Great North Road Solar and Biodiversity Park

Environmental Statement

Volume 2 – Chapters

Chapter 2 – Environmental Impact Assessment

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Contents

2.1 INTRODUCTION

1 This chapter provides a summary of the Environmental Impact Assessment (EIA) process and methodology, as applicable to the Development.

2 This chapter is supported by the following figures, in Volume 3:

- Figure 2.1A: Socioeconomic Zone of Influence [EN010162/APP/6.3.2.1]; and
- Figure 2.1B: Other Zones of Influence [EN010162/APP/6.3.2.2].

3 This chapter is supported by the following Technical Appendix (TA), in Volume 4:

- TA A2.1: Cumulative Assessment Long- and Short-List [EN010162/APP/6.4.2.1].

4 A glossary of terms is provided in ES Chapter 20, Glossary [EN010162/APP/6.2.20].

2.2 OVERVIEW OF THE EIA PROCESS

2.2.1 Purpose of EIA

5 The purpose of EIA is to ensure that the likely significant environmental effects of the Development are understood and properly taken into account when decision-makers consider an application for development consent.

6 Through the EIA process, likely significant environmental effects (adverse and beneficial) arising from the construction, operation and decommissioning phases of the Development have been identified and assessed with measures explored and proposed to mitigate or reduce any significant adverse effects on the environment caused by the Development. If likely significant effects are identified, consideration is given to monitoring measures that may be required.

7 The process is designed to produce an environmentally sensitive development by considering and assessing the effects of the Development against existing environmental baseline conditions. At the outset of the project, the EIA team identified potentially sensitive environmental receptors. This initial study was used to inform the Stage 1 Concept Masterplan of the Proposed Development which was presented within the non-statutory consultation exercise undertaken in January 2024. Further design and assessment work has been undertaken following the conclusion of the non-statutory consultation, prior to production of this Environmental Statement (ES). The evolution of the design of the Development is described in ES Chapter 4, Site Selection and Design [EN010162/APP/6.2.4].

2.2.2 EIA Regulations

8 The EIA Regulations[1] specify which developments are required to undergo EIA and schemes relevant to the NSIP planning process are listed under

[1] HMSO. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents [accessed on 04/10/2024].

either 'Schedule 1' or 'Schedule 2' of the EIA Regulations. Those developments listed in Schedule 1 must be subject to EIA, while developments listed in 'Schedule 2' must only be subject to EIA if they are considered "*likely to have significant effects on the environment by virtue of factors such as its nature, size or location*". The criteria on which this judgement must be made are set out in Schedule 3 of the EIA Regulations. The Development falls under Schedule 2 Part 3(a) of the EIA Regulations, as it constitutes "*industrial installations for the production of electricity, steam and hot water…*".

9 Taking into account the criteria listed in Schedule 3, it is considered that due to the Development's nature, size and location that it has the potential to have significant effects on the environment and therefore constitutes EIA Development as defined in the EIA Regulations. In accordance with Regulation 8(1)(b) of the EIA Regulations, the Applicant has therefore provided this ES in support of the DCO Application.

10 The information required in an ES under Regulation 14(2) of the EIA Regulations is:

11 *"(a)a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*

12 *(b)a description of the likely significant effects of the proposed development on the environment;*

13 *(c)a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*

14 *(d)a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*

15 *(e)a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*

16 *(f)any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected."*

2.3 EIA PROCESS AND METHODOLOGY

17 Each of the technical assessments within the EIA follows a systematic approach, with the principal steps being:

- Description of baseline conditions;
- Prediction of potentially significant effects including cumulative effects (to include all likely significant effects);
- Assessment of potentially significant effects, to include all likely significant effects;

- Identification of appropriate mitigation measures, including design changes; and
- Assessment of residual (likely) effects.

18 Each technical assessment (ES chapters 7 to 19; [EN010162/APP/6.2.7 to 6.2.19]) is broadly structured as follows and where this differs it is stated in the relevant section of the ES:

- Introduction;
- Consultation;
- Assessment methodology and significance criteria;
- Baseline conditions;
- Development design mitigation;
- Assessment of likely effects;
- Mitigation measures and residual effects;
- Cumulative effects assessment (and, if necessary, identification of any further required mitigation measures and residual cumulative effects);
- Summary of likely effects; and
- Statement of significance.

19 The EIA assessment is based on a number of related activities, as follows:

- Consultation with statutory and non-statutory consultees throughout the pre-application process;
- Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to EIA;
- Consideration of technical standards for the development of significance criteria;
- Review of secondary information, previous environmental studies and publicly available information and databases;
- Physical surveys and monitoring;
- Desk-top studies;
- Computer modelling;
- Reference to current legislation and guidance; and
- Expert opinion.

2.3.1 Rochdale Envelope Approach

20 The planning and design process of large development projects is fluid by nature and certain project details may not always be confirmed or finalised at the time of application submittal or examination, for example due to changing market conditions and evolving technologies. This is particularly true for renewable energy schemes, where technology can change rapidly over a short space of time. This uncertainty must be balanced against the need to assess likely parameters of the proposed project. The need for flexibility is identified in a number of National Policy Statements (NPS)[2] which suggest

[2] Planning Inspectorate (2012). Nationally Significant Infrastructure Projects: National Policy Statements. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/national-policy-statements/ [accessed on 04/10/2024]. Note that consultation draft revisions of these were issued in April 2025 but no revisions were made to the content referred to in this chapter.

the Rochdale Envelope as an approach to address uncertainties inherent to the Development. Specifically, EN-1 envisages flexibility in development consent order applications for energy projects at paragraphs 4.3.11 and 4.3.12. In summary, these paragraphs state that where it is not possible for all aspects of the proposal to be settled in precise detail, the applicant may explain the elements that are not finalised, and the reasons for this, and provide and assess the maximum extent of the proposed development.

21 The use of the Rochdale Envelope approach has also been recognised and endorsed in the Planning Inspectorate (PINS) Advice Note Nine: Rochdale Envelope[3]. This approach has been used in the majority of renewable energy applications.

22 Advice Note Nine is supportive, as it states at paragraph 6.1 that:

23 *"The Rochdale Envelope assessment approach is an acknowledged way of assessing a Proposed Development comprising EIA development where uncertainty exists and necessary flexibility is sought".*

24 The “Rochdale Envelope” is named after the High Court cases “R. vs Rochdale MBC ex parte Milne” and “R. V Rochdale MBC ex parte Tew (1999)” which concerned the outline planning application for a proposed business park in Rochdale. The decisions state that a certain flexibility should be allowed, but should not be treated as a blanket opportunity to allow for insufficient detail in the assessment. In terms of the DCO application process, the PINS Advice Note Nine also states at paragraph 2.4 that:

25 *“the DCO application documents should explain the need for and the timescales associated with the flexibility sought and this should be established within clearly defined parameters;*

26 *the clearly defined parameters established for the Proposed Development must be sufficiently detailed to enable a proper assessment of the likely significant environmental effects and to allow for the identification of necessary mitigation, if necessary within a range of possibilities;*

27 *the assessments in the ES should be consistent with the clearly defined parameters and ensure a robust assessment of the likely significant effects;*

28 *the DCO must not permit the Proposed Development to extend beyond the ‘clearly defined parameters’ which have been requested and assessed.*

29 *the more detailed the DCO application is, the easier it will be to ensure compliance with the EIA Regulations.”*

30 ES Chapter 5, Development Description [EN010162/APP/6.2.5], establishes the relevant parameters for the purposes of the assessment and the reason for any flexibility required in the consent. Each technical chapter contains a section in its introduction setting out the relevant design parameters likely to

[3] Planning Inspectorate (2025). Advice Note 9 - Rochdale Envelope. Available online: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope [accessed on 04/05/2025]

result in the maximum adverse effect (the worst-case scenario) and the technical assessments are undertaken accordingly to determine significance.

31 This reflects paragraph 4.9 of Advice Note Nine which states:

32 *"The ES will need to establish the relevant parameters for the purposes of the assessment. Where this approach is adopted the assessments in the ES should be undertaken on the basis of the relevant design parameters applicable to the characteristics of the Proposed Development included within the DCO. The assessment should establish those parameters likely to result in the maximum adverse effect (the worst case scenario) and be undertaken accordingly to determine significance".*

33 This is the approach taken in this ES, which has followed the advice outlined in Advice Note Nine while adhering to the 2008 Planning Act and Schedule 4 of EIA Regulations. When project details are unknown, the worst-case scenario has been used when assessing the environmental impacts of the Development in accordance with the Rochdale Approach.

2.3.2 Baseline Description

34 In order to evaluate the likely environmental effects (and therefore ensure that the likely significant effects are identified and assessed, as required by the EIA Regulations), information relating to the existing environmental conditions have been collected through field and desktop research, including consultation. These are known as the baseline conditions. The baseline also extends into the future (the future baseline), although predictions of this can involve potentially large uncertainties. As a result, in most cases, the future baseline is assumed to remain unchanged throughout the operation of the Development. Where this is not the case, this is stated within the ES technical chapter.

35 The baseline has been used to identify and assess the sensitivity of receptors on and near to the Development, what changes may take place during the construction, operation and decommissioning of the Development and the effects, if any, that these changes may have on these receptors.

36 Within each technical assessment, the methods of data collection are described. Data have been collected from public records and other archive sources and where appropriate, field surveys have been carried out. The seasonal timing of the work (if appropriate) and the study areas proposed are outlined within each assessment section of this ES.

2.3.3 EIA Assessment Scenarios

37 The ES presents the assessment of effects of the following scenarios;

- Construction Phase (2027 - 2029);
- Operation Phase (2029 - 2069); and
- Decommissioning Phase (2069 - 2070).

2.3.4 Prediction of Likely Effects

38 The prediction of likely effects, including all likely significant effects, covers the three phases of the Development: construction (including pre-construction), operation and decommissioning. During each phase different environmental effects are likely to arise. Each technical assessment of the EIA will cover (as appropriate):

- Direct and indirect effects;
- Short-, medium- and long-term effects;
- Permanent and reversible effects;
- Beneficial and adverse effects;
- Likelihood of an effect occurring (i.e., very likely, likely, or unlikely); and
- Cumulative effects.

39 Following identification of likely environmental effects, changes to baseline conditions have been predicted, allowing an assessment of the environmental effects of these changes and the identification and assessment of the likely significant effects.

2.3.5 Assessment of Likely Effects

40 The likely effect that the Development may have on each environmental receptor would be influenced by a combination of the sensitivity or importance of the receptor and the predicted magnitude of change from the baseline conditions (either beneficial or adverse).

41 The magnitude of change from the baseline state is typically defined as high, medium, low, negligible or no change and can be beneficial or adverse. The definition of magnitude varies by technical discipline as described in the technical chapters of this ES.

42 Environmental sensitivity (or importance) may be categorised by a multitude of factors, for example: threat to rare or endangered species; transformation of natural landscapes; or changes to soil quality and land-use. The initial assessment, consultation and scoping phases identify these factors along with the implications of the predicted changes. Unless stated otherwise in each technical chapter, the sensitivity or importance of each identified receptor is defined as high, medium, low or negligible.

43 The overall significance of an environmental effect is determined by the interaction of the above two factors (i.e., sensitivity/importance and predicted magnitude of change from the baseline). In order to evaluate the likely environmental effects, the assessment criteria used are identified and justified within each technical chapter in line with the definitions described above, unless otherwise stated (*e.g.*, the definition of what constitutes a receptor of 'high' sensitivity).

44 Table 2.1 summarises, in the form of a matrix, the generic format by which the significance of a likely effect is determined within each technical chapter. Effects that would be **'significant'** in terms of the EIA Regulations are shaded in Table 2.1 and highlighted in bold.

Table 2.1: Generic matrix for determining the significance of likely effects

Sensitivity of receptor	Magnitude of change			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

45 For the purposes of EIA, the significance of an effect is generally assessed as being either:

- Negligible – no detectable or material change to a location, environment or species;
- Minor – a detectable but non-material change to a location, environment or species;
- Moderate – a material, but non-fundamental change to a location, environment or species; or
- Major – a fundamental change to a location, environment or species.

46 Given this methodology, it follows that, regardless of a receptor's importance or sensitivity, there can be no significant effect when the magnitude of change is negligible. Similarly, there can be no significant effect where the importance or sensitivity of the receptor is negligible, regardless of the magnitude of change.

47 Some assessments may deviate from this methodology set out above, and where this is the case, the detailed methodology has been stated within the relevant section of this ES. It is also important that professional judgement can be applied in concluding the significance of effects, to allow for receptors and effects which fall between definitions of magnitude and sensitivity, or do not fit well into a rigid matrix-based approach.

2.3.6 Mitigation

48 Where applicable, each technical chapter will propose measures to avoid, prevent, reduce and/or offset any likely significant adverse effects that are identified. These are termed mitigation measures. Such measures may include the consideration of alternatives; physical design evolution such as movement or reduction in scale; and operational and/or management measures.

49 This strategy of avoidance, prevention, reduction and offsetting is a hierarchical one which seeks:

- First to avoid likely effects (typically through site selection and design);

- Then to reduce those which remain (typically through site layout, restrictions on maximum parameters, design detail and construction processes);
- To propose mitigation where practicable (for instance through control processes and vegetation planting); and
- Lastly, where no other measures are possible, to propose compensatory measures to offset the predicted effect (typically to enhance some aspect of a receptor in a way that might not be related to the adverse effect on it).

50 One conceptual approach to identify potential effects is a "source-pathway-receptor" model. A source is a cause of change and is typically mitigated by avoiding the change or reducing the scale of change. A pathway is the way that the change affects a receptor, and this is typically mitigated by interrupting the pathway, to prevent the receptor from being affected or to minimise this. A receptor, once affected as a result of a source and a pathway, cannot be unaffected, but the overall effect on it could be mitigated by some compensation.

51 Mitigation will be secured through DCO requirements or other means (e.g., other regulations, such as the Environmental Permitting Regulations), and the mitigation and its means of being secured is documented in a Commitments Register [EN010162/APP/7.1] that is submitted as part of the DCO application.

2.3.6.1 Embedded Mitigation

52 Where possible, mitigation measures have been embedded into the overall design rather than "added on" to the Development proposals. By being flexible with the design, the project design has responded to the findings of consultation and EIA work, and mitigated accordingly, as the Development design progressed.

53 Embedded mitigation measures include features that are a clear part of the Development proposals. Generally, these are features that are shown on layout plans of the Development, but they can also include management and control documents where it is not reasonably conceivable that such a development could proceed without them, such as a Construction Environmental Management Plan (CEMP). Where such documentation is treated as embedded mitigation, this has been made clear within this ES, and an outline version of the document has typically been included in the ES, generally as a Technical Appendix to Chapter 5, Development Description [EN010162/APP/6.2.5].

2.3.6.2 Further Mitigation

54 Following the main assessment, where adverse effects are identified and those effects are assessed as being greater than negligible, further mitigation is proposed, where practicable.

2.3.7 Residual Effects

55 The assessment process concludes with an examination of residual effects after mitigation has been applied, *i.e.*, the overall predicted (likely) effects of the Development.

2.3.8 Cumulative Effect Assessment and Interrelationships

56 As noted in PINS Advice on Cumulative Effects Assessment[4]:

57 *"Schedule 4 paragraph 5(e) of the EIA Regulations 2017 requires the Environmental Statement to include a description of the likely significant effects of the development on the environment resulting from:*

58 *"the cumulation of effects with other existing and, or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources"*

59 *…*

60 *In this advice, 'other existing and, or approved development' is taken to include existing developments and existing plans and projects that are 'reasonably foreseeable'."*

61 The PINS advice also notes that, "*Cumulative effects with 'other existing and, or approved development' are separate from an assessment of interrelationships between aspects for the proposed NSIP (such as between ecology and hydrology).*" The approach in this ES to cumulative effects is described in Sections 2.3.8.1 to 2.3.8.6, inclusive, and the approach to interrelationships is set out in Section 2.3.8.7.

62 The approach taken to cumulative environmental assessment in this ES is as set out in the PINS advice, and follows a 4-stage process:

- "*establishing the long list (stage 1)*
- *establishing the short list (stage 2)*
- *information gathering (stage 3)*
- *assessment (stage 4)*".

63 Sections 2.3.8.1 to 2.3.8.6 set out how this has been carried out for this EIA.

2.3.8.1 Stage 1 – Establishing the Long List

64 The Zone Of Influence (ZOI) for each environmental aspect was identified by the relevant experts in the EIA team, as follows. The zone of influence of other developments is conservatively assumed to be the same as for the Development, and hence the area of search for developments with the potential to lead to cumulative effects, i.e., where the zones of influence intersect, is double the zone of influence distance. This has been mapped on Figures 2.1A and 2.1B [EN010162/APP/6.3.2.1 and EN010162/APP/6.3.2.2].

[4] Planning Inspectorate (2024). Nationally Significant Infrastructure Projects: Advice on Cumulative effects assessment. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment [accessed on 05/05/2025].

65 Landscape and visual:

- The zone of influence of the Development in conjunction with potential cumulative developments depends on the scale and nature of the cumulative development: DCO applications will be identified within a 10 km radius of the Order Limits, EIA projects within a 5 km radius and major planning applications within a 3 km radius. All other developments/ planning applications considered at Stage 1 that lie within 100 m of the Order Limits will also be considered. This is consistent with the landscape and visual study areas as set out in section 7.1.3 of ES Chapter 7, Landscape and Visual Impact Assessment (LVIA; [EN010162/APP/6.2.7]). There is no guidance on study areas for cumulative assessment for LVIA. 10 km is substantially in excess of what is required to identify and assess likely significant effects, based on professional judgement and preliminary assessment, and was established as being twice the initial LVIA study area of 5 km, allowing for the possibility of some larger (taller) cumulative developments with wider zones of visual influence. Given that predicted effects from the Development were assessed as being negligible beyond 1.5 km based on the findings set out in the Preliminary Environmental Information Report (PEIR; which was based on a layout that has since been reduced), 3 km would be an adequate search area for other solar farms for cumulative landscape and visual effects.

66 Ecology and ornithology:

- There is no guidance on study areas for cumulative assessment for ecology. The zone of influence of the Development has been based on the maximum distance over which biophysical changes to ecological features have a reasonable probability of occurring. The study areas for receptors extended to 30 km from the Order Limits for International Sites, however there are none within this distance. There is a possible Potential Special Protection Area for breeding nightjar and woodlark that is as close as 4.5 km from the Order Limits. The maximum search area for other ecological receptors is 5 km. The zone of influence for ecology is therefore set at 5 km, although the potential for significant effects will vary greatly among ecological features and will be generally at much lower distances than this. The maximum potential distance from the Order Limits for another development to have cumulative effects on these receptors is therefore 10 km.

67 Water resources:

- There is no guidance on study areas for cumulative assessment for water resources. Hydrological and hydrogeological receptors within a 5 km radius from the Order Limits are considered for the cumulative assessment, based on the hydrological and hydrogeological connectivity of water bodies located downstream of the Order Limits. The maximum potential distance from the Order Limits for another development to have cumulative effects on these receptors is therefore 10 km.

68 Land contamination:

- There is no guidance on study areas for cumulative assessment for land contamination. The ZOI for this topic comprises the Order Limits and a data search buffer of 250 m. This distance has been selected based upon professional judgement. It enables the identification of both on-site (within the Order Limits) and off-site sources (outside the Order Limits) of potential contamination and other factors which may influence ground conditions.

69 Heritage:

- The Chartered Institute for Archaeologists provides no guidance on study areas for cumulative assessment for heritage, so the Zones of Influence below are based on professional judgement and preliminary assessment for the Development (as reported in PEIR).
- Direct: There is no potential for the Development to directly affect heritage features beyond the Order Limits, so the only potential for cumulative direct effects is where another development would have a direct effect on a heritage feature that lies within the Order Limits. This could occur if another development overlapped with the Order Limits and/or if the heritage feature existed within the Order Limits and extended outside it. PINS Scoping Opinion, para 3.4.5, (see TA A3.2, EIA Scoping Opinion [EN010162/APP/6.4.3.2]) agrees that direct effects on heritage assets from developments beyond 500 m from the Order Limits can be scoped out of the EIA.
- Indirect: The zone of influence of the Development is anticipated to be less than 5 km from the Order Limits. This is consistent with the wider heritage setting study area used in PEIR. The maximum potential distance from the Order Limits for another development to have cumulative effects on these receptors is therefore 10 km.

70 Noise and vibration:

- There is no guidance on study areas for cumulative assessment for noise and vibration. The zone of influence of the Development will be less than 500 m, based on initial modelling and professional experience. As potential cumulative developments might also create noise, a suitable area for searching for cumulative developments would be up to 1 km from the Order Limits.

71 Socioeconomics and tourism:

- There is no guidance on study areas for cumulative assessment for socioeconomics and tourism. The zone of influence for socioeconomics and tourism would match the study area for employment impacts (Newark and Sherwood, and Mansfield Local Authority areas). This is important because potential cumulative effects include the impact on accommodation providers as a result of need for temporary workers accommodation. Beyond 5 km from the Order Limits, only the largest developments have the potential to lead to cumulative effects on the availability of accommodation, however. So, to keep the long list manageable without risking the omission of important developments,

beyond 5 km from the Order Limits, only the following developments are considered: all “major” (in planning terms) projects, including ground-mounted solar PV developments; and all residential developments of over 50 homes.

72 Traffic and Transport:

- There is no guidance on study areas for cumulative assessment for traffic and transport. The Zone of Influence of the Development on traffic comprises the extent of the local road network affected by the Development, as well as any identified receptors sensitive to changes in traffic flows on these roads. This will include the three key A-road corridors in close proximity to the Site, these being: the A617, the A616 and the A1 (part of the Strategic Road Network). Developments with the potential to substantially affect traffic on these routes would be expected to be within 5 km of the Order Limits Any other developments beyond this ZOI are unlikely to significantly impact the volume and composition of traffic flows in the study area, with flows likely disbursed to such an extent that any differences would fall within the levels of daily fluctuation.

73 Climate change:

- Effects on, or from, climate change are not local, and would not be affected specifically by other local development. Hence there is no area of search for cumulative developments in respect of climate change.

74 Glint and glare:

- There is no guidance on study areas for cumulative assessment for glint and glare.
- For residential properties, the zone of influence of the Development will be less than 200 m (the study area of the glint and glare assessment), based on initial modelling and professional experience. As potential cumulative solar developments might also create periods of glint and glare, a suitable area for searching for cumulative solar developments would be up to 400 m from the Order Limits.
- The assessment of effects on road, rail and aviation receptors (including air traffic control towers) is based on intensity rather than duration, and as this would have to come from the same direction, cumulative developments leading to cumulative effects would have to be in the same location as the Development, which they cannot be, so there is no potential for cumulative glint and glare effects on mobile receptors.

75 Air quality:

- There is no guidance on study areas for cumulative assessment for air quality.

- Dust: according to the Institute of Air Quality Management's (IAQM) guidance[5] for assessing effects from construction, the zone of influence extends 250 m from the Order Limits and 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s). If these extents were similar for cumulative developments, then the area of search for cumulative developments for dust should extend to 500 m from the Order Limits and within 500 m of the Order Limits along the haul routes.
- Emissions: Emissions from construction vehicles could arise from on-site plant (within the Order Limits) and from vehicles using the haul routes (up to, but excluding the trunk road network, because proportional additions to traffic on trunk roads will be negligible – as detailed in Chapter 14, Traffic and Transport [EN010162/APP/6.2.14]). An air quality zone of influence could extend approximately 100 m from these. If these extents were similar for cumulative developments, then the area of search for cumulative developments for air quality should extend to 200 m from the Order Limits and 200 m from the haul routes.

76 Agriculture/soils:

- There is no guidance on study areas for cumulative assessment for agriculture/soils. The Development would have no potential to affect agriculture beyond the Order Limits and adjoining land, where relevant. However, in response to consultation comments from Newark and Sherwood District Council (NSDC), the change of use of agricultural land within the district of Newark and Sherwood resulting from the Development together with other existing and/or approved developments is set out in Chapter 17, Agricultural Land [EN010162/APP/6.2.17]. In addition, the change of use of agricultural land within the districts of Newark and Sherwood, Bassetlaw, West Lindsey, North Kesteven and South Kesteven resulting from the Development together with other existing and/or approved Nationally Significant Infrastructure Project developments is set out in Chapter 17.

77 Recreation:

- There is no guidance on study areas for cumulative assessment for recreation. The zone of influence for recreation would extend to the length of footpath and bridleway routes that pass through the Order Limits that might be used by the same users within the same half day (i.e., where two developments might affect a user's experience). This extends to 5 km from the Order Limits. Within this area, DCO, EIA and major planning applications are considered that are within 250 m (the study area for recreation effects of the Development) of footpath and bridleway routes that connect to those within the Order Limits.

[5] Institute of Air Quality Management (IAQM) (2014). Guidance on the Assessment of Dust from Demolition and Construction. Available at: https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf [accessed on 11/10/2024]

78 The Order Limits used for the above search were the Order Limits at PEIR stage. As set out in ES Chapter 4, Alternatives [EN010162/APP/6.2.4], the Order Limits were substantially reduced between PEIR and application submission, and hence stage 1 of the cumulative assessment was carried out using larger search areas than required, which is a conservative approach.

79 The superset of these areas was used to identify the area of search for other existing and/or approved developments. These developments were in the form of planning applications, relevant development plans and any other available and relevant sources, such as consultation response information from a relevant planning authority.

80 The development types included in the search were not limited to commercial-scale solar/BESS development but also included other major development that had the potential to impact the environmental aspects considered above. This included individual developments of more than 10 new residential properties, new or substantially expanded industrial developments, infrastructure developments and agricultural developments of more than 5 ha.

81 Other existing and/or approved developments that become known (or their status changes, or information about them changes) after 4th April 2025 are not assessed, due to the practicalities of producing documentation for submission of the application.

82 All local authorities within the maximum ZOI identified above (i.e., 10 km and/or Newark and Sherwood District and Mansfield District) were requested to send geographic data (shapefiles) of all planning applications from the last 3 years. Newark and Sherwood District Council provided this in April 2024 and November 2024, and confirmed in April 2025 that the resulting list was comprehensive. Other councils provided information for the 3 years preceding February 2025, with the exception of West Lindsey, South Kesteven and North Kesteven who provided information for the 3 years preceding November 2024. Local plan allocations within the ZOIs have been sourced from the relevant local planning authorities.

83 The outcome of the search (the Long List) is provided in Table A2.1.1 in TA A2.1.

84 The level of certainty applied to each other existing and/or approved development was categorised as Tier 1 (most certain) to Tier 3 (least certain), in accordance with the PINS Advice on Cumulative Effects Assessment.

85 Where another existing and/or approved development was expected to be completed (*i.e.*, construction had completed and its operational phase had started) prior to the expected date of commencement of construction of the Development (i.e., April 2027), these were treated as part of the baseline, and were not considered in the cumulative effects assessment. The distinction between these is made clear in Table A2.1.1 in TA A2.1.

2.3.8.2 Stage 2 – establishing the short list

86 To ensure that the cumulative effects assessment is proportionate, criteria have been developed and applied to the long list to include or exclude development projects which fall with the ZOI for the Development.

87 These criteria are:

- Overlap in timing;
- Scale and nature of development likely to have a significant effect; and
- Other factors (as individually described).

88 These are set out for each development in Table A2.1.1 in TA A2.1.

89 Professional judgement has also been applied for certain developments and, where this has led to a development being included or excluded, this is set out in Table A2.1.1 in TA A2.1.

90 Developments included in the cumulative effects assessment are shown on Figure A2.1.1 in TA A2.1.

2.3.8.3 Works Related to the Development

91 There are elements of work that are related to the Development but that are not included in the DCO application. “NG+ developments” are environmental and socio-economic enhancement works that are being offered as part of the community benefit scheme associated with the Development.

92 These would proceed if, and only if, the Development proceeds, subject to any required planning permission being secured, and their implementation is anticipated to take place post-consent and pre-construction of the Development. These are included in the cumulative effects assessment.

93 NG+ is the term for the money, or projects-in-kind, that will be provided voluntarily to the community by the developers of the GNR Solar and Biodiversity Park during its operational phase. NG+ is being led by the developers of GNR in consultation with the local communities. The details of NG+ are available elsewhere, and (with the exception of the cumulative assessment) are generally not relevant to the EIA being undertaken for the Development, which forms part of the DCO application.

94 Certain potential projects that have been suggested as part of NG+ are being developed in parallel to the GNR proposals, and some of these may require planning permission in their own right. Such developments would go ahead only if GNR is constructed and operated, and only if they receive planning permission.

95 Certain of these projects are sufficiently advanced in concept that they can be considered in the cumulative effects assessment for the Development. These projects are all flood alleviation measures – ground-works, to attenuate flow of rainfall run-off particularly during and after heavy rainfall events. They are being developed by the Trent Rivers Trust, in partnership with the Applicant for the Development. Measures are proposed in three areas:

- Maplebeck – 3 bunds with an average length of c. 65 m, and 3 offline ponds (i.e., ponds that are not connected to a watercourse) with an average area of c. 340 m^2;
- Carlton-on-Trent – 2 bunds with an average length of c. 80 m; and
- Sutton-on-Trent – 3 bunds with an average length of c. 60 m, and 1 offline pond with an area of c. 1,200 m^2.

96 Given their scale, and that they'd be located in arable fields, these have the potential to lead to an altered cumulative baseline only for the assessment of effects of the Development on water resources. These developments are therefore considered in the cumulative effects assessment of Chapter 9, Water Resources [EN010162/APP/6.2.9] and not in other assessments in this ES.

2.3.8.4 Consultation

97 Consultation undertaken for the Cumulative Effects Assessment is set out in Table 2.2, focusing on the scope and methods of the assessment. Where consultation comments relate to specific environmental technical disciplines, these are addressed in the relevant technical chapters and are not repeated here.

Table 2.2 Summary of Consultation relating to Cumulative Effects

Consultee	***Summary of Response by Consultee***	***Application Response***
PINS	Scoping Opinion, para. 2.1.14. The Applicant's attention is drawn to a potential overlap with the scoping boundary of the A46 Newark NSIP scheme in the south- eastern corner of the Great North Road Solar Park scheme. The ES, (with particular reference to cumulative effects) should assess any implications of this overlap.	Following changes to the boundaries of both schemes, there is now no overlap. The boundaries of both are shown on Figure A2.1.1 in TA A2.1 [EN010162/APP/6.4.2.1]. This scheme is included in the cumulative assessment stages 1 and 2, and progressed to stages 3/4.
PINS	Scoping Opinion, para. 2.2.7. The ES should consider the potential for significant cumulative effects from all other development types. The Applicant should agree the scope of the cumulative assessment, including the other developments or allocations (of all types) to be assessed, with the relevant consultation bodies such as the LPAs.	All development types are included in the cumulative assessment, as set out in Section 2.3.8.1. The methods and scope of the cumulative assessment were set out in the PEIR, which was subject to statutory consultation. The main response to this was

Consultee	***Summary of Response by Consultee***	***Application Response***
	Evidence of this consultation and/or agreement should be provided within the ES	from NSDC, which broadly agreed with the approach (as noted below and in Section 2.3.8.1).
PINS	Scoping Opinion, para. 3.4.5. The Inspectorate agrees that cumulative impacts are unlikely to occur on buried archaeological assets further than 500m from the Proposed Development boundary, and therefore this matter can be scoped out from further assessment.	This is noted, and accords with the methods set out in Section 2.3.8).
PINS	Scoping Opinion, para. 3.4.6. The Scoping Report states that significant cumulative effects are not anticipated to occur on heritage assets beyond a 5km radius. Limited information has been provided on the cumulative schemes in proximity. The Inspectorate does not therefore agree that this matter can be scoped out of further assessment. Receptors at risk of cumulative effects should be identified using the ZOI of the project in conjunction with the ZOIs of identified cumulative schemes. Unless otherwise agreed with the relevant consultation bodies, all heritage assets within the area of intersection of these ZOIs should be included in the assessment of cumulative effects.	The ZOI approach has been applied in this Chapter, as set out in Section 2.3.8.
NSDC	Response to Scoping Recommends a clear staged approach be adopted to the cumulative effects assessment in accordance with PINS Advice	This is provided in this ES, as set out in Section 2.3.8.
NSDC	Response to statutory consultation. The cumulative effects assessment should consider “the cumulation of effects with other existing and, or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be	Clarity is provided on the methods used in this Chapter, in Section 2.3.8. NSDC has confirmed, subsequently to the response to statutory

Consultee	***Summary of Response by Consultee***	***Application Response***
	affected or the use of natural resources". Clarity is required as the PEIR sets out the that cumulative effects are considered against developments 'expected to be completed' and also with reference to the future baseline. As part of the ES, we would hope to agree the development which should be considered in a cumulative assessment, and these may not be restricted to those currently listed.	consultation, that the long-list of developments is comprehensive.
NSDC	Response to statutory consultation. We would also need more clarification on other BESS schemes and the accumulation of those in other areas for the next stages of the project in respect of cumulative effects.	BESS schemes that are within the area of search for cumulative developments are included in the long list, and generally included in the short list, as set out in ES TA A2.1 [EN010162/APP/6.4.2.1].
NSDC	Response to statutory consultation. It is noted that there are a number of small(er) and large-scale solar PV schemes in both Nottinghamshire and Lincolnshire, with others planned or proposed. Many of these projects will have specific impacts on BMV agricultural land. The area as a whole has substantial amounts of land within the Best and Most Versatile category. There is a potential concern about cumulative impacts on BMV land within the District and would ask that the Applicant capture this specific point within the wider cumulative impact assessment. Further to the cumulative issues raised above the area of land is considered to be 'large' locally and if the quantities of BMV are as expected or similar the impact could be significant at a District or County Level.	The extent of cumulative usage of BMV land within the District from all major ground-mounted solar developments; all "major" (in planning terms) commercial projects; and all residential developments of over 50 homes has been evaluated. In addition, the extent of cumulative usage of BMV land within the districts of Newark and Sherwood, Bassetlaw, West Lindsey, North Kesteven and South Kesteven from all Nationally Significant Infrastructure Projects has been evaluated. These are reported in ES Chapter 17, Agricultural

Consultee	***Summary of Response by Consultee***	***Application Response***
		Land [EN010162/APP/6.2.17].
NSDC	Post-statutory consultation communication. NSDC considered the 'long list' of developments was comprehensive, on the basis that the consideration of development schemes has been based on data provided by NSDC. Comments were provided on specific elements of the list.	These comments are noted and, where appropriate, amendments have been made in the ES.
	The approach in the PEIR has been to follow government guidance in the creation of the spreadsheet. This should be carried forward into the final ES in tabular form, so as to provide a clear audit trail of the developments considered.	The approach set out in PEIR has been used as the basis for the assessment in the ES. The ES provides greater detail and clarity than PEIR.
	More detail was requested on the justification of the zones of influence for landscape/visual, ecology, agriculture/soils and heritage.	Additional justification has been added in the descriptions of these in Section 2.3.8.
	NSDC encourages the Applicant to consider whether all NSIP projects within Nottinghamshire should as a minimum be considered/initially and identified on the long list, in addition to schemes like Fosse Green that lie to the eastern side of the NSDC district within Lincs.	All DCO schemes in Nottinghamshire and the districts east of Newark and Sherwood have been added to the long list set out in ES TA A2.1 [EN010162/APP/6.4.2.1].
	Cumulative impacts are a key concern of the local community, parish councils and members. Accordingly, the work that sits behind it should comprise a detailed methodology and justification for the approach, along with clear and easily understood explanations as to why schemes have been subject to further assessment or not. Going forward, the ES should also provide such explanations, and follow a robust approach.	The approach set out in Section 2.3.8 and followed throughout the ES is detailed and robust, and follows PINS advice. ES TA A2.1 [EN010162/APP/6.4.2.1] includes explanations of why schemes have been included or excluded from selection for

Consultee	*Summary of Response by Consultee*	*Application Response*
		detailed assessments, as per the methods set out in PINS advice.
North Muskham Parish Council	Response to statutory consultation. The PC are concerned regarding the cumulative impacts of GNR both individually (due to its excessive size), and collectively as a solar development but also as part of the overall provision and existence of industrialisation in the countryside, including utlities, transport and mineral extraction within the immediate Muskham area and indeed across the Trent Valley and Nottinghamshire.	Cumulative effects have been assessed in this ES in accordance with PINS advice, as set out in Section 2.3.8.
North Muskham Parish Council	Response to statutory consultation. This cumulative effect in particular, affects North Muskham due to its linear compression within a thin north to south parcel of land between the River Trent and the East Coast main line and A1. Unlike many rural villages, we have very little easy access available to the open countryside and currently that being only to the west of the village, i.e.: the proposed area to receive the GNR solar developments	The majority of the Development infrastructure that was proposed in PEIR (on which the response was based) around North Muskham has been removed in the layout provided with this application, and hence the cumulative effects on North Muskham will have substantially reduced.
West Lindsey District Council	Response to statutory consultation. The DCO for One Earth Solar Farm (ref: EN010159) which is presently at the preapplication stage, located partially within West Lindsey, is noted within appendix A2.1 [of PEIR]. Further discussion and cumulative consideration should be given to EN010159 and the other proposals within the district.	DCO and other developments with the potential to lead to cumulative effects have been considered in this cumulative effects assessment, as set out in Section 2.3.8.

2.3.8.5 Stage 3 – information gathering

98 For each of the existing and/or approved developments shortlisted at stage 2, information has been gathered and presented in the ES in the cumulative effects assessments in the ES technical chapters insofar as required to inform the assessment of cumulative effects. This may include describing the proposed design and location, the programme of construction, operation and

decommissioning, and environmental assessments for the other developments.

2.3.8.6 Stage 4 – assessment

99 The cumulative effects of the Development with the existing and/or approved developments shortlisted at stage 2 has been undertaken for each environmental aspect and reported in the technical chapters of the ES.

100 The assessments have (in accordance with PINS advice):

- Been undertaken at a level of detail proportionate to the information available;
- Explained and recorded any limits or gaps in the information;
- Considered all Tier 1 and Tier 2 other existing and, or approved developments where possible;
- Considered all Tier 3 other existing and, or approved development where possible, although this may be qualitative and high level;
- Moved from a qualitative to a more quantitative assessment as the availability of information has increased;
- Included the effects arising from multiple, individually non-significant effects; and
- Been proportionate and no longer than necessary to identify and assess likely significant cumulative effects.

101 The measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant cumulative effects and, where appropriate, any proposed monitoring arrangements have been described in the technical chapters of this ES, along with the means of securing delivery of these.

2.3.8.7 Interaction and Accumulation of Effects

102 The EIA Regulations state that the EIA should contain a "*description of the aspects of the environment likely to be significantly affected by the Development… and the interrelationship between the above factors*".

103 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 impact taken in isolation may not have a significant impact on a receptor, but where several effects are considered in an interrelated manner, the resultant impact could then be considered significant.

104 An assessment of the possible impact of interrelationships and their potential to create significant effects under the EIA Regulations has been undertaken and is included as Chapter 19, Interrelationships [EN010162/APP/6.2.19].

2.4 SITE SELECTION AND CONSIDERATION OF ALTERNATIVES

105 Schedule 4, Paragraph 2 of the EIA Regulations sets out the information for inclusion in the PEIR as follows:

106 *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific*

characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

107 The approach to site selection and the evolution of the design of the Development to date is summarised in Chapter 4, Alternatives [EN010162/APP/6.2.4].

2.5 EIA SCOPING

2.5.1 Overview

108 Scoping is the process of identifying the issues to be addressed during EIA. An EIA Scoping Report[6] was submitted to PINS in November 2023. The Scoping Opinion[7] was received from PINS on 20th December 2023. The scope of the EIA was informed by the nature and scale of the Development, its location and consultant experiences.

109 An overview of consultation is provided in Chapter 3, Consultation [EN010162/APP/6.2.3] and each ES technical chapter (7-19) also provides a summary of the key points raised during scoping, indicating how the issues have been dealt with in the EIA.

2.5.2 Issues Included in the EIA

110 The technical assessments included in the EIA are:

- Landscape and Visual Impact Assessment;
- Ecology and Biodiversity;
- Water Resources, including flood risk;
- Ground Conditions and Land Contamination;
- Cultural Heritage and Archaeology;
- Noise and vibration;
- Socioeconomics and Tourism;
- Traffic and Access;
- Climate Change;
- Miscellaneous Issues, including Air Quality, Glint and Glare, Human Health, Major Accidents or Disasters; Electromagnetic Fields; and Waste;
- Agricultural Land;
- Recreation; and
- Interrelationships.

[6] Elements Green Trent Ltd (2023) GNR Solar Park EIA Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010162/EN010162-000008-GNR%20EIA%20Scoping%20Report%2020231108.pdf [accessed 26/06/2025]

[7] The Planning Inspectorate (2023). Scoping Opinion: Proposed Great North Road Solar Park. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010162/EN010162-000012-EN010162%20Great%20North%20Road%20Solar%20Park%20-%20Scoping%20Opinion.pdf [accessed 26/06/2025]

2.5.3 Issues Scoped Out of the EIA

111 The Planning Inspectorate's Scoping Opinion identifies the effects to be scoped into the EIA. All other effects are scoped out. The following specific effects have been scoped out of the EIA, as confirmed via the Planning Inspectorate's Scoping Opinion:

- Risk of transfer of sediment to surface water resources during the operational phase providing the ES describes any mitigation measures which are in place to reduce sediment movement during operation, including how rapidly these would become effective, for example if reliant on mature vegetation;
- Risk of transfer of chemicals to surface water resources during the operational phase, providing that the ES considers the implications of any runoff or other pollution incidents in the event of a fire or other damage to the battery storage facility or other electrical infrastructure;
- Risk of chemical pollution from damaged Photovoltaic (PV) arrays or risk of leakage from PV arrays during operation, providing the ES describes any mitigation measures which are in place to reduce the potential for pollution during operation;
- Effects on buried archaeology during operation;
- Cumulative effects on buried archaeology beyond 500 m for all phases;
- Effects of traffic noise during operation (subject to Chapter 14, Traffic and Transport [EN010162/APP/6.2.14], confirming the anticipated trip generation required for maintenance visits);
- Risks to human health associated with electrical infrastructure (such as lightning strikes) during the operational phase, providing that battery safety and Electro Magnetic Fields (EMF) effects associated with the 400 kV cabling will be assessed;
- Operational waste generation provided that the ES details the anticipated operational waste streams, including solar infrastructure, water or other disposal from welfare and grass cuttings / vegetation management, but excluding significant replacement of infrastructure;
- Assessment of operational air quality although the ES should specify the number and type of vehicle movements likely to be required during the operational phase to justify this;
- Construction and decommissioning plant emissions although the ES should confirm the anticipated type and number of plant required for construction and decommissioning and any measures in place that reduce the potential for likely significant effects to occur; and
- Transboundary effects.