FENWICK SOLAR FARM

Fenwick Solar Farm

EN010152

Grid Connection Statement

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Executive Summary

ES1 This Grid Connection Statement (the Statement) has been prepared in respect of an application for a Development Consent Order (DCO) for the construction, operation (including maintenance), and decommissioning of the Fenwick Solar Farm (The Scheme). The Scheme comprises of ground mounted solar photovoltaic (PV) panel arrays, a Battery Energy Storage System (BESS), associated infrastructure, and export and import connection to the national grid.

ES2 There are two options being considered for the grid connection within the DCO:

a. **Grid Connection Corridor option** – which is the existing contractual connection offer from National Grid and would connect the Scheme to the Existing National Grid Thorpe Marsh Substation via underground 400kV cables; or

b. **Grid Connection Line Drop option** – which is a potential amendment to the grid connection offer at a date after DCO determination, at which point National Grid could allow the Scheme to connect into the existing 400kV overhead line running through the Solar PV Site.

ES3 **ES Volume II Figure 1-3: Elements of the Site [EN010152/APP/6.2]** shows the location and the elements of the Scheme.

ES4 The Scheme is defined under the Planning Act 2008 as a Nationally Significant Infrastructure Project (NSIP) as it comprises a generating station in England with a capacity exceeding 50 megawatts (MW). It therefore requires a DCO from the Secretary of State for Energy Security and Net Zero (the Secretary of State). This Statement has been prepared on behalf of Fenwick Solar Project Limited (the Applicant) to support the DCO Application and should be read in conjunction with the other documents submitted with the DCO Application.

ES5 This Statement is submitted pursuant to Regulation 6(1)(a)(i) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, which requires the Applicant for a generating station to state who will be responsible for designing and building the connection to the electricity grid.

ES6 This Statement provides confirmation to the Secretary of State of responsibilities for designing and building the connection from the ground mounted solar PV panel arrays, BESS and associated infrastructure to the National Grid Thorpe Marsh Substation for the Grid Connection Corridor option or to the overhead lines tower within the Solar PV Site as part of the Grid Connection Line Drop option.

ES7 The Applicant has, or will have, the ability to procure the necessary land and rights in order to connect to the National Grid Thorpe Marsh Substation as part of the Grid Connection Corridor option, or the overhead lines tower within the Solar PV Site as part of the Grid Connection Line Drop option; and has sought compulsory acquisition powers to facilitate this if required, as set out in the **Draft DCO [EN010152/APP/3.1]** and the **Statement of Reasons [EN010152/APP/4.1].** The Scheme for which development consent is being

sought includes the necessary infrastructure to connect to the National Grid Thorpe Marsh Substation for the Grid Connection Corridor option or the overhead lines tower within the Solar PV Site as part of the Grid Connection Line Drop option.

1. Introduction

1.1 Background

1.1.1 This Grid Connection Statement (the Statement) has been prepared by Fenwick Solar Project Limited (the Applicant) as part of an application for a Development Consent Order (DCO) for the construction, operation and maintenance, and decommissioning of Fenwick Solar Farm (the Scheme).

1.1.2 The Scheme comprises of the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating facility, with a total capacity exceeding 50 megawatts (MW) together with a Battery Energy Storage System (BESS) and export and import connection to the national grid.

1.1.3 There are two options being considered for the grid connection within the DCO:

a. **Grid Connection Corridor option** – which is the existing contractual connection offer from National Grid and would connect the Scheme to the Existing National Grid Thorpe Marsh Substation via underground 400kV cables; or

b. **Grid Connection Line Drop option** – which is a potential amendment to the grid connection offer at a date following DCO determination, at which point National Grid could allow the Scheme to connect into the existing 400kV overhead line running through the Solar PV Site.

1.1.4 Should the Applicant be successful in obtaining development consent for the Scheme, the Applicant will immediately advise National Grid of such consent and request for the connection date to be brought forward, should there be scope to do so. This is standard industry practice, if development consent and land are secured. At this stage, the Applicant will also request National Grid to further assess the feasibility of the Grid Connection Line Drop option as the grid connection point for the Scheme. Previous discussions between the parties indicated that such a connection could be viable.

1.1.5 The Scheme is defined under the Planning Act 2008 as a Nationally Significant Infrastructure Project (NSIP) as it comprises a generating station in England with a capacity exceeding 50 megawatts (MW). It therefore requires a DCO.

1.1.6 The DCO Application is submitted to the Planning Inspectorate, with the decision whether to grant a DCO being made by the Secretary of State pursuant to the Planning Act 2008 (PA 2008) (Ref. 1).

1.1.7 This Statement has been prepared on behalf of the Applicant to support the DCO Application and should be read in conjunction with the other documents submitted with the DCO Application. A detailed description of the Scheme is included in **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1].**

1.2 Purpose and Structure of this Statement

1.2.1 This Statement is part of a suite of documents which must accompany the DCO Application pursuant to Section 55 of the Planning Act 2008 (Ref. 1) and Regulations 5 and 6 of the Infrastructure Planning (Applications:

Prescribed Forms and Procedure) Regulations 2009 (APFP Regulations) (Ref. 2).

1.2.2 It has been prepared in accordance with Regulation 6(1)(a)(i) of the APFP Regulations (Ref. 2) which requires an applicant for a DCO in respect of a generating station to provide a statement of who will be responsible for designing and building the connection to the electricity grid.

1.2.3 This Statement is therefore structured as follows:

a. Section 1: Introduction;

b. Section 2: Grid Connection Agreement;

c. Section 3: Elements of the Grid Connection for the Grid Connection Corridor Option;

d. Section 4: Elements of the Grid Connection for the Grid Connection Line Drop Option;

e. Section 5: Responsibilities for Designing and Building the Grid Connection;

f. Section 6: Acquisition of Land Rights for the Grid Connection;

g. Section 7: Consent for the Grid Connection; and

h. Section 8: Conclusion.

1.3 Works Numbers

1.3.1 Works numbers (Work No.'s) are referred to throughout this Statement. These refer to the works describing the authorised development set out in Schedule 1 of the **Draft DCO [EN010152/APP/3.1].** The **Draft DCO [EN010152/APP/3.1]** should be referred to for the specific terminology and full details of each work number.

1.3.2 The location of each of the work numbers is shown on the **Works Plan [EN010152/APP/2.2].**

1.3.3 The work numbers which are relevant to the Grid Connection Corridor option are as follows:

a. **Work No. 3**— development of onsite substation and associated works including—

   i. substation, switch room buildings and ancillary equipment including reactive power units and harmonic filters; and

   ii. monitoring and control systems housed within a control building or located separately in their own containers or control rooms, with welfare facilities.

b. **Work No. 4**— works to lay electrical cables and compounds for the electrical cables including—

   i. works to lay 400kV electrical cables connecting Work No. 3 to the National Grid Thorpe Marsh Substation, including link boxes and tunnelling, boring and drilling works for trenchless crossings;

   ii. electrical engineering works within or around the National Grid Thorpe Marsh Substation, including the laying and terminating of the electrical cables and ancillary equipment; and

iii. construction and decommissioning compounds, including site and welfare offices and areas to store materials and equipment.

1.3.4 The work numbers which are relevant to the Grid Connection Line Drop option are as follows:

a. **Work No. 3**— development of onsite substation and associated works including—

i. substation, switch room buildings and ancillary equipment including reactive power units and harmonic filters; and

ii. monitoring and control systems housed within a control building or located separately in their own containers or control rooms, with welfare facilities.

b. **Work No. 5(b)** – works to lay electrical cables connecting Work No. 3 to an existing on site 400kV overhead line tower including the laying and terminating of the electrical cables and ancillary equipment at the cable sealing end compound

1.3.5 Depending on the option chosen for the grid connection, the above works will form the infrastructure that is used to export the electricity generated by **Work No. 1** (the ground mounted solar photovoltaic generating station) or the grid, to be stored in **Work No. 2** (the BESS) and transmitted at times of peak demand.

2. Grid Connection Agreement

2.1.1 In order to connect to the Existing National Grid Thorpe Marsh Substation as part of the Grid Connection Corridor option, the Applicant has submitted an application for the grid connection. The Applicant received a grid connection offer from National Grid Electricity System Operator Limited (NGESO) to connect the Scheme to the National Electricity Transmission System (NETS) at the Existing National Grid Thorpe Marsh Substation in South Yorkshire. NGESO are the system operator for the NETS, and as such are the body of National Grid able to make connection offers. National Grid Electricity Transmission (NGET) operate as transmission owners, and as such NGET are the body of National Grid responsible for owning and operating the Existing National Grid Thorpe Marsh Substation that the Scheme will connect to as part of the Grid Connection Corridor option. The viability of connection into National Grid's overhead lines (the Grid Connection Line Drop option, as described above) will be further explored should the DCO receive consent.

2.1.2 The grid connection offer (a Bilateral Connection Agreement and Construction Agreement) was novated to the Applicant and signed on 3 October 2023. The Bilateral Connection Agreement and Construction Agreement is for the import and export of up to 237.5 MW alternating current.

2.1.3 NGET have confirmed that a bay within the Existing National Grid Thorpe Marsh Substation will be made available. All works to the Existing National Grid Thorpe Marsh Substation to accommodate the Scheme connection for the Grid Connection Corridor option would be undertaken by National Grid and are anticipated to include the installation of infrastructure to facilitate the efficient transmission of power onto the electricity transmission network. All infrastructure within the Existing National Grid Thorpe Marsh Substation would remain under National Grid’s control.

2.1.4 The Applicant therefore confirms that for the Grid Connection Corridor option the electricity generated by **Work No. 1** (the ground mounted solar PV generating station) and imported and exported to and from **Work No. 2** (the BESS Area) will be connected to the NETS via the National Grid Thorpe Marsh Substation, owned and operated by NGET.

3. Elements of the Grid connection for the Grid Connection Corridor Option

3.1 Overview

3.1.1 As part of the Grid Connection Corridor option, electricity generated by the Scheme will be exported to the NETS via cabling located within the Grid Connection Corridor (**Work No. 4**). This cabling will connect the On-Site Substation (**Work No. 3**) to the National Grid Thorpe Marsh Substation.

3.1.2 The locations of the Works areas are shown on the **Works Plans [EN010152/APP/2.2]** and the location of the Existing National Grid Thorpe Marsh Substation is shown on sheet 10 of the **Works Plans [EN010152/APP/2.2].**

3.1.3 The following sections summarise the elements required for the grid connection for the Scheme as part of the Grid Connection Corridor option. A description of how these elements will be constructed is provided in **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1].**

3.2 The On-Site Substation (Work No. 3)

3.2.1 The On-Site Substation would be located within Field SW8 (refer to **ES Volume II Figure 2-3: Indicative Site Layout Plan [EN010152/APP/6.2]).**

3.2.2 The On-Site Substation would:

a. Receive the electricity from Field Stations (**Work No. 1**) and BESS (**Work No. 2**) and step up the voltage from 33 kV to 400 kV ready to be exported to the Existing National Grid Thorpe Marsh Substation via the 400 kV Grid Connection Cables;

b. Receive excess electricity generated by the Solar PV Panels via the Field Stations (**Work No. 1**) and send it to BESS (**Work No. 2**) for storage; and

c. Import excess electricity from the grid via the 400 kV Grid Connection Cables (**Work No. 4**), step down the voltage from 400 kV to 33 kV, and send it to BESS (**Work No. 2**) for storage.

3.2.3 The electrical infrastructure that forms the On-Site Substation would comprise cable sealing ends (where the export cables would terminate into the infrastructure), busbars/conductors, isolator/disconnectors and circuit breakers (for electrical safety), and voltage transformers (for measuring supply). The transformer would be outside (i.e. not contained within a building) and would comprise separate infrastructure and conductors.

3.3 Grid Connection Corridor (Work No. 4)

3.3.1 The Grid Connection Corridor would comprise the area in which the 400 kV Grid Connection Cables would be installed between the On-Site Substation and the Existing National Grid Thorpe Marsh Substation.

3.3.2 The On-Site Substation and the Existing National Grid Thorpe Marsh Substation would be connected via three 400 kV single core AC cables, as well as a bare copper Earth cable, fibre optic cable, and low voltage control cable.

3.3.3 The cable trench would be up to approximately 0.75 m wide. Grid Connection Cables will be installed to a minimum depth of 1 m (to top of cable duct). To accommodate this, the trench depth will be up to 1.495 m.

3.3.4 The Grid Connection Corridor allows for necessary spatial flexibility in the routing of the Grid Connection Cables. The working area for the installation of the Grid Connection Cables is anticipated to be a 30 m wide corridor. This may be widened in places to accommodate required operations and narrowed in others, for example to minimise removal of hedgerows or at open cut watercourse crossings.

3.3.5 The working width includes the trench, soil and spoil storage, working area and haul road with passing places where required. As is typical for cable installation projects, the haul road will be up to a maximum of 5 m wide and will run directly on the subsoil surface with temporary track matting used where required; it will not be stoned.

3.3.6 The requirements of the trench design for cable laying are set out in the **Outline Design Parameters Statement [EN010152/APP/7.4].**

3.4 Works at the National Grid Thorpe Marsh Substation

3.4.1 As part of the Grid Connection Corridor option, the Scheme will be connected to the Existing National Grid Thorpe Marsh Substation. NGET have confirmed that a bay within the National Grid Thorpe Marsh Substation will be made available. All works to the National Grid Thorpe Marsh Substation to accommodate the Scheme connection would be undertaken by National Grid and are anticipated to include the installation of infrastructure to facilitate the efficient transmission of power onto the electricity transmission network. All infrastructure within the National Grid Thorpe Marsh Substation would remain under National Grid’s control.

4. Elements of the Grid Connection for the Grid Connection Line Drop Option

4.1 Overview

4.1.1 As part of the Grid Connection Line Drop option, electricity generated by the Scheme will be exported to the NETS via underground cables (**Work No. 5(b)**) connecting the On-Site Substation (**Work No. 3)** to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2, which would be connected to the existing overhead lines. The overhead power lines running north south across the east of the Solar PV Site are part of the NETS.

4.1.2 The locations of the Works areas are shown on the **Works Plans [EN010152/APP/2.2].**

4.1.3 The following sections summarise the elements required for the grid connection for the Scheme for the Grid Connection Line Drop option. A description of how these elements will be constructed is provided in **ES Volume II Chapter 2: The Scheme [EN010152/APP/6.1].**

4.2 The On-Site Substation (Work No. 3)

4.2.1 The On-Site Substation would also be located within Field SW8 (refer to **ES Volume II Figure 2-3: Indicative Site Layout Plan [EN010152/APP/6.2]).**

4.2.2 The On-Site Substation would:

a. Receive the electricity from Field Stations (**Work No. 1**) and BESS (**Work No. 2**) and step up the voltage from 33 kV to 400 kV ready to be exported to below ground cables running from the On-Site Substation to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2;

b. Receive excess electricity generated by the Solar PV Panels via the Field Stations (**Work No. 1**) and send it to the BESS (**Work No. 2**) for storage; and

c. Import excess electricity from the grid via the below ground cables (**Work No 5(b**)) that would connect the existing on-site 400 kV overhead line tower located within Field SE2 to the On-Site Substation (**Work No. 3**), and step down the voltage from 400 kV to 33 kV and send it to the BESS (**Work No. 2**) for storage.

4.2.3 The electrical infrastructure that forms the On-Site Substation would comprise cable sealing ends (where the export cables would terminate into the infrastructure), busbars/conductors, isolator/disconnectors and circuit breakers (for electrical safety), and voltage transformers (for measuring supply). The transformer would be outside (i.e. not contained within a building) and would comprise separate infrastructure and conductors.

4.3 Grid Connection Line Drop (Work No. 5(b))

4.3.1 The Grid Connection Line Drop would comprise of below ground cables running approximately 1.5 km (refer to **ES Volume II Figure 2-3: Indicative Site Layout Plan [EN010152/APP/6.2]**) connecting the On-Site Substation

to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2.

4.3.2 As part of the Grid Connection Line Drop option, the Scheme will be connected to the NETS via underground cables from the On-Site Substation to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2 of the Solar PV Site. All works to accommodate the connection including the new cable sealing end compound to the overhead lines would likely be undertaken by National Grid and are anticipated to include the installation of an above ground cable within the line tower, between the new cable sealing end compound and the 400 kV overhead lines to connect them.

4.3.3 The tower will likely require modification to allow the associated infrastructure to connect by this method. The new cable sealing end compound would likely include a form of isolation and may be adopted by National Grid.

5. Responsibilities for designing and building the Grid Connection

5.1 Responsibilities of the Applicant

5.1.1 The Applicant and its appointed contractors will be responsible for designing and constructing the elements described in Sections 3.2 and 3.3 or Sections 4.2 and 4.3 of this Statement, depending on the option chosen for the grid connection.

5.1.2 Works at the Existing National Grid Thorpe Marsh Substation and works at the existing 400 kV line tower (described in Section 3.4 and 4.4 of this Statement) to accommodate the Scheme connection would be undertaken by National Grid.

5.2 Responsibilities of National Grid Electricity Transmission

5.2.1 For both grid connection options, NGET will be responsible for designing and building all non-contestable works (works that will be undertaken by National Grid). NGET is proposing to install infrastructure at a bay at the National Grid Thorpe Marsh Substation for the Grid Connection Corridor option or will facilitate the connection of the Scheme to existing overhead cables as part of the Grid Connection Line Drop option, as described in this statement.

6. Acquisition of land rights required for the Grid Connection

6.1.1 Negotiations for the purchase of land, rights and interests are ongoing in respect of any new rights required for the Scheme, where voluntary agreement has not yet been reached. It is necessary for the Applicant to seek compulsory acquisition powers to secure such land, rights and interests and to ensure that any third-party interests or encumbrances affecting such land, rights and interests may be acquired, overridden or extinguished pursuant to the **Draft DCO [EN010152/APP/3.1],** thereby ensuring that the Scheme can be constructed, operated and maintained.

6.1.2 The Applicant nevertheless remains committed to obtaining necessary land and rights by negotiation where possible and discussions with landowners remains ongoing.

6.1.3 An option on the land required for the On-Site Substation, and the cables as part of the Grid Connection Line Drop option, is complete, and the Applicant continues to negotiate an option for easement with affected landowners for the Grid Connection Corridor. The status of negotiations at the time of the DCO Application submission is reported in the **Schedule of Negotiations and Powers Sought [EN010152/APP/4.4].**

7. Consent for the Grid Connection

7.1.1 The grid connection, comprising the On-Site Substation (**Work No. 3**), and the Grid Connection Corridor (**Works No. 4**) for the Grid Connection Corridor option, and the On-Site Substation (**Work No. 3**) and the cables for the Grid Connection Line Drop (**Work No. 5(b)**) for the Grid Connection Line Drop option, form part of the Scheme for which development consent is being sought via the DCO Application.

7.1.2 The Applicant has accepted a grid connection offer from NGET which stipulates the works required to connect to the Existing National Grid Thorpe Marsh Substation for the Grid Connection Corridor option. These works are explained in Sections 2 and 3 of this Statement.

7.1.3 As such, if the same terms as those set out in the **Draft DCO [EN010152/APP/3.1]** are granted, development consent to deliver the grid connection will have been secured.

8. Conclusion

8.1.1 The Applicant is required to submit a statement pursuant to Regulation 6(1)(a)(i) of the APFP Regulations (Ref. 2), stating who will be responsible for designing and building the connection to the electricity grid.

8.1.2 It is considered that this Statement provides confirmation to the Secretary of State of the requirement above, namely:

a. The Applicant has received a grid connection offer from NGESO to connect the Scheme to the NETS as part of the Grid Connection Corridor option and this offer has been accepted and the grid connection agreement entered into in October 2023. This offer may be modified if the Grid Connection Line Drop option is chosen.

b. For the Grid Connection Corridor option:

   i. A connection to the Existing National Grid Thorpe Marsh Substation will be provided via three 400 kV single core AC cables and associated infrastructure from the On-Site Substation shown as **Work No. 4** on sheet 10 of the **Works Plans [EN010152/APP/2.2];**

   ii. The Applicant will be responsible for designing and building the On-Site Substation (**Work No. 3**) and laying the cable within the Grid Connection Corridor (**Work No. 4**). NGET will be responsible for any works required within the connection bay at National Grid Thorpe Marsh Substation to receive the electricity;

   iii. The Applicant has, or will have, the ability to procure the necessary land and rights in order to accommodate the Grid Connection Corridor.

c. For the Grid Connection Line Drop option:

   i. A connection to the NETS will be provided by connecting the On-Site Substation (**Work No. 3**) to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2, via below ground cables running approximately 1.5 km (**Work No. 5(b)**). Cables would then connect the cable sealing end compound to the 400 kV overhead lines that form part of the NETS;

   ii. The Applicant will be responsible for designing and building the On-Site Substation (**Work No. 3**) and laying the below ground cables to a new cable sealing end compound at the base of an existing on-site 400 kV overhead line tower located within Field SE2 tower (**Work No. 5(b)**). NGET will be responsible for providing the cable sealing end compound and connection to the 400 kV overhead lines, which may include above ground cabling and modifications to the tower;

d. An option on the land required for the On-Site Substation, and the cables as part of the Grid Connection Line Drop option, is complete, and the Applicant continues to negotiate an option for easement with affected landowners for the Grid Connection Corridor; and

e. As set out in the **Draft DCO [EN010152/APP/3.1],** the grid connection, including the two options set out in this Statement, form part of the Scheme for which development consent is being sought.

9. References

Ref. 1 HM Government (2008). Planning Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 17 July 2024].

Ref. 2 H.M Government (2009). Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009 (the APFP Regulations). Available at: https://www.legislation.gov.uk/uksi/2009/2264/contents/made [Accessed 17 July 2024].

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