



Great North Road Solar and Biodiversity Park

Design and Access Statement

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1.1 INTRODUCTION

- 1 This Design and Access Statement (DAS) and has been written to meet the requirements of Part 3, Article 9 of The Town and Country Planning (Development Management Procedure) (England) Order 2015.
- 2 This DAS supports an application (the 'Application') made to the Secretary of State (SoS) for the 'Department for Energy Security and Net Zero' (DESNZ), under Section 37 of the Planning Act 2008 (PA 2008). The Application is for a Development Consent Order (DCO) for the construction, operation and maintenance and decommissioning of Great North Road Solar and Biodiversity Park; a proposed solar photovoltaic (PV) electricity generating facility with a total capacity exceeding 50 megawatts (MW) and electrical storage facility with an export connection to the National Grid (hereafter referred to as "the Development").
- 3 A detailed description of the physical characteristics of the Development and the proposed programme of site preparation, construction and decommissioning are described in Chapter 5 – Development Description of the Environmental Statement (ES) [EN010162/APP/6.2.5]
- 4 Two alternative options are proposed to connect the Development to the existing National Grid Staythorpe Substation and the Development will have a generating capacity of around 800MW (AC), which would be equivalent to meeting the electricity requirements of up to 400,000 homes.
- 5 This DAS is one of a suite of documents that accompany the Application, including an Environmental Statement (ES) with associated surveys and assessments. The DAS should be read in conjunction with the details contained in the ES and the submission in its entirety to gain a full understanding of the Development; and in particular Chapter 4 – Alternatives [EN010162/APP/6.2.4]; Chapter 5 – Development Description [EN010162/APP/6.2.5]; and the Design Approach Document (DAD) [EN010162/APP/5.6].
- 6 The Development has been designed to reduce, as far as possible, any negative impacts on the environment. Appropriate assessments and relevant surveys have been incorporated into the design to ensure the conservation and enhancement of the natural and historic environment has been robustly considered.
- 7 Various constraints have informed the design of the Development including the area's natural features and species, residential receptors, historic assets, proximity to power lines/substation, the proximity of the local road network and access.
- 8 The Development has been designed to create a high-quality development. Key design principles such as responsive design, embedded mitigation, sustainable design principles, appropriate siting, highway safety and security have been adhered to.
- 9 Sympathetic materials and planting that reflect those found in the local setting have been selected to better integrate the Development with its environs.



- 10 It is essential to provide flexibility in the Development to allow for the most efficient technology possible to be utilised at the point of construction. The rapid improvement of technology in the solar photovoltaic (PV) and energy storage industry, means that in some cases, the Development could utilise the latest technology. To address this, a Rochdale Envelope approach is used. The principles and justification for this approach are set out in Chapter 2 - EIA [EN010162/APP/6.2.2] of the Environmental Statement; with application in relation to the design of the Development provided in Chapter 5 – Development Description [EN010162/APP/6.2.5].

1.1.1 Summary of the Development

- 11 A full description of the Development is provided within Chapter 5 – Development Description of the Environmental Statement [EN010162/APP/6.2.5].
- 12 The Development will comprise an array of solar PV modules, energy storage and associated development infrastructure, together with biodiversity enhancements including 64,500 trees and 50 km of new hedgerow. In addition, 27 new permissive routes are proposed, comprising 21 footpaths and 6 bridleways, totalling 32.6 km of new recreational routes. These are shown on Figure 5.2, Masterplan [EN010162/APP/6.3.5.2] and assessed in Chapter 18, Recreation of the Environmental Statement [EN010162/APP/6.2.18].
- 13 The general flow of electricity across the Development has been set out below, explaining at high level the linkage and function of the principal electrical components of the Development:
- Solar PV Modules – Solar PV Modules are installed on a metal framework at an inclination, while the mounting configuration is broken down into discrete units. The layout configuration and framework height is designed to avoid modules being too close or too far, and to avoid contact with flooded areas and to preserve the natural terrain.
 - Strings - The connection in series of a set of solar modules (usually called a string) allows the voltage to be increased thereby reducing electrical losses and improving both operational and construction efficiency.
 - Combiner Boxes - The purpose of Combiner Boxes (CB) is to aggregate the output from the strings while maintaining the string voltage and thereby reduce the number of inputs required in the central inverter.
 - Central Inverters – The central inverters convert the direct current (DC) into alternating current (AC) while allowing to monitor the operational parameter and provide protection to the installation.
 - Transformer Stations – Transform Stations (TS) are implemented to step-up the voltage to, typically, 33kV to reduce energy losses. Additionally, TS also provide protection to the installation at higher voltage levels.
 - Intermediate Substations – Intermediate Substations combine the electricity from all Transformer Substations and increase the voltage



to 132kV that is subsequently transported to the BESS compound via cable.

- BESS/400 kV substation - The BESS/400 kV compound would include transformers and other electrical equipment to combine the electricity from the Intermediate Substations, potentially storing it temporarily in the batteries that comprise the BESS. Electricity would be transmitted from the compound (either directly from the solar panels or via storage in the batteries) at 400 kV along a cable either ducted or direct buried below the surface of the ground.
- Connection - Two options have been considered for the BESS/400kV compound connection and configuration; the options are based on the connection of the 400kV line cable to the National Grid Staythorpe Substation:
 - Connect via the substation associated with a consented grid support BESS (Planning Reference 22/01840/FULM) on land immediately to the west of the existing National Grid Staythorpe Substation.
 - Connect the 400 kV cable to connect directly to the National Grid Staythorpe Substation.

1.1.2 Design Evolution

- 14 Consultation, environmental and technical considerations all fed into refinement of the Development design.
- 15 Environmental survey and assessment work was ongoing throughout the development process, increasing in intensity and focus following EIA scoping and considering the responses received from statutory consultees. Continued environmental survey and baseline assessment results fed back into the design process, generally leading to gradual reductions of the solar PV areas or increases in environmental mitigation areas as new constraints were identified. A summary of key changes to the design has been provided below:
 - Following non-statutory consultation changes were made to multiple locations to avoid areas at risk of flooding (Flood zone 2 or 3).
 - Multiple areas had new woodlands proposed to further ecological enhancements, mitigate visual impacts, and to enhance the wooded character of the area.
 - Solar areas were reduced in multiple locations in response to consultation and further surveys.
 - Two new access roads were added to the PEIR Order Limits following the Statutory Consultation which included passing places. These were subject to targeted consultation.
- 16 A detailed analysis of Design Evolution has been provided in the Design Approach Document (DAD) [EN010162/APP/5.6].

1.2 NEED FOR THE DEVELOPMENT

- 17 The Development will help the UK meet its legally binding carbon emissions targets and has the potential to support the operation and balancing of the



National Electricity Transmission System through the delivery of an integrated electricity storage capability. This smart demand management has the potential to support further decarbonisation of the electricity sector through facilitating greater use of renewably generated electricity during peak periods. Further details relating to need for the development can be found in the Planning Statement [EN010162/APP/5.4] and the Statement of Need [EN010162/APP/7.2].

1.3 SITE CONTEXT

- 18 The Development would be located to the northwest of Newark, in the Newark and Sherwood district, Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and north-west of Staythorpe. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels and connected by cable route areas. The eastern side of the Development runs from the north of North Muskham to Egmanton in the north. The western side of the Development runs north-west from Staythorpe Power Station and then splits at Maplebeck, with spurs running to Eakring in the north-west and Kneesall to the north-northeast, then connecting with the eastern side of the Development.

1.4 EXISTING SITE

- 19 The wider area within and surrounding the Order Limits is predominantly composed of agricultural land predominantly used for arable purposes, interspersed by occasional woodlands. Surrounding villages and hamlets are connected by rural roads and public rights of way. Smaller fields and tree cover are more common close to the villages and along water courses, with larger and more open fields further away.

1.5 USE AND FUNCTION

- 20 The design of the Development primarily derives from its function. The purpose of the Development, which is discussed in detail in the Environmental Statement [EN010162/APP/6.2], is to provide essential renewable energy infrastructure in the form of a Solar Farm and battery energy storage facility. The Development is designed to generate electricity and provide power to the National Grid and the design and layout arrangement is essential to achieving this function.

1.6 AMOUNT

- 21 The Development covers a total area of approximately 1765ha. The 'amount' of development has been influenced by the import/export capacity agreed with National Grid, the current technology available, the need for flexibility in technology used, and the requirements of good design to provide enhancements to the area's pre-development baseline condition. A good balance between meeting the need for essential infrastructure and sitewide landscape and biodiversity enhancement can therefore be achieved. Full details of the components and infrastructure are detailed in Chapter 5 – Development Description of the Environmental Statement [EN010162/APP/6.2.5].



- 22 It is anticipated that the Development will generate and provide clean and secure energy of an equivalent level to meet the needs of 400,000 homes.

1.7 LAYOUT

- 23 Solar PV technology is rapidly evolving. In order to maintain flexibility, allowing the latest technology to be utilised at the time of construction, the parameters describing the maximum, or worst-case (for the purposes of environmental assessment), extents or designs will need to remain flexible throughout the evolution of the Development design.
- 24 The layout of the Development will be led primarily by functional requirements and specifications of the infrastructure. The Solar PV modules, and BESS storage units will flank rows of Stings, Central units and PCS units in a compatible arrangement, in as small a footprint as possible, whilst adhering to fire safety guidance, enabling safe access, movement, and maintenance. Security fencing and cameras both protect the equipment and prevents unauthorised access into the facility.
- 25 The area of solar PV fields (including field margins) required for the generation of 800 MW (AC) is c. 1,025 ha. The Solar PV modules will be installed on a metal framework, the mounting framework will be broken down into discrete units which will correspond to the PV module wiring configuration. The Solar PV modules layout will be based around a standard table with a small number of shorter tables as required to avoid the modules being too close or too far from the ground.
- 26 The inverters have been placed further away from residential properties to reduce noise impact on the wider population, with the units located on higher ground and close to existing access tracks to avoid the creation of new access tracks and reducing impact on local hydrology.
- 27 Two options have been considered for the BESS/400kV compound connection and configuration; the options are based on the connection of the 400kV line cable to the National Grid Staythorpe Substation:
- Connect via the substation associated with a consented grid support BESS (Planning Reference 22/01840/FULM) on land immediately to the west of the existing National Grid Staythorpe Substation.
 - Connect the 400 kV cable to connect directly to the National Grid Staythorpe Substation.

1.8 SCALE

- 28 The scale of the Development has been informed by the import/export capacity in a similar vein to the 'amount' of development and is led by the technology available and typical design of the associated apparatus and infrastructure. The illustrative drawings submitted with the Application set out typical dimensions of the Development and infrastructure and are provided within Volume 2 of the Environmental Statement [EN010162/APP/6.3.5.1-20] . These present a worst-case scenario in terms of scale and the final design will keep within these parameters.



1.9 APPEARANCE

- 29 The external appearance of the Development is largely dictated by the technology available, however it is low profile and unobtrusive.
- 30 The metal construction is functional, and the proposed finish is designed to provide an appearance which blends into the landscape. Security fencing which contains the Development can also be provided in muted colours.
- 31 Several mitigation and enhancement measures have been identified to address effects on residential visual amenity.
- 32 The proposed landscaping will help to naturalise the Development and over time it will not be visible behind the screening. The long-term effects will enhance the appearance of the Development in the wider landscape. Further details are provided within the Landscape Masterplan [EN010162/APP/2.11].

1.10 ACCESS

- 33 The Applicant has assessed the potential transport related environmental effects of the Development arising during the construction, operation and decommissioning phases. Further details are presented within Chapter 14 - Traffic and Access, of the Environmental Statement [EN010162/APP/6.2.14].
- 34 This assessment has determined that effects associated with traffic movements during the life of the Development are not considered to lead to any significant effects on environmental receptors that have been identified. In conjunction, additional measures and mitigation measures have been adopted to reduce and prevent any potential impacts as far as practicable.
- 35 The Development will result in an increase in traffic movements along local roads during the construction period whereas the traffic movement during operational phase is deemed to be insignificant. The main traffic effects are associated with an increase in vehicle movements during the construction phase due to the existing low traffic flow numbers along the local roads.
- 36 Consideration has been given to the effect the increase traffic flow would have on Severance, Driver Delay, Pedestrian Delay, Pedestrian Amenity, Fear and Intimidation, and Accidents and Safety; and all effects upon these issues are considered not significant.
- 37 There are very limited pedestrian facilities alongside the links being used for construction traffic; those that are present are typically characterised by being relatively narrow and with limited or no separation from traffic. Within the villages, provisions are generally sufficient and suitable to meet local demand and need.
- 38 The Applicant has assessed the potential for cycle routes within the Core Study Area (CSA) and within the Order Limits. Whilst there is no apparent extensive cycle network within the CSA the potential presence of cyclists along less busy roads and routes away from heavy and fast-moving traffic has been considered within the assessment of traffic.
- 39 Due to the layout and scale of the Development, it is dissected by several public roads and as such, numerous site access locations are required from these roads. Site access locations have been carefully selected to ensure



they are appropriately located in relation to visibility and overall suitability. Where appropriate, preference has been to use already established access locations, which will be upgraded as required to meet design requirements.

- 40 An outline Construction Management Plan (oCTMP) [EN010162/APP/6.4.5.2] is provided to consider appropriate management and mitigation for construction traffic. A final Construction Traffic Management Plan (CTMP) will be developed and agreed with the relevant stakeholders prior to construction, to control and mitigate effects associated with vehicle movements.
- 41 Additionally, the Applicant has identified opportunities to improve accessibility to the countryside for recreational purposes and there are provisions within the Development to enhance footpath provision and access. Further details are provided within the outline Recreational Routes Management Plan (RRMP) [EN010162/APP/6.4.18.1]
- 42 No recreational routes will be lost as a result of the Development. Furthermore, no restrictions are envisaged to the PRowS once the Development is operational. Any retained and new recreational routes through the Development will be made appealing to people to encourage their use by providing information boards, containing text on matters such as wildlife and solar energy.
- 43 All new recreational routes and those existing will be designed and altered accordingly to ensure full inclusivity and compatibility with various different users. This measure will further encourage use of the recreational routes, whilst appealing to a wider audience.
- 44 The Development will introduce 21 permissive footpaths and 6 permissive bridleways, increasing access to outdoor recreation in the countryside, whilst improving connectivity to existing PRow networks.
- 45 Full details of the assessment of public access are provided within Chapter 18 - Recreation of the Environmental Statement [EN010162/APP/6.2.18] which concludes that the new permissive routes proposed as part of the Development will provide improved access by way of connecting disjointed areas of the network of PRow. The need to walk along roads without pavements or through areas where there may be difficulties in managing the different requirements of recreation and livestock will be reduced; and options for improved circular walks will be provided.
- 46 Enhancing footpath provision will encourage additional recreational use of the footpaths, which could also act as a tourism attraction, providing further social and economic benefits. In addition, measures such as the inclusion of community farming will provide social, environmental and economic benefits through encouraging individuals to come together and cultivate/ harvest crops collectively. Provision of orchards will allow for more individual focussed planting but again, communities can benefit. Full details of the assessment of potential socio-economic benefits are provided within Chapter 13 – Socio-Economics and Tourism, of the Environmental Statement [EN010162/APP/6.2.13]



1.11 POLICY CONTEXT

- 47 The relevant policies and their consideration against the Development have been considered in detail within Chapter 6 - Planning Policy of the Environmental Statement [EN010162/APP/6.2.6] and the Planning Statement [EN010162/APP/5.4]
- 48 The Development represents a form of essential energy infrastructure that responds directly to national policy imperatives to decarbonise the electricity system, enhance grid resilience, and support the transition to net zero by 2050 and meet the UK government's Clean Power 2030 Policy.
- 49 The Development aligns strongly with the overarching objectives of the National Planning Policy Framework (NPPF) (December 2024), particularly paragraphs 161 and 168 which require planning decisions to support renewable and low-carbon energy development and afford such proposals significant weight. The Development is a form of infrastructure that underpins the effective integration of renewable generation into the grid, enables grid balancing, and contributes to reduced reliance on fossil fuels.
- 50 The proposal represents sustainable development within the meaning of paragraph 11 of the NPPF.
- 51 Local policy similarly provides a supportive framework. Newark and Sherwood District Council, and Nottinghamshire County Council, local plans and adopted policies seek to promote renewable energy generation, energy resilience, and carbon neutrality. The Development is consistent with development policies and aligns with the spatial and environmental aims of the development plan.

1.12 SUMMARY AND CONCLUSION

- 52 This Design and Access Statement has been prepared in accordance with requirements of Article 9 of The Town and Country Planning (Development Management Procedure) (England) Order 2015 and associated guidance.
- 53 Extensive environmental assessment demonstrates that the Development would not give rise to significant environmental effects in relation to ecology, flood risk, ground conditions, noise, or highway safety. Consultation with stakeholders have informed the Development and led to beneficial design changes.
- 54 The Development is well-sited in landscape and technical terms. The Development has been designed to mitigate and prevent any perceived and potential impact on statutory and non-statutory designated assets.
- 55 The location of the Development has been carefully selected and the design and layout of the Solar PV modules has been given detailed consideration. It benefits from proximity to the National Grid Staythorpe Substation and multiple existing access points. The Development is naturally well screened, and views of the Development are limited and mitigated, with the most notable visual effects being short-duration views with ample mitigation incorporated into the design. The low physical height of the Solar PV modules and associated equipment results in the visual effects of the Development being considered to be limited.



- 56 Overall, the environmental effects are modest, have been appropriately mitigated, and are significantly outweighed by the social, environmental, and economic benefits at both national and local level.
- 57 Safe access can be taken from the public highway and within the Development, with mitigation measures employed to ensure construction traffic is managed appropriately whilst safeguarding and enhancing surrounding public access.
- 58 The Development can demonstrate an integrated approach that will deliver inclusive design and address the full range of access requirements throughout the design process.
- 59 Overall, the Development is appropriate in terms of design and access and the clearly represents a necessary step towards meeting the UK's legally binding climate change and renewable energy obligations.