main development area ranges from approximately 3 to 8 m AOD.

3.6 Scawby Beck (also known as Scawby Brook, but referred to as Scawby Beck throughout this report to avoid confusion with the village of Scawby Brook), a maintained stream, enters the site at the western boundary and flows in a northerly direction (see Appendix A, photograph 5), exiting the site at the north-western corner of the site, travelling through a culvert through the flood bank, with a tidal flap valve on the downstream side before running east to join the New River Ancholme. The New River Ancholme is designated a main river and is maintained by the Environment Agency (see Appendix A, photograph 2). Normal water levels are controlled by the Environment Agency at a sluice at Ancholme Outfall to the Humber.

3.7 High voltage (132 kV) overhead lines run along the eastern boundary of the site, connecting the existing power station to the electricity grid, via an underground cable section through the village.

3.8 An existing approximately 14 km 300 mm steel National Transmission System (NTS) high pressure gas pipeline transports natural gas to the existing power station from Blyborough gas compound, to the south (see Figure 1).

3.9 The total area of the proposed development site is approximately 55 ha.

Proposed Development

Basic Principles of a CCGT Power Station

3.10 In a CCGT power station natural gas fuel is fired in the gas turbine combustion system to drive the gas turbine, which is connected to a generator producing electricity. A considerable amount of heat remains in the gas turbine exhaust, and this is passed into a Heat Recovery Steam Generator (HRSG), a type of boiler, to make steam to generate additional electricity via a steam turbine. The exhaust steam from the steam turbine is condensed back into water which is returned to the HRSG to continue the process.

3.11 The efficiency of energy converted into electricity by a modern CCGT power station is in the range of about 55-60%, which is considerably higher than that for a standalone gas turbine or a conventional coal, oil or gas fired steam turbine generating plant..

Plant Description

Introduction

3.12 The proposed new 2 GW CCGT power station is referred to as Brigg 2 Power Station. The efficiency of the plant is expected to be above 55%. The plant will operate continually throughout the year for an expected period of 25 years.

3.13 The new power station will, wherever possible, be totally independent of the existing power station, with the exception of the access road and electrical grid connection.

Main Plant Layout

3.14 This section describes the station design and layout as currently envisaged. The plant will consist of four single shaft CCGT power units housed within separate turbine halls (approximately 30 m high) with a combined generating capacity up to 2000 MW (the exact generating capacity will depend on the choice of plant manufacturer since the capacities differ on different machines). The four power units will be almost identical to one another, housed in separate buildings with sufficient space between them for maintenance and access.

3.15 Each power unit will have a related HRSG/ boiler (approximately 50 m high), stack and air cooled condenser (ACC). The flue gases will discharge up through the stacks, the height of which is estimated to be up to 100 m but this will be confirmed during the dispersion modelling.

3.16 Cooling for the plant shall be through ACCs (approximately 40 m high), which will minimise the amount of water that will be required for cooling the plant. Each power unit shall have its own dedicated bank of ACC.

3.17 In addition to the four power units there will be an auxiliary plant area which will consist of one and two storey buildings to accommodate the following:

- administration and control building;
- workshop and stores;
- water treatment plant;
- waste water treatment plant (WWTP);
- water storage tanks;
- diesel generator; and
- two auxiliary boilers.

3.18 An indicative layout is shown Figure 2.

Fuel Source

3.19 The fuel source for the turbines will be natural gas supplied from the National Grid Transmission network. The current power station is supplied from a feed from the Blyborough gas compound to the south of the site. A new gas supply is required to provide sufficient flows for the new power station. It is anticipated that this new gas pipeline will follow a similar route to the existing gas pipeline, and it will enter a new gas receiving area at the site where the supply will be filtered, measured and the pressure regulated to suit the requirements of the new power station. This new gas pipeline will be subject to a separate application.

Transmission

3.20 Attached to each generator is a 400 kV step up transformer, which connects via underground cables to the new gas insulated switchgear (GIS) substation located at the north-east corner of the site. From here National Grid are responsible for transferring the electricity to their existing 400 kV substation at Keadby to the north.

Water and Wastewater Requirements

3.21 High quality water (demineralised) is required for the boilers. This water will come from either the existing mains or abstracted from an adjacent river source, and then treated on site. This requirement of water is expected to be in the range of 12 to 18 m^3/hr, and sufficient storage will be available on site to suit the security of the incoming water supply.

3.22 Effluent from the plant shall be treated and neutralised, where necessary, through an on site WWTP prior to being discharged from the site. Surface water runoff shall be attenuated as necessary to keep the peak discharge below the maximum allowable for the development. Foul water shall be connected to the nearest public foul sewer if possible; alternatively it may be treated locally on site prior to discharge.

Foundations and Bulk Earthworks

3.23 The proposed development site will need to be remediated where significant contamination occurs and reprofiled to create the development platform. A remediation and earthworks strategy will be prepared with the intention of balancing cut and fill volumes, but some waste materials may be generated.

3.24 It is envisaged that the foundations for all the heavy equipment will require support on piles.

Carbon Capture and Storage

3.25 The proposed development will also incorporate areas set aside for the future installation of carbon capture and storage (CCS) technology. A 34,000 m^2 area to the south of the site (where the existing power station is currently located) and a 45,000 m^2 area to the west (where the former settling ponds are located) has been identified for future CCS technology.

Access

3.26 Permanent access to the site will be through an extension of the access road that currently serves the existing power station. A temporary construction access may be installed to the north to facilitate the transportation of abnormal load deliveries to the site during construction (see Appendix A, Photograph 6).

Staff

3.27 It is anticipated that up to seven additional permanent full time equivalent jobs will be created in a range of occupations with the existing Brigg power station staff being retained. In addition 200 maintenance outage staff will be required for a twelve week period for two years out of every four.

3.28 A number of temporary jobs will be created during the construction period, a significant proportion of which are anticipated to be filled from within the local area.

Planning Process

3.29 Centrica is seeking a Development Consent Order (DCO) under the terms of section 37 of the Planning Act 2008, which replaces the former route to consent (under the Electricity Act 1989) for new onshore power stations over 50 MW in England and Wales, and other Nationally Significant Infrastructure Projects (NSIPs) as defined by the Planning Act.

3.30 The application for the DCO will be made to the Infrastructure Planning Commission (IPC). All 'associated' works such as roads and transmission infrastructure and other ancillary development will also be considered by the IPC.

3.31 Following the recent change of Government, a statement made to Parliament by the Minister for Decentralisation on 29th June 2010, confirmed the abolition of the IPC as an independent body. It did, however, state the desire to retain the skill and expertise needed to provide an efficient and democratically accountable fast-track process for infrastructure projects.

3.32 The Government's intention is to establish a Major Infrastructure Planning Unit as part of the Planning Inspectorate within the Department for Communities and Local Government. Primary legislation will be required for these new arrangements which will take time to put in place. The Government also stated that it intends to press ahead with development of the National Policy Statements (NPS).

3.33 Until new legislation is in place the IPC will continue in its present role and transitional provisions will allow for applications to be examined without interruption. During this time, if an application reaches decision stage and the relevant NPS has been designated, the IPC will decide the application. If the NPS has not been designated, the IPC will make a recommendation to the Secretary of State, who will make the decision.

3.34 Public consultation on the draft Energy NPSs (published by the Department of Energy and Climate Change in November 2009) was completed in February 2010 and these NPSs are now undergoing parliamentary scrutiny. The following are relevant to the proposals at Brigg:

- the Draft Overarching NPS for Energy (EN-1); and
- the Draft NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2).

3.35 Following submission to the IPC, schemes will be assessed against the relevant NPS and there is a requirement for the applicant to demonstrate that they have consulted widely on their scheme. Local authorities will play a major role in the consultation exercise which will culminate in the production of a Consultation Report. Once proposals are formally lodged with the IPC, it will make a decision within 35 weeks.

Need for the Proposed Development

3.36 The Energy White Paper 'Meeting the Energy Challenge' published in 2007 by the Department for Trade and Industry, which formed the basis of the Energy Act 2008, set out the Government's plans for tackling climate change by reducing carbon emissions whilst ensuring the availability of secure, clean, affordable energy.

3.37 The White Paper and the recent Draft Overarching NPS for Energy (EN-1) (DECC, 2009) both emphasise the importance of a diverse mix of energy generating technologies, including renewables, nuclear and fossil fuels, to avoid over-dependence on a single fuel type and thereby ensure security of supply.

3.38 Changes to the current mix of energy generating plant will occur as a large number of existing oil, coal and nuclear power stations close over the next 10-15 years due to the requirements of the European Large Combustion Plant Directive and/or as plants reach the end of their operational lives. Projections quoted in the Draft Energy NPS indicate 22 GW of electricity generating capacity will close over this period (DECC, 2009). This creates a significant need for new major energy infrastructure.

3.39 The long lead-in for new nuclear power stations means that new fossil fuel and renewable generating capacity will need to be progressed relatively quickly to meet demand.

3.40 Renewable energy is important to achieve the UK's targets for reductions in carbon emissions, but the Draft Energy NPS also emphasises the benefits of fossil fuel power stations as they can be operated more flexibly in response to changes in energy demand compared to renewable energy technologies.

3.41 Generating electricity from gas is more efficient than other fossil fuels such as coal, resulting in significantly lower carbon dioxide emissions per MW from gas-fired power stations compared to coal-fired power stations.

Alternatives

3.42 Alternatives to the proposed development include:

- similar development at an alternative site;
- alternative developments within the proposed development site; and

- 'do nothing'.

Alternative Sites

3.43 Centrica are continually considering potential sites for new power generation development. As well as the proposed development site at Brigg, a number of other sites have been considered recently for new CCGT power stations. These have included sites at:

- Hillhouse, Blackpool;
- Bedford;
- Peterborough;
- Meaford, Stafford;
- Kings Lynn;
- Roosecote, Cumbria; and
- Langage.

3.44 A range of factors are considered in the selection of power station development sites, many of which relate to the commercial viability of development. These include:

- availability and suitability of land (e.g. size including not only the power generation technology but also land available for future CCS technology and lay down areas for construction);
- site constraints including topography and ground conditions;
- distance to electricity grid connection and gas supply connection;
- cost associated with electricity grid connection and gas supply connection; and
- accessibility.

Alternative Developments

3.45 The majority of the site is allocated for industrial development and a range of industrial uses may be appropriate for the site.

3.46 Alternative layouts and technologies for the new CCGT power station have been considered through the concept design process. The proposed technologies have been selected on the basis of the site's constraints. For example ACCs are proposed instead of water cooling because the River Ancholme cannot provide sufficient water.

3.47 The layout has been designed to optimise operational efficiency and minimise environmental impact. The design will be further refined throughout the EIA process.

Do Nothing

3.48 If no development is undertaken on the site, the area would remain vacant and the contamination on site would be unlikely to be remediated.

Consultation

3.49 Extensive consultation will be undertaken during the preparation of the application, including consultation with statutory and non-statutory consultees and public exhibitions.

3.50 A number of stakeholders have already been contacted to request baseline data to inform the environmental assessment, including:

- Natural England;
- Environment Agency;
- Ancholme Internal Drainage Board;
- Anglian Water;
- North Lincolnshire Council;
- Lincolnshire Environmental Records Centre;
- Lincolnshire Wildlife Trust; and
- English Heritage.

3.51 A Statement of Community Consultation is currently being prepared in consultation with North Lincolnshire Council. This will define the strategy for community consultation.

Programme

3.52 Centrica propose to submit the planning application in 2011.

3.53 Subject to planning approval being granted, work on site is anticipated to commence in 2014 and will be consist of approximately one year of ground preparation works followed by approximately three years of construction. The construction phase is therefore anticipated to be completed by 2018 and the power station is expected to open that year.

4 Planning and Environmental Context

Planning Policy

4.1 To fully understand how the proposed development fits with relevant planning policies a review of the planning context related to the proposed new power station and associated infrastructure will be completed as part of the EIA process. A summary of key policy is set out below.

National Planning Policy

4.2 As mentioned in Section 2 above, the Government released the Draft Overarching NPS for Energy (EN-1) (DECC, 2009) which sets out the Government's policy for delivery of major new energy infrastructure in England and Wales. This has been issued alongside five technology-specific NPSs, of which the Draft NPS for Fossil Fuel Electricity Generating Infrastructure (EN-2) is relevant to this proposal.

4.3 The NPSs are intended to provide the IPC with guidance in determining DCO applications for NSIPs. EN-1 in particular describes the government's energy and climate change strategy, and defines the need for major new energy infrastructure.

4.4 The policies within EN-1 reflect the UK Low Carbon Transition Plan (DECC, 2008) which sets out a detailed low carbon transition plan to 2020. Underlying the climate change strategy is a legally binding target of cutting emissions by 80% by 2050 compared to 1990 levels, set in legislation by the 2008 Climate Change Act. The Government's five steps to meet this target are:

1. protecting the public from immediate risk;
2. preparing for the future;
3. limiting the severity of future climate change through a new international agreement;
4. building a low carbon UK including: cutting emissions, maintaining secure energy supplies, maximising economic opportunities, and protecting the most vulnerable; and
5. supporting individuals, communities, and businesses to play their part.

4.5 As described in Section 2 above, EN-1 also establishes a significant need for new major energy infrastructure over the next 10-15 years, including fossil fuel energy generation (constructed and operated in line with climate change goals) as part of a diverse mix of energy generating technologies. It also identifies that although demand for electricity generation in 2020 is likely to be similar to 2009 levels, beyond this date the decarbonisation of heat and transport may result in the need for greater national generating capacity. EN-1 states that '*the IPC should start its assessment of applications for infrastructure covered by the energy NPSs on the basis that need has been demonstrated*" (EN-1, pg 14).

Local Planning Policy

4.6 Following the revocation of regional strategies on 6 July 2010 the statutory development plan for the relevant local authority comprises the saved policies contained in the adopted North Lincolnshire Local Plan (2003).

4.7 In determining planning applications, guidance states that local planning authorities should also have regard to other material considerations, including national policy.

Land Use Allocations

4.8 The existing power station is not accompanied by a specific land use allocation in the North Lincolnshire Local Plan. The former British Sugar site on which the proposed new development would be sited is identified in Policy IN9-1 as being suitable for industrial uses including Class B1, B2 and B8.

4.9 Policy IN8 (Former British Sugar Site) provides further guidance. It is stated that,

> *"Planning permission for new industrial development will be allowed for Use Class B1 business development, Use Class B2 general industrial development and Use Class B8 warehouse and storage development at the former British Sugar site, Scawby Road, Scawby Brook, Brigg.*
>
> *Proposals will be required to achieve a high standard of landscaping".*

4.10 The supporting text states that the open flat topography of the location is highly visible from the surrounding area and, with the exception of the power station, the site is surrounded by the New River Ancholme and Grades 2 and 3 agricultural land. It suggests that there is a requirement for a high standard of landscaping within the site to mitigate the effect of industrial development on the landscape and nearby housing.

4.11 This is in addition to the 'buffer areas' allocated in Policy IN6 (Defined Industrial Buffer Areas) which are located on all sides of the former British Sugar site and to the south of the existing power station. It is intended that the allocation of the buffer areas will help to mitigate the effect of industrial development on the landscape and the amenity of existing and proposed residential areas.

Emerging Policy and Other Material Considerations

4.12 The saved policies of both the North Lincolnshire Local Plan will eventually be superseded by the Local Development Framework (LDF). The North Lincolnshire LDF will be made up of a suite of documents which will guide development over the Plan period.

4.13 The North Lincolnshire Core Strategy is well advanced and is scheduled to undergo examination in September 2010 and adoption by April 2011.

4.14 The Core Strategy Submission Version (May 2010) does not identify specific site policies and does not directly consider the development of new power generating facilities. More generally Spatial Policy 7 (Efficient Use and Management of Resources) seeks to ensure the efficient use of non-renewable resources, maximise recycling of minerals and waste products, minimise pollution, maintain and improve air, soil and water quality, and employ sustainable building practices in new development.

4.15 It is also of interest to note that supporting paragraph 11.21 recognises that it will be a key issue for the LDF to reconcile the need to reduce reliance on fossil fuels such as coal, oil and gas by generating energy from renewable resources with the need to protect and enhance our landscapes and minimise their impact on communities.

Socio-Economics

4.16 In terms of broad socio-economic indicators North Lincolnshire is generally above the regional average. Economic activity among the working age population in Brigg and Goole is 81.2% which is higher than the local authority, regional and national averages. Average gross weekly pay in North Lincolnshire is £461.20 which is 4% higher than the county average and 1.9% higher than the regional average, although it is 7.5% lower than the national average. The claimant count in North Lincolnshire was 4.6% in June 2010, which is comparable with the regional average of 4.4%, but higher than the national average of 3.7%.

4.17 The existing power station currently employs around 45 staff.

Agriculture and Land Use

4.18 The proposed development site is located in a predominately rural area with agricultural land located to the east, south and west of the proposed development site, and beyond the M180 to the north.

4.19 Agricultural Land Classification (ALC) separates agricultural land into five quality grades, from Grade 1 (excellent) to Grade 5 (poor), where Grades 1-3a are considered as 'best and most versatile'. A number of criteria are used for assessment of agricultural soil, including climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, structure, texture, chemicals, stoniness). The proposed development site and the majority of agricultural land in the vicinity of the site is ALC Grade 3 (good/ moderate), with an area of ALC Grade 2 (very good) immediately to the west of the proposed development site.

4.20 Given the historic uses of the majority of the proposed development site, it is not considered likely to be classified as ALC Grade 3a (best and most versatile). The detailed classification (3a or 3b) of the southernmost part of the site (south of the existing power station) is unknown but the area of this section of the site is small (approximately 6 ha).

4.21 There are no public rights of way within the proposed development site, and no other current land uses as the site is currently vacant.

History of the Proposed Development Site

4.22 The proposed development site is a former sugar beet factory which was owned by British Sugar and first occupied the site in 1928. Most of the buildings that comprised the works have been demolished to grade leaving some areas of concrete hard standing. The remaining buildings stand on the western side of the site (outside the proposed development site for the new power station) and include a manned security office and unoccupied former factory offices, stores and warehouses.

4.23 The landfill associated with the factory was closed in 1994. Measures have been taken since then to try to resolve issues with leaching from the landfill into the New River Ancholme, and geo-environmental studies at the site are ongoing in relation to the proposed development.

Geology and Soils

4.24 Much of the proposed development site has been subject to intrusive ground investigation works. The most recent (Phase III Site Investigation by Ford Consulting Group in 2010) covered the area occupied by most of the development with the exception of the future carbon capture areas and the area to the south of the existing power station. Previous investigations in 2008 and 2009 covered most of these areas.

4.25 During the investigations a number of potential contaminants were found across the development site. For example the former British Sugar lime pit and processing areas. In addition, a wide range of receptors, including water resources, human health and built structures were identified. The proposed development could result in modification to the existing Conceptual Site Model (source pathway receptor model) for the site.

Water Quality, Drainage and Flood Risk

4.26 The proposed development site is located between Scawby Brook and the New River Ancholme and Old River Ancholme (see Appendix A, photograph 2 and 5). The New River Ancholme flows south to north adjacent to the eastern boundary of the site. Scawby Beck, which flows west to east, and through the north-west part of the proposed development site, discharges to the New River Ancholme by gravity. Numerous drainage ditches cross the site, which are managed by the Ancholme Internal Drainage Board (IDB).

4.27 The entire proposed development site is underlain with a principal aquifer (bedrock formation), which is used for abstraction. There is a groundwater source protection zone (SPZ) for potable use (inner and outer zones) covering a large area of the west of the proposed development site, and the abstraction point is likely to be nearby.

4.28 Surface water from the existing power station drains to the New River Ancholme via a low capacity pump, and the site contains surface water storage capacity. The proposed development site currently drains surface water to the New River Ancholme via pumps and a pipeline. The system previously served the treated effluent from the processing plant.

4.29 Ground levels across the site vary between 2 and 6 m AOD. The majority of the open area lies between 3 and 4 m AOD.

4.30 According to Environment Agency Flood Zone Maps, the existing site is located in Flood Zones 1, 2 and 3a.

Table 1: Environment Agency Flood Zone Definitions

Flood Zone	Annual Probability of Flooding	Appropriate Land Uses
Flood Zone 1 Low Probability	< 1 in 1000 (0.1%) annual probability of flooding in any given year	All land uses
Flood Zone 2 Medium Probability	1 in 100 to 1 in 1000 (1% to 0.1%) annual probability of flooding in any given year	Less vulnerable uses More vulnerable uses Essential infrastructure Water compatible uses
Flood Zone 3a High Probability	> 1 in 100 (1%) annual probability of flooding in any given year	Less vulnerable uses Essential infrastructure Water compatible uses
Flood Zone 3b Functional Floodplain	> 1 in 20 (5%) annual probability of flooding in any given year	Essential infrastructure Water compatible uses

4.31 Existing models and reports indicate that the 1 in 100 year (1%) flood levels plus climate change would be:

- Scawby Beck: 3.58 m AOD; and
- River Ancholme: 2.68 m AOD.

4.32 Flood defences for the River Ancholme are approximately 3 m AOD, but the condition of the defences it is not known.

4.33 The proposed development is classified as 'essential infrastructure', and therefore permissible in all flood zones across the site. However development in Flood Zone 3a will only be permitted subject to the plans passing an Exception Test, which would be needed to demonstrate that the new power station has to be located at this site.

4.34 Essential infrastructure in Flood Zone 3 should be designed and constructed to remain operational and safe for users during times of flood.

Ecology and Nature Conservation

4.35 Since the cessation of British Sugar's industrial activities on the site, it has become vegetated with extensive dense scrub and tall ruderal habitats (see Appendix A, Photograph 7). Some

open grassland areas are present that support a relatively diverse assemblage of botanical species.

4.36 Two waterbodies (see Appendix A, Photographs 8 and 9) and numerous ditches are present in and around the site (see Appendix A, Photograph 10). These include Scawby Beck and the New River Ancholme, which runs along the eastern site boundary. Surveys of the ditches within the site boundary undertaken by Environmental Research and Advisory Partnership in 2007 and Andrew McCarthy Associates in 2009 confirmed that a population of water vole (*Arvicola amphibious*) was present within the site.

4.37 Ecology surveys undertaken on site for a proposed biomass power station development (marked 'Area outside proposed development site' on Figure 2) identified nesting barn owl (*Tyto alba*) within the former factory buildings, and the surrounding rough grassland within the proposed development site provides good quality foraging habitat for this species.

4.38 The site of the former sugar beet settling ponds (now infilled) in the north-eastern part of the site, to the north of Scawby Beck, has been designated as a non-statutory site for its nature conservation interest (Silversides Site of Nature Conservation Importance (SNCI)) (see Appendix A, Photograph 11).

4.39 There are also four statutory nature conservation designations within 5 km of the proposed development site:

- Castlethorpe Tufas Site of Special Scientific Interest (SSSI) approximately 0.7 km to the north-west;
- Manton and Twigmoor SSSI approximately 4.9 km to the south-west;
- Broughton Alder Wood SSSI approximately 4.5 km to the north-west; and
- Broughton Far Wood SSSI approximately 4.6 km to the north-west.

Traffic and Transport

4.40 In its strategic context the proposed development site is located approximately 1 km south-west of the town centre of Brigg and approximately 1.8 km east of the village of Scawby. The M180 (part of the Highways Agency core network of motorway and trunk roads) and the A18 and A15 (classified as primary network) are located in close proximity to the development site providing good access.

4.41 Local access to the proposed development site is via a private road off the B1206 Scawby Road located approximately 800 m west of the development site from which the existing power station is also accessed.

Air Quality and Dust

4.42 Local air quality has been subject to regular review and assessment by North Lincolnshire Council and the air quality that the communities surrounding the site are exposed to is of good quality. The available measurement data does not indicate that any of the health based national air quality standards are at risk of being exceeded within this area of North Lincolnshire.

4.43 There is no data available relating to the current baseline level of exposure of the local community to dust or odorous substances. Given the agricultural nature of the area it is likely that the local community are tolerant of the existing level of exposure associated with agricultural practices.

Noise and Vibration

4.44 Groups of residential properties to the west, north and east of the proposed development site may currently experience noise impacts from the existing power station, although these are likely to be minor considering the distances from the power station to the receptors. The motorway, other main roads and the railway line are also key noise sources in the area.

Landscape and Visual Amenity

4.45 The proposed development site is located in an open, undulating arable landscape with limited woodland blocks. Farmsteads are dispersed with the larger settlement edges appearing as prominent elements. Transportation corridors, including the M180 motorway and railway lines, appear as prominent visual elements, appearing as incongruous urban features in an otherwise open rural setting.

4.46 The four up to 100 m high stacks of the existing power station are visible within the wider landscape. Visually intrusive elements include transmission lines.

4.47 The site is located within the Natural England National Character Area 44 Central Lincolnshire Vale and 45 Northern Lincolnshire Edges with Coversand and the local landscape characterisation provided by North Lincolnshire.

4.48 Potential receptors include; residential properties on the edge of nearby settlements (see Appendix A, Photograph 12); road users either in the vicinity of the development or with elevated, clear open views towards the development; users of footpaths and pleasure boats along the New River Ancholme.

Cultural Heritage

4.49 A search of the North Lincolnshire Sites and Monuments Record for undesignated heritage assets has been undertaken using a search area of 1.5 km from the proposed development site boundary. The search has identified 136 Sites and Monuments Records, 34 National Monuments Records, 28 listed buildings and a conservation area within the study area. Also recorded within this area are 86 archaeological interventions. The assets recorded date between the prehistoric and modern period with the majority dating to the prehistoric and post-medieval period.

4.50 There are three scheduled monuments within 5 km of the proposed development site boundary:

- moated site 285 m east of Castlethorpe House, located approximately 30 m to the north of the proposed development site;
- Hibaldstow Mill approximately 2.8 km to the south; and

- Romano-British settlement near Staniwells Farm located approximately 3.4 km to the south-west.

5 Environmental Impact Assessment

The EIA Scoping Exercise

5.1 Considering the proposed development set out in Section 2 and the planning and environmental context set out in Section 4 above, a scoping exercise has been undertaken to determine which environmental topics are to be 'scoped in' and 'scoped out' of the EIA.

5.2 The main issues that have been identified are summarised as:

- land allocation for industrial use across part of the proposed development site;
- the historic use of the land and associated ground contamination;
- the land-take of Agricultural Land Classification Grade 3 (good/moderate) land;
- environmental impacts associated with generation of road traffic during construction, but no significant increase in operational traffic;
- nearby watercourses, the New River Ancholme and Scawby Beck;
- underlying principal aquifer and groundwater source protection zone;
- parts of the site lie within Flood Zones 1, 2 and 3a (low, medium and high probability of flooding respectively);
- air and noise emissions from the new power station;
- nearby residential properties, the closest being located in Scawby Brook and Brigg to the north of the proposed development site;
- Silversides Site of Nature Conservation Interest within the north-west area of the site, a local nature conservation designation;
- presence of protected species within the site (surveys to confirm details are currently being undertaken);
- landscape and visual impacts associated with the size and massing of the proposed development within the flat topography of the surrounding land;
- a number of designated and undesignated cultural heritage resources located within the study area including a scheduled monument approximately 30 m to the north of the proposed development site and listed buildings and a conservation area in Brigg;
- remediation and earthworks could generate significant quantities of waste material.

5.3 The following environmental topics will therefore be assessed in detail as part of the EIA, and reported as technical chapters in the ES:

- planning policy;
- contaminated land;
- water quality, drainage and flood risk;
- ecology and nature conservation;
- noise and vibration;
- air quality and dust;

- landscape and visual amenity;
- cultural heritage; and
- waste management.

5.4 A Flood Risk Assessment, Transport Assessment and Geo-Environmental Assessment will be prepared as standalone documents, and relevant conclusions will be summarised in the relevant sections of the ES. Any impacts on environmental receptors as a result of flooding or flood risk mitigation, traffic and transport and ground remediation will be assessed in the relevant chapters as listed above.

5.5 The proposed development is not considered to have any likely significant effects on agriculture, land use or socio-economics, and these topics have therefore been scoped out of the EIA.

5.6 Details of the proposed assessment of the topics that have been scoped in to the EIA are provided in Section 6 of this report.

EIA Methodology and Reporting

5.7 The ES will set out the process followed during the EIA including the methods used for the collection of data and for the identification and assessment of impacts. Any assumptions made will be clearly identified.

5.8 The EIA process is designed to be capable of, and sensitive to, changes that occur as a result of changes to the design, including any mitigation measures that are incorporated during the EIA. This will be particularly important for this scheme as the design and layout of the power station is still being refined, and minor changes are likely to be made following submission of this EIA Scoping Report.

5.9 Impacts will be considered on the basis of their magnitude, duration and reversibility. Cumulative and combined effects will also be considered where appropriate. Significance will be evaluated on the basis of the scale of the impact and the importance or sensitivity of the receptors, in accordance with standard assessment methodologies (major, moderate, minor and not significant).

5.10 Where significant environmental effects are identified in the assessment process, measures to mitigate these effects will be put forward in the form of recommendations, and agreed with the project team.

The Scenario Years

5.11 The EIA will address the impacts of the development using defined timescales.

Baseline 2010 - No Development

5.12 This is the year in which survey and assessment work will be undertaken. It will represent the existing conditions on the site. This will provide baseline conditions against which the impacts of the proposal can be evaluated.

Construction 2014 - With Development

5.13 This is the year that construction is expected to commence. Construction is expected to be completed in 2018. This scenario will consider the impacts of construction.

Opening 2018 – With Development

5.14 This is the year that the proposed development is expected to commence operation. Assessment of this scenario will enable consideration of the impacts of the proposed development at the opening year.

Future Baseline 2033 – No Development

5.15 This is the year used to assess future conditions, should the proposed development not be implemented.

Operation 2033 – With Development

5.16 This is the year used to assess future conditions, should the proposed development be implemented.

5.17 The future year 2033 has been selected as landscape planting would take at least fifteen years to mature and take full effect.

Structure of the Environmental Statement

5.18 The ES will comprise the following documents:

1. **Non-Technical Summary** – a short concise document written in a non-technical language; and
2. **Environmental Statement** – contains an introduction to the EIA process, a description of the Scheme, a summary of each specialist assessment and detailed technical appendices.

5.19 Each of the specialist chapters dealing with the potential impacts of the proposed development will be set out in the same broad format for ease of comparison. This is summarised below.

- **Introduction** – setting out the purpose and scope of the chapter.
- **Methodology** – including data sources and the methods used in any surveys, as well as the assessment methodology including the assessment of significance and a definition of the study area relevant to the assessment.
- **Baseline Conditions** – a description of the study area in 2010 and a prediction of future baseline conditions.
- **Environmental Impacts** – a description of the potential impacts on the environment during the construction of the proposed development and the operation of the development.
- **Significance of Effects** – an assessment of the significance of the effects of the described above on the identified receptors, using defined significance criteria.
- **Mitigation** – an outline of the measures that will be included in the proposed development in order to reduce the likelihood of severity of an impact, and the residual significance of the effect following mitigation.

- **Limitations** – a summary of any technical or other difficulties encountered during the assessment.
- **Summary** – provides a brief synopsis of the assessment.

The Study Area

5.20 The extent of the study area will vary between the topics considered. The most wide-ranging area is likely to relate to the landscape and visual assessment. This approach is supported by advice given by the Institute of Environmental Management and Assessment (IEMA).

6 Environmental Assessment Topics

Planning Policy

Potential Impacts

6.1 The proposed development will be considered in the context of the policy and guidance documents identified above. Where the development is supported by policy and guidance documents, this will be identified, and where there is any conflict this will also be identified and the issues will be discussed with the relevant specialist (e.g. ecology team) with a view to developing appropriate avoidance, mitigation or compensation measures.

Scope of Assessment

6.2 The assessment will consider the pertinent planning policy framework, and will be bound by the associated extents of these areas. Where appropriate, policy relating to adjacent areas may also be considered.

Contaminated Land

Potential Impacts

6.3 The site investigation previously undertaken by Ford Consulting (2010) identified a range of contaminants across the proposed development site. There is potential for new pathways between contamination sources and sensitive receptors (water resources, human health and built structures) to be created during the construction of the proposed development, and mitigation will need to be designed as part of the remediation and earthworks strategy to ensure significant environmental effects are avoided.

Scope of the Assessment

6.4 Since there are known potential contaminants at the site, a full assessment of the risks associated with contaminated land within the proposed development site will be undertaken. The assessment will be undertaken in accordance with the relevant guidelines (e.g. EA Model Procedures for Management of Contaminated Land (CLR 11) and CIRIA C659 / 655 (2006) Assessing risks posed by hazardous ground gases to buildings).

6.5 To avoid duplication with the water quality assessment (see below), the Contaminated Land chapter will focus on human health and built structures.

Water Quality, Drainage and Flood Risk

Potential Impacts

6.6 The proposed development has the potential to impact surface and groundwater in various ways. During construction, potential impacts include contamination from suspended solids in site runoff and accidental discharge of pollutants and foul waste held on site. An important consideration is the impact of the disturbance of contaminated materials, given the industrial

history of the site and reported ground contamination, which has the potential to effect surface and groundwater.

6.7 Potential impacts during the operational phase include those associated with long-term changes to drainage and flow. These could affect receiving waterbodies in terms of their use and attributes, such as their ability to support aquatic life, dilute and remove pollutants and associated impacts such as erosion and flood risk.

6.8 There is also potential for pollution from the development, notably the water and wastewater treatment plants and accidental spillages from any other activities or substances used and held on site. These have the potential to impact water quality and associated use and value (drinking water sources, leisure activities, ability to support aquatic life and features, ecological status etc.), notably for the New River Ancholme, Scawby Beck and the aquifer.

Scope of the Assessment

6.9 A desktop study is being undertaken to identify available information relevant to the assessment.

6.10 When assessing the potential impacts of the proposed development on the water environment the following points will be considered for a 2 km radius of the proposed development and/or sites that are hydrologically connected and have the potential to be affected:

- relevant European Union and UK legislation (notably Water Framework Directive);
- Environment Agency Pollution Prevention Guidelines;
- surface and groundwater related status and objectives set out in the River Basin Management Plan;
- source protection zone information;
- historic pollution incidents;
- local abstraction and discharge consents; and
- designated sites of nature conservation importance.

6.11 The potential construction and operation impacts of the proposed development on water resources will be identified, assessed and reported. It is understood that this will focus on impacts on the New River Ancholme, Scawby Beck, the aquifer and associated source protection zone.

6.12 If the assessment indicates that significant impacts on the water environment are likely, mitigation measures will be proposed. These may include construction and/ or operational procedures.

6.13 A review will be carried out of the proposed drainage design and proposals for the treatment of surface water runoff to existing measures and establish if there will be any area changes to the impermeable area to be drained.

6.14 Any impacts will be measured against Water Framework Directive ecological and chemical status/potential and objectives set out in the Humber River Basin Management Plan.

6.15 The Flood Risk Assessment will need to include appropriate assessment of flooding from all potential sources, and appropriate assessment for flood mitigation and resilience, including a Flood Warning and Evacuation Plan and designated areas of Safe Refuge. The River Ancholme has raised banks in the vicinity of the site, so the residual risk associated with flood embankment failure must be considered.

6.16 Loss of floodplain due to new development will also need to be assessed and mitigated by provision of equivalent compensation storage.

6.17 Floor levels for the new development will need to exceed the 1 in 100 year (1%) flood level, plus allowance for climate change.

6.18 Previous flood risk assessments indicate that the principal flood risk is fluvial, i.e. from the River Ancholme and Scawby Beck. The risk of flooding from groundwater is thought to be low.

6.19 The Environment Agency has modelled the River Ancholme and will be able to provide details of flood levels and the existing flood defences adjacent to the site. Scawby Beck was modelled for a flood risk assessment for the site in 2009 (JBA, 2009), and this report includes details of flood levels from Scawby Beck. Therefore no additional flood risk modelling is proposed.

6.20 Finished floor levels will need to be located at least 300 mm above the predicted flood levels, i.e. at approximately 4.0 m AOD, to ensure that the new power station can remain operational during times of flooding.

6.21 Surface water will need to be managed to ensure that the new power station does not increase the risk of flooding elsewhere.

6.22 The Environment Agency will not permit increased surface runoff discharge to the River Ancholme without provision of compensatory storage by the developer upstream of the site, and this is assumed to be impossible due to land ownership issues.

6.23 Discharge to Scawby Beck will require the permission of the Ancholme IDB.

6.24 Surface runoff from the site will need to be restricted to the “Greenfield Runoff Rate” of 1.4 l/s/ha. The maximum discharge rate will need to be calculated for the whole development area. New impermeable development will increase the surface runoff rate, and this increase will need to be mitigated by surface water management on site.

6.25 The preferred option for the management of surface water runoff will be provision of compensation storage ponds within the site. The Flood Risk Assessment will inform the design of these ponds.

Ecology and Nature Conservation

Potential Impacts

6.26 The assessment will consider the impacts and associated effects on ecological receptors for both the construction and operational phases of the development.

6.27 At this stage, potential impacts that have been identified include:

- loss of habitat that supports protected species;

- temporary disturbance to habitat that supports protected species;
- loss of habitat within Silversides SNCI; and
- loss of barn owl foraging habitat.

Scope of the Assessment

6.28 The ecological impact assessment will be undertaken in accordance with the methodology set out in the Institute of Ecology and Environmental Management's (IEEM) *Guidelines for Ecological Impact Assessment in the UK* (IEEM, 2006).

6.29 The assessment will be based upon a combination of the data collected through desk study and the findings of the extended Phase 1 Habitat survey completed in June 2010. Based on these findings the following scope of the assessment is proposed:

Desk study

6.30 The following organisations will be consulted as part of the desk-study:

- Lincolnshire Environmental Records Centre;
- Lincolnshire Wildlife Trust;
- Environment Agency;
- Local Bat Conservation Group;
- Local Amphibian and Reptile Group;
- National Biodiversity Network Gateway website;
- Nature-on-the-Map website; and
- Multi-Agency Geographic Information for the Countryside website.

6.31 In addition, ecological information from the ES submitted in support of the biomass power station on the adjacent site (Eco2 North Lincs Ltd, 2008), as well as the previous ecology survey undertaken on the site in 2007 (Environmental Research and Advisory Partnership, 2007) will be used to inform the assessment where appropriate.

Extended Phase 1 Habitat Survey

6.32 An extended Phase 1 Habitat survey of the proposed development site was undertaken in June 2010. Reporting and mapping of results will follow the standard Phase 1 habitat methodology (JNCC, 2003) with Target Notes detailing locations of interest.

6.33 The extended Phase 1 Habitat survey included surveying for the potential of protected and Biodiversity Action Plan (BAP) species to occur (species of principal importance), based on habitats present within and immediately adjacent to the site. In addition, any waterbodies identified within the study area were evaluated for their potential to support great crested newts (*Triturus cristatus*), based on all aquatic and terrestrial features, where possible using the Habitat Suitability Index (HSI) assessment methodology (Oldham *et al*., 2000).

Species-Specific Survey

6.34 The extended Phase 1 Habitat survey identified habitat potentially suitable to support a range of protected species. Therefore the following species-specific surveys have been (or will be) undertaken within the proposed development site, in accordance with standard methodologies, to enable the effects of the proposed development on ecological receptors to be assessed:

- amphibians;
- bat activity;
- badger;
- breeding bird;
- National Vegetation Classification (NVC) survey of botanically diverse grassland and Silversides SNCI;
- hedgerow.
- reptile; and
- water vole.

Amphibians

6.35 Two waterbodies within the site boundary that provide attenuation for site drainage were assessed for their potential to support great crested newt (*Triturus cristatus*) during the extended Phase 1 Habitat survey. Following an initial survey of these waterbodies in June 2010, both have been evaluated as being unsuitable for great crested newt as one is heavily polluted, and the other contains large numbers of fish having been linked to the adjacent New River Ancholme when the site was operational. Furthermore, there are no other ponds within 500 m of the site boundary from which great crested newts may have colonised those on the site and therefore it is concluded that there is no reasonable likelihood of this species being present. On this basis amphibian surveys have been scoped out of the assessment.

Bat Activity

6.36 Potential foraging habitat was identified along the ditches and mature vegetation bands within the site boundary during the extended Phase 1 Habitat survey. Bat activity surveys (transect surveys) visits were undertaken on the 11th 26th and 27th August 2010. Only small numbers of bats were recorded foraging, with the focus of the activity along Scawby Beck and the public footpath that runs adjacent to the Brook.

Badger

6.37 A badger (*Meles meles*) survey was completed at the same time as the extended Phase 1 habitat survey in June 2010. No signs of badgers were found within the proposed development site.

Breeding Bird

6.38 Breeding bird surveys were undertaken on the 18th, 23rd June and 5th July 2010. The site supports a range of common nesting species as well as providing foraging habitat for the

Schedule 1 species barn owl (*Tyto alba*), which is nesting in the former sugar beet factory. ('Schedule 1 species' refers to protection under the Wildlife and Countryside Act 1981 as amended). We have been informed by the existing site manager that a kingfisher (Schedule 1 species) is also occasionally seen along Scawby Beck but this has not been recorded in any of our surveys to date.

National Vegetation Classification (NVC) survey

6.39 This survey was completed on 7th July 2010, when the majority of botanical species are in flower and the survey findings are considered to be most robust. Colonies of southern marsh orchid (*Dactylorhiza praetermissa*), common spotted orchid (*Dactylorhiza fuchsia*) and the hybrid between the two (*Dactylorhiza xgrandis*) are present within the proposed development site boundary.

Hedgerow

6.40 All hedgerows within the site boundary were assessed in accordance with the Hedgerow Regulations 1997 during the extended Phase 1 Habitat survey in June 2010. None of the hedgerows were found to meet the criteria for an 'important' hedgerow under the Hedgerow Regulations.

Reptile

6.41 The extended Phase 1 Habitat survey in June 2010 identified a mosaic of scrub, rubble and bare south-facing embankments in the former lime ponds to be potentially suitable for reptiles. A total of 51 reptile mats were placed around this area (on 26th August 2010) and have been left to 'bed in'. The reptiles surveys commenced in mid September and a total of seven visits will be undertaken to establish presence or likely absence..

Water Vole

6.42 Surveys undertaken for the proposed biomass power station on the adjacent site in 2008 identified a resident population of water vole (*Arvicola amphibious*) on Scawby Beck and on ditches within the proposed development site boundary (Andrew McCarthy Associates, 2008). An updated water vole survey will be completed in autumn 2010 when bankside vegetation has died back allowing greater visibility of burrows, latrines and feeding stations. The updated water vole survey will inform any future mitigation for this species.

Air Quality and Dust

Potential Impacts

6.43 There is the potential for air quality impacts during the construction phase. The level of impact will depend upon the movement of construction associated vehicles on the local highway network throughout the proposed construction works. The additional emissions from these vehicles have the potential to increase pollutant concentrations at local sensitive receptors beyond that which would be experienced in the baseline scenario.

6.44 There is also the potential for some dust impacts during the construction phase. Construction activities can generate fugitive emissions of airborne dust, which has the potential to deposit beyond the works boundary. Such an impact is unlikely to be an issue with regard to human health, but may cause concern in terms of potential soiling of property and the annoyance

caused by such soiling. During the construction phase the disturbance of land identified as containing elevated concentrations of potentially odourous substances could have an adverse impact on amenity at nearby residential receptors. There are no significant sources of odurous substances associated with the operational phase and therefore odour has been scoped out of the assessment of operational phase effects.

6.45 Air quality impacts may also occur during the operational phase. As a combustion plant there will be additional emissions to air relative to baseline conditions. The magnitude of the change in ambient concentrations of air pollutants, due to the additional operational emissions will require quantifying. Additional road vehicle movements associated with the operation of the site would also contribute exhaust emissions of the same pollutants within the study area.

Scope of the Assessment

6.46 The spatial scope of the dust assessment will extend to an area within approximately 100 m of construction worksite. The spatial scope of the local air quality assessment will extend to an area within approximately 50 m of each road where traffic flows are affected by the proposed scheme. It will also include construction traffic routes and routes subject to changes in traffic flow associated with diversions, road closures etc, which will experience changes in flows where sensitive receptors may be affected.

6.47 The construction phase local air quality assessment will quantify the concentration of the pollutants most commonly associated with vehicle emissions at the worst affected receptor locations during the construction phase. Advanced dispersion modelling software will be used to predict concentrations for both a baseline and with construction phase scenario. The magnitude of change as a result of construction associated vehicle movements will be used to identify the potential for road traffic emissions to cause a significant effect at each receptor location. This assessment will focus on a worst-case scenario during the construction works, when the greatest number of construction related vehicle movements is anticipated.

6.48 The construction phase dust and odour assessments will follow a qualitative methodology in the form of an approach for a risk-based assessment. This will involve the identification of sensitive receptors that could reasonably be expected to be affected by fugitive emissions of dust, the relative risk of construction activities generating airborne dust, based on it location, frequency and duration, and the availability of appropriate mitigation to control such emissions. This information will be used to identify the potential for fugitive emissions of dust to cause a significant effect at each receptor location.

6.49 The operational phase local air quality assessment will quantify the concentration of the pollutants nitrogen dioxide, and particulate matter (PM_{10} and $PM_{2.5}$) at potentially affected receptor locations during the operational phase of the scheme. Advanced dispersion modelling software will be used to predict concentrations for both a baseline and with scheme scenario. The magnitude of impact as a result of the combined change in emissions from vehicle movements and plant emissions due to the scheme will be used to assess the significance of effects at relevant receptors.

6.50 In order to gain a better understanding of baseline nitrogen dioxide concentrations in the area around the proposed development site, a six month diffusion tube survey is currently being undertaken. Eleven diffusion tubes have been located in the areas surrounding the site, including Broughton, Scawby, Scawby Brook, Hibaldstow, Brigg, Wrawby and Cadney. Permission has been granted to attach the tubes to North Lincolnshire Council's lamp posts.

As well as providing important baseline data, the diffusion tubes located adjacent to the local highway network also provide a source of data by which to bias adjust modelled predictions.

6.51 Reference will be made but not limited to the following guidance:

- Office of the Deputy Prime Minister (2004), Planning Policy statement 23: Planning and Pollution Control, H.M. stationary Office;
- Environment Agency (2009), Combustion Activities (EPR 1.01) _GEHO0209BPIN-E-E;
- Environment Agency (2010), Horizontal Guidance Note H1 – Annex (f) – Air emissions;
- Highways Agency (2003), Design Manual for Roads and Bridges (DMRB), Part 1, HA 207/07, Volume 11, Section 3;
- Department for the Environment Food and Rural Affairs (2009) Local Air Quality Management – Technical Guidance, LAQM TG(09);
- British Research Establishment (2003), Control of Dust from Construction and Demolition Activities, BRE Bookshop.British Standard 5228:2 2009 'Code of practice for noise and vibration control on open sites' Vibration; and
- Mayor of London (2006), The Control of Dust and Emissions from Construction and Demolition – Best Practice Guidance, London Councils.

Noise and Vibration

Potential Impacts

6.52 There is the potential for noise impacts during the construction phase for the new power station and the gas pipeline. There is also the potential for noise impacts from construction road traffic.

6.53 Additionally, there is the potential for vibration impacts during the construction phase. Activities such as concrete breaking and piling can generate ground-borne vibration, which may cause concern in terms of potential building damage and annoyance. It will also be necessary to determine whether there are any particularly sensitive equipment or operations that take place in the surrounding buildings, and if necessary employ appropriate vibration limits to protect these.

6.54 Potential operational noise impacts may arise due to the proximity of the new power station to residential properties and the nature of the proposed plant on site (turbine halls, air cooled condensers etc.). There is also the potential for noise impacts from operational road traffic, although these are likely to be minor.

6.55 There should be no operational noise impacts along the route of the gas pipeline. However, there is the potential for noise impacts resulting from any associated new plant at Blyborough gas compound and the new power station.

6.56 Due to the relatively large distances from the proposed new plant and the surrounding sensitive receptors, and the nature of the operations, no significant operational vibration impacts are predicted to occur.

Scope of the Assessment

6.57 The scope of the noise and vibration assessment is:

- identification of nearest noise sensitive receptors;
- liaison with Local Authority Environmental Health Officer (EHO) to agree scope and methodology of noise assessment, including baseline noise monitoring locations and measurement protocol;
- establishment of baseline noise levels in the locality;
- assessment of the impact of predicted noise levels at the nearest noise sensitive receptors from the construction and operation of the proposed power station and gas pipeline including:
    - construction noise and vibration (including construction traffic on public roads); and
    - operational noise (including site traffic on public roads).

6.58 Operational vibration has been scoped out of the assessment at this stage, as no significant impacts are predicted to occur.

6.59 A five day period of unmanned long-term baseline noise monitoring (including weekend and weekday times) has been undertaken at three locations within the proposed development site, in close proximity to local sensitive receptors. In addition, short term manned noise monitoring has been undertaken outside the proposed development site. This monitoring regime has been agreed with North Lincolnshire District Council and the procedures conform to British Standard (BS) 7445: 1991 Description and Measurement of Environmental Noise.

6.60 Noise and vibration levels associated with any enabling and construction works will be calculated (at chosen sensitive receptors) using the data and procedures given in BS 5228: 2009 *Code of practice for noise and vibration control from construction and open sites*. Additionally, noise increases at sensitive receptors due to any construction traffic on public roads will be calculated according to the methods given in *Calculation of Road Traffic Noise* (Department of Transport, 1988).

6.61 The operational noise impact of the proposed new power station will be predicted using sophisticated computer noise modelling software, based on information on plant layout, the operating conditions and the levels of noise generated by plant items and vehicles. The modelling software enables a detailed implementation of the proposed equipment and buildings, existing surrounding buildings and ground features. The software implements the methodology in ISO 9613-2: 1996 '*Attenuation of sound during propagation outdoors, Part 2: General method of calculation*' for the calculation of noise levels from industrial sources.

6.62 The significance of the noise impact of the new power station will be assessed using the method given in BS 4142: 1997 '*Method for rating noise affecting mixed residential and industrial areas*' (or any alternative method as agreed with the Local Authority EHO). This Standard details a method for rating the acceptability of increases in existing noise levels at noise-sensitive receptors affected by noise from fixed plant at proposed developments.

BS 4142 is interpreted differently by different Local Authorities so the assessment methodology will be discussed with the relevant EHO to determine any local requirements.

6.63 The change in road traffic noise levels, at a selection of relevant receptors, will be predicted using the standard methodology outlined in the '*Calculation of Road Traffic Noise'*. The predictions will be based on baseline and with-development traffic data provided by the client.

6.64 The significance of changes in road traffic noise levels will be assessed based on a range of relevant guidance including the 'Design Manual for Roads and Bridges: 2008'.

6.65 Reference will be made, but not be limited, to the following guidance:

- BS 5228:1 2009 'Code of practice for noise and vibration control on open sites' Noise;
- BS 5228:2 2009 'Code of practice for noise and vibration control on open sites' Vibration;
- ISO 9613-2: 1996 'Attenuation of sound during propagation outdoors. Part 2: General method of calculation';
- BS 4142: 1997 'Method for rating noise affecting mixed residential and industrial areas';
- BS 7385: 1993 'Evaluation and measurement for vibration in buildings';
- BS 6472: 2008 'Guide to evaluation of human exposure to vibration in buildings';
- Control of Pollution Act 1974;
- The Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 (EC Directive 2000/14/EC); and
- Calculation of Road Traffic Noise (DoT, 1988).

Landscape and Visual Amenity

Potential Impacts

6.66 The proposed development has the potential to impact upon the surrounding landscape character due to the increased massing of structures adjacent to the existing power station. Whilst views of the site are fairly limited other than from locations in close proximity to the site, visual impacts of the proposed development will arise from the up to 100 m high stacks in addition to the existing approximately 70 m high stacks associated with the existing power station.

Scope of the Assessment

6.67 The landscape and visual impact assessment will be undertaken using the methodology set down in the Landscape Institute and IEMA's *Guidelines for the Landscape and Visual Impact Assessment for Environmental Assessment*.

6.68 It is proposed that a full landscape and visual impact assessment will be undertaken, using a combination of site survey and 3D modelling, to identify the visibility of the individual elements of the proposed development (including the turbine buildings and the stacks) and assess the significance of this on visual amenity.

6.69 The sequence of work it is proposed to undertake is as follows:

- prepare a 3D base model of the site, the development proposals and incorporating OS terrain data over a suitable distance from the site; this will enable a data led/analytical approach to visual assessment, which allows both focusing and modification of the on-site survey;
- visit the site and record photographic panoramas from the identified viewpoints/ receptor locations; and
- provide a written report on the baseline landscape and visual context and the way in which the proposed development would affect it during both the construction and operational stages.

6.70 The assessment will identify both adverse and beneficial effects of the development and assess their significance on landscape character and visual amenity by considering the magnitude of impact together with sensitivity of the receptor.

6.71 Impacts will be assessed at the viewpoints to be selected following consultation with Lincolnshire County Council.

6.72 Photomontages will be produced to illustrate the impact of the development from the most sensitive identified viewpoints.

Cultural Heritage

Potential Impacts

6.73 There is the potential for the proposed development to have an impact on the setting of designated and undesignated heritage assets including Listed Buildings, Conservation Areas, scheduled monuments, locally listed buildings and undesignated archaeological assets. In addition, there is the potential for the development to directly impact upon undesignated buried archaeological assets during construction.

6.74 Due to the height of the stacks, there is the potential for the setting of built heritage assets and scheduled monuments to be impacted up to 10 km from the proposed development site. Appropriate guidance will be consulted to assess these monuments.

Scope of the Assessment

6.75 The assessment will be undertaken in accordance with PPS 5: Planning for the Historic Environment (DCLG, 2010), PPS 22: Renewable Energy (ODPM, 20004) and other relevant guidance on setting and cumulative impacts.

6.76 A baseline assessment will be undertaken, the scope of which will be agreed with the County Archaeologist and Conservation Officer for North-East Lincolnshire and English Heritage. This will consist of the identification and description of the heritage assets which may be impacted upon by the development and will involve further documentary and archive research. Following this, a site visit will be undertaken to assess which assets will be significantly impacted upon by the development. There may be a requirement to undertake pre-determination archaeological fieldwork if there is not enough evidence to assess the potential for archaeological assets within the proposed development site. This may take the form of a geophysical survey, aerial photograph analysis and/or trial trenching.

6.77 A 1 km search area has been used for the archaeology baseline study. The search area for built heritage is currently being determined with the Conservation Officer for North-East Lincolnshire.

6.78 The assessment will consider the magnitude of the impact from the proposed development and identified heritage assets, including historic buildings, historic landscape and archaeology. These assets will have been given a value decided by national criteria. Mitigation proposals will be proposed where necessary.

Waste and Resources

Potential Impacts

6.79 The remediation and earthworks strategy will aim to balance the cut and fill across the proposed development site to minimise the requirement for import and export of materials on and off site. However at this stage the volume of waste arising from the construction phase is not known so the topic has been scoped into the EIA. If the remediation and earthworks strategy results in only small volumes of waste then the topic may be scoped out at a later date.

6.80 No significant solid waste arisings are expected from the operational phase (compared to the existing power station which the new power station will replace), so operational phase assessment has been scoped out.

Scope of Assessment

6.81 The waste management assessment will involve a desk based study including the following elements:

- identification of relevant legislation, sources of information and local strategies and plans – including any relevant supplementary planning guidance; and
- acquisition, collation and analysis of relevant available data including contact with local waste management service providers (where necessary) to identify local waste management infrastructure.

6.82 The waste and resources chapter will consider the issue of solid waste arisings and management associated with the construction phase.

6.83 The assessment of impacts will include:

- consideration of any relevant consultee responses/requirements;
- an estimation of likely construction waste arisings;
- an assessment of the potential significance of projected construction waste arisings, in the context of baseline conditions and local infrastructure capacity (the receptors);
- identification and consideration of any best practice measures (to minimise or eliminate adverse effects caused by waste) that will be adopted as mitigation;
- an assessment of the significance of projected waste arisings following mitigation – i.e. demonstration of how mitigation will reduce the impacts/effects of waste arisings; and

- an assessment of cumulative impacts with other local developments identified, where sufficient data is available.

Cumulative and Combined Effects

6.84 Cumulative effects from the proposed development together with any proposals within the vicinity of the development site, including the proposed renewable (biomass) energy plant and the gas pipeline and electricity lines associated with the proposed power station, will be considered in the Cumulative and Combined Effects chapter based on available information.

6.85 Cumulative effects are those that accrue over time and space from a number of development activities. The effects of the proposed development will be considered in conjunction with the potential effects from other projects or activities which are both reasonably foreseeable in terms of delivery (e.g. have planning consent) and are located within a realistic geographical scope where environmental impacts could act together to create a more significant overall effect. Information on other developments that have the potential for cumulative effects with the proposed new power station will be identified in consultation with the local planning authorities.

6.86 The combination of predicted environmental impacts resulting from a single development on any one receptor that may collectively cause a greater effect, are referred to as combined effects. Potential combined effects that will be considered include the combined effects of noise and air quality/ dust impacts during construction on local residents.

Mitigation

6.87 As part of the EIA, measures to avoid and/or mitigate significant environmental effects will be identified. These measures may include:

- careful consideration of plant location, layout and design to minimise environmental impacts such as noise, landscape, visual and air quality;
- consideration of the appearance of plant and buildings to reduce the affect on the landscape, including, for example, careful selection of external colour;
- bunds, fencing and/or landscape planting to minimise noise and visual effects;
- translocation of protected species;
- consideration of the timing for vegetation clearance to minimise effects on ecological receptors; and
- ensuring that best working practices are employed to minimise traffic, noise and dust impacts during the construction phase.

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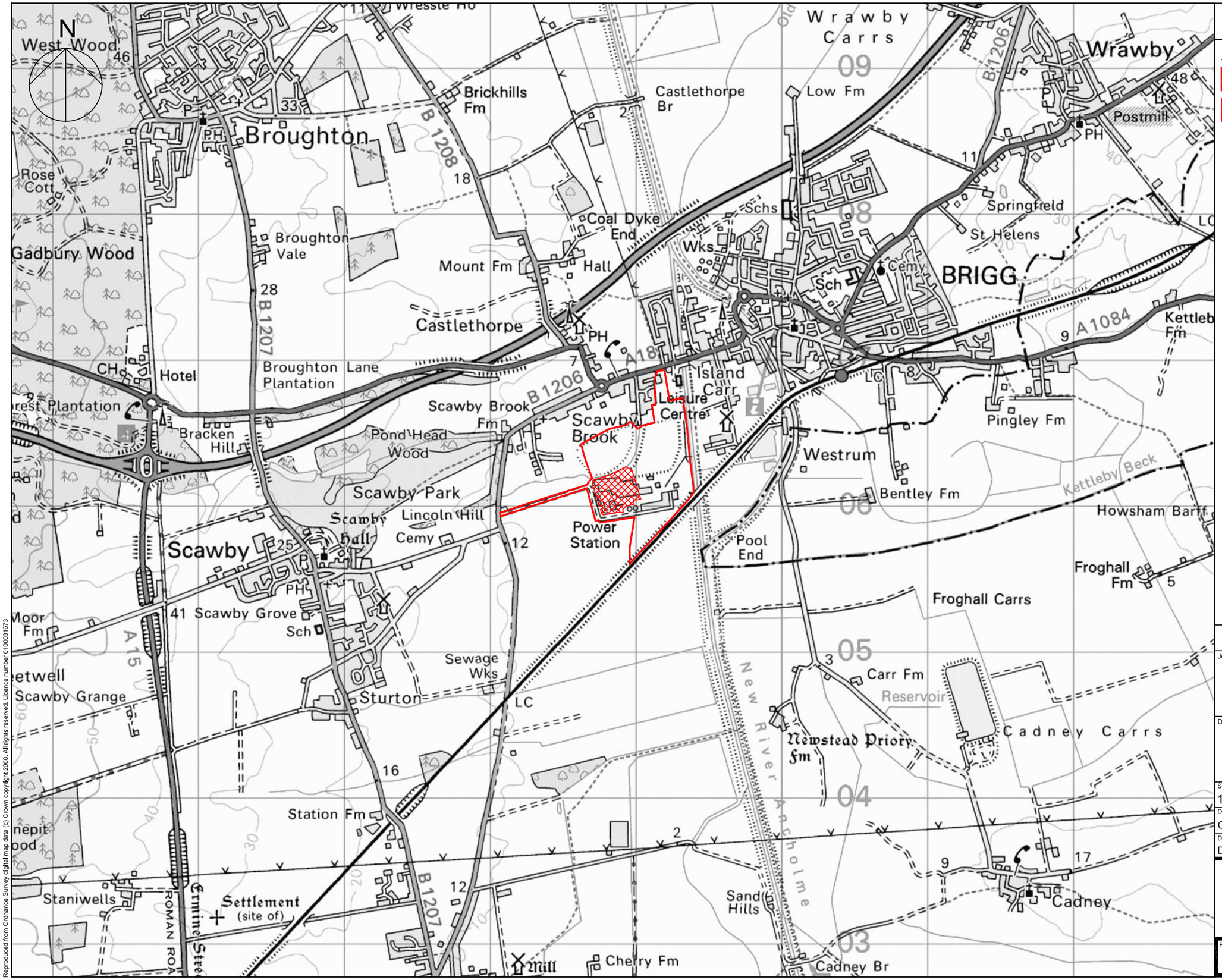

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Notes

- Approximate boundary of proposed development site
- Area outside of proposed development site

Revision Details	By / Check	Date	Suffix

Job Title

BRIGG 2 POWER STATION

Drawing Title

SITE LOCATION PLAN

Scale(s) at A3

1:25,000

Drn	Chk	App	Date
CLH	KC	KC	SEP 2010

Dwg Ref Number

D128287/SCOP/001

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Figure Number

Figure 1

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LEGEND

1. TURBINE HALL.
2. HEAT RECOVERY STEAM GENERATOR.
3. AIR COOLED CONDENSER.
4. STACK.
5. TRANSFORMER & ELECTRICAL BUILDING.
6. ADMIN BUILDING.
7. WORKSHOPS & STORES
8. GIS SUBSTATION.
9. WATER TREATMENT PLANT.
10. RAW WATER TANK.
11. DEMIN WATER TANK.
12. GAS METERING & COMPRESSOR COMPOUND

This drawing may be used for the purpose intended and only written dimensions shall be used.

Notes

Revision Details	By / Check	Date	Suffix

Job Title

BRIGG 2 POWER STATION

Drawing Title

PROPOSED DEVELOPMENT

Scale(s) at A3

NTS

Drn	Chk	App	Date
CLH	KC	KC	SEP 2010

Dwg Ref Number

D128287/SCOP/002

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Figure Number

Figure 2

Appendix A – Site Photographs

Photograph 1 - existing power station

Photograph 2 – River Ancholme

Photograph 3 – agricultural field to the south of the existing power station

Photograph 4 - main site access road

Photograph 5 – Scawby Brook

Photograph 6 – location of proposed haul road , looking north (most northerly part of proposed development site)

	
Photograph 7 – dense scrub and tall ruderal vegetation looking south from the centre of the proposed development site	Photograph 8- pond 1 (western pond), located adjacent to the River Ancholme to the north-east of the existing power station
	
Photograph 9 – pond 2 (eastern pond), located adjacent to the River Ancholme to the north-east of the existing power station	Photograph 10 – example of drain running through the centre of the proposed development site
	
Photograph 11 - Silversides Site of Nature Conservation Importance (SNCI)	Photograph 12 - residential receptor on the edge of nearby settlement, looking south towards the existing power station (stack just visible above rooftops)