Great North Road Solar and Biodiversity Park

Environmental Statement

Volume 1 – Non-Technical Summary

Cover and Contents

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Contents

1 INTRODUCTION

1.1 BACKGROUND

1 This document is a Non-Technical Summary (NTS) of the Environmental Statement (ES) that has been prepared on behalf of Elements Green Trent Ltd (the Applicant) in relation to an application (the Application) made to the Secretary of State (SoS) for Department for Business, Energy & Industrial Strategy (BEIS), under Section 37 of the Planning Act 2008.

2 The Application is for a Development Consent Order (DCO) for the construction, operation and maintenance, and decommissioning of the Great North Road Solar and Biodiversity Park, a solar photovoltaic (PV) array electricity generating station and electrical storage facility, with a total capacity exceeding 50 megawatts (MW), and an export connection to the National Grid (the Development).

3 The Development would be located to the northwest of Newark, in Newark and Sherwood district, Nottinghamshire, East Midlands. The Development would be within an area defined 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, occupying two main areas to the north and north-west of Staythorpe. The Development Location is shown on Figure 1.1.

4 The Order Limits include all land required for the Development and associated habitat management and are referred to as the ‘solar park site’ in this NTS.

1.2 THE DEVELOPMENT

5 The Development will comprise an array of solar PV modules, battery storage, and associated infrastructure, together with biodiversity enhancements including 64,500 trees and 50 km of new hedgerow. A description of the physical characteristics and land-use requirements of the solar park site during the construction, operational and decommissioning phases is provided in section 5: Development Description of this NTS.

1.3 THE APPLICANT

6 The Applicant is Elements Green Trent Ltd, a wholly owned subsidiary of Elements Green Ltd.

7 Elements Green is a UK-based developer with over 14 years of experience in developing solar and Battery Energy Storage System (BESS) projects and has the capability to develop, procure and operate its assets. Elements Green has a global development pipeline of more than 12 GigaWatts (GW) and has a strong reputation for being at the forefront of technological and commercial evolution in the renewable energy sector.

1.4 THE PURPOSE OF THE ENVIRONMENTAL STATEMENT

8 The ES has been produced to document the outcome of the Environmental Impact Assessment (EIA) process, as required by the EIA Regulations which is required for projects that intend to apply for a Development Consent Order.

9 The EIA information contained in the ES includes the information required to be included, as set out in the EIA Regulations. This comprises, in summary:

- A description of the Development (see section 5, Development Description);
- A description of the reasonable alternatives studied by the Applicant, which are relevant to the Development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects (see section 4, Alternatives);
- A description of the relevant aspects of the current state of the environment (baseline scenario; see sections 7-19).
- A description of the factors likely to be significantly affected by the Development, including:
  - Population (see sections 7, 12, 13, 14, 16 and 19;
  - Human health (see section 16, Miscellaneous Issues);
  - Biodiversity (see section 8, Ecology and Biodiversity);
  - Land (see sections 10 and 17);
  - Soil (see sections 10 and 17);
  - Water (see section 9, Water Resources);
  - Air (see section 16, Miscellaneous Issues);
  - Climate (see section 15, Climate Change);
  - Material assets (see section 16, Miscellaneous Issues);
  - Cultural heritage (see section 11, Archaeology and Cultural Heritage); and
  - Landscape (see section 7, Landscape and Visual).
- A description of the likely significant effects of the Development on the environment (see sections 7-19).

10 Environmental effects of the Development have been studied systematically in accordance with current industry good practice and relevant guidance. The results of the assessments undertaken are presented within the ES and are summarised in this NTS. These documents inform readers of the nature of the Development, likely environmental effects and measures proposed to protect the environment during construction, operation and decommissioning.

1.5 THE PURPOSE OF THE NTS

11 The NTS provides a concise summary, in simple language, of the assessments undertaken. The NTS is supported by the following figures, which are copies of some of those provided in Volume 3 of this ES:

- Figure 1.1 – Site Location;
- Figure 5.1 – Work Areas;
- Figure 5.2 – Masterplan;
- Figure 5.4 – Illustrative Design; and
- Figure 14.4 – Construction Traffic Routes and Site Access Points.

12 The main sections (1, 2, 3, etc.) in this NTS summarise chapters with the same numbers and names in Volume 2 of the ES.

2 ENVIRONMENTAL IMPACT ASSESSMENT

13 The purpose of an EIA is to identify and evaluate the likely significant environmental effects of a proposed development and to propose actions to reduce negative effects. The EIA assessment is informed by consultation with statutory consultees, members of the public and any other interested parties. The overall aim of the EIA is to ensure that decision makers understand and take into account the environmental effects of the Development so they can make an informed judgement.

14 The relevant ES chapters provide detailed assessments of the environmental information obtained and assessed as part of the EIA.

15 Given the nature, size and location of the Development, it is considered that there will likely be significant environmental effects that will necessitate an EIA. As such, an Environmental Statement (ES) is needed to support the Application.

16 The key elements of an EIA for a DCO application are:

- Iterative project design, applying relevant consultation feedback to the development design on an ongoing basis throughout the EIA process;
- Scoping and ongoing consultation, including consideration of responses and how they should be addressed in the EIA;
- Technical environmental impact assessments which will include baseline studies, input to the design process, and identification of potential significant environmental effects;
- Consultation; and
- Preparation and submission of the ES.

17 Mitigation is proposed throughout the above process to avoid or reduce likely significant effects.

2.1 EIA SCOPING

18 The scoping process is undertaken to identify the key issues that are to be addressed during the EIA and establish the scope of baseline studies and assessments.

19 The key issues to be addressed within the ES were identified in the EIA Scoping Report which was submitted to the Planning Inspectorate in November 2023. The Scoping Opinion was received on 20th December 2023.

20 The key issues identified by the Scoping Opinion are summarised in each technical chapter of the ES and have been considered throughout the EIA process.

2.2 CUMULATIVE EFFECTS

21 The EIA includes an assessment of potential cumulative effects; that is, the effects that the Development may have, if other proposed projects are also built. Only likely significant effects are required to be assessed, not every potential effect. The Planning Inspectorate advise a method for doing this, in four stages, and stages one and two have been completed and are reported in Chapter 2 and Technical Appendix A2.1 (in Volume 4 of this ES). These

identify which projects are to be considered in the cumulative effects assessment. The assessment itself is carried out in the technical chapters, 7 to 19, of the ES (summarised in sections 7 to 19 of this NTS).

22 The principal cumulative developments are other large developments that are in the planning system or are consented but not yet constructed. These include other solar developments proposed within c. 3 km of the Development, the two BESS projects close to the National Grid Staythorpe Substation, the carbon capture and storage (CCS) project proposed at Staythorpe Power Station and extensions to the quarrying activities near the River Trent. The agricultural land assessment considers other large scale solar developments proposed in Nottinghamshire and the districts of Lincolnshire that abut Newark and Sherwood District.

3 CONSULTATION

23 The main consultation activities undertaken to date and embedded throughout the ES include:

- EIA Scoping (November-December 2023);
- Non-statutory consultation including public consultation (January-February 2024);
- Statutory consultation including public consultation (January-February 2025); and
- Meetings and discussions with statutory consultees and relevant stakeholders (throughout the process – 2023-2025).

24 As part of the consultation process, the Applicant has engaged with the local community to inform local residents about the project, to explain the Development and its likely effects and to consider any concerns or issues raised.

25 A series of non-statutory public consultation events were held in January and February 2024 and provided the opportunity to speak with representatives of the Development, including technical specialists, to learn about the Development and provide comment. This feedback was summarised in a newsletter and Consultation Summary Report which was made available on the project website (https://www.gnrsolarpark.co.uk/).

26 A series of public events were held as part of the statutory consultation process in January and February 2025 and provided the opportunity to speak with representatives of the Development, including technical specialists, to learn and/or be updated about the Development and provide comment. This feedback is collated in the Consultation Report which accompanies this application.

27 In addition to public engagement there have been meetings with a range of statutory and non-statutory consultees and stakeholders.

4 ALTERNATIVES

28 This section summarises the alternatives to the Development that were considered by the Applicant and provides an indication of the main reasons for the design layout, taking into account the effects of the development on the environment.

4.1 CONSIDERATION OF ALTERNATIVES

29 The “Do Nothing” Scenario. The EIA compares the future scenario in which the Development is constructed and operated, as it is described in Chapter 5, Development Description, with the future scenario in which the Development is not constructed and operated (the “Do Nothing Scenario”). It is the relative impacts of the first scenario compared to the second, and the effects of this on environmental receptors, which are identified and assessed.

30 Generally, the Do Nothing Scenario is assumed to be the same as the current situation, as reflected in the findings of environmental surveys and studies. For certain technical assessments, different assumptions may be made, for example as a result of climate change, and these are explained in those chapters.

31 Alternative locations and designs have been considered throughout the evolution of the Development, as described in sections 4.1 and 4.2.

32 Alternative technologies, for generating 800 MW (AC) and connecting this at the existing Staythorpe substation, have been considered and discounted. A nuclear power station could not be developed and operational by c. 2029, as the Development could be. The local area is not suitable for wind generation of this scale. To generate this capacity with wind turbines would require c. 400 turbines of height c. 120 m, or 130 turbines of height c. 200 m, and there is insufficient landscape capacity and space between residential properties to accommodate these whilst meeting relevant guidelines and standards. A solar park that was smaller in area would have a smaller electrical energy generating capacity and has not been considered as an alternative. A solar park with lower energy generating capacity would not deliver the same energy benefits as the Development or maximise the use of the available grid infrastructure and capacity at the National Grid Staythorpe substation.

4.2 SITE SELECTION

33 The starting point of the site selection process was the acceptance of the grid connection application by the Applicant to connect the Development to the National Grid at Staythorpe substation.

34 From this point, an initial area of search was identified, with areas within a 15 km radius of the Staythorpe substation being classified as potentially suitable areas. Greater distances involve the laying of longer cables resulting in additional costs, transmission losses and potential for increased environmental effects. The areas south and east of the A1 and River Trent were also excluded due to the multiple environmental factors affecting the road and river corridor and the additional costs of crossing the Trent.

35 Once the initial search area had been identified, the project design principles, environmental factors, physical constraints to solar development and developer considerations all informed the site selection process.

36 Once the search area for the Development was identified, the ownership of larger parcels of land within the parts of the search area with lesser constraint were identified. This process worked outwards from the accepted grid connection point at Staythorpe substation, favouring lower constraint / more suitable areas and with a stronger preference placed on closer land parcels to ensure efficiency in terms of the future electrical design and use of materials for the Development.

37 The Applicant also considered availability of land as a factor, related to socio-economic effects on farm businesses and to the level of likely local opposition to the Development that would arise from planning to compulsory purchase because the owners were not willing to enter agreement voluntarily. A general principle included ensuring that where the Applicant could avoid ejecting tenant farmers who farm the land under long term tenancies, they did so. Although there would eventually be land swaps as part of the land acquisition efforts, no farmers have ultimately been removed from their long-term tenancies.

38 The land included in agreements with landowners formed the initial solar park site area.

4.3 DEVELOPMENT DESIGN

39 Many physical, environmental and practical factors were considered, and the design was amended in response to these. Data describing these factors was collected through desk-based studies of existing information and site-based surveys to collect new information. Information, and commentary on the proposals, was also received through consultation with the local public, local groups, local organisations and national advisory bodies such as the Environment Agency and Natural England.

40 This information identified areas that were less preferred for development, or for certain types of development, such as solar panels in areas with the best soils for agriculture and substations within 300 m of residential properties. Areas of the highest flood risk were avoided and areas with particular visual impact from key locations were avoided. The technical design of the Development evolved, with a 400 kiloVolt (kV) substation proposed as close as practical to the National Grid Staythorpe substation, alongside a Battery Energy Storage System (BESS). A landscape and ecological plan for the Development was proposed at a high level, including woodland, hedges, new grassland and other areas for environmental mitigation or enhancement. This resulted in the layout proposed in the EIA Scoping report.

41 Following the Scoping Report and non-statutory consultation, feedback on the proposals combined with increased data from the ongoing environmental surveys and technical studies led to another round of design changes. Design changes at this stage were at smaller scale, generally. They included omitting solar panels from particular views, adding new areas of woodland and other habitats to improve biodiversity, developing cable

routing options and reducing options for substations and other infrastructure as it became clear that they wouldn't be required as part of the electrical design. An access strategy was developed, with access points to the solar park site from the public road network proposed, surveyed and assessed. A public rights of way (footpaths and bridleways) strategy was developed, to minimise effects on users of routes in areas with solar on both sides, by diverting the routes around the edges of fields, and to propose a network of new permissive routes, complementing the existing rights of way network. The Applicant had always planned to include environmental benefits, however, the extent of the land agreements created the opportunity for landscape-scale biodiversity benefits and, in collaboration with local wildlife groups, proposals for a biodiversity park were included and the name of the Development was changed to reflect those benefits. This led to the layout proposed in the Preliminary Environmental Information Report (PEIR) which was the document that formed the basis of the statutory consultation process.

42 Following statutory consultation feedback, and the completion of the environmental surveys and studies as part of the EIA, a further round of design changes was made. The principal changes at this stage included avoiding areas identified in new flood modelling released by the Environment Agency, a reduction in solar area overall as a result of increases in solar panel efficiency (meaning the same electricity could be generated from less land than was previously the case), preferred cable routes were chosen from the options previously identified, reducing the number of intermediate substations from 6 down to 4 and the proposed boundary was reduced to omit those areas no longer needed.

43 Along with the changes to the proposals as viewed on a map, other aspects of the design evolved through this process. Fixed, south-facing solar panels were decided on, avoiding the taller "tracker" panels that move as the sun moves across the sky. The maximum height of the solar PV modules was reduced from 4.0 m to 3.5 m, reducing visibility. Methods for drilling holes for cables to pass under watercourses and woodland were selected in certain locations, rather than digging an open trench, to reduce environmental impacts. The permissive path routing proposals were refined following discussions with local walking groups and parish councils, and a new long-distance footpath was identified, using some new permissive paths, but also some existing public footpaths within and outside the solar park site area. The access point strategy was further developed, so that the number of places where construction traffic could enter the solar park site was limited, and internal tracks would be used, reducing the construction traffic levels on public roads. Many other aspects of mitigation were captured in control documents, drafted in outline at this stage and to be finalised at pre-construction stage. These included the Construction Environmental Management Plan, the Construction Traffic Management Plan, the Operational Environmental Management Plan and the Decommissioning and Restoration Plan.

44 These changes combined to form the Development as proposed, which is set out in section 5, Development Description.

5 DEVELOPMENT DESCRIPTION

5.1 EXISTING LAND USE

45 The solar park site is rural, comprising agricultural farmland, interspersed by occasional woodland and rural roads and footpaths that connect small villages and hamlets. The total area of the Development as shown on Figure 1.1 is c. 1,765 ha, the majority of which is agricultural land.

5.2 DESCRIPTION OF THE DEVELOPMENT

46 Flexibility in the design of the Development is needed in the DCO, to allow for the most efficient technology possible to be utilised by the Development at the point of construction. This flexibility is allowed for by defining "work areas" - defined areas of land within which certain activities/infrastructure may be, but within which there are not fixed locations for any proposed activity/infrastructure. The work areas are shown on Figure 5.1.

47 Of the 1,765 ha within the solar park site, only around 1,060 ha would be used for solar panels and substations. 1,025 ha of this is land that would be used for solar panels, although the area of the solar panels themselves would be around 550 ha, with the remainder being grassland with no panels above it. The area not used for solar panels and substations would be used for cables (which would be buried) and mitigation and enhancement.

48 A masterplan, showing proposed landscape/ecological measures and recreational routes, has been prepared alongside the infrastructure proposals, and this is shown in Figure 5.2. Biodiversity enhancements include planting 64,500 trees and over 50 km of species-rich hedgerow, as well as enhancing habitats across the solar park site.

49 A realistic, feasible and specific Development design has been produced as an illustration of what the Development may look like (including solar panels, inverters/transformers, substations and the main cabling routes), within the flexibility allowed by the work areas. This Illustrative Design is shown in Figure 5.4.

50 WORK AREAS

51 Areas within the solar park site are described as being one of nine distinct Work Areas, numbered 1-8 but with 5 split into 5a and 5b, and these are shown on Figure 5.1. Each Work Area includes a unique combination of Development infrastructure and activities, and these are summarised below for each Work Area. Each Work Area may also include a range of more general infrastructure and activities, and these are collectively summarised in section 5.2.9.

5.2.1 Work no. 1: Solar PV

52 Solar PV modules convert irradiation from the sun into electrical energy through the photovoltaic effect. Solar PV modules are installed on a metal framework raised to a maximum height of 3.5 m above ground level.

53 Low voltage electrical cables link the solar PV modules to inverters that convert direct current (DC) into alternating current (AC) making the installation compatible with the electrical network. Central inverters are often

of similar size and outline to a shipping container, with each serving a large number of PV modules.

54 Transformers reduce energy losses throughout the installation and provide a more efficient connection to the transmission network. The transformers are typically prefabricated metal assemblies with dimensions like shipping containers and can also accommodate the inverters.

55 Work no. 1 includes some locations in which there are hedges, overhead lines and other areas not suitable for solar panels. To ensure solar panels are not placed in these locations, there are specified restrictions on this set out in detail in Chapter 5, to avoid/minimise environmental effects.

5.2.2 Work no. 2: Cables

56 Buried electrical cables are included in some other Work Areas, such as Work no. 1, Solar PV, but cables are also needed to link the solar PV areas to the substations and link the substations together. This is the purpose of Work no. 2.

57 The Work no. 2 areas are shown as approximately 60 m wide (Figure 5.1) in most places which is much larger than is expected to be needed but is the corridor within which the cable route is expected to be located, to give flexibility for the designer post-consent. The maximum cable trench width is 12 m, with a 9 m working corridor (for construction) either side, leading to a maximum width of 30 m actually being required within Work no. 2. Generally, with fewer cables needed at most locations, the width of the trench will be much less than 12 m.

58 The main types of cables include:

- Medium Voltage underground cables linking the Work no. 1, Solar PV, areas to Work no. 4, Intermediate Substations;
- High Voltage underground cables linking the Work no. 4, Intermediate Substations to Work no. 5b, the 400 kV compound;
- Extra-High Voltage underground cables linking the 400 kV compound to the Work no. 6, National Grid Staythorpe Substation, likely via the Work no. 7, Consented Staythorpe BESS and Connection;
- Associated auxiliary Low Voltage underground cables, for control, communication, security and similar purposes.

5.2.3 Work no. 3: Mitigation/Enhancement

59 Throughout the solar park site, habitat management is proposed (as shown on the Masterplan in Figure 5.2) to provide mitigation and enhancement to biodiversity, recreation and for landscape reasons. This will include the creation of new habitats, through, for example, seeding grassland and planting trees and hedgerows, and enhancing existing ones, by changing their current management.

60 Habitat management is included in all other Work Areas but is also proposed in areas where no electrical infrastructure is proposed. This is the purpose of Work no. 3.

5.2.4 Work no. 4: Intermediate Substations

61 The intermediate substations combine the electricity from transformers and increase the voltage from 33 kV to 132 kV through transformers. The substations include a range of electrical structures and buildings. Four Intermediate Substations are proposed, each more than 300 m from the nearest residential property:

- On the north side of the road between Ossington and Carlton-on-Trent (in field 165 as shown on Figure 5.1);
- On the south side of the A616, 1 km east of Kersall (in field 84 as shown on Figure 5.1);
- Up the hill, south of the road between Maplebeck and Caunton, 1 km southeast of Maplebeck (in field 59 as shown on Figure 5.1); and
- On the southeast side of the road between Hockerton and Caunton, almost opposite the current 'Bedmax' site (in field 41 as shown on Figure 5.1).

5.2.5 Work no. 5a: BESS

62 The Battery Energy Storage System (BESS) compound would include containerised batteries and associated inverters, transformers and cabling. Up to around 750 battery containers are proposed. The Work no. 5a, BESS, area is located around 500 m northeast of the A617 and 1 km north of Averham (in fields 447, 375, 374 and 505 as shown on Figure 5.1).

5.2.6 Work no. 5b: 400 kV Compound

63 The 400 kV compound would include transformers and other electrical equipment to combine the electricity from the four Work no. 4, Intermediate Substations, and link to the batteries that comprise Work no. 5a, BESS. The compound will include a range of electrical structures and buildings. Electricity would be transmitted from the compound at 400 kV along a buried cable. Two alternative options are proposed to connect the 400 kV cable to the Work no. 6, National Grid Staythorpe Substation – either directly, or (more likely) via Work no. 7, the Consented Staythorpe BESS and Connection. This flexibility is required because the Consented Staythorpe BESS is not yet constructed and ready to accommodate the Development infrastructure, although it is likely it will be ready before the Development construction starts. The Work no. 5b, 400 kV Compound, area is located around 300 m northeast of the A617 and 1.3 km northwest of Averham (in field 238 as shown on Figure 5.1).

5.2.7 Work no. 6: National Grid Staythorpe Substation

64 Modification works would be required at the existing National Grid Staythorpe Substation. The works would require some new electrical infrastructure, such as cabling and overhead busbars, and modifications to existing infrastructure.

5.2.8 Work no. 7: Consented Staythorpe BESS connection

65 Modification works would be required at the consented Staythorpe BESS installation. The works would require some new electrical infrastructure, such

as cabling and overhead busbars, and modifications to existing infrastructure.

5.2.9 Work no. 8: Access Works

66 Existing access points onto the public highway have been used where practicable, however, some upgrades and new access points are required. Access works will include the creation of new access points from public highways and other road works, including temporary changes to street furniture, road widening, installation of passing places, and vegetation cutting to ensure there is sufficient visibility at the access points for the safe flow of traffic.

5.2.10 Other Development Features and Activities

67 The above Work Areas may also include one or more of the following:

- Site preparation and/or clearance;
- Archaeological investigations;
- Earthworks;
- Access tracks (temporary and permanent) and car parking;
- Fencing and gates;
- Sustainable Drainage Systems (SuDS);
- Security cameras;
- Equipment storage containers associated with the PV infrastructure;
- Laying down of permissive paths and bridleways, signage and information boards;
- Temporary and permanent Public Rights of Way diversions;
- Vegetation and soil management, including reinstatement, mitigation and enhancement;
- Staff welfare and office facilities; and
- Enabling works associated with the above, including temporary construction compounds (which will all be at least 300 m from residential properties).

5.3 CONSTRUCTION

68 The construction period is likely to be undertaken in at least five phases over an estimated total of 24 months:

- Phase one will last an estimated 24 months and include the construction of approximately a quarter of the solar area, one intermediate substation, the 400 kV substation, works at the existing National Grid Staythorpe Substation and cabling in between;
- Phases two to four will each last an estimated 12 months and include the construction of approximately a quarter of the solar area, one intermediate substation and cabling including connection to the 400 kV substation; and
- Phase five will last an estimated 12 months and will include the construction of the BESS.

69 It is possible that the main elements of construction activity would be underway on a maximum of half the solar park site at any one time, although it is likely to be much less than this.

5.3.1 Construction Controls

70 The construction phase will be controlled by several documents relating to environmental effects. The outline documentation, which is included in Technical Appendices (TAs) in the ES in Volume 4, includes an:

- Outline Landscape and Ecology Management Plan (LEMP; TA A5.1);
- Outline Construction Traffic Management Plan (CTMP, TA A5.2); and
- Outline Construction Environmental Management Plan (CEMP; TA A5.3).

71 Final versions of these documents will be prepared, based on the outline versions, before construction starts, and submitted for approval to Newark and Sherwood District Council.

5.4 OPERATION

72 The operational life of the Development is expected to be 40 years and will be limited to this maximum in the Development Consent Order. During the operational phase, day to day activity on the solar park site will be minimal, being principally: vegetation management, equipment maintenance and servicing; replacement of any sufficiently degrading or failed components and monitoring to ensure the continued effective operation of the Development.

73 Operational and maintenance activities will be undertaken in accordance with the LEMP (as mentioned above), an Operational Environmental Management Plan (OEMP), an outline of which is included in the ES as TA A5.5. The BESS will be operated in accordance with an Outline Fire Safety Management Plan (FSMP); TA A5.4). Final versions of these documents, based on the outline versions, will be prepared before operation starts, and submitted for approval to Newark and Sherwood District Council.

5.5 DECOMMISSIONING

At the end of the operational phase, the Development will be decommissioned over a period of 18 to 24 months.

The ES includes, as TA A5.6, an Outline Decommissioning and Restoration Plan (DRP). This sets out that the solar PV and BESS elements of the Development will be removed at the decommissioning phase and the land restored for agriculture. Other elements, including the substations and some of the habitats created as part of the Development, may be retained depending on the need for this equipment for other purposes at that time, and so flexibility is left in the DRP for decisions on these things to be made near, but before, the time of decommissioning. The outline DRP will be used as the basis of a final DRP to be prepared prior to decommissioning, and this will be submitted for approval to Newark and Sherwood District Council.

The outline DRP includes control measures comparable to those proposed for the construction stage, to ensure there is a similar level of control over decommissioning traffic and environmental impacts.

6 PLANNING POLICY

6.1 NATIONAL POLICY STATEMENTS

74 In deciding the application for development consent, in accordance with Sections 104 (2) and 104 (3) of the 2008 Act, the Secretary of State must have regard to the relevant National Policy Statements (NPS).

75 The NPSs, designated under the Planning Act 2008, set out the primary basis for NSIP developments. There are six Energy NPSs, the Governments policy for delivery of major energy infrastructure. The first Energy NPSs were published in 2011; however, these versions have been subsequently withdrawn and superseded in 2023. The revised NPSs emerged from the National Infrastructure Planning Reform Programme, established in 2020 in order to make the system more effective.

76 The Energy NPSs are specific in terms of which energy generation technologies they cover. In relation to a ground-mounted photovoltaic solar farm, the relevant NPSs are Overarching National Policy Statement for Energy (NPS EN-1) and National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) and National Policy Statement for Electricity Networks Infrastructure (NPS EN-5).

77 NPS EN-1 sets out that the delivery of a large amount of solar generation capacity, in particular, is an essential element required for delivery of the Government's energy objectives and legally binding net zero commitments.

78 NPS EN-1 paragraph 3.2.3 highlights the importance of not limiting renewable energy generation schemes, instead, encouraging them to meet the need of such schemes:

> *"It is not the role of the planning system to deliver specific amounts or limit any form of infrastructure covered by this NPS. It is for industry to propose new energy infrastructure projects that they assess to be viable within the strategic framework set by government. This is the nature of a market-based energy system. With the exception of new coal or large-scale oil-fired electricity generation, the government does not consider it appropriate for planning policy to set limits on different technologies but planning policy can be used to support the government's ambitions in energy policy and other policy areas."*

6.2 NATIONAL PLANNING POLICY FRAMEWORK

79 The National Planning Policy Framework (NPPF), published in 2012 and subsequently revised numerous times, most recently in December 2024, sets out the Government's planning policies for England and how these are to be applied.

80 The NPPF confirms at Paragraph 5 that it does not contain specific policies for NSIPs, and that they are determined in accordance with the Planning Act

2008 decision-making framework and relevant national policy statements for major infrastructure, as well as any other matters that are relevant, which may include the NPPF.

81 Paragraph 161 of the NPPF also supports the transition to a low carbon future and expects the planning system to contribute to *"radical reductions in greenhouse gas emissions"* by supporting renewable and low carbon energy and associated infrastructure.

82 Paragraph 168 of the NPPF expects the determination of planning applications to "not require applicants to demonstrate the overall need for renewable or low carbon energy".

6.3 NATIONAL ENERGY POLICY AND COMMITMENTS

83 The UK is subject to the following legally binding targets in respect of reduction of carbon emissions and use of renewable energy:

- The 'Clean Power 2030 Action Plan' (December 2024) further reinforces that the route to a Clean Power system requires mass deployment of renewable energy generation, including Solar;
- Climate Change Act 2008 sets a legally binding target to reduce UK carbon dioxide (CO_2) emissions. This was updated in 2019 to provide a legal basis for the target of securing a 100% reduction in greenhouse gas emissions to be achieved by 2050 (compared to 1990 levels).
- Paris Agreement 2015 was established at COP21 and is a legally binding international treaty, adopted by Member States, including the UK. The treaty seeks to reduce global greenhouse gas emissions and to limit the global temperature increase in this century to 2°C, while pursuing the means to limit this further to 1.5 °C.
- Glasgow Climate Pact 2021 was established at COP26 and adopted by Member States, including the UK. This included commitments to phase down the use of coal and supports a common timeframe and methodology for national commitments on emissions reductions.
- The Kyoto Protocol 1997 brings the United Nations Framework Convention on Climate Change into use by committing industrialised countries and economies to limiting and reducing greenhouse gas emissions in accordance with agreed individual targets. The Convention asks those countries to adopt policies and measures on mitigation and to report periodically.

84 The Net Zero Strategy: Build Back Greener, 2021 sets out the UK's long-term plans to meet net zero emissions by 2050 and gives the vision for a decarbonised economy in 2050. This strategy brings forward the ambition for a fully decarbonised power system by 15 years, building on the targets set out in the Energy White Paper and the 10 Point Plan for a Green Industrial Revolution. The ambition is to fully decarbonise the UK's power system by 2035, through the growth in renewable and nuclear power in addition to an increase in energy storage capacity, gas with CCS, and hydrogen to increase the flexibility of supply.

85 Looking at solar specifically, the UK Energy Security strategy highlights the importance of solar energy in the move towards renewables, and it outlines

that it seeks solar generation to reach 70 GW by 2035. The Powering Up Britain: Energy Security Plan also states that the government is seeking to deploy large scale ground-mount solar development across the UK, encouraging developments that deliver environmental benefits.

6.4 THE DEVELOPMENT PLAN

86 Under the NPS EN-1, the Development Plan is a consideration to which the Secretary of State may have regard (when making the decision on consent). The NPSs are instead the primary consideration for NSIP applications. Nevertheless, the Development Plan is still a matter which can be considered important for the consideration of DCO applications and has been considered for the Development.

87 The relevant Development Plan compromises of:

- Newark and Sherwood Local Development Framework – Allocations and Development Management DPD (2013);
- Newark and Sherwood Local Development Framework – Amended Core Strategy DPD (2019); and
- Nottinghamshire Minerals Local Plan (2021).

7 LANDSCAPE AND VISUAL

7.1 INTRODUCTION TO CHAPTER

88 The Landscape and Visual Impact chapter of the ES provides an assessment of the potential effects of the Development on landscapes and views. The assessment has followed good practice guidance published by the Landscape Institute and Institute of Environmental Management and Assessment.

7.2 WHAT FEATURES MIGHT BE AFFECTED?

89 The Development has the potential to affect the physical fabric (ground level vegetation, hedges, trees and other features such as fences) within the solar park site; the character of the landscape, and views seen by people from roads, recreational routes, settlements and homes. There is no potential to affect designated landscapes as there are none close to the solar park site.

7.3 WHAT ARE THE POTENTIAL EFFECTS?

90 Effects during construction on landscape fabric would arise from removal of short sections of hedgerow to create access; planting of new trees and hedgerows and the creation of new habitat areas; construction of the above ground elements of the Development; excavation and cable laying.

91 Effects during construction on landscape character would arise from the short-term change of farmland to construction site; and changes to landscape fabric as described above.

92 Effects during construction on visual receptors would arise from the short-term movement of vehicles and plant within and travelling to and from the Development to deliver and install the Development; construction activity

within the solar areas and along cable routes; and increasing completion of the Development.

93 Effects during operation on landscape fabric would arise from the long-term presence of the solar farm within fenced areas; changes to existing landscape management; and growth of new planting. These changes would have consequential effects on landscape character and views.

94 Effects during decommissioning would be short-term and similar to those arising during construction except in reverse in terms of the panel areas and BESS being reinstated to farmland. Planting and PRoW diversions would remain after decommissioning, and the substations may also do so. Permissive routes would be removed as part of decommissioning.

7.4 HOW WILL THE EFFECTS BE MANAGED?

95 Key measures to mitigate landscape and visual effects are incorporated within the design, and include:

- Site selection avoids designated landscapes;
- Site selection for panel areas avoids more sensitive landscape character types, focussing on larger scale, flatter arable landscapes;
- Visibility from settlements is minimised in the selection of solar panel areas and locations for the substations and BESS;
- Panels would be set back behind existing hedges which would be gapped up and grown taller to provide screening;
- New hedgerow planting would be provided around solar areas where hedges are absent and tree planting along northern boundaries and around substations/BESS;
- Seeding and management of panel areas to establish meadows;
- Diversion of Public Rights of Way (PRoW) to avoid routes passing through the middle of panel areas where there would be open views of solar panels to both sides;
- Selection of fencing, CCTV and lighting to minimise their visual impact;
- Minimal use of lighting during operation and construction;
- Retention of existing trees and hedges by using 15 m root protection zones and 5 m set backs from field boundaries in the design of development areas, and use of existing field accesses where possible;
- Reinstatement of hedges where they are removed for cable laying; and
- Solar panels would be set back a minimum of 100 m from homes where panel areas would be openly visible.

96 In addition, there would be enhancements to the landscape provided as follows (as shown in Figure 5.2, Masterplan):

- Woodland, hedgerow and tree planting;
- A new way-marked circular footpath making use of existing and diverted PRoW and new permissive routes;
- Permissive routes providing better connectivity where routes are currently absent;
- Interpretation, wayfinding and access improvements to improve the ease of access and highlight features of local cultural and heritage value or

provide understanding of aspects of the project such as energy generation and biodiversity enhancements;
- A community orchard; and
- Measures to provide biodiversity net gain.

7.5 WHAT ARE THE OVERALL EFFECTS?

97 Effects would be greatest during construction and early operation, before planting included as part of the Development matures.

98 Significant, adverse effects would arise during construction and early operation on the one landscape character type (LCT) which would host most of the Development. This results from the physical presence of the Development within it and the locally characteristic rural views of villages, separated by gently undulating arable fields bordered by hedges, changing to include close views of solar panels and the substations and BESS. There would also be localised areas of ecological enhancement and new woodland, tree and hedgerow planting within several LCTs which would gradually improve the landscape condition from the commencement of the operational life of the Development, continuing to do so after decommissioning.

99 The significantly affected landscape character type - Mid-Nottinghamshire Farmlands / Village Farmlands with Ancient Woodlands LCT is a larger scale, flatter arable landscapes with hedges and woodlands characteristically dividing the fields. Ancient woodland is also a characteristic component which would not be affected by the Development.

100 Effects on other landscape character types would not be significant.

101 During construction and early operation, effects on visual receptors would arise as a result of changes to views to include visibility of the short-term construction activities and the Development (solar panels, substations and/or the BESS) before planting matures. In many locations, visibility would be reduced within 1-3 years where the mitigation measure is the growth of existing hedges. The screening of views would take longer (7-10 years) where new hedges or woodland are proposed.

102 Significant effects would arise as a result of Medium-term changes to views for the following visual receptors:

- Users of public rights of way:
  - Between Caunton and the A617;
  - Between Micklebarrow Hill and Kelham;
  - Between Caunton, Eakring and Kneesall – east of Eakring and around Maplebeck;
  - Between Kneesall, Caunton and Ossington Airfield;
  - Between the A1, Ossington and Moorhouse; and
  - Between Carlton-on-Trent, Ossington and Norwell;
- Users of local roads:
- Between Caunton, Eakring and Kneesall;
- Between Kneesall, Caunton and Ossington Airfield; and
- Between Carlton-on-Trent, Ossington and Norwell – in the north of this area.

103 In all cases the changes to views giving rise to significant impacts would arise within at most 1.1 km and more typically 0.7 km of the Development.

104 No significant effects would arise for users of long distance recreational or transport routes.

105 Once planting has matured, effects on landscape character would remain as assessed during early operation.

106 No new significant effects on visual receptors would arise once planting has matured. Significant effects would continue to arise as a result of changes to views for the following visual receptors:

- Users of public rights of way:
- Between Caunton and the A617;
- between Micklebarrow Hill and Kelham;
- between Caunton, Eakring and Kneesall – east of Eakring and around Maplebeck;
- between Kneesall, Caunton and Ossington Airfield;
- between the A1, Ossington and Moorhouse, and
- between Carlton-on-Trent, Ossington and Norwell.

107 For most of these groups the effects would reduce slightly in terms of the degree of changes to views and/or the geographic extent of those changes.

108 At night, no significant effects would arise as a result of lighting associated with the Development.

109 Cumulative effects with existing and consented developments are considered in the main assessment above – they form part of the baseline for that assessment. Cumulative effects have also been considered with developments in planning. The main development of relevance to the assessment are the proposed nearby solar farms (One Earth, Kelham and Foxholes) and the proposed BESS west of Averham (SSE BESS). One Earth and Foxholes are sufficiently distant from the Development that they would have largely separate effects to each other. The interaction between the effects of the SSE BESS and Development would also be limited due to the mature hedge to the north of the SSE BESS which provides separation from the area most affected by the Development.

110 The only cumulative development scenario in which the effects of the Development would differ from the main assessment would be if Kelham solar farm is consented. This change to the baseline would mean that visual effects arising from the Development would be reduced in areas to the east and northwest of the 400 kV substation and BESS as the area would already have the character of a solar farm, and views from the A617 and Trent Valley way to the east would include solar panels in the foreground.

111 All of the 142 homes within 250 m of the solar park site as it was proposed at PEIR stage (for statutory consultation in January-February 2025) have been considered in relation to potential changes to residential visual amenity. Some of these were no longer within the study area for the final assessment due to design changes. The Residential Visual Amenity Assessment (RVAA) identifies that effects would not be at the highest level of magnitude and the threshold would not be exceeded at any of the properties considered.

8 ECOLOGY AND BIODIVERSITY

8.1 INTRODUCTION TO CHAPTER

112 The Ecology and Biodiversity chapter provides an assessment of the potential effects of the Development on ecological features. These include the habitats and species which contribute to biodiversity, as well as the designated sites and ecological processes that support them. The assessment has followed good practice methods published by the Chartered Institute of Ecology and Environmental Management.

8.2 WHAT FEATURES MIGHT BE AFFECTED?

113 The solar park site is dominated by farmland, mostly fields of arable crops surrounded by a network of hedgerows of various types, many including mature broadleaved trees. Surveys have been carried out to classify and map habitats. Grassland occurs in various forms, mostly as pasture, field margins and the unmanaged margins of watercourses. There are also patches of woodland within the solar park site and more extensive and ancient examples bordering it. Several streams and ditches flow through the solar park site and there are several ponds of varying sizes. Some of these habitats are important for nature conservation.

114 There are two internationally important designated sites of nature conservation value within the Study Area: Birklands and Bilhaugh Special Area of Conservation (SAC) and Sherwood Forest possible Potential Special Protection Area (ppSPA). There are nine nationally important designated sites nearby, of which two, Eakring and Maplebeck Meadows Site of Special Scientific Interest (SSSI) and Mather Wood SSSI are very close to the solar park site. In addition, there are 120 locally designated, non-statutory designated sites within the Study Area, of which 16 are within or border the solar park site. The designated sites support a wide range of habitats and species.

115 The habitats within the solar park site have the potential to support species that are legally protected or important for nature conservation. Studies have been undertaken to establish more information about these species, particularly their locations within the solar park site. The studies have identified the following important species: fish, great crested newt, grass snake, water vole, otter, badger, bats, breeding birds, and wintering birds.

8.3 WHAT ARE THE POTENTIAL EFFECTS?

116 The Development has the potential to affect important ecological features in a variety of ways over its lifetime. These effects can be either beneficial or adverse. The main adverse effects include the loss of and disturbance to habitats, and the harm to and disturbance of animals. The main beneficial effects include habitat creation and enhancement, improvement in water quality, and a reduction in harm to and disturbance of animals.

8.4 HOW WILL THE EFFECTS BE MANAGED?

117 The potential adverse effects have been minimised by designing the Development to avoid, as far as possible, the most sensitive ecological

features, such as ancient woodland. An Outline Construction Environmental Management Plan (CEMP), incorporating a Construction Ecological Management Plan (CEcMP), has been prepared (included in Volume 4 as Technical Appendix A5.3) which includes a range of good practice measures to further reduce and avoid potential negative effects during construction. An Outline Landscape and Ecology Management Plan (LEMP) has also been prepared (included in Volume 4 as Technical Appendix A5.1) to demonstrate how land will be managed over 40 years to reduce potential negative effects and to benefit biodiversity. The LEMP has been and will be developed in consultation with a range of organisations to ensure that it supports local and national nature conservation projects and provides a net gain in biodiversity.

8.5 WHAT ARE THE OVERALL EFFECTS?

118 The measures incorporated into the design and specified in the Outline CEMP will avoid potential negative effects or reduce them to acceptable levels. No potential significant cumulative effects were identified. The Outline LEMP includes a range of measures which will provide a net gain in biodiversity by improving the extent and condition of habitats, including the creation of new ponds and wetland scrapes, 31 ha of woodland with 64,500 trees planted, and 50 km of species-rich hedgerows, which will provide improved habitats for a range of wildlife. The Development will lead to a Biodiversity Net Gain of over 60% in value of habitats, over a 17 square kilometre area.

9 WATER RESOURCES

9.1 INTRODUCTION TO CHAPTER

119 Chapter 9 of the ES sets out the assessment of effects on water resources, which comprise surface water (rivers, streams and ponds) and groundwater (water that exists within the soil or rock). This includes potential effects on and from flood risk and includes consideration of drainage features that could be proposed to mitigate adverse effects or enhance beneficial effects. The assessment also accounts for the potential effects of climate change.

9.2 WHAT FEATURES MIGHT BE AFFECTED?

120 The geology under the solar park site is mainly mudstone, which in some places has clay, silt, sand and gravel on top. The solar park site has a mix of clay soils that drain poorly and sandy soils that drain well, at least down to the mudstone.

121 There are no Drinking Water Safeguarded Zones for groundwater within the solar park site.

122 Severn Trent operates two groundwater abstractions, at Caunton and Ompton, and these have Source Protection Zones associated with them, suggesting a sensitivity to potential contamination. There are three public water abstraction points, from groundwater, within the wider area around the solar park site. There are three private water supplies within the wider area

around the solar park site, two of which are from groundwater, the other is from rainwater harvesting.

123 The water resources within the solar park site are typical of lowland agricultural plains and are drained by man-made ditches of slow running water that drain to the River Trent. The main watercourses in the solar park site are The Beck, Moorhouse Beck and Car/Pingley Dyke. The quality of water in these is generally Moderate, while the quality of watercourses in the wider area ranges from Moderate (River Trent) to Bad (The Fleet). The northeastern area of the solar park site lies within a Drinking Water Safeguard Zone for surface water.

124 Eakring and Maplebeck Meadows Site of Special Scientific Interest (SSSI), Mather Wood SSSI and Laxton Sykes SSSI all lie downstream of the solar park site.

125 The eastern areas of the solar park site, specifically the mitigation and enhancement areas, and the wider area are susceptible to flooding, particularly around the River Trent corridor, The Beck and Moorhouse Beck.

9.3 WHAT ARE THE POTENTIAL EFFECTS?

126 Watercourses and drainage ditches may be subject to increased run-off, erosion, sedimentation, stream flow impediments and pollution as a result of construction groundworks and chemical handling / storage.

127 Groundwater could potentially experience pollution as a result of erosion and sedimentation from construction activities and uncontained spills from chemical handling / storage.

128 Water supplies could potentially experience pollution as a result of erosion and sedimentation from construction activities and uncontained spills from chemical handling / storage, and changes in water quantities.

129 Structural damage to flood defences could lead to a reduced standard of protection.

9.4 HOW WILL THE EFFECTS BE MANAGED?

130 Embedded Development design measures are set out within the Outline Construction Environmental Management Plan (oCEMP; provided as Technical Appendix A5.3 in Volume 4). These are a set of good practice methods and works that are established and effective measures to which the Applicant will be committed through the DCO Requirements.

131 While the oCEMP is an outline document, the final version must be based on the outline, and hence there is sufficient confidence in the effectiveness of the measures set out in the oCEMP for them to be treated as part of the Development.

132 The following mitigation measures relating to the hydrological environment are embedded into the design and construction of the Development:

- 10 m watercourse edge buffers for all construction works (i.e., solar PV and associated infrastructure, construction compounds, BESS and

substations) with the exception of watercourse crossings for cables and access tracks;
- Horizontal Directional Drilling to install cables under the larger watercourses such as The Beck and Moorhouse Beck;
- The Development will utilise existing access road and tracks already in place where possible, and this will help to minimise ground disturbance and requirement for further watercourse crossings;
- Development has been designed to avoid placing solar panels within areas that flood, even in extreme events and including an allowance for climate change, meaning there should be no displacement of flood waters; and
- A pollution prevention plan (part of the CEMP provided at TA A5.3) includes good practice measures to avoid and minimise potential pollution from the Development.

133 Surface water run-off within the solar PV area will be managed through Rural Sustainable Drainage Systems (RSuDS) such as establishing vegetation under the solar panels, which will act to bind the soil and slow water flowing over the ground surface.

134 The fields within the solar park site are used for arable and pastoral farming. The Development does not include the application of nitrates or phosphates to the land, which is carried out periodically via the current land use, and this cessation may lead to improvements in surface water quality.

9.5 WHAT ARE THE OVERALL EFFECTS?

135 Following application of off-set distances from watercourses, and the methods and controls set out in the oCEMP, effects on water resources are avoided or greatly reduced, and all are assessed as being “negligible”.

136 Due to the depth of groundwater underlying the wider area and the proposed shallow excavation depths, the Development will not interact directly with subsurface water. As all effects are assessed as being negligible, there is no potential for any significant cumulative effects.

10 CONTAMINATED LAND

10.1 INTRODUCTION TO CHAPTER

137 Chapter 10 of the ES sets out the assessment of effects in relation to geology, hydrogeology and ground conditions. This includes consideration of effects in relation to geological features and ground conditions (including ground contamination), as well as effects on the quality of groundwater.

138 The assessments undertaken have been primarily based on a desktop review of publicly available information, online data sources and publishing and information contained in Groundsure Enviro-Geo Insights reports.

10.2 WHAT FEATURES MIGHT BE AFFECTED?

139 The Development is underlain by a thick sequence of Triassic bedrock geology of the Mercia Mudstone Group with areas of superficial deposits

constrained to the flood plain of the River Trent and its tributaries and localised remnants of glacial deposits in the west. The superficial deposits comprise Alluvium (clay, silt, sand and gravel), Holme Pierrepont Sand and Gravel Member (predominantly sands and gravels) and Glaciofluvial Deposits comprising predominantly sands and gravels and Glacial Till (mid Pleistocene), an unsorted heterogenous mixture of clay, sand, gravel, and boulders.

140 No geological conservation sites have been identified within the Study Area associated with the geological sequence present; however, the Holme Pierrepont Sand and Gravel Member and Mercia Mudstone strata have been identified as being designated Mineral Safeguarding Areas for sand and gravel and brick clay in parts of the Development. The Superficial Deposits are designated as Secondary A or Secondary undifferentiated aquifers and the bedrock a Secondary B aquifer.

141 There are localised areas in the Study Area, which due to historical land uses and/or activities, have the potential to cause contamination of the soil or groundwater.

10.3 WHAT ARE THE POTENTIAL EFFECTS?

142 A number of potential impacts on geology, groundwater (including groundwater dependent receptors) and human health, associated with the construction, operation and decommissioning phases of the Development, were identified. These included potential impact of mobilisation of existing contaminants (or release of new contaminants) during construction on groundwater, off-site residents and construction workers. Potential operational impacts include use and spillage of oils or chemicals during routine maintenance work impacting on groundwater/surface water. Cumulative effects have been assessed, and no potential significant effects have been identified.

143 Measures to be adopted as part of the Development and referenced in the oCEMP (Technical Appendix A5.3 in Volume 4) would result in effects of either negligible or minor adverse significance.

11 CULTURAL HERITAGE AND ARCHAEOLOGY

11.1 INTRODUCTION TO CHAPTER

144 Chapter 11 of the ES provides an assessment of the potential effects of the Development on Cultural Heritage and Archaeology assets. These comprise buried archaeological remains, conservation areas, buildings of historic interest, and designed landscapes, both designated and non-designated. The assessment has followed good practice methods published by the Chartered Institute for Archaeologists and Historic England.

145 Following a summary of the relevant legislation and policy, Chapter 11 describes the baseline data gathering exercise, the assessment methodology and sets out the preliminary baseline conditions. An assessment of the likely significant effects of the Development is then

presented. The chapter concludes with a summary of the residual effects and an evaluation of their significance.

11.2 WHAT FEATURES MIGHT BE AFFECTED?

146 Desk-based sources including the Nottinghamshire Historic Environment Record, the National Heritage List for England, aerial photographs, National Mapping Programme data as well as geophysical survey and trenching have been used to identify assets within the solar park site and a wider study area which might be affected by the Development.

147 When considering potential effects on Cultural Heritage and Archaeology assets outside of the solar park site a Study Area extending 2 km beyond the solar park site boundary was used. When considering potential effects on highly designated assets such as Grade I and II* Listed Buildings, Scheduled Monuments and Registered Parks and Gardens a wider study area extending 5 km from the solar park site was used.

148 The outer edge of the Conservation Area of Maplebeck overlaps slightly with the solar park site. Within 2 km of the solar park site are 17 Conservation Areas along with 227 listed buildings (of which 19 are listed at Grade I), 26 Scheduled Monuments and one Registered Park and Garden. Between 2 km and 5 km from the solar park site are a further 18 Grade I Listed Buildings, 28 Grade II* Listed Buildings, 29 Scheduled Monuments, one Registered Park and Garden and one registered battlefield.

149 Chance finds, previous investigations and surveys undertaken to inform the design of the Development have identified the presence on the solar park site of archaeological remains of prehistoric, Roman and later date. These remains include scatters of stone tools, sites of settlements, evidence for past agricultural practice, former designed landscapes and the remains of modern defence structures. Earthwork remains of the Civil War siege works lie close to the solar park site and evidence for military activity of the same period may lie within the solar park site.

150 The solar park site lies partially within the historic flood plain of the River Trent where deposits may survive which could provide evidence for how the landscape and ecology of the site has developed since the last Ice Age.

11.3 WHAT ARE THE POTENTIAL EFFECTS?

151 The Development has the potential to affect important cultural heritage and archaeological features in a variety of ways over its lifetime. These effects can be either beneficial or adverse. The main adverse effects include the loss of archaeological remains and changes to the settings of buildings, monuments and designed landscapes. The main beneficial effects include the removal of areas of sensitive archaeological remains from ploughing and an increased understanding of the significance of archaeological remains and historic buildings as a result of investigations carried out in connection with the Development.

152 The assessment has identified some non-significant negative effects to buried archaeological remains, none of which are scheduled, within the solar park site. Mitigation in the form of preservation in situ or preservation by

record will reduce these significant effects to levels which are not significant in EIA terms.

153 No significant effects are predicted outside of the solar park site either as an indirect result of construction activities within the solar park site or as a result of changes to the setting of buildings, monuments or conservation areas. The effects of the Development when added to a baseline including cumulative developments was assessed, and no significant effects were identified.

154 However, it will not be possible to fully assess all potential effects until the design is finalised, and baseline studies are completed. Consequently, additional mitigation is proposed through the Archaeological Mitigation Strategy, which is provided as TA A11.8 and which comprises further survey and data collection that will inform any need for further investigation and construction controls.

11.4 HOW WILL THE EFFECTS BE MANAGED?

155 The potential adverse effects have been minimised by designing the Development to avoid, as far as possible, the most sensitive archaeological remains, such as sites of former settlements. Similarly, the design incorporates visual screening which will reduce the effect of changes in the settings of buildings, monuments and designated landscapes. No significant effects are identified, including cumulative effects, and mitigation is proposed that will further reduce the level of any effects to a negligible level.

156 The Archaeological Mitigation Strategy explains how cultural heritage assets will be investigated, enhanced and conserved during all stages of the Development.

12 NOISE AND VIBRATION

12.1 INTRODUCTION TO CHAPTER

157 The Noise and Vibration chapter of the ES provides an assessment of the potential effects from noise and vibration as a result of the Development. The assessment includes the consideration of noise and vibration from construction activities and construction traffic on sensitive receptors. In addition, the assessment considers the effect of operational noise on sensitive receptors. The methodology and assessment criteria for the assessment of both construction and operational noise and vibration effects was agreed with the Environmental Health department at Newark and Sherwood District Council through the Scoping process and subsequent consultation.

12.2 WHAT FEATURES MIGHT BE AFFECTED?

158 The dominant noise source in the vicinity of the Development is road traffic noise associated with the A1, which lies to the east of the solar park site. In addition, noise from the East Coast Main Line railway was clearly audible during the survey at a number of locations. At locations further from the A1

and East Coast Main Line, local roads and agricultural activities were noted to be the dominant noise sources, particularly during daytime periods.

159 Baseline noise monitoring was undertaken at 35 locations to accurately determine the existing acoustic environment in the area.

12.3 WHAT ARE THE POTENTIAL EFFECTS?

160 The assessment of construction noise and vibration includes a number of worst-case assumptions, including all plant operational simultaneously at the closest point from each working area to the nearest receptors. During construction activities, the assessment has identified a number of receptors where noise and vibration effects have the potential to exceed the threshold criteria. The nature of construction works means that any exceedances in the threshold criteria would only be experienced at each receptor for a short duration. The short duration, in combination with good practice mitigation measures, mean that the effect of noise and vibration from construction noise and vibration is assessed as not significant. Noise from construction traffic has been assessed as not significant.

161 Noise emissions from plant associated with the Development, including the Solar PV array, energy storage and electrical substations have been predicted at the nearest noise sensitive receptors. The predictions assume all plant is operational simultaneously, at 100% capacity during daytime and night-time periods, which is unlikely to occur in practice. Operational noise was found to be below the assessment criteria at all receptors. The effects from operation noise are predicted to be negligible / low and are therefore not significant.

12.4 HOW WILL THE EFFECTS BE MANAGED?

162 Construction working hours will be controlled for noise generating construction activities, and good practice measures specified in the Outline Construction Environmental Management Plan (CEMP) would further reduce noise levels in practice. Section A5.3.5 Control of Noise and Vibration of the CEMP commits to the development of a Construction Noise Management Plan (CNMP), prior to construction, to identify any additional mitigation measures required to ensure noise and vibration thresholds are not exceeded. This will be in conjunction with any cumulative developments that may be being constructed at the same time. The CNMP will be submitted to appropriate stakeholders prior to commencement of construction works.

163 Operational noise will be controlled through the application of noise limits at the nearest noise sensitive receptors. The noise limits will be achieved through detailed design and selection of equipment. As required by the DCO, an operational noise assessment will be submitted to the Council prior to each phase of the Development being commenced based on the final layout and equipment selection for that phase, demonstrating how the noise limits will be complied with. Cumulative noise effects have been assessed for the operation phase of the Development, and all potential effects are assessed as being not significant.

13 SOCIOECONOMICS AND TOURISM

13.1 INTRODUCTION TO CHAPTER

164 The socioeconomic assessment considers the interaction of social and economic factors such as income, education, and employment of the local and regional area and the impact on this that the Development is likely to have. It also assesses any potential tourism impacts of the Development on the population and is informed by the following other environmental topics:

- Landscape and Visual;
- Noise and Vibration;
- Traffic and Transport; and
- Agricultural Land Use.

165 The assessment also draws upon information contained within the socio-economic baseline report which includes an assessment of commuting patterns and travel to work areas to define the Study Area.

166 The socio-economic indicators considered within the baseline assessment include population, demographics, employment, health, travel to work patterns, access to renewable energy, deprivation and tourism.

13.2 WHAT FEATURES MIGHT BE AFFECTED?

167 The Study Area typically had a larger share of employment within the construction sector, than observed regionally (5.6%) and nationally (4.9%). The share of individuals in the Study Area employed in manufacturing was also higher than the national average, but lower than observed regionally.

168 The Study Area population had a lower share of the 16–64-year-old population educated to A-level or Higher National Certificate level than was observed nationally. The Index of Multiple Deprivation (2019) indicates that educational deprivation is highest towards the town of Newark-On-Trent and around the northeastern perimeter of the district.

169 In terms of unemployment, rates have fluctuated considerably in the study area over the last ten years. Typically, the study area had a higher rate of unemployment than observed both regionally and nationally between 2014-2023.

170 The tourism economy in Newark and Sherwood is provided by around 5 million visitors each year. The Development is not located close to any major tourist infrastructure; however, several public rights of way will be affected during construction and operation, through diversions and changes to views, and use of these by tourists could be affected by the Development. A survey of tourist usage of public rights of way near the Order Limits showed that 23% of users said they were visitors to the area, and around 50% of these said their decision of whether to return might be affected by the presence of solar panels.

13.3 HOW WILL THE EFFECTS BE MANAGED?

171 The Development provides for a number of socioeconomic mitigation measures which will help avoid, reduce or offset likely adverse

socioeconomic impacts and enhance any likely beneficial socioeconomic effects of the Development. The measures which are to be adopted as part of the Development are:

- Advertise any lane closures in advance so road users are forewarned and can manage commute to work effectively;
- Make retained and new recreational routes through the solar park site appealing to people to encourage their use by providing information boards (with details of new routes); wildflowers and hedgerows (for visual screening); education boards (e.g., on wildlife and solar energy). A community orchard is also proposed as part of the Project; and
- An Outline Skills, Supply Chain and Employment Plan has been drafted and is included in the ES as Technical Appendix A13.2. This sets out how the supply chain will be encouraged to work for local people.

13.4 WHAT ARE THE OVERALL EFFECTS?

172 The employment generation associated with each phase of works was independently assessed with all phases considered to have a beneficial effect – moderate during construction and minor during operation and decommissioning. The effect of direct investment, supply chain investment, employment generation and sale of electricity on the 'economic output' receptor is expected to be moderate beneficial during all phases. This is not significant in EIA terms.

173 The effect of directed skills and training as part of an employment and skills plan on existing skills and qualifications is also expected to be a moderate beneficial effect during construction and operation.

174 There will be no significant adverse effects on socioeconomics or tourism during the construction, operation and maintenance or decommissioning phases of the Development, including from cumulative developments.

14 TRAFFIC AND TRANSPORT

14.1 INTRODUCTION TO CHAPTER

175 The Traffic and Transport chapter of the ES assesses the potential transport-related environmental effects of the Development arising from traffic during the construction, operation and decommissioning phases.

176 The Study Area considers the surrounding road network to be used by construction related vehicles travelling to and from the Development. The increase in traffic along these key movement corridors are then assessed in detail to determine the forecast environmental effects using the Institute of Environmental Management and Assessment guidelines.

14.2 WHAT FEATURES MIGHT BE AFFECTED?

177 Traffic from the Development may affect all modes of transport users, including pedestrians, cyclists, equestrians and motor vehicles. Using good practice guidance, the assessment considers the impacts that may be experienced on these users resulting from severance, stress and delay,

amenity, fear and intimidation and road safety. The movements of hazardous / large loads are also considered.

178 The routes to be used by construction traffic to and from the Development (Figure 14.4) seek to utilise the shortest route from the strategic road network, whilst avoiding sensitive areas so far as possible and roads with appropriate width and alignment. There are, however, sections along the routes which pass through areas with dwellings and roads that are currently not wide enough in their current form for two vehicles to pass.

179 Several new site access points and passing places are required to facilitate the construction and operation of the Development, for which it will be necessary in some cases to locally remove or displace hedgerow to create the access and its associated visibility splays for exiting vehicles.

14.3 WHAT ARE THE POTENTIAL EFFECTS?

180 The construction phase of the Development has the greatest potential to affect traffic levels and road users, although these will be temporary in duration. When the Development is in operation, significantly fewer vehicle trips will arise. Traffic associated with decommissioning will not be greater than that considered for construction.

181 During the construction phase, there will potentially be localised moderate effects on non-motorised road user delay and amenity, along with minor effects on road safety. All other effects are assessed as being negligible.

182 If the Development construction phase overlaps with other proposed developments that would use or affect the Development's construction routes, then there is a potential for a cumulative effect on users of these roads.

14.4 HOW WILL THE EFFECTS BE MANAGED?

183 The potential negative effects have been minimised by routing construction related traffic to and from the Development to avoid, as far as possible, the most sensitive areas such as residential areas, schools and areas with higher levels of non-motorised users (walkers, cyclists and horse riders). The network of proposed access points means that heavy goods vehicle traffic will be routed off the public roads and onto site tracks as early as practical, minimising impacts on public roads. An Outline Construction Travel Plan is included in the ES as TA A14.2. This includes measures to reduce the number of vehicles travelling to and from the solar park site. In areas where effects could be reduced further, specific traffic management arrangements are identified within an Outline Construction Traffic Management Plan (CTMP), which is included as Technical Appendix A5.2 in Volume 4. These documents will be finalised prior to the start of construction and will take into account any cumulative development construction activity in the area that could overlap with Development traffic.

184 The CTMP provides a framework for the management of construction vehicle movements to and from the Development, to ensure that the effects of the temporary construction phase on the local highway network are minimised. It sets out construction access arrangements, construction

vehicle routing, construction vehicle trip generation, and the management/mitigation measures. It also summarises the requirements for vehicles to transport abnormal loads.

185 Prior to construction work commencing, any required road surface remedial works will be undertaken to rectify defects and on sections of road where there is currently insufficient width for two vehicles to pass safely, new inter-visible passing places will be installed.

14.5 WHAT ARE THE OVERALL EFFECTS?

186 None of the effects associated with traffic movements during the life of the Development are considered to lead to significant effects on environmental receptors, including cumulative effects. Furthermore, where appropriate, measures have been identified to reduce and/or mitigate traffic related effects.

187 The main traffic effects are associated with the increase in vehicle movements along the local roads leading to the site during the construction phase. This could include traffic from cumulative developments.

188 A final CTMP will be developed and agreed with the relevant stakeholders prior to construction, in order to control and mitigate effects associated with vehicle movements. This will include consideration of any traffic that is foreseen to arise from the construction of any cumulative developments, where this might occur at the same time and on the same routes as the Development traffic.

15 CLIMATE CHANGE

15.1 INTRODUCTION TO CHAPTER

189 The assessment of the effect of the Development on and of the climate includes the effects of changes in greenhouse gas (GHG) emissions associated with the Development and resilience of the Development to cope with weather as it may be altered by climate change.

15.2 WHAT FEATURES MIGHT BE AFFECTED?

190 The global climate (which affects local weather patterns) is affected by emissions of greenhouse gases, which are measured in tonnes of carbon dioxide (or, for other substances, their equivalent in terms of the effect they have on the climate). The more greenhouse gases are emitted, the greater the change in the climate.

191 The other “feature that might be affected” that is assessed in this chapter is the Development itself, in terms of how resilient it is to future weather conditions, in particular the more frequent and more extreme events that are associated with climate change.

15.3 WHAT ARE THE POTENTIAL EFFECTS?

192 Operating a solar farm and/or battery energy storage facility involves the emission of almost no greenhouse gases; vehicles to maintain the facility,

and a back-up generator to keep equipment safe in case of power outages only. However, the operation of the Development will displace the need for using gas-fired electricity generation elsewhere and hence lead to a reduction in emissions of greenhouse gases, which is beneficial for the climate.

193 The construction and decommissioning of the Development involves several activities that, currently, involve emissions of greenhouse gases: mining of the materials, processing and manufacturing of the solar panels and batteries (and ancillary equipment, such as mounting poles, foundations, cabling and substations), transporting these to the solar park site, construction and decommissioning of the Development on site, and recycling of the materials. When, at some point in the future, these activities are also decarbonised, the whole lifecycle will involve zero carbon emissions. However, in the meantime, these activities represent an emission of greenhouse gases associated with the Development.

194 Potential effects of the future climate on the Development include strong winds, different temperatures and heavy rain. Increased flood risk is accounted for in the Water Resources assessment, discussed in section 9.

15.4 HOW WILL THE EFFECTS BE MANAGED?

195 The net effect of the savings in emissions of greenhouse gases during operation and the increased emissions as a result of construction and decommissioning is a reduction in emissions (see section 15.5). Therefore, maximising the generation capacity of the Development will lead to the maximum beneficial effects on climate change. The Development has been designed to maximise use of the available grid connection capacity.

196 It is expected that the Development will use UK-manufactured steel, from arc-furnaces (i.e., electrical rather than coal/coke-based) that will be transported to site and manufactured there into the structures on which the solar panels will be mounted. This will save emissions associated with the manufacture and transport of steel. However, given market variables, as a worst-case assumption for the climate change assessment, the steel has been assumed to be manufactured in China and using fossil fuels.

197 The resilience of the Development to increased severity of weather conditions arises through the design of the components (with solar PV modules capable of withstanding a wide temperature range), the design of their installation (with wind modelling and push-pull testing on the solar mounting poles being designed for higher wind speeds), and control measures (through the design and management of the batteries to minimise risk of overheating and fire; an Outline Fire Safety Management Plan (FSMP) is included as Technical Appendix A5.4), and this will be used as the basis of a final FSMP before the start of construction of the BESS.

15.5 WHAT ARE THE OVERALL EFFECTS?

198 The carbon emissions, or savings in emissions, from the Development depend on the emissions scenario in the absence of the Development. Electricity generated by solar panels at the Development is assumed to

displace other electricity on the national electrical grid, and this is predicted to decarbonise rapidly, with most of the reduction occurring by 2035 – this leads to the solar component of the Development having a net carbon emission. This reduction in grid carbon is because of predictions that the grid will be supplied increasingly by low carbon projects such as the Development. This is circular logic, therefore, and should not be used as an argument against the Development. Instead, using a grid carbon value as it is now (that is, not making the assumption that the grid will decarbonise) leads to the Development having a substantial saving in carbon emissions. Both scenarios are presented in Chapter 15. There is no information available on the decarbonisation of the electricity used to top-up supply at peak times and so, in the absence of this, carbon savings are calculated on the basis that the BESS exported electricity will replace electricity that would otherwise have been generated by gas.

199 Greenhouse gas emissions associated with the construction, operation and decommissioning of the Development (including production of the parts and recycling/disposal at the end of their use) are estimated as being approximately 3,124 kteCO_2eq (thousand tonnes of carbon dioxide equivalent). The overall savings of greenhouse gases associated with the 40-year operation of the Development is between approximately 3,939 and 9,750 kteCO_2eq, depending on the baseline scenario as discussed in the paragraph above. There is therefore an estimated net reduction in emissions resulting from the Development of between approximately 815 and 6,626 kteCO_2eq[1]. This is assessed as being a major beneficial effect that is significant, in that it will actively reverse the risks of climate change. In combination with other such decarbonising projects, there is a potentially very significant beneficial effect on the global climate.

200 The Development has been designed to be resilient to future extreme weather events, and designed in accordance with current planning, design and engineering practices and codes. Development in areas known or predicted to flood have either been avoided by placing equipment elsewhere, or the flood water has been avoided by elevating flood sensitive equipment well above predicted flood levels. Risks to the Development from future weather events and patterns are assessed as being Very Low.

[1] The reason this number is lower than may be expected is that the calculations include several worst-case assumptions, and that the electrical grid is assumed to be largely decarbonized by c. 2035, in line with government targets. This will only happen if projects such as the Development proceed.

16 MISCELLANEOUS ISSUES

16.1 INTRODUCTION

201 The Miscellaneous Issues chapter of the ES includes topics that are not covered in dedicated, single-topic chapters, as described below.

16.2 AIR QUALITY

202 The potential effects of the Development on local air quality during construction and decommissioning are:

- Dust from both construction and decommissioning activities and exhaust emissions from construction machinery; and
- Construction and decommissioning traffic emissions.

203 A dust assessment has been carried out. This identified minor and negligible effects on the nearest receptors, residential properties and Carlton Wood Ancient Woodland. With the implementation of recommended mitigation measures to sensitive receptors through the oCEMP (included as Technical Appendix A5.3), the effects of construction dust and exhaust emissions from construction machinery would be negligible and not significant.

204 The traffic flows from construction and decommissioning are predicted to be well below (less than 20% of) 500 cars/small vans or 100 large lorry movements per day, which are established lower thresholds for requiring detailed assessment on the basis that effects could be significant. Therefore, construction and decommissioning traffic emissions will not lead to significant effects on air quality.

205 Mitigation measures including travel planning and HDV management during the construction stage will be incorporated into an Outline Construction Traffic Management Plan (oCTMP, included as Technical Appendix A5.2). These will include avoiding HDV movements at peak times, which will further reduce the potential to contribute to poor air quality.

206 Traffic levels resulting from the operational phase will be extremely low in comparison to the construction phase and will not lead to significant air quality effects.

16.3 GLINT AND GLARE

207 Whilst solar photovoltaic (PV) panels are specifically designed to absorb, rather than reflect light, they may reflect the sun's rays at certain angles, causing glint and glare. This can be an annoyance to residents, and a potential distraction for drivers of road vehicles, boats, trains and aircraft.

208 The potential reflection of sunlight from the solar panels has been modelled for the Development at the location of nearby residential properties, roads, railways and aerodromes (including flight paths).

209 Glint and glare effects were considered throughout the design process, in order to reduce the requirement for additional mitigation measures. This has resulted in effects being found to be acceptable at the large majority of

receptors, however additional mitigation will be required to ensure that glint and glare effects are acceptable in all cases.

210 With the exception of Caunton airfield, no glint and glare impacts have been predicted for any aerodrome. Any glint and glare impacts that occur at Caunton Airfield would not increase the level of glare intensity over and above that already anticipated due to Knapthorpe Lodge and Muskham Wood Solar Farms, which have previously been confirmed as being acceptable by both the gliding club that operates from this airfield, and Nottinghamshire Council. As such, any glint and glare due to the Development is not expected to affect the safety or use of the airfield, and effects are therefore acceptable.

211 The assessment has identified limited potentially significant glint and glare effects on certain stretches of the A1 (northbound), A616 (northwest-bound) and A627 (southbound) only, with no effects in the opposite directions.

212 Cumulative glint and glare effects have also been modelled, with additional glint and glare occurring at the same locations as from the Development from only one cumulative development, Muskham Wood Solar Farm. The additional glint and glare were minimal, and the cumulative effects are below the threshold levels and not significant.

213 A number of mitigation measures are available, including but not limited to:

- The use of textured glass PV panels in key areas;
- Additional visual screening in the form of fencing and / or planting;
- Changes to the azimuth and / or tilt angle of the PV arrays; and
- Modifying the extent of the PV array areas.

214 The Development Description, as set out in Section 5 of this NTS (Chapter 5 of the ES), includes some flexibility in the design, and hence the detail of the solar PV modules will be fixed at pre-construction stage, after grant of the Development Consent Order. A glint and glare assessment of the proposed final, detailed design will be carried out at that time, and mitigation specific to the final design will be proposed, setting out how significant effects will be avoided. This will be submitted to Newark and Sherwood Council for approval prior to construction starting.

16.4 HUMAN HEALTH

215 A Human Health Impact Assessment (HHIA) has been undertaken to consider key determinants to protect human health. HHIAs are designed to determine whether a proposal might improve health inequalities or negatively affect people's health and wellbeing in its widest sense.

216 Based on the experience of the project team, this section draws together and considers the findings from the following assessments:

- Air Quality;
- Climate;
- Hydrology and Hydrogeology;
- Traffic and Transport;
- Noise;
- Landscape and Visual;

- Socioeconomics and Tourism; and
- Recreation.

217 The outcome of the HHIA indicates that the Development is unlikely to negatively affect people's health and wellbeing in its widest sense, including mental health. There are no effects that:

- Cause potentially severe or irreversible negative effects;
- Affect a large number of people; or
- Specifically, may affect people who already suffer poor health or are socially excluded.

16.5 MAJOR ACCIDENTS OR DISASTER

218 The Scoping Report identified a list of potential major accidents or disasters that could affect the Development or potentially be caused or influenced by the Development. These are as follows:

- Flood;
- Fire;
- Road Accidents;
- Aircraft Disaster;
- Flood Defence Failure;
- Utilities Failure (e.g., gas, electricity, water, sewage, oil, communications);
- Mining/Extractive Industry; and
- Plant Disease.

219 Work no. 5a, BESS, includes a battery energy storage system (BESS). Batteries are used in a very large number of domestic and commercial appliances, and only rarely fail, and even more rarely fail in a way that could be a hazard. However, as noted by the National Fire Chief's Council (NFCC) guidance[2], "*a number of high profile incidents have taken place and learning from these incidents continues to emerge*".

220 An Outline Fire Safety Management Plan (FSMP) has been developed and is included as Technical Appendix A5.4. A DCO Requirement will ensure that a full and final FSMP will be developed, based on the Outline FSMP, and submitted to NSDC in consultation with the Nottinghamshire Fire and Rescue Service (NFRS) local fire and rescue service prior to the start of construction of the BESS part of the Development.

221 The only utility with any substantial connection to the Development is the electrical grid. If there is an accident or disaster that cause the grid elsewhere to cease to operate, this will not affect the Development.

222 The Development has no potential to have an impact on any mining or extractive industry due to an accident or disaster. Records of mining activity under land within the solar park site are limited to oil extraction around

Moorhouse, and these are not likely to lead to land collapse or subsidence that could affect the Development.

223 With the implementation of an FSMP to be submitted to NSDC in consultation with NFRS, there are no significant effects to, or from, the Development associated with major accidents and disasters.

16.6 ELECTROMAGNETIC FIELDS

224 Electromagnetic fields (EMFs) arise from generation, transmission, distribution and use of electricity and occur around power lines and electric cables and around domestic, office or industrial equipment that uses electricity. Electric fields are the result of voltages applied to electrical conductors and equipment. Most materials do not readily block magnetic fields. The intensity of both electric fields and magnetic fields diminishes with increasing distance from the source.

225 The scope of the assessment of EMFs in the EIA, as agreed in the Scoping Opinion, is limited to consideration of any cables associated with the Development which exceed 132 kV. The only part of the Development likely to exceed this voltage is the underground export cable between the 400 kV compound, area and the National Grid Staythorpe Substation (likely via the Consented Staythorpe BESS) which will be a 400 kV cable.

226 The 400 kV cable will be buried to a depth of at least 60 cm. Calculations of the electromagnetic field strength from the proposed electricity passing down such a cable conclude that the threshold at which long-term human exposure is not recommended extend for only 37 cm from the cable, in any direction, which would be below the surface of the ground. As a result, there are no significant effects associated with electromagnetic fields.

16.7 WASTE

227 Given the nature of the Development and the construction process, no significant quantities of waste are anticipated during the construction and operation phases, and all of it is expected to be re-used, recycled or incinerated. The majority of construction equipment will be delivered to the solar park site for assembly and installation (mounting structures) and connection (solar PV modules). A Site Waste Management Plan (SWMP) is included in the Outline CEMP (TA A5.3), and a final version will be agreed as part of the final CEMP prior to the commencement of construction.

228 The number of vehicles associated with the removal of waste material associated with decommissioning and construction is considered within the Traffic and Access assessment. All waste transported offsite will be delivered to the appropriately licenced receivers of such materials.

17 AGRICULTURAL LAND

17.1 INTRODUCTION TO CHAPTER

229 This chapter of the ES considers agricultural land, soils and agricultural businesses.

17.2 WHAT FEATURES MIGHT BE AFFECTED?

230 The majority of the 1,765 ha within the solar park site are agricultural.

231 Soils, and their agricultural quality, may be affected by construction and decommissioning activities, and by change of use during the operational phase to grassland with substations. Based on survey work completed within the solar park site soils are mostly a mixture of sub-grades 3a ("good") and 3b ("moderate"). Soils are loamy or sandy in the east, turning more clayey in the west.

232 There are farm businesses with land in the solar park site.

17.3 WHAT ARE THE POTENTIAL EFFECTS?

233 The parts of the Development proposed for Work area 2, cables, and some of the areas proposed for Work area 3, mitigation/enhancement, will continue in agricultural use, albeit some will have a temporary disturbance during the construction and decommissioning phases. Work area 1, solar PV, may be used for sheep grazing around and under the panels, and hence agriculture in these areas would continue. There would be some parts of the site, including the substations, BESS area and any solar PV areas not grazed by sheep, which could not be used for agriculture, however.

234 Soils may be affected by the construction activities, and during the operational phase by the change in land use from arable farming to grassland and substations. During decommissioning, the solar PV areas, at least, would have the panels removed and would be available to be restored to arable farming.

235 Farm businesses could be affected by disruption during the construction and decommissioning phases, and during the operational phase by the change in land use from arable to grassland and substations.

17.4 HOW WILL THE EFFECTS BE MANAGED?

236 The design and layout of the Development has sought to prioritise areas of lower agricultural land quality.

237 An Outline Soil Management Plan (SMP) is included as Technical Appendix A17.2 of the ES and describes measures to minimise the effects on soils and land quality. At detailed design stage, after grant of the Development Consent Order and before construction starts, the Outline SMP will be used as the basis of a final SMP that will be submitted for approval to Newark and Sherwood District Council. The Outline SMP identifies the soil types across the solar park site, and any sensitivities to being worked in wet weather. The

SMP provides guidance on the handling of soils, and the trafficking across soils, for all parts of the construction and operational works, and provide guidance for decommissioning.

17.5 WHAT ARE THE OVERALL EFFECTS?

238 There will be four intermediate substations, plus one main substation and a Battery Energy Storage System area, and whilst these areas may be restored at the decommissioning phase, there is the potential for the operational phase for agricultural land to be adversely affected. There is the potential for in excess of 20 ha of such land to be involved, which would be a medium adverse effect, albeit reduced to negligible on decommissioning.

239 There are no other significant agricultural effects anticipated.

18 RECREATIONAL RESOURCES

18.1 INTRODUCTION TO CHAPTER

240 This chapter of the ES assesses the potential effects of the Development on recreational resources.

18.2 WHAT FEATURES MIGHT BE AFFECTED?

241 Recreational resources that have the potential to be affected by the Development are public rights of way (footpaths, bridleways, etc.), and other outdoor recreational features such as fishing ponds, and where there is access to Local Wildlife Sites (LWS) and Sites of Special Scientific Interest (SSSI).

18.3 WHAT ARE THE POTENTIAL EFFECTS?

242 Potential effects of the Development on these resources are either direct, through the closure or diversion of routes, or indirect, through changes in views and levels of noise. These could arise from the construction, operation and decommissioning of the Development.

18.4 HOW WILL THE EFFECTS BE MANAGED?

243 In seven locations (which includes eight sections of path), a public right of way goes through a field that is proposed to be used for solar PV and, at these locations, the route has been diverted around the edge of that field. The diversion would be in place during construction, operation and decommissioning of the Development, and would remain in place following decommissioning. This limits the visual effect of the solar panels to being typically just on one side of the route, whilst also allowing maximum use of the field for solar PV.

244 During construction, one section of bridleway, for 500 m west from Ossington Lane, would be closed temporarily during those times when construction vehicles would use that route. This is expected to be less than a year. A diversion will be put in place using one of the new permissive

bridleways, to the south This is likely to be the same during decommissioning, if the same routes are used.

245 All other routes would be kept open during construction and decommissioning. Any diversions required during the operation phase would be implemented prior to the start of construction in that area. Where cables or construction access tracks cross public rights of way, these would be managed such that the public right of way would remain open, but construction or decommissioning could continue, such as by the use of 2-way gates.

246 Substantial enhancement of recreational resources is proposed as part of the Development:

- Tree and hedgerow planting would provide visual screening of solar PV areas and contribute to the condition and quality of the landscape;
- A waymarked long-distance circular footpath would be provided around the Development and nearby landscape. This route would use a mix of existing and diverted public rights of way and new permissive routes, including routes through or adjacent to solar areas and those further away;
- 27 new permissive routes (21 footpaths and 6 bridleways) are proposed, during the operation phase of the Development, through the solar park site where they would provide improved access by way of connecting disjointed areas of the network of Public Rights of Way; reduce 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; or provide improved options for circular walks;
- Interpretation (typically in the form of information boards) would be provided along the recreational routes through the solar park site. These would identify information of local landscape, biodiversity and heritage interest. In addition, some interpretation would describe aspects of the solar farm itself - primarily in areas where the Development would be more openly visible;
- Biodiversity enhancements would provide users of recreational resources within the solar park site with increased presence of wildlife, one of the interests that contribute to recreational amenity.

247 The management proposed for the recreational routes affected by the Development is set out in an Outline Recreational Routes Management Plan (RRMP), included in the ES as TA A18.1. At detailed design stage, post-consent, this will be used as the basis for a final RRMP, which will be submitted to Newark and Sherwood District Council for approval.

18.5 WHAT ARE THE OVERALL EFFECTS?

248 Adverse effects have been identified during construction, operation, and decommissioning of the Development on a number of public rights of way and two Local Wildlife Sites. These effects were found to be non-significant for all public rights of way, as they are of local use or importance. One, NT|Sutton on Trent|BW14, will be temporarily diverted during construction and decommissioning, when Development vehicles will use that route; at other times it will be open. 7 routes that currently go through areas that are

proposed for solar PV areas, are proposed to be diverted, with the same start and end points; the diversions will be created prior to the closure of the current routes.

249 Beneficial effects have been identified during the operation phase of the Development on 27 new permissive routes totalling 32.6 km, which would contribute to the connectivity and recreational amenity of the area. These effects were assessed as significant for only one new route, the new circular long-distance footpath. This is a c. 50 km route broadly following the solar park site.

19 INTERRELATIONSHIP EFFECTS

19.1 INTRODUCTION

250 The EIA Regulations state that "*the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors—*

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(14) and Directive 2009/147/EC(15);

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) ***the interaction between the factors referred to in sub-paragraphs (a) to (d)****."* (our emphasis).

251 Interrelationships may occur where two or more effects arise that have the potential to impact on the same receptor during construction, operation or decommissioning. An effect taken in isolation may not have a significant effect on a receptor, but where several effects are considered in an interrelated manner, the resultant effect could then be considered significant.

252 Cumulative effects, considered here to be the effects of the Development on a receptor relative to a baseline including other proposed and consented (but not built) developments, will be assessed in the technical chapters of the ES (see section 2).

19.2 WHAT ARE THE POTENTIAL EFFECTS?

253 Other chapters of the ES relate to the type of effect (e.g., visual, noise, air quality, glint/glare, traffic) for which the receptors are people in the vicinity of the Development, who might experience more than one of these effects. The scope of the interrelationships assessment is therefore limited to consideration of the potential for multiple different effects to act on local people.

19.2.1 Construction

254 The potential effects of the Development on local people during construction are:

- Adverse effects on people living in close proximity to Development construction activity (visual and noise), which could combine to affect a sense of tranquillity;
- Beneficial effects on workers (employment and skills and qualifications); and
- Adverse effects on non-motorised users of public routes (recreational amenity and along the construction traffic routes).

255 Each of the individual assessments that identified the above effects has been carried out on a worst-case basis. All of these effects will be short-term, lasting for a maximum of the construction period (2 years), but generally only for one phase of the construction period (typically 12 months), and often much less than that (e.g., where footpaths are impacted by works to install a cable, or where construction work is within 100 m of properties, this is likely to last for a few weeks at most).

256 As a worst-case, for short periods of time, in close proximity to the construction works and/or the construction vehicle routes, the in-combination effects on local people are assessed as a detectable but non-material change which is minor and not significant in terms of the EIA Regulations. In-combination effects on the large majority of local people, and for all local people for the large majority of the construction period, will be negligible.

19.2.2 Operation

257 The potential effects of the Development on local people during construction are:

- Adverse effects on people living in close proximity to above-ground Development infrastructure (visual and noise);
- Beneficial effects on workers (employment and skills and qualifications); and
- Both adverse and beneficial effects on users of public routes (recreational amenity).

258 Each of the individual assessments that identified the above effects has been carried out on a worst-case basis. Mitigation of adverse visual and recreational amenity effects is proposed in the form of new hedges and other planting, which will mature over time to screen views of the Development's above-ground structures, lessening any effect.

259 In-combination effects on the large majority of local people during the operational phase, will be negligible. As a worst-case, in close proximity to the above-ground structures in the solar PV areas, the substations and BESS area, from locations where views are not screened, the in-combination effects on local people are assessed as a detectable but non-material change which is minor and not significant in terms of the EIA Regulations.

19.2.3 Decommissioning

260 The potential effects of the Development on local people during decommissioning are identified as being the same, or slightly less than, the effects during construction. The assessment of these effects is therefore also the same: in-combination effects on the large majority of local people, and for all local people for the large majority of the decommissioning period, will be negligible.

261 As a worst-case, for short periods of time, in close proximity to the decommissioning works and/or the decommissioning vehicle routes, the in-combination effects on local people are assessed as a detectable but non-material change which is minor and not significant in terms of the EIA Regulations.