NORTH LINCOLNSHIRE GREEN ENERGY PARK

Planning Act 2008

Infrastructure Planning (Applications Prescribed Forms and Procedure) Regulations 2009

Regulation 6(1)(a)

Regulation 5(2)(p)

North Lincolnshire Green Energy Park

Volume 5

5.5 Grid Connection Statement

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Contents

2 Introduction

2.1.1.1 The North Lincolnshire Green Energy Park (NLGEP) ('the Project'), located at Flixborough, North Lincolnshire, is a Nationally Significant Infrastructure Project (NSIP) with an Energy Recovery Facility (ERF) capable of converting up to 760,000 tonnes of non-recyclable waste into 95 MW of electricity at its heart and a carbon capture, utilisation and storage (CCUS) facility which will treat the excess gasses released from the ERF to remove and store carbon dioxide (CO_2) prior to emission into the atmosphere.

2.1.1.2 The NSIP incorporates a switch yard, to ensure that the power created can be exported to the National Grid or to local businesses, and a water treatment facility, to take water from the mains supply or recycled process water to remove impurities and make it suitable for use in the boilers, the CCUS facility, concrete block manufacture, hydrogen production and the maintenance of the water levels in the wetland area.

2.1.1.3 The Project will include the following Associated Development to support the operation of the NSIP:

1. a bottom ash and flue gas residue handling and treatment facility (RHTF);
2. a concrete block manufacturing facility (CBMF);
3. a plastic recycling facility (PRF);
4. a hydrogen production and storage facility;
5. an electric vehicle (EV) and hydrogen (H_2) re-fuelling station;
6. battery storage;
7. a hydrogen and natural gas above ground installation (AGI);
8. a new access road and parking;
9. a gate house and visitor centre with elevated walkway;
10. new railway works including, sidings at Dragonby, re-instatement and safety improvements to the 6km private railway spur, and the construction of a new railhead with sidings south of Flixborough Wharf;
11. a north and south district heating and private wire network (DHPWN), Biodiversity Net Gain (BNG) and ecological mitigation, including green infrastructure and 65-acre wetland area, new public rights of way and cycle ways;
12. Sustainable Drainage Systems (SuDs) and flood defence; and
13. an electrical grid connection, lighting and utilities.

2.1.1.4 The Project will also include development in connection with the above works such as security gates, fencing, boundary treatment, hard and soft landscaping, surface and foul water treatment and drainage systems and CCTV.

2.1.1.5 The Project also includes temporary facilities required during the course of construction, including site establishment and preparation works, temporary construction laydown areas, contractor facilities, materials and plant storage, generators, concrete batching facilities, vehicle and cycle parking facilities, offices, staff welfare facilities, security fencing and gates, external lighting, roadways and haul routes, wheel wash facilities, and signage.

2.1.1.6 The overarching aim of the Project is to support the UK's transition to a low carbon economy as outlined in the Sixth Carbon Budget (December 2020), the national Ten Point Plan for a Green Industrial Revolution (November 2020) and the North Lincolnshire prospectus for a Green Future. It will do this by enabling circular resource strategies and low-carbon infrastructure to be deployed as an integral part of the design (for example by re-processing ash, wastewater and carbon dioxide

to manufacture concrete blocks and capturing and utilising waste-heat to supply local homes and businesses with heat via a district heating network)

2.2 Purpose of this report

2.2.1.1 The purpose of this document is to meet the requirements of Regulation 6(1)(a)(i) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, which require the Applicant to provide a statement setting out who will be responsible for designing and building the proposed grid connection to the Proposed Development.

2.2.1.2 This Grid Connection Statement has therefore been prepared to satisfy the requirements of Regulation 6(1)(a)(i) and to demonstrate (as required by National Policy Statement EN-1, paragraph 4.9.1) that there is no reason why a grid connection would not be possible.

2.2.1.3 Section 3 of this document describes the grid connection route and the connection point options. Section 4 describes the contractual agreements which are in place, Section 5 explains the responsibilities for designing and building the grid connection, Section 6 describes the consents required for the connection and Section 7 sets out the conclusions.

2.3 The Energy Park Land

2.3.1.1 The Energy Park Land, as shown on the Site Location Plans **(Document Reference 4.1)** is located entirely in North Lincolnshire. The Energy Park Land primarily comprises land south of Flixborough Industrial estate, but also includes a railway line running to Dragonby Sidings, and district heating and private wire network corridors which run south, to a proposed housing development, and east into Scunthorpe, to a proposed hospital. The electricity generating elements of the scheme (the energy recovery facility and the battery storage facility) will be located on land adjacent to Flixborough Industrial Estate.

2.3.1.2 The Energy Park Land includes all land required to deliver the Project. This includes land which would be required temporarily to facilitate the development.

2.4 Stages of development

2.4.1.1 The proposed ERF is intended to be operational before the end of 2028, but precise timings are to be determined. It is likely that the battery storage facility would enter service sometime after the ERF.

2.4.1.2 In order to operate the facilities, the following key steps are required:

1. obtain a DCO for the proposed ERF and associated developments;
2. obtain relevant environmental permit(s) and other licences, consents and permits required;
3. identify a suitable technology provider, or group of providers if required;
4. agree and arrange source(s) of funding;
5. enter into contract(s) for the design, build and operation of the new facility and associated developments; and
6. construct and commission each of the facilities.

2.4.1.3 Site preparation and construction would be undertaken over six years, and it is expected that the earliest construction could commence is 2024, although this may be later.

2.5 Proposed generation

2.5.1.1 The proposed ERF would have a generation capacity up to 95 MW_e in fully condensing mode, when processing the design flow of 81.3 tonnes per hour of waste with a net calorific value of 14 MJ/kg. The parasitic load of the facility is expected to be approximately 9.5 MW_e, leaving a maximum of 85.5 MW_e for export to the grid in power only mode. With the private wire network operating, including charging the proposed battery storage, approximately 30.4 MWe would be available for export to the national grid plus any capacity stored in the batteries.

2.5.1.2 The ERF is intended to be enabled for CHP operation from the outset, by employing an extraction condensing steam turbine with a controlled extraction point. The Project proposes to export heat to the associated development within the scheme, and to a proposed housing development, business park and hospital beyond the site boundary. The scheme allows for construction of heat export equipment and supply of heat to the boundaries of these developments.

2.5.1.3 The detailed electrical design of the facility will be carried out by the Engineering, Procurement and Construction (EPC) Contractor. However, the ERF will likely generate electricity at a voltage between 11 kV and 17 kV from a single steam turbine alternator. The electricity will then be conducted from the alternator, located within the ERF building, to one or more step up transformers to increase the voltage level. The voltage would be stepped up initially to 33 kV for export to a battery storage facility, and then to 132 kV for export to the Northern PowerGrid substation located at Scunthorpe North. Private wire users will either connect to the facility at 11 kV or 33 kV.

2.5.1.4 A battery storage facility is also proposed as associated development to the ERF. This facility would have a capacity of up to 45 MWh_e with a peak discharge capacity of 30 MW_e. The battery storage facility would be connected directly to the ERF switchboard at 33kV, and hence the 132 kV import/export connection to Scunthorpe North.

3 Proposed Grid Connection Routing and Options

3.1.1.1 The Applicant has received a grid connection offer from Northern PowerGrid (NPG) for an export of up to 63 MW_e and an import capacity of 2000 kVA (reference ENQ5359613). The grid connection point is at NPG substation at Scunthorpe North. The proposed circuits will be installed below ground. The connection voltage is 132 kV. The proposed route of the existing grid connection offer is shown in drawing S3154-8000-0019AO1 and in Appendix A of this document. The route is as follows:

7. Exit Scunthorpe North 132/33 kV SP substation onto Normanby Road;
8. Normanby Road to A1077;
9. A1077 to Phoenix Parkway;
10. Phoenix Parkway to B1216/Ferry Road West;
11. Ferry Road West to New Access Road;
12. New Access Road to Stather Road; and
13. Stather Road to proposed intake substation.

NPG has agreed that there is capacity at 132kv to increase the export capacity to cover the full electrical export capacity of the facility (95MW_e) and an increased import capacity (50MVA) required to ensure security of supply to the private wire network and associated development on site. The exact details of this connection are still under discussion between the Applicant and NPG, with a revised offer expected imminently.

4 Contractual Agreements

4.1.1.1 The Applicant has received an offer from Northern PowerGrid for the provision of 63 MW_e export 132 kV connection at the site, as discussed in section 3.

4.1.1.2 Discussions are ongoing for a grid connection with an increased capacity of up to 95 MW_e in order to export the maximum generation from the site. The new offer will include an increased import capacity of 50MVA, in order to provide energy security and continuity of supply to the private wire users.

4.1.1.3 The grid connection offers will be mutually exclusive. The increased import and export offer once received and accepted with satisfactory costs and terms and conditions, the existing connection agreement will then be relinquished.

5 Responsibilities for the connection

5.1.1.1 The increased import and export grid connection capacity referred to in this Application has been designed by NPG as the Distribution Network Operator (DNO). NPG will continue to refine the outline design as the detailed design process continues.

5.1.1.2 The following is a summary of the non-contestable works which must be carried out by Northern PowerGrid, and which are detailed in the existing grid connection offer.

1. Installation of a new 132 kV motorised disconnector at Scunthorpe North.
2. Installation of inter-tripping between different parts of the distribution system, which will interface with the contestable connection assets and the Applicant's installation.
3. Undertaking any protection and control modifications which may be necessary at Keadby and Scunthorpe North
4. Two new microwave radio links between the ERF premises and Keadby.

5.1.1.3 The following is a summary of contestable works which could be carried out by NPG, or by an accredited contractor appointed by the Applicant.

1. Construction of a new 132/33kV metering substation comprising a 132 kV outdoor switchgear/transformer compound, a control room, a 132 kV motorised disconnector; transformers; a 33 kV metering circuit breaker and associated equipment.
2. Installation of an underground 132 kV cable and associated fibre optic cable running from the NLGEP site to the NPG substation at Scunthorpe North.

5.1.1.4 The Applicant’s chosen Engineering, Procurement and Construction (EPC) contractor will undertake detailed design of the connection route between the ERF and battery storage facility and the on-site metering substation. NPG will be responsible for making the connection between the site metering substation and the connection point at Scunthorpe North.

6 Consenting of the Grid Connection

6.1.1.1 The grid connection will require works to be performed within the Project site, including construction of the on-site substation and constructing the connections between the substation and the ERF and battery storage facility. These works will be completed as part of Work No. 1, and as such are including in the DCO. This work is assessed in the ES topic chapters **(Document References 6.2.7 and 6.2.13)**.

6.1.1.2 Electrical connection works outside of Work No. 1 will require the relevant undertaker to utilise their statutory powers or obtain the relevant consents prior to connection. These are assessed in Chapter 18 “Cumulative Effects” of the ES **(Document Reference 6.2.18).**

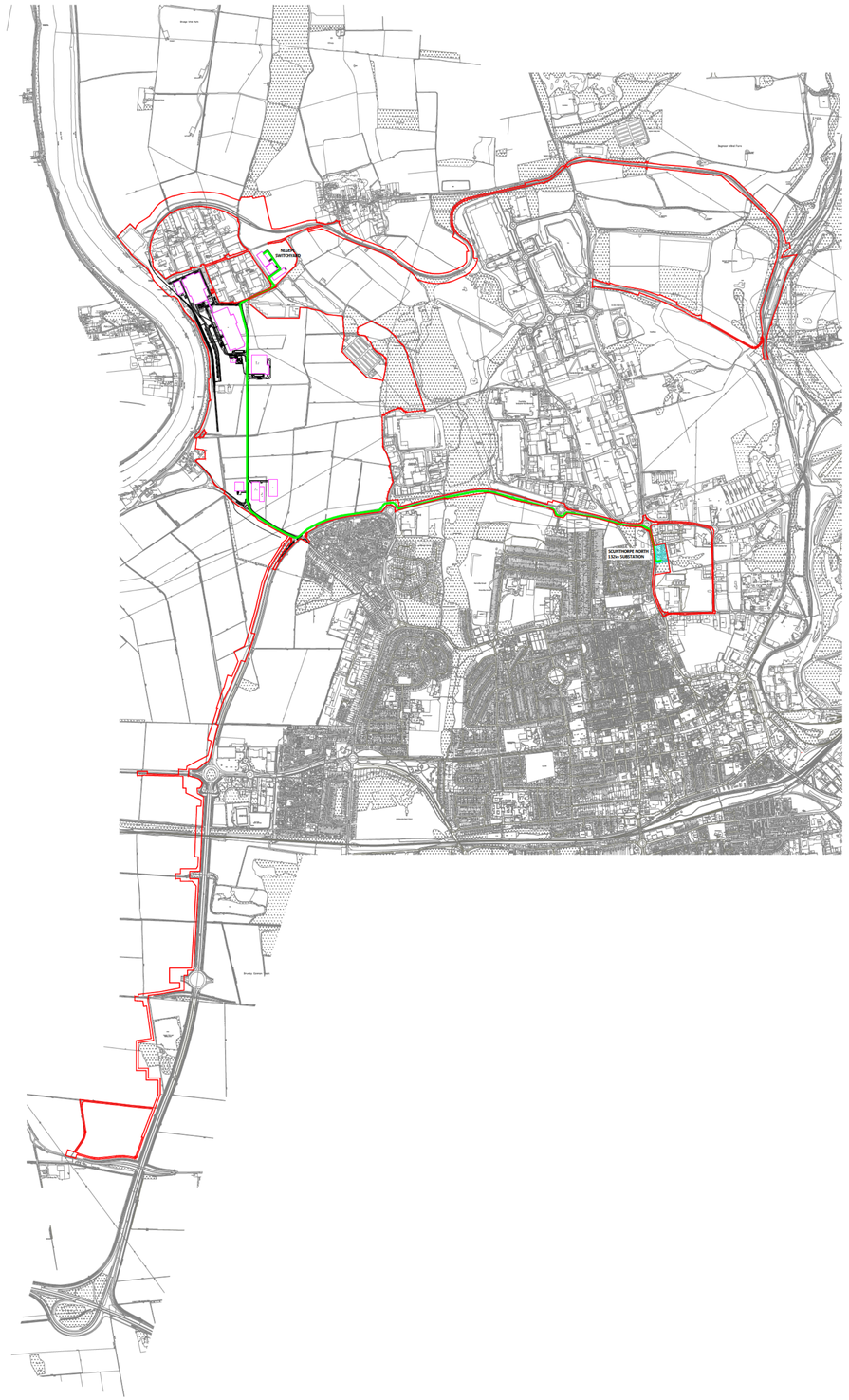
7 Conclusions

7.1.1.1 This Grid Connection Statement has been prepared to satisfy the requirements of Infrastructure Planning (Applications: Prescribed Forms and Procedures Regulations 2009 Regulation 6(1)(a)(i)) and to demonstrate that there is no reason why a grid connection would not be possible for the Project, in accordance with National Policy Statement (NPS)EN-1.

7.1.1.2 This Statement has demonstrated that the grid connection and associated underground cables included within the Application (and assessed as part of the associated Environmental Impact Assessment reported in the ES **(document references 6.2.7 and 6.2.13)** are feasible, and that the necessary agreements are being secured and appropriate powers are included in the draft Order to facilitate the delivery of the grid connection.

Appendices

A Indicative grid connection route



NORTH

FOR PLANNING EXAMINATION PURPOSES ONLY

Notes

LEGEND

INDICATIVE GRID CONNECTION ROUTE

0 200 400 600 800m 1200 1600 2000

Metres 1:20,000

Rev	Description	Date	Iss'd	Rev'd	App'd
3.0	Updated Grid Connection Route	10.12.21	AO1	DTW	CAB
2.0	Updated Red Line Boundary	03.12.21	AO1	DTW	CAB
1.0	Issued for client sign off	11.11.21	AO1	DTW	CAB

DCO SUBMISSION

Project Stage

PRELIMINARY

Status of Drawing

Client

NORTH LINCOLNSHIRE GREEN ENERGY PARK

Level 33, Euston Tower, 286 Euston Rad,
London, NW1 3DP

LDĀDESIGN GSDA ERM FICHTNER CONSULTING ENGINEERS LIMITED

BURO HAPPOLD northern planners bowland ecology

Client	*NORTH LINCOLNSHIRE GREEN ENERGY PARK LTD*
Consultant	*FICHTNER CONSULTING ENGINEERS*
Project	**NORTH LINCOLNSHIRE GREEN ENERGY PARK**
Drg Title	NLGEP INDICATIVE GRID CONNECTION ROUTE

Planning Inspectorate No. 0046658	Scale@A1 1:20,000
Drawn/Designed By. DTW	Checked By. AO1
Approved By. CAB	
Drawing No. NLGEP-FCE-XX-XX-DR-Y- 4002	Revision 3.0

Angela Ogden X:\Solar 210154 - Flixborough\EIA\Development Support\0000 - Drawings\Drawings\For Client\Revised\210154-0000-0004011\NLGEP Indicative Grid Connection Route R3.0.dwg

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