



Mallard Pass

Solar Farm

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Grid Connection Statement

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Table of Contents

1.0	Executive summary	2
2.0	Introduction	5
	Purpose and Structure of this Statement	7
	Work numbers.....	8
3.0	Grid connection agreement	9
4.0	Elements of grid connection	10
	Introduction	10
	Onsite Substation.....	10
	Grid Connection Route.....	11
5.0	Responsibilities for designing and building the grid connection	13
	Responsibilities of the Applicant.....	13
	Responsibilities of National Grid Electricity Transmission.....	13
6.0	Acquisition of land rights	14
	Solar PV Site.....	14
	Grid Connection Route.....	14
7.0	Consent for the grid connection works	15
8.0	Conclusion	16

1.0 Executive summary

- 1.1 This Grid Connection Statement has been prepared in respect of an application for a Development Consent Order (DCO) for the construction, operation and maintenance and decommissioning of Mallard Pass Solar Farm (hereafter the 'Proposed Development').
- 1.2 The Proposed Development will comprise the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity-generating facility with a total capacity exceeding 50 megawatts (MW), and an export connection to the National Electricity Transmission System (NETS). The Scheme will be located within the "Order limits" (as will be described in the DCO Application documents) and is the subject of the DCO Application.
- 1.3 Mallard Pass Solar Farm Limited has a grid connection agreement with National Grid Electricity Transmission to export 240MW (AC) of clean power to the national grid.
- 1.4 The parameters applied for in this Development Consent Order application allow for a solar farm capable of generating up to 350MW (DC) to account for the normally applied factors:
- Degradation of panels over time;
 - Seasonal and daily variation of solar irradiance;
 - Loss of power in the conversion from AC to DC.
- 1.5 This will ensure that Mallard Pass Solar Farm is able to optimise the available grid connection and generate as much clean power as possible each day and over its lifetime.
- 1.6 The Proposed Development will be located on land near the village of Essendine in Lincolnshire. The parcels lie mainly to the north of the

existing Ryhall National Grid Substation and are situated on both sides of the East Coast mainline railway which passes through the local area.

- 1.7 The Scheme will be connected to the NETS via a Point of Connection (PoC) at Ryhall 400kV Substation ('Ryhall Substation'), which lies on a well-connected and resilient part of the NETS and is located in close proximity to the proposed land parcels. The location of the land parcels and PoC minimise the additional above or below-ground transmission infrastructure required to export the power generated to customers in Lincolnshire and nationally.
- 1.8 There will also be a new single substation (400/33KV) located onsite (the 'Onsite Substation'), close to the existing Ryhall Substation. The Onsite Substation will comprise electrical infrastructure such as the transformers, switchgear Control Buildings and metering equipment as required to facilitate the export of electricity from the Proposed Development to the National Grid via the Ryhall Substation. The Onsite Substation will also include ancillary buildings which will include office space and welfare facilities as well as operational monitoring and maintenance equipment.
- 1.9 The Scheme qualifies as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) from the Secretary of State for Business, Energy and Industrial Strategy (the 'Secretary of State'), due to its generating capacity exceeding 50 megawatts.
- 1.10 This Grid Connection Statement has therefore been prepared on behalf of Mallard Pass Solar Farm Limited ('The Applicant') to support the DCO Application and should be read in conjunction with the other documents submitted with the DCO Application. This Grid Connection Statement is submitted pursuant to Regulation 6(1)(a)(i) of the Infrastructure Planning

(Applications: Prescribed Forms and Procedure) Regulations 2009 (“APFP Regulations”), which requires the Applicant to state who will be responsible for designing and building the connection to the electricity grid from the Scheme.

- 1.11 This Statement provides confirmation to the Secretary of State that the electricity generated by the Mallard Pass Solar Farm will be exported via a 400kV connection between the Onsite Substation and the existing Ryhall Substation. The Ryhall Substation itself benefits from an available transformer bay and therefore will not need to be expanded to accommodate the connection from the Proposed Development.
- 1.12 The Onsite Substation and associated cabling form part of the Proposed Development and the Applicant has or will have, the ability to procure the necessary land and rights in order to undertake the necessary works to connect the Solar Farm to Ryhall Substation. This is stipulated in the draft DCO Order [Ref: **EN010127/APP/3.1**]. The Grid Connection and the Onsite Substation, cabling and associated works required to facilitate this connection to the Ryhall Substation form part of the Scheme for which development consent is being sought.

2.0 Introduction

- 2.1 This Grid Connection Statement has been prepared by Mallard Pass Solar Farm Limited as part of the DCO Application for the Proposed Development.
- 2.2 Mallard Pass Solar Farm Limited has a grid connection agreement with National Grid Electricity Transmission to export 240MW (AC) of clean power to the national grid.
- 2.3 The Proposed Development comprises the construction, operation and maintenance, and decommissioning of a PV array electricity generating facility with a total capacity exceeding 50MW and export connection to the National Grid.
- 2.4 The location of the Proposed Development is shown in Figure 03.1: Extent of Order Limits and described in Chapter 3: Description of Order limits with the accompanying Environmental Statement (ES) [Ref: **EN010127/APP/6.1**], with consideration of alternatives described in Chapter 4: Alternatives and Design Evolution of the accompanying ES.
- 2.5 The area subject to the DCO Application comprises the Solar PV Site, the Grid Connection Route, the Onsite Substation, the Highways Works Site, and Mitigation and Enhancement Areas of which the principal components comprise the following:
- PV Modules;
 - Mounting Structures;
 - Inverters;
 - Transformers;
 - Switchgear;

- Onsite Substation and Ancillary Buildings;
- Low Voltage Distribution Cables;
- Grid Connection Cables;
- Fencing, security and ancillary infrastructure;
- Access tracks; and
- Green Infrastructure (GI).

2.6 A detailed description of the Scheme is included in Chapter 5, Project Description, of the ES [Ref: **EN010127/APP/6.1**].

2.7 The DCO Application is submitted to the Planning Inspectorate, with the decision whether to grant a DCO being made by the Secretary of State for Business, Energy and Industrial Strategy (the 'Secretary of State') pursuant to the Planning Act 2008 ('PA 2008').

2.8 The Scheme is defined under the PA 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. This document 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.

2.9 The parameters applied for in this Development Consent Order application allow for a solar farm capable of generating up to 350MW (DC) to account for the normally applied factors:

- Degradation of panels over time;
- Seasonal and daily variation of solar irradiance;

- Loss of power in the conversion from AC to DC.

2.10 This will ensure that Mallard Pass Solar Farm is able to optimise the available grid connection and generate as much clean power as possible each day and over its lifetime.

Purpose and Structure of this Statement

2.11 This Statement is part of a suite of documents which must accompany the DCO Application pursuant to Section 55 of the PA 2008 and Regulations 5 and 6 of the APFP Regulations.

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

2.13 The Statement is structured as follows:

- Section 1: Introduction;
- Section 2: Grid Connection Agreement;
- Section 3: Elements of Grid Connection;
- Section 4: Responsibilities for Designing and Building the Grid Connection;
- Section 5: Acquisition of Land Rights;
- Section 6: Consent for the Grid Connection Works;
- Section 7: Conclusion.

Work numbers

- 2.14 'Work Nos.' are referred to throughout this Grid Connection Statement. These refer to Schedule 1 of the Draft DCO [**Ref: EN010127/APP/3.1**]. The Draft DCO [**Ref: EN010127/APP/3.1**] should be referred to for the precise terminology and full details of each Work number.
- 2.15 The location of each Work number is defined by the Works Plans [**Ref: EN010127/APP/2.2**].
- 2.16 The work numbers particularly relevant to the NGET grid connection site at Ryhall Substation, the Onsite Substation and the 400kv grid connection route are as follows:
- Onsite Substation (Work No. 2)
 - Grid Connection Route (Work No. 3)
- 2.17 The above works will form the infrastructure that is used to transport the electricity from Work No. 1, the Solar Photovoltaic Generating Station to the NETS, via the proposed Onsite Substation.

3.0 Grid connection agreement

- 3.1 The Applicant has received a grid connection offer from National Grid Electricity System Operator Limited (NGESO) to connect the Scheme to the NETS. NGESO are the system operator for the NETS, and as such is the body of National Grid able to make connection offers. National Grid Electricity Transmission (NGET) operate as the transmission owners, and as such NGET is the body of the National Grid responsible for owning and operating the Ryhall Substation.
- 3.2 The Applicant first contacted NGESO regarding the potential of a grid connection at existing Ryhall substation, in the summer of 2020, with an initial meeting held on 19th of August 2020. On the call, the Applicant discussed a variety of options for a potential connection and solutions to allow connection into the substation. This was subsequently explored further by the Applicant's technical team and a formal grid application for the project was submitted on 22nd March 2021. A grid connection offer was received from NGESO on 15th July 2021. Thereafter, the Applicant conducted a review process with their technical team. The grid connection offer was finally accepted by the Applicant on 8th October 2021 and is now completing detailed designs to determine the arrangement of the connection. Following acceptance, the Applicant has maintained a positive relationship with NGESO.
- 3.3 As such the Applicant confirms that the output of Work No. 1, the Solar Photovoltaic Generating Station will be exported to the NETS, via the Ryhall Substation, owned and operated by NGET.

4.0 Elements of grid connection

Introduction

4.1 The electricity generated by the Scheme will be exported to the NETS via a new below-ground grid connection cable located within the Grid Connection Route (Work No. 3). This will connect the new Onsite Substation (Work No. 2) and the Ryhall Substation.

4.2 The Works Areas where the following Works will be located are identified by the Works Plans [Ref: EN010127/APP/2.2]:

- Work No 2: Onsite Substation;
- Work No 3: Grid Connection Route (Work No 3A) including access tracks (Work No 3Aii) and temporary construction laydown areas (Work No. 3B).

4.3 It is assumed that the Construction Phase, including the process of building the Onsite Substation and Grid Connection Route, would be commenced in 2026, and for a period of 24 months.

Onsite Substation

4.4 The Onsite Substation (400/33kV) will convert electricity generated and stored by the Solar PV Site (Work No. 1) for onward transmission to the National Grid via the Grid Connection Route (Work No. 3) and the Ryhall Substation. It will be located near the existing National Grid Ryhall Substation, within Work No 2.

4.5 The Onsite Substation (Work No. 2) will comprise electrical infrastructure, as required to facilitate the export of electricity from the Proposed Development to the National Grid, including:

- Transformers;

- Switchgear Control Buildings; and
- Metering equipment.

4.6 The Onsite Substation will also include Ancillary Buildings which will include office space and welfare facilities as well as operational monitoring and maintenance equipment. The size of the substation compound is 100m x 200m, with a maximum height parameter being 13m that allows for the Onsite Substation and associated ancillary electrical control buildings & workshop buildings and Site office, storage and welfare building.

4.7 The majority of the components will be up to 6m in height, with the exception of the Harmonic Filters which will be up to 12.5m in height and the lightning/surge protection masts which will be up to 13m.

4.8 It is not anticipated that a connection to the public sewer network would be required.

Grid Connection Route

4.9 The electricity generated by the Proposed Development is expected to be exported via a 400kV connection between the Onsite Substation and the existing National Grid Ryhall Substation at Uffington Lane which is an NGET substation. The grid connection cables to the National Grid Ryhall Substation will comprise 400kV cables buried within a trench which will partly pass under Uffington Lane, up to 2m in depth. The cables within the trench will have a minimum separation distance of 500mm between them. The trench will also include a fibreoptics communications cable connecting the Onsite Substation with the Ryhall National Grid Substation.

4.10 The depth and separation of the cables will be designed in accordance with the British Standard and National Grid Recommendation (E.g.-

CDS-GFS-00-001-R1 underground cable installation, XDS GFS 00 001 R4 Substation General Requirements etc.) boundaries to minimise the potential for magnetic field effects on relevant receptors.

- 4.11 The Grid Connection Route will cross underneath Uffington Lane and connect to the National Grid Ryhall Substation as shown in Figure 5.7 in Chapter 5 ‘Project Description’ in the accompanying ES [Ref: **EN010127/APP/6.1**].
- 4.12 The construction, operation and (where relevant) decommissioning of all elements of the Grid Connection have been assessed as part of the Environmental Impact Assessment which is reported by the ES [Ref: **EN010127/APP/6.1**].
- 4.13 The construction, operation and (where applicable) decommissioning of all elements of the Grid Connection will be undertaken (respectively) in accordance with the Outline Construction Environmental Management Plan [Ref: **EN010127/APP/7.6**], the Outline Operational Environmental Management Plan [Ref: **EN010127/APP/7.7**], the Decommissioning Environmental Management Plan [Ref: **EN010127/APP/7.8**].

5.0 Responsibilities for designing and building the grid connection

Responsibilities of the Applicant

5.1 The Applicant and its appointed contractors will be responsible for designing and building the following elements of the grid connection:

- Onsite Substation (Work No. 2)
- Grid Connection Route (Work No. 3)

Responsibilities of National Grid Electricity Transmission

5.2 NGET will be responsible for facilitating the connection to Ryhall Substation via the existing transformer bay available.

6.0 Acquisition of land rights

6.1 As shown in the Schedule of Negotiations [Ref: EN010127/APP/4.1], discussions have been on-going with the relevant land interests, detailed below.

Solar PV Site

6.2 Whilst the Applicant has sought to reach option agreements with all landowners of the Solar PV Site, compulsory acquisition powers are sought for the Solar PV Site to ensure that no third-party rights encumber the ability to undertake the Scheme.

Grid Connection Route

6.3 The Grid Connection Route involves cabling from the Solar Farm Site firstly under the highway that is unregistered and the Applicant will be seeking powers to compulsory acquire rights to facilitate the installation maintenance and use of this cabling under the highway.

6.4 The cabling route then passes under a field adjacent to the National Grid Ryhall Substation, within the ownership of National Grid, before going on to connect to the Substation. The Applicant will seek to reach a voluntary agreement with National Grid for rights over this land, but in the absence of an agreement at this time is seeking powers to compulsory acquire rights to facilitate the installation maintenance and use of the cabling in this land. The Applicant has been in discussion with National Grid, as owner of the substation and the adjacent field, regarding Protective Provisions which will regulate the use of these powers, as included in Draft DCO [Ref: EN010127/APP/3.1].

7.0 Consent for the grid connection works

- 7.1 The Grid Connection, comprising the Onsite Substation (Work No. 2) and the Grid Connection Route (Work No. 3) forms part of the Scheme for which development consent is being sought via the DCO Application. Ryhall Substation benefits from an existing transformer bay which is available to facilitate the connection to the NGET. Accordingly, no expansion of the Ryhall Substation is required to facilitate the export of electricity generated by the Scheme to the NGET.
- 7.2 As such, if the same terms as those set out in the draft DCO [**Ref: EN010127/APP/3.1**] are granted, development consent for the Grid Connection as described in this Statement will have been secured.

8.0 Conclusion

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

8.2 This Grid Connection Statement provides confirmation to the Secretary of State of the requirement above, namely:

- The Applicant has received a grid connection offer from NGENSO to connect the Scheme to the NETS and that offer has been accepted.
- A connection to the Ryhall Substation will be provided via 400kV underground cables from the proposed Onsite Substation, within the Solar PV Site;
- The Applicant will be responsible for designing and building the Onsite Substation (Work No. 2) and the Grid Connection Route (Work No. 3). NGET will be responsible for allowing connection to Ryhall Substation via the existing transformer bay available.
- The Applicant has, or will have, the ability to procure the necessary land and rights in order to provide the proposed Onsite Substation to facilitate the Grid Connection; and
- As stipulated in the draft DCO [Ref: **EN010127/APP/3.1**], the Grid Connection forms part of the Scheme for which development consent is being sought.

