

## **Great North Road Solar and Biodiversity Park**

Environmental Statement

Volume 2 – Chapters


Chapter 16 – Miscellaneous Issues, including Air Quality, Glint and Glare, Human Health, Major Accidents or Disasters; Electromagnetic Fields and Waste

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## 16.1 INTRODUCTION

- 1 This chapter of the Environmental Statement (ES) describes and assesses the potential effects of the Development in relation to:
  - Air Quality (section 16.2)
  - Glint and Glare (section 16.3);
  - Human Health (section 16.4);
  - Major Accidents or Disasters (section 16.5);
  - Electromagnetic Fields (section 16.6); and
  - Waste (section 16.7).
- 2 This chapter is supported by the following Technical Appendices (TAs) provided in Volume 4:
  - TA A5.2 Outline Construction Traffic Management Plan (CTMP) [EN010162/APP/6.4.5.2];
  - TA A5.3 Outline Construction Environmental Management Plan (CEMP) [EN010162/APP/6.4.5.3];
  - TA A5.4 Outline Fire Safety Management Plan [EN010162/APP/6.4.5.4];
  - TA A16.1 Glint and Glare Assessment Report [EN010162/APP/6.4.16.1]; and
  - TA A16.2 Mental Well-Being Impact Assessment Screening [EN010162/APP/6.4.16.2].
- 3 A glossary of terms is provided in ES Chapter 20, Glossary [EN010162/APP/6.2.20].
- 4 The Development would be located to the northwest of Newark, in the Newark and Sherwood district of Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmonton, to the north and northwest of Staythorpe.
- 5 The Development is described by ES Chapter 5, Development Description, [EN010162/APP/6.2.5], and briefly summarised here. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels and associated infrastructure (Work no. 1), connected by cable route areas (Work no. 2). Up to 4 intermediate substations (Work no. 4) will be spaced around the solar areas, and a Battery Energy Storage System (BESS; Work no. 5a) and 400 kV Compound (Work no. 5b) will collate the electrical energy and step up the voltage before cabling it to the National Grid Staythorpe Substation (Work no. 6), possibly via the Consented Staythorpe BESS (Work no. 7). Road works (Work no. 8; access) will be undertaken, principally to create passing places and create or upgrade access points. Other areas within the Order Limits are identified for mitigation/enhancement (Work no. 3). The Work Areas are shown on ES Figure 5.1 [EN010162/APP/6.3.5.1] and a summary of mitigation/enhancement measures is shown on ES Figure 5.2 [EN010162/APP/6.3.5.2].

## 16.2 AIR QUALITY

### 16.2.1 Introduction

- 6 This section of the ES addresses the potential for significant air quality effects by considering the baseline environment and setting out the potential impacts that could occur during the construction, operation and decommissioning phases of the Development.
- 7 This section is supported by ES Chapter 14, Traffic and Transport, [EN010162/APP/6.2.14] and Technical Appendices A5.2, outline Construction Traffic Management Plan (CTMP) [EN010162/APP/6.4.5.2] and A5.3, outline Construction Environmental Management Plan (CEMP) [EN010162/APP/6.4.5.3].

### 16.2.2 Consultation

- 8 A summary of responses to the request from the Applicant for a Scoping Opinion and to statutory consultation (“Section 42” or “Section 47”) on the Preliminary Environmental Information Report (PEIR) relating to air quality are provided in Table 16.1. A full set of responses to the statutory consultation on PEIR, and other consultation, is provided in the Consultation Report [EN010162/APP/5.1].

**Table 16.1: Summary of Consultation Comments Relating to Air Quality**

Consultee	Response	How Response has been addressed
Planning Inspectorate (Scoping Opinion)	The ES should include an assessment of whether the Proposed Development would result in LSE on ecology as a result of emissions to air during construction, operation and decommissioning.	The air quality implications of the Development for ecological receptors are considered in section 16.2.6.
Planning Inspectorate (Scoping Opinion)	The ES should provide an assessment of [the air quality impact from construction and decommissioning vehicles], or the information required to demonstrate the absence of a likely significant effect.	The air quality implications of construction and decommissioning traffic is considered in section 16.2.6.
Planning Inspectorate (Scoping Opinion)	Considering the characteristics of the Proposed Development, and the anticipated construction activities described in paragraphs 98 and 99, the Inspectorate is content that [construction and decommissioning plant emissions] can be scoped out. However, the ES should confirm the anticipated type and number of plant required for construction and decommissioning and any measures	The number and type of plant required for construction and decommissioning are presented in section 16.2.6.

Consultee	Response	How Response has been addressed
	in place that reduce the potential for likely significant effects to occur.	
Planning Inspectorate (Scoping Opinion)	The Applicant proposes to scope out an assessment of effects for the operational phase. The reasoning provided is that traffic generation would be very low, associated with maintenance and servicing vehicles only, and therefore would lead to a slight (negligible) positive effect. Considering the characteristics of the Proposed Development the Inspectorate is content that this matter can be scoped out of further assessment, however, the ES should specify the number and type of vehicle movements likely to be required during the operational phase to justify this.	The number and type of operation phase vehicle movements are presented in section 16.2.6.
Newark and Sherwood District Council (Scoping Opinion)	The EIA Scoping Report proposes to scope out 'Air Quality – pollution from emissions of vehicles and plant' for the Construction and Decommissioning phases of the Development (table 15.1). However, no details of the likely levels of construction traffic are provided in the report and details of the locations of access points and construction compounds are currently unclear. On that basis, NSDC does not agree that these effects can be scoped out of the assessment at this stage.	The air quality implications of construction and decommissioning traffic is discussed in section 16.2.6.  Levels of construction traffic are set out in ES Chapter 14, Traffic and Transport [EN010162/APP/6.2.14]. The locations of access points are shown in Figure 14.4 [EN010162/APP/6.3.14.4]. Construction compounds can be located throughout the Order Limits, but limited by the restrictions placed on them in ES Chapter 5, Development Description, [EN010162/APP/6.2.5], section 5.4.2.
Forestry Commission (Section 42)	Ancient Woodland: Where assessment shows impacts are likely to extend beyond [15 m], you're likely	The potential effects of dust on Ancient Woodland are assessed in Section

Consultee	Response	How Response has been addressed
	to need a larger buffer zone. For example, the effect of air pollution from development that can result from a significant increase in traffic or dust from construction.	16.2.6.1. It should be noted that the effects of dust from soil disturbance will be lower with the Development (in all phases) than it is from arable farming, which is typically the baseline scenario.
Environment Agency (Section 42)	Where development involves the use of any non-road going mobile machinery with a net rated power of 37kW and up to 560kW, that is used during site preparation, construction, demolition, and/ or operation, at that site, we strongly recommend that the machinery used shall meet or exceed the latest emissions standards set out in Regulation (EU) 2016/1628 (as amended). This shall apply to the point that the machinery arrives on site, regardless of it being hired or purchased, unless agreed in writing with the Local Planning Authority. Use of low emission technology will improve or maintain air quality and support LPAs and developers in improving and maintaining local air quality standards and support their net zero objectives.	Good practice measures in relation to Non-Road Mobile Machinery (NRMM) are set out in the Outline Construction Environmental Management Plan (CEMP), section A5.3.9, in ES TA A5.3 [EN010162/APP/6.4.5.3]. At detailed design stage, this will be used as the basis for a final CEMP which will be submitted for approval to Newark and Sherwood District Council. This is secured by DCO Requirement.
Newark and Sherwood District Council (Section 42)	Emissions from dust and Non-Road Mobile Machinery (NRMM) during construction, operation and decommissioning are briefly considered [in PEIR]. Maximum numbers of NRMM for construction and decommissioning phases are suggested (no more than 3 in a solar PV area, no more than 5 in a substation or BESS area) however no discussion on what impact this will have on air quality is provided. NSDC would expect consideration of NRMM to include emission levels and the impact this will have on local background levels and potential for nuisance at sensitive receptors, which	The potential effects of dust and emissions from NRMM on human and ecological receptors is assessed in Section 16.2.6.1. It should be noted that the effects of dust from soil disturbance will be lower with the Development (in all phases) than it is from arable farming, which is typically the baseline scenario.

Consultee	Response	How Response has been addressed
	is currently a missing component of the assessment work undertaken thus far.	
Newark and Sherwood District Council (Section 42)	NSDC note that the CEMP is currently in draft format, and it is noted that a dust risk assessment is proposed, however we would expect and request further detail, in line with IAQM and other relevant guidance to be incorporated in future iterations and submissions of the document.	A dust risk assessment, in accordance with the IAQM Guidance, has been carried out and is reported in Section 16.2.6.1. It should be noted that the effects of dust from soil disturbance will be lower with the Development (in all phases) than it is from arable farming, which is typically the baseline scenario.

### 16.2.3 Relevant Legislation, Policy and Guidelines

9 In preparation of this section, the following policy, legislation and guidance relating to air quality has been reviewed:

- Environment Act 2021<sup>1</sup>;
- Overarching National Policy Statement (NPS) for Energy (EN-1): Section 5.2 (Air Quality and Emissions)<sup>2</sup>, paragraphs 5.2.1 to 5.2.3, which refer to potential dust and pollutant emissions to air from combustion sources;
- NPS for renewable energy infrastructure (EN-3)<sup>3</sup> (although air quality is not referred to in section 2.10, Solar Photovoltaic Generation);
- NPS for electricity networks infrastructure (EN-5)<sup>4</sup> (no policies relating to air quality);
- National Planning Policy Framework (NPPF)<sup>5</sup>;

<sup>1</sup> HMSO (2021). The Environment Act 2021. <https://www.legislation.gov.uk/ukpga/2021/30/contents> [accessed on 01/06/2025].

<sup>2</sup> DESNZ (2023). Overarching National Policy Statement for Energy (EN-1). <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [accessed on 01/06/2025].

<sup>3</sup> DESNZ (2023). National Policy Statement for renewable energy infrastructure (EN-3). <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3> [accessed on 01/06/2025].

<sup>4</sup> DESNZ (2023). National Policy Statement for electricity networks infrastructure (EN-5). <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [accessed on 01/06/2025].

<sup>5</sup> MHCLG and DLUHC (2023). National Planning Policy Framework. <https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf> [accessed on 01/06/2025].



- Local Air Quality Management (LAQM): Policy Guidance (PG22)<sup>6</sup> and Technical Guidance (TG22)<sup>7</sup>;
- Land Use Planning and Development Control: Planning for Air Quality (EPUK/IAQM, 2017)<sup>8</sup>;
- Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)<sup>9</sup>;
- The air quality strategy for England (DEFRA, 2023)<sup>10</sup>, Section 6: Annex A, Tables of Pollutants and Limits; and
- Newark and Sherwood Local Development Framework – Amended Core Strategy DPD (2019)<sup>11</sup>. The only references to air quality in policy are: Core Policy 12 identifies that the council will “*work with partners to develop a strategic approach to managing Air Quality in the Sherwood Area, including through the development of a Supplementary Planning Document*”; and Policy ShAP 4 refers to development proposals on Land at Thoresby Colliery, which is c. 6 km northwest of the Order Limits; and
- Newark and Sherwood District Council’s (NSDC) 2024 Air Quality Annual Status Report<sup>12</sup>.

#### 16.2.4 Methods

- <sup>10</sup> Air Quality Objectives for England are provided in “The Air Quality Strategy for England” (DEFRA, 2023), Section 6: Annex A, Tables of Pollutants and Limits. Although these are the specified limits, poor air quality is known to have an effect on human health at any level of pollutant concentration, with the effect increasing as pollutant concentrations increase. Potential effects on human health are considered in section 16.4 of this chapter. The air quality assessment is made against the potential for breach of the air quality objectives, specifically those for nitrogen dioxide (NO<sub>2</sub>; 40 µg/m<sup>3</sup>), fine particulate matter (PM<sub>10</sub>; 40 µg/m<sup>3</sup>) and very fine particulate matter (PM<sub>2.5</sub>; 25 µg/m<sup>3</sup>, though the Air Quality Strategy also identifies an interim target of 12 µg/m<sup>3</sup> by 2028 and a legally binding target of 10 µg/m<sup>3</sup> by 2040).

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<sup>6</sup> DEFRA (2022). Local Air Quality Management Policy Guidance (PG22). <https://laqm.defra.gov.uk/wp-content/uploads/2023/11/LAQM-Policy-Guidance-2022.pdf> [accessed on 01/06/2025].

<sup>7</sup> DEFRA (2022). Local Air Quality Management Technical Guidance (TG22). <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf> [accessed on 01/06/2025].

<sup>8</sup> EPUK and IAQM (2017). Land Use Planning and Development Control: Planning for Air Quality. <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [accessed on 01/06/2025].

<sup>9</sup> IAQM (2024). Guidance on the assessment of dust from demolition and construction. <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [accessed on 01/06/2025].

<sup>10</sup> DEFRA (2023). The air quality strategy for England. <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england> [accessed on 01/06/2025].

<sup>11</sup> Newark and Sherwood District Council (2019). Newark and Sherwood Local Development Framework – Amended Core Strategy DPD (2019). Available at: <https://www.newark-sherwooddc.gov.uk/media/newark-and-sherwood/images-and-files/planning-policy/pdfs/core-strategy/ACS2019.pdf> [accessed on 01.06.2025].

<sup>12</sup> NSDC (2024). 2024 Air Quality Annual Status Report. [https://www.newark-sherwooddc.gov.uk/media/nsdc-redesign/documents-and-images/your-business/environmental-health/pollution/air-pollution/ASR\\_NSDC\\_2024.pdf](https://www.newark-sherwooddc.gov.uk/media/nsdc-redesign/documents-and-images/your-business/environmental-health/pollution/air-pollution/ASR_NSDC_2024.pdf) [accessed on 01/06/2025].



- 11 Methods for assessment follow the processes set out in the EPUK/IAQM 2017 guidance for traffic emissions, and the IAQM 2024 guidance for dust emissions and control.

#### **16.2.4.1 Traffic Emissions**

- 12 For traffic emissions, the EPUK/IAQM 2017 guidance states that the indicative criteria for requiring an air quality assessment in an area not within an AQMA includes:
- 13 *“A change of LDV [Light Duty Vehicles] flows of: more than 500 AADT [Annual Average Daily Traffic] elsewhere”; and*
- 14 *“a change of HDV [Heavy Duty Vehicle] flows of: more than 100 AADT elsewhere”.*
- 15 The guidance notes that these criteria are precautionary. These criteria apply for all receptor types, including ecological receptors.

#### **16.2.4.2 Dust Emissions**

- 16 The IAQM 2024 “Guidance on the assessment of dust from demolition and construction” notes at Section 4.3 that:
- 17 *“The risk of dust emissions from a demolition/construction site causing loss of amenity and/or health or ecological impacts (and effects) is related to:*
- 1. the activities being undertaken (demolition, number of vehicles and plant etc.);*
  - 2. the duration of these activities; the size of the site;*
  - 3. the meteorological conditions (wind speed, direction and rainfall);*
  - 4. the proximity of receptors to the activities;*
  - 5. the adequacy of the mitigation measures applied to reduce or eliminate dust; and*
  - 6. the sensitivity of the receptors to dust.”*

18 Section 5 of the IAQM Guidance identifies four types of activity, which are assessed in slightly different ways:

    - Demolition;
    - Earthworks;
    - Construction; and
    - Trackout.

19 Section 6, Box 1, of the IAQM Guidance indicates that an assessment will normally only be required where there is a “human receptor” within 250 m of the site boundary and/or within 50 m of the route used by construction vehicles, up to 250 m of a site entrance, and within 50 m of an ecological receptor (taken to comprise Ancient Woodland).

20 Section 7 of the IAQM Guidance sets out steps for establishing the dust emission magnitude and receptor sensitivity for dust soiling, health effects of fine particulate matter (PM<sub>10</sub>) and ecological receptors. Table 2 then sets out a matrix to identify the sensitivity of the area to dust soiling effects based on the number of high, medium and low receptors and the distance of these from the potential source of dust (note, only distances up to 250 m are

considered, beyond this effects are assumed to be negligible). Table 3 sets out a matrix to identify the sensitivity of the area to human health effects from PM<sub>10</sub>, which is based on the number of high, medium and low sensitivity receptors, the annual mean PM<sub>10</sub> baseline concentration, and the distance between the receptors and the potential source of PM<sub>10</sub> (note, only distances up to 250 m are considered, beyond this effects are assumed to be negligible). Table 4 sets out a matrix to identify the sensitivity of the area to dust effects on ecological receptors, depending on the sensitivity of the receptor and the distance from the potential source of dust (note, only distances up to 50 m are considered, beyond this effects are assumed to be negligible).

- 21 The risk of dust impacts is then established using matrices that combine sensitivity with magnitude in Tables 6 to 9.

#### 16.2.4.3 Onsite Plant Emissions

- 22 The IAQM 2024 “Guidance on the assessment of dust from demolition and construction” notes at Section 4.3 that:
- 23 *“Experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur.”*
- 24 Notwithstanding this, the use of onsite plant is discussed below and mitigation measures are proposed in order to minimise effects.

#### 16.2.5 Baseline Conditions

- 25 The following sources for baseline data have been used:
- NSDC 2024 Air Quality Annual Status Report (ASR); and
  - Department for Food and Rural Affairs (DEFRA) Background Mapping data for local authorities - 2021<sup>13</sup>.
- 26 The Order Limits, and the routes from the A1 to be used by Development construction vehicles (as detailed in chapter 14 and shown on Figure 14.4) are entirely within the district of Newark and Sherwood.
- 27 NSDC’s 2024 air quality ASR (page 4) states that, “In Newark & Sherwood the predominant sources of air pollution are from vehicle emissions, industrial processes and agriculture. The main pollutants of concern being nitrogen dioxide and particulate matter, a significant source of both coming from vehicle exhaust emissions. Ambient background levels are also affected by emissions from domestic heating: NO<sub>x</sub> [oxides of nitrogen] from domestic gas boilers and PM [particulate matter] from wood, coal and oil fired burners and boilers”.
- 28 The 2024 ASR (page 5) notes that certain streets within Newark town itself “have historically shown some of the most elevated monitored levels of

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<sup>13</sup> DEFRA (2024). Background Mapping data for local authorities – 2021. <https://uk-air.defra.gov.uk/data/laqm-background-maps> [accessed on 01/06/2025].

nitrogen dioxide in the district, although the levels are significantly below Air Quality Objectives for England ... and below that required for declaring a new Air Quality Management Areas (AQMA)". It explains that these areas with lower air quality are associated with streets that routinely have queuing traffic, leading to high annual average concentrations of pollutants.

- 29 The Order Limits are located in a rural area, with a lower density of roads than the town of Newark and are expected to have a higher air quality (i.e., lower pollutant concentrations) as a result.
- 30 Background concentrations for the Order Limits have been obtained from the background maps published by DEFRA. These estimated concentrations are produced on a 1 km by 1 km grid basis for the whole of the UK. The Order Limits fall into multiple grid squares and grid square 476500 361500 has been used as it is approximately centrally located within the Order Limits and the local is representative of the wider Order Limits in terms of air quality emissions, in that it is a rural location with a village (Norwell) nearby. Predicted concentrations for this grid square for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> for 2025 (the anticipated year of application submission) and 2027 (the anticipated year of the start of construction) are provided in Table 16.2.

**Table 16.2: Estimated Annual Mean Background Concentrations in 2025 and 2027 in µg/m<sup>3</sup>**

Year	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2025	5.33	13.8	6.01
2027	5.05	13.6	5.88

- 31 Based on the estimates outlined in Table 16.2, the modelled background concentrations for the Order Limits are well below the relevant annual mean air quality objective levels for NO<sub>2</sub> (40 µg/m<sup>3</sup>), PM<sub>10</sub> (40 µg/m<sup>3</sup>), and PM<sub>2.5</sub> (25 µg/m<sup>3</sup>).
- 32 Whilst these data are specific to this location, the values are typical of the wider area, with variations of up to c. 10% in values typical across the district (excluding Newark itself). NSDC's 2024 air quality ASR notes that:
- 33 *"The trend over the last few years seems to have been a significant reduction in NO<sub>2</sub> levels from 2019-20 during COVID 19 pandemic restrictions. 2020 saw an increase as things started to get back to normal and businesses opened and commuting began again, however it was noticeable that levels during this period didn't return to pre pandemic levels. Since 2020 the levels of NO<sub>2</sub> observed have continued to reduce year on year and during 2023 were back to or lower than that recorded during the height of the pandemic restrictions in 2019/20. As reported in previous years, these continuing reductions can be attributed to improving technology, gradual upgrade of vehicle fleets and continued uptake of flexible working arrangements. Going forward we expect this trend to continue to a certain degree however there may be a plateau effect whereby many of the large wins are realised and smaller more focussed objectives are required to continue the reduction. Generally speaking the NO<sub>2</sub> reduction pattern echoes the UK trend in recent years."*

- 34 The UK trend in reduction in NO<sub>2</sub> is provided by DEFRA's Accredited official statistics for nitrogen dioxide<sup>14</sup>, of which Figure 1 shows annual mean concentrations from 1997 to 2023 of NO<sub>2</sub> in the "rural background" dropping steadily from around 18 µg/m<sup>3</sup> to around 6 µg/m<sup>3</sup>. Roadside concentrations, which are typically much higher because of vehicle emissions (and are recorded by monitoring stations typically located in town centres or other areas of the highest pollutant concentrations, so are not representative of roadsides across the UK), are also reported to have dropped from c. 60 µg/m<sup>3</sup> in 1997 to c. 20 µg/m<sup>3</sup> in 2023. There is no evidence, in the trends shown in the DEFRA data up to 2023, of the decrease in concentrations plateauing, as suggested by NSDC (see quote above) may happen in future.

## 16.2.6 Potential Effects and Mitigation Measures

### 16.2.6.1 Construction

#### 35 *Potential effects*

- 36 The potential effects of the Development on local air quality during construction are:

- Construction dust both from construction activities, including the potential for dust generating activities, and exhaust emissions from Non-Road Mobile Machinery (NRMM) associated with the construction phase; and
- Construction traffic emissions.

#### 37 *Construction Dust*

- 38 No "demolition" work is proposed, so this is scoped out of further assessment. For the other three types of activity that can cause dust:

- Earthworks may occur in any of the Work no.s, which comprise the Order Limits;
- The only "construction" work proposed (as described in the IAQM Guidance) is within Work no.s 4 and 5b (substations) and 5a (BESS) areas, all of which are at least 300 m from the nearest residential property (as set out in ES Chapter 5 [EN010162/APP/6.2.5], Section 5.4.2). One Intermediate Substation (Work no. 4), east of Ossington, is within 50 m of an area of Ancient Woodland; and
- Trackout: There is one residential property within 50 m of a proposed access point and/or route to be used by construction vehicles, on the east side of Staythorpe village. There is one area of Ancient Woodland, Carlton Wood, within 50 m of a proposed access point and/or route to be used by construction vehicles, on Ossington Road.

#### 39 Dust Emission Magnitude

- 40 Work no. 3, Mitigation/Enhancement, 6, National Grid Staythorpe Substation and 7, Consented Staythorpe BESS and Connection, and 8, Access do not include substantial earthworks or other substantial dust-creating activities, and are discounted from further consideration.

<sup>14</sup> DEFRA (2024). Accredited official statistics Nitrogen dioxide (NO<sub>2</sub>). <https://www.gov.uk/government/statistics/air-quality-statistics/nitrogen-dioxide#:~:text=The%20annual%20mean%20concentration%20of%20NO2%20at%20urban%20background%20sites,%20B5g%20each%20year.> [accessed on 01/06/2025].

- 41 Earthworks in Work no. 1 (solar PV) and 2 (cables) potentially within 250 m of a residential property are limited to the creation of stone or tarmac tracks and cable installation works. Construction compounds will be more than 300 m from residential properties, as limited in Chapter 5.
- 42 For Work no.s 1 and 2, the area of earthworks within 250 m of any residential property would be less than 18,000 m<sup>2</sup>, based on the maximum width of proposed cable trenches and tracks. This is the upper limit of the “small magnitude” category of earthworks set out in Section 7.2 of the IAQM Guidance.
- 43 Earthworks in Work no. 1 (solar PV) and 2 (cables) potentially within 50 m of an area of Ancient Woodland are limited to the creation of stone or tarmac tracks, cable installation works and construction compounds. No earthworks will take place within 15 m of an Ancient Woodland, as this has been applied as a constraint in design.
- 44 For Work no.s 1 and 2, the area of earthworks within 50 m of any Ancient Woodland would be a maximum of c. 2,530 m<sup>2</sup>, based on the earthworks occupying all land within 50 m of a given point in the Ancient Woodland, but excluding a 15 m buffer as noted above. This is approximately 15% of the upper limit of the “small magnitude” category of earthworks set out in Section 7.2 of the IAQM Guidance.
- 45 Construction work, in Work no. 4, Intermediate Substations, within 50 m of Carlton Wood Ancient Woodland, is assessed as being likely to be no more than “*Medium [magnitude]: Total building volume 12,000 m<sup>3</sup> – 75,000 m<sup>3</sup>, potentially dusty construction material (e.g. concrete), on site concrete batching*”, as set out on page 17 of the IAQM guidance.
- 46 Trackout magnitude is assessed by considering the maximum number of Heavy Duty Vehicles (HDVs) exiting onto the public road per day. Two access points are identified for this assessment, above. For the access point east of Staythorpe village (relevant to a residential property), traffic flows are not explicitly estimated in Chapter 14, Traffic and Transport [EN010162/APP/6.2.14], but this access point would be used for cable installation work only, would not have any permanent tracks installed, and hence would only need the equipment for trench excavation and cable installation. This would be less than 20 HDVs per day, and therefore a “small magnitude”. For the access point on Ossington Road (relevant to Carlton Wood Ancient Woodland), Table 14.15 in Chapter 14, Traffic and Transport, identifies that link 12, Ossington Road (East), would have a maximum of 68 HDVs per day, for the worst-case month during the construction phase, which would be a “large magnitude”.
- 47 In summary, the magnitude of:
- Earthworks impacts on residential property and Ancient Woodland are **Small**;
  - Construction impacts on Ancient Woodland are **Medium**;
  - Trackout impacts on residential property are **Small**; and
  - Trackout impacts on Ancient Woodland are **Large**.



- 48     Receptor Sensitivity
- 49     Human receptors for earthworks and trackout are people at residential properties, which have a “high sensitivity” to dust and particulate matter (PM<sub>10</sub>), according to Box 6 of the IAQM Guidance.
- 50     Ecological receptors for earthworks, trackout and construction include Ancient Woodland. These are assessed as being “*a local designation where the features may be affected by dust deposition*”, and therefore a “low sensitivity” receptor in accordance with Box 8 of the IAQM Guidance.
- 51     Sensitivity of the Area
- 52     The sensitivity of the area to dust soiling effects on people and property is established using Table 2 of the IAQM Guidance.
- 53     For earthworks, the number of residential properties (high sensitivity, as above) within certain distances of Work no.s 1 and 2 are:
- 1 within 20 m (leading to medium sensitivity of the area);
  - 2 between 20 and 50 m (leading to low sensitivity of the area);
  - 18 between 50 and 100 (leading to low sensitivity of the area); and
  - 70 between 100 and 250 m (leading to low sensitivity of the area).
- 54     Taking the highest sensitivity category from these, the area therefore has “medium” sensitivity to earthworks-generated dust soiling effects on people and property.
- 55     For trackout, there is one property within 50 m of any access point. As residential properties have high sensitivity (see above), Table 2 of the IAQM Guidance indicates that the area has “medium” sensitivity to trackout-generated dust soiling effects on people and property.
- 56     Table 3 of the IAQM Guidance sets out that the sensitivity of the area to human health impacts, for receptors of high sensitivity and for an Annual Mean PM<sub>10</sub> concentration of 13.8 µg/m<sup>3</sup> (from Table 16.2 of this chapter) depends on the number of receptors within various distance ranges. Based on the numbers above, Table 6 of the IAQM Guidance indicates that the area has a “low” sensitivity to earthworks- and trackout-generated particulate matter for human health impacts.
- 57     Table 4 of the IAQM Guidance sets out that the sensitivity of the area to ecological impacts, for Ancient Woodland, depends on the distance between the activity and the sensitivity of the receptor. Given that the nearest Ancient Woodland is 15 m from the nearest part of Work no. 1, 2 and 8, Table 6 of the IAQM Guidance indicates that the area has “low” sensitivity to ecological impacts.
- 58     In summary, the sensitivity of the area to:
- Earthworks- and Trackout- generated dust soiling impacts on people and property is **Medium**;
  - Earthworks- and Trackout-generated particulate matter impacts on human health is **Low**; and
  - Earthworks-, Trackout- and Construction-generated impacts on ecological receptors is **Low**.

59 Risk of Dust Impacts

60 For earthworks, Table 7 of the IAQM Guidance combines the magnitude with the sensitivity of the area to each type of receptor identified above, leading to the risk of dust impacts from earthworks being:

- **Negligible** for ecological impacts (Low sensitivity and Small magnitude);
- **Negligible** for human health impacts (Low sensitivity and Small magnitude); and
- **Low** for dust soiling impacts (Medium sensitivity and Small magnitude).

61 For construction, Table 8 of the IAQM Guidance combines the magnitude with the sensitivity of the area to each type of receptor identified above, leading to the risk of dust impacts from earthworks being:

- **Low** for ecological impacts (Low sensitivity and Medium magnitude);

62 For trackout, Table 9 of the IAQM Guidance combines the magnitude with the sensitivity of the area to each type of receptor identified above, leading to the risk of dust impacts from earthworks being:

- **Low** for ecological impacts (Low sensitivity and Large magnitude);
- **Negligible** for human health impacts (Low sensitivity and Small magnitude); and
- **Low** for dust soiling impacts (Medium sensitivity and Small magnitude).

63 These risks are low or negligible as a result of the nature of the process of constructing a solar park combined with the design of the Development, such as committing to keep construction compounds and substations a minimum of 300 m from residential properties. As all risks are Low or Negligible, all effects from dust during construction are assessed as being **not significant** in terms of the EIA Regulations.

64 Mitigation measures to further reduce the risk are set out in the “mitigation” section below.

65 It should be noted that the extent of soil disturbance associated with the Development will, generally, be substantially less than the effect of ploughing fields and spraying of agricultural additives, which occurs in the baseline scenario, and hence impacts of the Development would generally be less than the impacts of the baseline agricultural operations, where arable farming is carried out.

66 *Exhaust Emissions*

67 NRMM likely to be required for construction (and decommissioning) of the Development includes generators to power office/welfare units at construction compounds, lightweight piling rigs for installation of the pole supports for the solar PV modules, and potentially small cranes, excavators and machinery to move the heavier substation and battery units around those sites. It is expected that, in any one solar PV area (field or construction compound) there would be no more than 3 NRMM operating at any one time. For construction of the substations and BESS areas, it is expected that there would be no more than 5 NRMM operating at any one time. Work in any given solar PV field would take only a small number of weeks (c. 2 to 6), typically.



68 In the few locations where machinery would be working close to residential or ecological receptors, such as parts of Work no. 1 (solar PV) and Work no. 2 (cables), the work would be short in duration, with construction activities quickly moving on to another area. For example, it is expected that machinery-operated elements of work to install solar panels and their mounting structures, within 250 m of a particular off-site point (such as a residential property), would take typically 1-2 weeks. As noted above, all construction compounds will be more than 300 m from residential properties. The level of work in a given area will therefore be very low, and short-duration, compared to typical construction projects (e.g., residential, offices, warehouses, etc.) that are considered in the IAQM Guidance. The background pollutant concentrations are low (a maximum of c. 35%, which is for PM<sub>10</sub>), compared to the relevant air quality objective, as set out in Section 16.2.5). On this basis, effects are assessed as being **not significant** in terms of the EIA Regulations.

69 *Mitigation*

70 Technical Appendix A5.3, Outline Construction Environmental Management Plan (CEMP) [EN010162/APP/6.4.5.3] includes for a dust risk assessment (similar to that presented above) to be carried out pre-construction, when specific locations of construction activity are known, followed by good practice mitigation measures for construction dust and NRMM, as set out in the IAQM guidance<sup>15</sup>. As outlined in Chapter 5 [EN010162/APP/6.2.5], these measures, commitments and actions have been carried forward to an Outline CEMP [EN010162/APP/6.4.5.3], and a full CEMP which will be produced following grant of the DCO consent and submitted to Newark and Sherwood District Council prior to construction.

71 With the implementation of recommended mitigation measures to sensitive receptors through the CEMP, the residual effects of construction dust and exhaust emissions from NRMM would be **negligible**, and **not significant** in terms of the EIA Regulations.

72 *Construction traffic emissions*

73 The predicted construction traffic generated by the Development has been compared to the screening criteria detailed in the EPUK/IAQM planning guidance<sup>16</sup>, as summarised in Section 16.2.4.

74 The predicted construction traffic generated by the Development is reported in ES Chapter 14, Traffic and Transport, [EN010162/APP/6.2.14] Table 14.14. In the month with the highest overall traffic generation (which would be split across different Development phases, therefore on different routes, but aggregated for assessment purposes), predictions based on worst-case assumptions (including a 20% uplift to account for uncertainty) suggest an addition to monthly traffic flow of around 2,200 vehicles. As this would be spread over a 5.5-day working week (c. 24 days per month), this equates to c. 92 movements per day. The average monthly traffic generation is c. 760

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<sup>15</sup> IAQM (2024). Guidance on the assessment of dust from demolition and construction. <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf> [accessed on 01/06/2025].

<sup>16</sup> EPUK and IAQM (2017). Land Use Planning and Development Control: Planning for Air Quality. <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [accessed on 01/06/2025].

movements, or c. 30 per day. The traffic flows from construction are therefore predicted to be well below (i.e., c. 6% of) the screening criteria of 500 LDV or 100 HDV movements per day as an annual average. Therefore, the air quality effects of construction traffic emissions will be **negligible** and are not assessed further.

75 *Mitigation*

76 Mitigation measures, which include travel planning and HDV management during the construction stage, are incorporated into the Outline Construction Traffic Management Plan (CTMP) [EN010162/APP/6.4.5.2]. These will include avoiding HDV movements at peak times, including school drop-off/pick-up, where possible, which will further reduce the potential to contribute to poor air quality.

### 16.2.6.2 Operation

77 *Potential effects*

78 There is a low likelihood of emissions resulting from the operational phase of the Development, which are unlikely to give rise to significant air quality effects.

79 It is anticipated that routine vehicle trips associated with operation of the Development will be around 15 visits (30 vehicle movements) per day. These would typically be made by light vans or 4x4 type vehicles.

80 These levels will be much lower than the EPUK/IAQM screening thresholds, and as a result **no significant effects** on air quality are likely.

81 Dust effects from the operational phase of the Development will be lower than the baseline scenario, with reduced ploughing of fields and spraying of agricultural additives.

82 *Mitigation*

83 No mitigation is required as no likely significant effects are anticipated from operation.

### 16.2.6.3 Decommissioning

84 *Potential effects*

85 The decommissioning phase of the Development will comprise activities similar to the construction phase and are not expected to result in any greater effects on air quality.

86 The potential limited effects of the Development on local air quality during decommissioning are associated with dust, NRMM and traffic associated with movement of materials. Decommissioning is likely to give rise to the same level of trip forecast as the construction phase.

87 *Mitigation*

88 Vehicle access and traffic management to minimise dust mitigation will be included in a decommissioning-phase Traffic Management Plan (TMP) and Environmental Management Plan (EMP), which will include measures similar to those set out in the draft outline CTMP (TA A5.2) [EN010162/APP/6.4.5.2] and draft outline CEMP (TA A5.3) [EN010162/APP/6.4.5.3], as set out in the Outline Decommissioning and Restoration Plan (DRP; TA A5.6)

[EN010162/APP/6.4.5.6]. These measures will be carried forward to a detailed DRP, which would be prepared and agreed with relevant authorities in advance of the commencement of decommissioning and secured by DCO Requirement. With the mitigating effect of the measures set out in the oDRP, air quality and dust effects will be no greater than those during the construction phase, and therefore **negligible**.

### 16.2.7 Cumulative Effects Assessment

- 89 Developments have been shortlisted in TA A2.1, Cumulative Effects Assessment Stages 1 and 2) [EN010162/APP/6.4.2.1], to be taken forward into the assessment stage. Having carried out the assessment above, however, and taking account of the mitigation embedded in the management plans that are embedded in the Development proposals and secured through the DCO [EN010162/APP/3.1], all air quality and dust effects from the Development are assessed as being negligible in all phases of the Development.
- 90 Cumulative effects are evaluated by considering the effects of the Development when added to a baseline that includes the cumulative developments. With air quality and dust effects from the Development being “no detectable or material change” (using the generic description of Negligible from ES Chapter 2, EIA [EN010162/APP/6.2.2]), any change to the baseline environment caused by any cumulative developments would not lead to the addition of the Development’s negligible effects becoming material. Cumulative air quality and dust effects are assessed as **negligible**, therefore.

### 16.2.8 Summary

- 91 Background air quality in the vicinity of the Order Limits is good, with low levels of air pollution (see Table 16.2). Based on the proposed activities comprising the Development, it is anticipated that there would be limited, and not significant, effects on air quality during the construction, operation and decommissioning phases. However, pollution effects are not threshold-based, and hence mitigation to further reduce impacts is set out in the outline CEMP (TA A5.3; [EN010162/APP/6.4.5.3]), outline CTMP (TA A5.2; [EN010162/APP/6.4.5.2]) and outline DRP (TA A5.6; [EN010162/APP/6.4.5.6]).

## 16.3 GLINT AND GLARE

- 92 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. Paragraph 2.10.102 of the UK Government’s National Policy Statement for Renewable Energy Infrastructure (EN-3: section 3.1.2)<sup>17</sup> defines these terms as follows:
- Glint: “a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel”; and

<sup>17</sup> UK Department for Energy Security and Net Zero (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3). <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3> [accessed on 01/06/2025].

- Glare: “a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel”.
- 93 TA A16.1 [EN010162/APP/6.4.16.1] presents the following in respect of glint and glare:
- A summary of consultation responses, including those made by PINS at scoping stage, and how these are addressed;
  - Policy and guidance relating to assessments;
  - Methods that have been used including study areas, receptor identification, assessment criteria, assumptions and modelling parameters;
  - Predictions of the potential for glint and glare to occur, and comparison of this with the assessment criteria; and
  - Potential mitigation measures.
- 94 Glint and glare is a physical effect that can affect various receptor types. Guidance on the acceptability of glint and glare, based on duration and frequency of occurrence at a given receptor location, is used in TA A16.1 [EN010162/APP/6.4.16.1]. The EIA significance of glint and glare effects are determined in the respective technical discipline ES chapters (Chapter 7, Landscape and Visual [EN010162/APP/6.2.7]; Chapter 8, Ecology and Biodiversity [EN010162/APP/6.2.8]; section 16.4 of this chapter, Human Health; and Chapter 19, Interrelationships [EN010162/APP/6.2.19]), referencing TA A16.1 [EN010162/APP/6.4.16.1] as appropriate.
- 95 Glint and glare effects were considered during 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 some additional mitigation will be required to ensure that glint and glare effects are acceptable in all cases.
- 96 Design changes since the statutory consultation on the PEIR, removing solar PV areas, has further reduced the potential for glint and glare effects.
- 97 The potential reflection of sunlight from the solar panels has been modelled for the Development at the location of nearby residential properties within 200 m of Work no. 1, Solar PV, Work no. 4, Intermediate Substations, Work no. 5a, BESS and Work no. 5b, 400 kV Compound. Effects have been modelled at roads and railways within 500 m of the above Work no.s, and on safeguarded civil or military aerodromes within 10 km and other / non-safeguarded aerodromes and aerodromes (including flight paths) within 5 km.
- 98 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 appreciably 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. This results from the greater proximity of these other two solar farms to the airfield, and resulting level of glint and glare expected. 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 and no mitigation is required.

- 99 The assessment has identified limited potentially significant glint and glare effects on certain stretches of the A1 (northbound) and A616 (northwest-bound), and none in the opposite directions. Mitigation for these would be required, as set out below.
- 100 The assessment has identified no potentially significant glint and glare effects on:
- The East Coast Main Line in either direction;
  - The River Trent (which is outside the study area, following design changes); and
  - Any residential property.
- 101 The cumulative glint and glare assessment, as reported in TA A16.1 [EN010162/APP/6.4.16.1], considered the combined effects of the Development together with other developments identified in TA A2.1, Cumulative Effects Assessment Stages 1 and 2), [EN010162/APP/6.4.2.1]. Only one other solar farm, Muskham Wood Solar Farm, had the potential to lead to effects on four of the receptors in common with the Development. Modelling these effects showed that cumulative effects at all receptors were below the respective assessment criteria and therefore not potentially significant.
- 102 Some mitigation will be required to ensure that glint and glare effects are acceptable in all cases. A number of potential mitigation measures are proposed to be considered, including but not limited to:
- Modifying the extent of the PV array areas;
  - The use of textured glass PV panels in key areas;
  - Additional visual screening in the form of fencing and / or planting; and
  - Changes to the azimuth and / or tilt angle of the PV arrays.
- 103 In order to ensure that the mitigation properly responds to the actual design to be constructed, the detailed glint and glare mitigation scheme will be designed to match the final PV array design in consultation with relevant stakeholders, and will be submitted to the Council for their approval prior to construction. This will be secured via a DCO Requirement.

## 16.4 HUMAN HEALTH

### 16.4.1 Introduction

- 104 A Human Health Impact Assessment (HHIA) has been undertaken to consider key determinants to protect human health. HHIA's are designed to determine whether a proposal might improve health inequalities or negatively affect people's health and wellbeing in its widest sense.
- 105 The requirement for human health to be considered in an EIA, and for likely significant effects to be identified and assessed is set out in the EIA Regulations<sup>18</sup>, Regulation 5(2): "*The EIA must identify, describe and assess*

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<sup>18</sup> The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/uksi/2017/572> [accessed on 01/06/2025]



*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; ...”.*

- 106 The World Health Organisation’s constitution states that: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"<sup>19</sup>.
- 107 The medical journal, The Lancet, reports annually on health and climate change, and notes that, “Climate change is the greatest global health threat facing the world in the 21st century , but it is also the greatest opportunity to redefine the social and environmental determinants of health”<sup>20</sup>.
- 108 Properly designed, constructed and maintained solar parks and energy storage facilities are safe technologies. This is evidenced by both technologies being widely deployed in residential settings in very close proximity to human receptors. The site design and inbuilt buffers from sensitive receptors, together with procedures that control the potential for pollution and other hazards, will minimise any risk to human health resulting from the operation of the Development. Risks associated with electrical infrastructure such as from lightning strikes are removed or reduced through inbuilt control systems.
- 109 Adopted NPS EN-1 (2023)<sup>21</sup> paragraph 4.4.1 states that “Energy infrastructure has the potential to impact on the health and well-being (“health”) of the population. Access to energy is clearly beneficial to society and to our health as a whole. However, the construction of energy infrastructure and the production, distribution and use of energy may have negative impacts on some people’s health.”
- 110 There is no commentary in NPS EN-3, Renewable Energy, (2023)<sup>22</sup> relating to health impacts from solar farms.
- 111 NPS EN-5, Electricity Networks (2023)<sup>23</sup>, paragraphs 2.9.44 to 2.9.58, discusses the potential for human health impacts from electromagnetic fields. Potential effects of electromagnetic fields are assessed in section 16.6 of this chapter, which concludes that no significant effects from electromagnetic fields are anticipated, and hence there are no anticipated effects on human health from electromagnetic fields.

<sup>19</sup> World Health Organisation (2024). Health and Well-Being (web-page). Available at: <https://www.who.int/data/gho/data/major-themes/health-and-well-being#:~:text=The%20WHO%20constitution%20states%3A%20%22Health,absence%20of%20disease%20or%20infirmity.%22> [accessed on 01/06/2025].

<sup>20</sup> The Lancet (2024). The Lancet Countdown on health and climate change. Available at: <https://www.thelancet.com/countdown-health-climate> [accessed on 01/06/2025].

<sup>21</sup> UK Government, department for energy security and net zero (2023). Overarching National Policy Statement for energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [accessed on 01/06/2025].

<sup>22</sup> UK Government, department for energy security and net zero (2023). National Policy Statement for renewable energy infrastructure (EN-3). Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3> [accessed on 01/06/2025].

<sup>23</sup> DESNZ (2023). National Policy Statement for electricity networks infrastructure (EN-5). <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [accessed on 01/06/2025].

#### **16.4.1.1 Approach**

- 112 This assessment is based on the approach of considering scheme impacts and their interrelationships on residents and subsequent effects on health and wellbeing.
- 113 Based on the experience of the project team, this section draws together and considers the findings from the following assessments:
- Landscape and Visual (chapter 7) [EN010162/APP/6.2.7];
  - Water Resources (chapter 9) [EN010162/APP/6.2.9];
  - Noise and Vibration (chapter 12) [EN010162/APP/6.2.12];
  - Socioeconomics and Tourism (chapter 13) [EN010162/APP/6.2.13];
  - Traffic and Transport (chapter 14) [EN010162/APP/6.2.14];
  - Climate Change (chapter 15) [EN010162/APP/6.2.15];
  - Air Quality (section 16.2 of this chapter); and
  - Recreation (chapter 18) [EN010162/APP/6.2.18].
- 114 The people who might be affected are different depending on the nature and magnitude of the potential effect; where effects are predicted, the affected population is described.

#### **16.4.2 Consultation**

- 115 A summary of consultee responses to the EIA Scoping Report (“Scoping response”) and to the PEIR (“Section 42”), relating to human health, are provided in Table 16.3.



**Table 16.3: Summary of Consultation Comments Relating to Human Health**

Consultee	Response	How Response has been addressed
Planning Inspectorate (Scoping Opinion)	The Inspectorate agrees that human health effects from electrical infrastructure can be scoped out of further assessment, on the basis that battery safety and Electro Magnetic Fields (EMF) effects associated with the 400 kV cabling will be assessed.	Battery safety is assessed in section 16.5 and EMF are assessed in section 16.6.
Planning Inspectorate (Scoping Opinion)	The ES should provide a clear justification the scope of the human health assessment. The ES should consider all relevant aspects assessed within other chapters within the human health assessment. The ES should also specify where the chapter assesses the project phases of construction, operation and decommissioning.	A clear scope of the human health assessment is provided in section 16.4.5, including which phases of development are being considered.
Planning Inspectorate (Scoping Opinion)	Any findings from other chapters which are relied on in the human health assessment should be clearly signposted.	Findings from other chapters that are relied on in this assessment are clearly signposted.
Carlton on Trent Parish Council (Scoping response)	Negative psychological impacts of large solar farms are subjective and vary among individuals and communities. This development has already raised anxiety about aspects of the development such as glare and noise or the visual impact on walking the local area. Differing opinions within the community regarding solar energy and this specific development are already exposing tensions and conflicts, impacting social cohesion and the overall community atmosphere. Changes to the landscape and the introduction of large solar panels can be perceived as visually disruptive, leading to a sense of loss in the aesthetic appeal of the surroundings. Some individuals are already worried about	Potential anxiety associated with the Development is considered in section 16.4.5, including a mental well-being impact assessment screening in accordance with methods recommended by the United Kingdom Health Security Agency (UKHSA) / Office for Health Improvement and Disparities (OHID), as set out in Section 16.4.5.2. As there a numerous potential impacts that could have an effect on human health, no fixed study area has been used; instead, receptors of potential effects have been identified using a source-pathway-receptor approach, as set out in Section 16.4.5.1.

Consultee	Response	How Response has been addressed
	decreases in property values due to the presence of such a large solar development which is affecting their perception of their home's worth and long-term investment. There are also concerns about health impacts related to electromagnetic fields generated by solar infrastructure. Even though scientific evidence generally suggests low health risks, such a major development will create a significantly increased risk. It is therefore imperative that there is a thorough investigation of the potential impact on residential properties within a 3 km radius, including noise, visual intrusion, and psychological effects	
Carlton on Trent Parish Council (Scoping response)	There needs to be a continuous monitoring plan for residential areas throughout the project lifespan, with a commitment to act upon any such negative impact.	In general, where significant effects are predicted, mitigation and/or monitoring is proposed, where there is a reasonable potential for this to be used to meaningfully further knowledge in this area or to reduce the level of adverse effects.  In the Human Health assessment, no further mitigation or monitoring is considered necessary.
Carlton on Trent Parish Council (Scoping response)	Those concerned don't just need reassurance that glare and noise will not impact, they need to be given a guarantee that if affected, the appropriate panels/power units will be removed to alleviate the psychological and/or physical impact. Such reassurances and commitments to prevent any physical or psychological impact from an early stage will be essential to gaining support for the project.	Glint and glare is a potential nuisance effect. It is similar to, but less intense than, light reflected off glass or water, which commonly occurs, and is not known to cause physical or psychological impacts.  The glint and glare mitigation strategy, which will be informed by the detailed design, will be secured through a DCO Requirement. The strategy will be submitted for approval to Newark and Sherwood District Council prior to commencement of construction.

Consultee	Response	How Response has been addressed
The Environment Agency (Scoping response)	Consideration for water quality impacts to surface water and groundwater bodies within the drinking water protected area should be considered as part of a wider WFD assessment.	This has been considered in ES Chapter 9, Water Resources [EN010162/APP/6.2.9].
Newark & Sherwood District Council (Scoping response)	Consideration should be given to direct and indirect impacts on human health receptors, which are not identified or explored within the EIA Scoping Report. It is therefore unclear whether effective scoping of human health matters has been carried out. The assessment should be informed by relevant guidance such as the Institute of Environmental Management and Assessment (IEMA) 2022 guidance 'Determining Significance for Human Health in Environmental Impact Assessment', which NSDC notes is not referred to within the EIA Scoping Report.	A thorough scoping exercise for human health impacts has been carried out and reported in section 16.4.5. The IEMA guidance has been used in the assessment of significance as reported in section 16.4.4.
North Muskham Parish Council (Scoping response)	We suggest that the cumulative impacts during construction, operation and de-commissioning of the proposal on the physical and psychological health and well being of residents with the area must be considered and scoped in.	This is considered in this section 16.4, with a detailed review of scope in section 16.4.5 and potentially significant effects assessed in 16.4.7.
Norwell Parish Council (Scoping response)	The Council would wish to see scoped in the impact of the decrease in value of residential properties and the impact that may have on the mental health of residents.	The author is aware of no credible documented evidence of a long-term decrease in value of residential properties as a result of solar development. The extensive pre-submission engagement with communities combined with the design process followed have sought to increase understanding and reduce uncertainty for local people,

Consultee	Response	How Response has been addressed
		helping to reduce concern/ worry. The impact on mental health of concern over these issues is assessed in section 16.4.7.
UKHSA and OHID (Scoping response)	The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlight	Section 16.4, human health, achieves this.
UKHSA and OHID (Scoping response)	UKHSA and OHID's predecessor organisation Public Health England produced an advice document 'Advice on the content of Environmental Statements accompanying an application under the NSIP Regime', setting out aspects to be addressed within the Environmental Statement.  This advice document and its recommendations are still valid and should be considered when preparing an ES. Please note that where impacts relating to health and/or further assessments are scoped out, promoters should fully explain and justify this within the submitted documentation.	The scope of the human health impact assessment is explained in section 16.4.5. The guidance is followed.
UKHSA and OHID (Scoping response)	We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure) and maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.	Traffic-related effects have been considered throughout Development design to date.  Construction compounds have been located at least 300 m away from residential properties.  New recreational routes have been proposed, including a long-distance circular route, as set out in the masterplan (Figure 5.2 [EN010162/APP/6.3.5.2]). The Development includes planting of c. 64,500 new trees within the Order Limits, as well as creating substantial additional areas of other new habitats, that largely replace arable farmland.

Consultee	Response	How Response has been addressed
UKHSA and OHID (Scoping response)	The assessment of significance should be established in accordance with Pyper, R et al., 2022, published by the Institute of Environmental Management and Assessment (IEMA). The IEMA guidance has been developed to be the national guidance for assessing significance in population and human health and so should be adopted and utilised for the purposes of the ES.	This method has been used in this assessment (see section 16.4.4).
UKHSA and OHID (Scoping response)	<p>There should be parity between mental and physical health, and any assessment of health impact should include the appreciation of both. A systematic approach to the assessment of the effects on mental health, including suicide, is required.</p> <p>When estimating community anxiety and stress in particular, a qualitative assessment may be most appropriate. Robust and meaningful consultation with the local community will be an important mitigation measure, in addition to informing the assessment and subsequent mitigation measures. This may involve conducting resident surveys but also information received through public consultations, including community engagement exercises. The Mental Well-being Impact Assessment Toolkit (MWIA) contains key principles that should be demonstrated in a project's community engagement and impact assessment. We would also encourage you to consult with the local authority's public health team who are likely to have Health Intelligence specialists who will have knowledge about the availability of local data.</p>	<p>Both mental health and physical health have been considered, and it has been assumed that any impact on physical health would also impact mental health.</p> <p>The MWIA Toolkit has been applied, as reported in section 16.4.5.2 and TA A16.2 [EN010162/APP/16.4.16.2].</p> <p>A systematic approach to the assessment of both physical and mental health impacts has been undertaken, as reported in section 16.4.5 and 16.4.7.</p>

Consultee	Response	How Response has been addressed
UKHSA and OHID (Scoping response)	The Mental Well-being Impact Assessment Toolkit (MWIA), could be used as a methodology. The assessment should identify vulnerable populations and provide clear mitigation strategies that are adequately linked to any local services or assets. Baseline indicators the assessment would benefit from including social cohesion/connectedness, satisfaction with local area and quality of life indicators owing to their established links to mental health and wellbeing.	This toolkit has been applied, as reported in section 16.4.5.2 and TA A16.2 [EN010162/APP/16.4.16.2].
UKHSA and OHID (Scoping response)	In terms of sources, we would draw your attention to the following: <ul style="list-style-type: none"> <li>PHE Fingertips – Mental Health and Wellbeing JSNA: Area profiles with various indicators on common mental disorders (including anxiety) and severe mental illness which can be benchmarked with other local areas as well as regional and national data</li> <li>Office for National Statistics - Wellbeing Indicators: Range of datasets related to wellbeing available including young people's wellbeing measures, personal wellbeing estimates and loneliness rates by local authority</li> </ul>	These sources have been considered where appropriate in Section 16.4.6 for the effects scoped into the assessment (see Section 16.4.5.3).
North Muskham Parish Council (Section 42)	Specifically, solar power plants can cause significant deterioration of residents mental and physical health and habitat degradation.	No evidence is provided for this. This Chapter assesses the potential for effects on health, and identifies no likely significant effects.
North Muskham Parish	Developers and government should absolutely ensure measures are put in place to monitor the health and wellbeing of residents. Any patients attending hospital, could easily be coded from postcodes that are affected by large	In general, where significant effects are assessed, it may be beneficial to propose monitoring of the effects, particularly where mitigation can be adapted to further reduce the effects. This Chapter identifies no significant

Consultee	Response	How Response has been addressed
Council (Section 42)	scale solar industrialisation and conditions could be reported and monitored over the forty year life of the projects.	effects on health and wellbeing, and no monitoring is proposed.
North Muskham Parish Council (Section 42)	<p>Special consideration with regard to health and wellbeing should be also given to all of the following areas:-</p> <ul style="list-style-type: none"> <li>a. Noise - particular during construction</li> <li>b. Routing - Construction and maintenance – avoiding villages and/or unsuitable roads</li> <li>c. Fly Tipping - This will likely increase given the large tracts of land without attendance</li> <li>d. Screening - This is crucial and must be meaningful and maintainable.</li> <li>e. Glint and Glare – Should be kept to a minimum in all areas.</li> <li>f. Maintenance and Enhancement of PROWs and Permissive Paths – This is extremely important and the joining up of routes would be of great benefit</li> <li>g. Enhancement of natural areas ie grassland, woods, orchards</li> <li>h. Protection of wildlife</li> </ul>	<p>These topics are considered in this Chapter where they relate to assessment. Commentary on other topics is: Routing is addressed in Chapter 14, Traffic and Transport, [EN010162/APP/6.2.14].</p> <p>Fly tipping is not expected to be a significant issue, given that the Order limits will benefit from the same level of security (hedges, gates, etc.) as is currently in place, with the addition of further fences around Work no. 1 (solar PV) and Work no.s 4, 5, 6 and 7 (substations and BESS).</p> <p>Protection of wildlife is addressed in Chapter 8, Ecology and Biodiversity [EN010162/APP/6.2.8].</p>
Laxton and Moorhouse Parish Council (Section 42)	Fields 82, 93, 109, 142 and 37 should be removed due adverse impact on community health and wellbeing.	No suggestion of why development in these fields might lead to an adverse impact on community health and wellbeing was given in the response, and none is readily apparent from a review of these fields.
Laxton and Moorhouse Parish	In addition, the removal of farming assets will also see farming disappear permanently from the community and the	The Development represents a diversification of landowner interests, reducing uncertainty and vulnerability from modern farming businesses.



Consultee	Response	How Response has been addressed
Council (Section 42)	area, negatively impacting the unique historic antecedents of the locality and composition and wellbeing of the community.	Employment will be created to help manage the land and vegetation within the Development, as set out in ES chapter 13, Socio-economics and Tourism.
Laxton and Moorhouse Parish Council (Section 42)	Mental health, particularly male suicide, is a significant aspect of concern for rural communities. Such losses from the countryside in the parish are likely to have a negative effect on health and wellbeing within the community and to those who visit to seek solace from its vistas.	The Development includes substantial proposals for increasing access to nature through the recreational enhancements proposed (ES chapter 18). The benefits of increased outdoor access are included in the human health impact assessment in ES chapter 16, section 16.4.
Nottinghamshire County Council (Section 42)	The Public Health Team has reviewed Chapter 16 Miscellaneous Issues with respect to Human Health. The summary of scoping comments in Table 16.3 related to Human Health provided by UKHSA and OHID are noted.	This is noted.
Nottinghamshire County Council (Section 42)	The response from the NCC Public Health response is in full compliance with the UKHSA and OHID consultee responses, and it appears that the applicant has addressed these comments. Therefore, currently, the Council has no further comments to add.	This is noted.
Newark & Sherwood District Council (Section 42)	NSDC note that Human Health is captured within Chapter 16, from Paragraph 16.4 onwards and in particular note some of the previous concerns that have been raised by Carlton on Trent Parish Council (summarised in Table 16.3) relating to the potential impacts on mental health. It would appear that the main response to this issue, is the Mental Well Being Impact Assessment Screening (November 2024) which is presented as Technical Appendix A16.2.	This is noted.

Consultee	Response	How Response has been addressed
Newark & Sherwood District Council (Section 42)	Whilst accepting that the document is a screening toolkit, some of the responses are quite limited, with regard to predicting the likely impact, as are the comments or recommendations, with a reliance being placed upon a stock response of 'Opportunities have been consulted on and enhanced as far as practicable.' The response above offers little in the way of meaning on how likely impacts have been understood and considered and any constraints to implementing further measures that may emerge from the more detailed consideration of potential impacts.	<p>The screening has been reviewed following PEIR, for this ES. A revised version is included in the ES TA A16.2 [EN010162/APP/6.4.16.2].</p> <p>The Order Limits principally comprise private land, and public access to that land will generally not change with the Development (although there will be more access in places, via the proposed permissive paths). The principal effects on the public are as set out in this ES, i.e., local visual and noise effects, construction effects principally on traffic, benefits to ecology, recreation, employment and climate and a reversible loss of agricultural land. As a result, there is generally no mechanism for the Development to affect the factors set out in the toolkit, which relate generally to affecting some categories or groups of people differently to others. The exceptions are the proposed additional recreational routes and the community orchard.</p>
Newark & Sherwood District Council (Section 42)	The comments on likely impacts for 'Individual' are more limited, with little acknowledgement on the potential negative impacts on emotional well being for example. Finally, the consideration of community impacts appears to be overly reliant on reference to the annual community fund of £1m, as a general response as a means to mitigate all community related impacts, rather than consideration a more bespoke set of recommendations. The community fund is in any event a proposal and is not something that can be secured/maintained as part of the DCO, should permission be forthcoming.	<p>Section 16.4.4 of this chapter summarises the methodology, as specified by Pyper, R., et al. 2022, which is the methodology recommended by the UKHSE and OHID. This sets out that assessment of significance at the level of individuals is not proportionate, and that EIA should take a population health approach.</p> <p>The assessment results are based on the Development as will be subject to the DCO only, and not the annual community fund. However, the community fund is relevant in this context, and so is referred to.</p>

### 16.4.3 Policy

116 In preparation of this section, the following policy, legislation and guidance relating to air quality has been reviewed:

- Overarching National Policy Statement (NPS) for Energy (EN-1): Section 4.4 (Health)<sup>24</sup>, paragraphs 4.4.1 to 4.4.3, which refer to potential direct physical impacts on health, and potential changes in population composition and size. Paragraph 4.4.6 states *“Opportunities should be taken to mitigate indirect impacts, by promoting local improvements to encourage health and wellbeing, this includes potential impacts on vulnerable groups within society and impacts on those with protected characteristics under the Equality Act 2010, i.e. those groups which may be differentially impacted by a development compared to wider society as a whole”*;
- NPS for renewable energy infrastructure (EN-3)<sup>25</sup> (although, in section 2.10, Solar Photovoltaic Generation, human health effects are not identified as potential impacts that need to be assessed);
- NPS for electricity networks infrastructure (EN-5)<sup>26</sup>, paragraphs 2.9.46 to 2.9.58, which relate to the potential effect of ElectroMagnetic Fields (EMF), which are assessed in Section 16.6.; and
- National Planning Policy Framework (NPPF)<sup>27</sup>, Section 8, “Promoting healthy and safe communities” supports decisions and policies that enable and support healthy lifestyles and provide access to a network of high quality open spaces and opportunities for sport and physical activity.

117 In 2022, Newark and Sherwood District Council released a 4-year health wellbeing strategy<sup>28</sup> to ‘Improve Health and Wellbeing’ and to align with the Nottinghamshire County Council’s Joint Health and Wellbeing Strategy 2022-2026<sup>29</sup>. The strategy sets out 4 ambitions to improve the length and quality of residents’ lives. The ambitions are as follows:

- Give every child the best chance of maximising their potential;
- Create healthy and sustainable places;
- Everyone can access the right support to improve their health; and
- Keep our communities safe and healthy.

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<sup>24</sup> DESNZ (2023). Overarching National Policy Statement for Energy (EN-1). <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> [accessed on 01/06/2025].

<sup>25</sup> DESNZ (2023). National Policy Statement for renewable energy infrastructure (EN-3). <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3> [accessed on 01/06/2025].

<sup>26</sup> DESNZ (2023). National Policy Statement for electricity networks infrastructure (EN-5). <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [accessed on 01/06/2025].

<sup>27</sup> MHCLG and DLUHC (2023). National Planning Policy Framework. <https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf> [accessed on 01/06/2025].

<sup>28</sup> Newark and Sherwood District Council (2022) Health and Wellbeing Strategy 2022 – 2026. Available at: <https://democracy.newark-sherwooddc.gov.uk/documents/s15355/06.12.22%20-%20Health%20Wellbeing%20Strategy%20-%20Appendix.pdf> [accessed on 01/06/2025]

<sup>29</sup> Nottinghamshire Health & Wellbeing Board (2022) Joint Health and Wellbeing Strategy 2022-2026. Available at: <https://www.healthynottinghamshire.org.uk/> [accessed on 01/06/2025]

- 118 The strategy also outlined six Health and Wellbeing Priorities for Newark and Sherwood, forming task and finish groups to deliver work and projects with partners and stakeholders. The following sets out the 6 Health and Wellbeing Priorities:
- Improving Healthy Lifestyles;
  - Ensuring the Best Start;
  - Improving Housing and the Environment;
  - Recognising Mental Health;
  - Tackling Physical Inactivity; and
  - Addressing the Needs of the Ageing Population.
- 119 Alongside this strategy, Newark and Sherwood District Council released a Health Improvement Action Plan<sup>30</sup>, providing further detail on how to achieve the priorities they set out.

#### 16.4.4 Methods

- 120 The assessment follows a source-pathway-receptor approach to identify potential effects. The sensitivity of receptors, magnitude of effect and assessment of significance is then established in accordance with Pyper, R., et al., 2022<sup>31</sup> (“the IEMA Guide”), as set out below.
- 121 The following factors identified by the IEMA Guide have been taken into account in this human health impact assessment:
- 122 *“5.2. ... Assessment of EIA significance at the level of individuals is not proportionate. 5.3. Literature and public health practitioner and impact assessor consensus is that EIA should take a population health approach. ... 5.4 Within a defined population, individuals will range in level of sensitivity due to a series of factors such as age, socio-economic deprivation and pre-existing health conditions. Some groups of individuals may be particularly vulnerable to changes in biophysical and socio-economic factors (adversely or beneficially) whereby they could experience differential or disproportionate effects when compared to the general population. ... 5.6 ... it may be appropriate to consider relevant sub-populations, i.e., groups of more sensitive individuals. 5.7 ... health in EIA should consider both populations and differential or disproportionate effects to relevant sub-populations. ... 5.9. To provide actionable information to decision-makers, significance conclusions should be on the basis of whether or not there are likely to be population-level effects, both positive and negative.”*

<sup>30</sup> Newark and Sherwood District Council (2022) Health Improvement Action Plan 2022-2026. Available at: <https://democracy.newark-sherwooddc.gov.uk/documents/s20808/24.09.24%20-%20Health%20and%20Wellbeing%20Strategy%20-%20Appendix%20B.pdf> [accessed on 01/06/2025]

<sup>31</sup> Pyper, R., Waples, H., Beard, C., Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald, J., Buroni, A., Bhatt, A., Phelan, E., Scott, I., Fisher, T., Christian, G., Ekermawi, R., Devine, K., McClenaghan, R., Fenech, B., Dunne, A., Hodgson, G., Purdy, J., Cave, B. (2022) IEMA Guide: Determining Significance for Human Health in Environmental Impact Assessment. Available at: <https://www.iema.net/media/ylib2nbs/iema-eia-guide-to-determining-significance-for-human-health-nov-2022.pdf> [accessed on 01/06/2025]

#### 16.4.4.1 Setting the Scope

- 123 IEMA have published guidance on how to set an appropriate scope for a health impact assessment in EIA<sup>32</sup> (“IEMA’s Scoping Guidance”), which has informed the assessment presented in this Section.
- 124 The first step in identifying the appropriate scope is to identify those wider determinants of health (associated with the WHO definition of health) that are potentially affected by changes that could be caused by the Development. These are set out in Table 5.1 of IEMA’s Scoping Guidance. This is informed by a source-pathway-receptor analysis of potential health impacts.
- 125 IEMA’s Scoping Guidance is clear that the assessment should be proportionate:
- 126 *“3.4. There can be a temptation to scope in a long list of wider health determinants to avoid the risk of later challenge. This would be contrary to proportionality and could be detrimental to delivering an effective assessment of the likely significant health effects. Scoping may be informed by careful application of the precautionary principle. Where there are threats of serious damage to health, a lack of full scientific certainty should not be used as a reason for postponing measures to minimise this damage. The precautionary principle should be used sparingly in health scoping. It should not be cited as a general reason to scope in all, or most, wider determinants of health for further assessment.”*
- 127 Potential effects are scoped in (or out) of the assessment based on whether they are both likely to occur and potentially significant (or not).
- 128 The study area is then set based on the geographical extent of those effects that are scoped into the assessment. The scope of this study is set out in Section 16.4.5.

#### 16.4.4.2 Assessment

- 129 For potential effects that are scoped into the assessment, their significance has been established in accordance with the IEMA Guide. The IEMA guidance has been developed to be the national guidance for assessing significance in population and human health.
- 130 Health sensitivity is determined in accordance with the criteria set out in Table 16.4.

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<sup>32</sup> IEMA (2022). Institute of Environmental Management and Assessment (IEMA) Guide to: Effective Scoping of Human Health in Environmental Impact Assessment. Available at: <https://www.iema.net/media/s35fughe/iema-eia-guide-to-effective-scoping-of-human-health-nov-2022.pdf> [accessed on 01/06/2025].

**Table 16.4: Population health sensitivity criteria (from the IEMA Guide)**

Sensitivity	Criteria
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt
Very Low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

131 The magnitude of a health impact is determined with reference to with the criteria set out in Table 16.5. Professional judgement is applied when interpreting impacts against these criteria, in accordance with the IEMA Guide.

**Table 16.5: Health impact magnitude criteria (from the IEMA Guide)**

Magnitude	Criteria
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes; majority of population affected; permanent change; substantial service quality implications
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity



Magnitude	Criteria
	or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication

132 Table 16.6 summarises, in the form of a matrix, guidance used in determination of significance of a likely effect. Effects that would be ‘significant’ in terms of the EIA Regulations are shaded.

**Table 16.6: 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
Very Low	Negligible	Negligible	Negligible	Negligible

#### 16.4.5 Scope of Assessment

133 IEMA’s Scoping Guidance, paragraph 6.7, sets out that, “Many potential health effects can be scoped out because they are unlikely. This includes scoping out health effects because there is certainty that proposed mitigation or enhancement is secured and high confidence that it would be effective.”

##### 16.4.5.1 Source – Pathway – Receptor Analysis

134 Table 16.7 presents a source-pathway-receptor analysis for health impacts from the Development. The nature of effect is identified as either physical health or concern/worry, depending on the principal effect. It is acknowledged, but not repeated in that table, that potential adverse effects on physical health can also impact mental health.

##### 16.4.5.2 Mental Well-Being Impact Assessment Toolkit

135 Mental health has been considered along with (and equally to) physical health in this assessment. In addition to this, following the advice at scoping from UKHSA and OHID (Table 16.3), the Mental Well-Being Impact Assessment (MWIA) Toolkit<sup>33</sup> screening stage has been completed for the

<sup>33</sup> National MWIA Collaborative (England) (2011). Mental Well-being Impact Assessment - A toolkit for well-being. Available at: [https://phwwhocc.co.uk/whiasu/wp-content/uploads/sites/3/2021/05/Mental\\_Wellbeing\\_Impact\\_Assessment\\_Toolkit\\_-\\_full\\_version.pdf](https://phwwhocc.co.uk/whiasu/wp-content/uploads/sites/3/2021/05/Mental_Wellbeing_Impact_Assessment_Toolkit_-_full_version.pdf) [accessed on 01/06/2025].



Development, and is included in Volume 4 as TA A16.2  
[EN010162/APP/6.4.16.2].

- 136 No additional potential impacts, risks or opportunities were identified by the MWIA screening and, following the method given in the toolkit, no further assessment under the MWIA process has been carried out.

**Table 16.7: Source – Pathway – Receptor Analysis**

Source (Development- caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
<b>Construction and Decommissioning Phases</b>						
Traffic and on-site plant	Pollutant emissions leading to lower air quality	Physical health (adverse)	Transport modes, access and connections	CEMP [EN010162/APP/6.4.5.3] requirements for vehicle maintenance	Likely (non-threshold response)	Yes
	Delays to emergency service vehicles	Physical health (adverse)	Transport modes, access and connections	CTMP [EN010162/APP/6.4.5.2] – following implementation of the CTMP, delays, road accidents and fear and intimidation to pedestrians/cyclists will be negligible (see chapter 14)	Unlikely – assessed in Chapter 14 [EN010162/APP/6.2.14]	No
	Road accidents	Physical health (adverse)	Transport modes, access and connections		Unlikely – assessed in Chapter 14 [EN010162/APP/6.2.14]	No
	Fear and intimidation of pedestrians/cyclists by HGVs and increased traffic levels	Concern/worry over safety when using local roads (adverse)	Transport modes, access and connections		Unlikely – assessed in Chapter 14 [EN010162/APP/6.2.14]	No
Employment – reduced farm employment	Financial position of farm workers affects their ability	Physical health, concern/	Employment and income	Construction and decommissioning of the Development will create local jobs, some of which	Unlikely – assessed in Chapter 13 [EN010162/APP/6.2.13], based on worst-case	No

Source (Development- caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
	to afford a healthy lifestyle	worry (adverse)		may be suitable for farm workers, such as vegetation management.	assumptions, to be 18 jobs. This is not likely to be significant at population level.	
Employment - construction employment created	Financial position of construction workers and the supply chain affect their ability to afford a healthy lifestyle	Physical health, concern/ worry (beneficial)	Employment and income	The Employment and Skills Plan (TA A13.2 [EN010162/APP/6.4.13.2]) includes measures to train local people in the roles that will be created by the Development.	Chapter 13 [EN010162/APP/6.2.13] calculates that “the construction phase is estimated to create up to around 120 local net direct construction FTE jobs and 60 local net direct manufacturing FTE jobs”, which it concludes is significant.	Yes
Accommodation used for construction workers	Reduced availability of short- term accommodation for others who use it, need to travel further, increased cost, ability to afford a healthy lifestyle	Concern/ worry, physical health (adverse)	Built environment	The Employment and Skills Plan (TA A13.2 [EN010162/APP/6.4.13.2]) includes measures to train local people in the roles that will be created by the Development, reducing the desire to hire non- resident workers.	Unlikely. Chapter 13 [EN010162/APP/6.2.13] assesses the magnitude of impact on accommodation availability as being Negligible and not significant.	No

Source (Development-caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
Changes to recreational resources	Temporary closures or direct or indirect changes to routes or other resources, reduced ability to use/enjoy recreational resources	Physical health (adverse)	Physical activity	The requirement for closures and diversions, and other disturbance, has been minimised through design of the layout of the Development. There are no proposed closures that would not be preceded by effective diversions.	Unlikely – the diversion of 8 sections of Public Right of Way, with some amenity reduction on other paths in the area, is not likely to have an appreciable effect on the physical health of the population.	No
Construction work	Health and safety risks to workers and the public	Physical health risk (adverse)	Risk taking behaviour	Legislation, including the Construction Design and Management Regulations 2015 <sup>34</sup>	Unlikely – these regulations are effective in minimising risks associated with construction	No
<b>Operation phase</b>						
Low carbon electricity generation	Reduced drivers of climate change, reduced effects of climate change, which include flooding, drought,	Physical (beneficial)	Climate change mitigation and adaptation	Generation (beneficial effect) has been maximised through design of the Development	Unlikely – the effect of a single solar park on climate change will not measurably affect the health of a population	No

<sup>34</sup> Construction health and safety legislation that will be adhered to includes the Health and Safety at Work Act 1974, The Construction (Health, Safety and Welfare) Regulations 1996, Construction (Design and Management) Regulations 2015; and the Electricity Safety, Quality and Continuity Regulations 2002.

Source (Development-caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
	famine, strong winds, etc.					
Employment – reduced farm employment	Financial position of farm workers affects their ability to afford a healthy lifestyle	Concern/worry (adverse)	Employment and income	Operation of the Development will create local jobs, some of which may be suitable for farm workers, such as sheep management and other vegetation management.	Unlikely – assessed in Chapter 13 [EN010162/APP/6.2.13], based on worst-case assumptions, to be 7 jobs. This is not likely to be significant at population level.	No
Employment - employment created	Financial position of construction workers and the supply chain affect their ability to afford a healthy lifestyle	Concern/worry (beneficial)	Employment and income	The Employment and Skills Plan (TA A13.2 [EN010162/APP/6.4.13.2]) includes measures to train local people in the roles that will be created by the Development.	Chapter 13 [EN010162/APP/6.2.13] calculates that “net total jobs created by the Development over the operational phase would, therefore, equate to 20 net direct local FTE jobs”, which it concludes is not significant.	No
Changes to recreational resources	Closures, creation or direct or indirect changes to routes or other resources, changed ability to	Physical health (beneficial)	Physical activity	Opportunities have been taken to include additional recreational routes and facilities in the Development (see	Likely	Yes

Source (Development- caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
	use/enjoy recreational resources			Chapter 18 [EN010162/APP/6.2.18])		
Changes to perceived environment, including visual, glint and glare and noise, battery safety, road traffic, house prices	Altered amenity and/or perceptions of amenity (e.g., aesthetic qualities) and financial position	Concern/ worry (adverse)	Wider societal infrastructure and resources	Once the Development is constructed, there will be much reduced uncertainty and therefore reduced worry and concern. Over time, screening planting will reduce views further and any altered aesthetic will become normal. Once realised, benefits from improved recreational route networks will help compensate for any residual concern.  In addition to the DCO, the community benefit will include public engagement and provision of a substantial package of local benefits.	Unlikely. Worry about construction of a solar farm is not likely to lead to population-scale health effects. Similar developments have occurred elsewhere (most notably large wind farms) without significant health effects being reported.	No
Battery malfunction	Battery fire, emissions to air and water	Physical health (adverse)	Hazardous structure	Fire Safety Management Plan (FSMP; an outline of	Unlikely – the measures set out in the BSMP will be required to be	No



Source (Development- caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
			(bio-physical environment)	which is provided in TA A5.4)	approved by relevant authorities via DCO Requirement, which will ensure there are no unacceptable risks.	
Electromagnetic fields	Physical effect of magnetic fields on the body	Physical health (adverse)	Radiation	Design – burying the high voltage (HV) cables to sufficient depth	Unlikely – see section 16.6.	No
Increased biodiversity	Improved recreational amenity, reduced flood risk/intensity, improved air quality	Concern/ worry (beneficial)	Land quality	The masterplan (Figure 5.2 [EN010162/APP/6.3.5.2]) has been designed to optimise the balance between solar generation, biodiversity gain and agricultural land.	Unlikely – whilst certain individuals might appreciate an increase in biodiversity, it is unlikely to lead to a population-level change in mental health	No
Reduced farming (ploughing, chemical additions to land (spraying))	Reduced dust creation, reduced odour, reduced chemical inhalation	Physical health (beneficial)	Wider societal infrastructure and resources	None applicable	Unlikely – whilst the effect on air quality of certain farming activities may have an effect on some individuals local to the activity, it is not likely to make a difference at population-level	No

Source (Development- caused change)	Pathway	Nature of effect	Health determinant	Mitigation	Likelihood (of an effect that could be significant)	Scoped in?
Operation traffic increase, farm traffic decrease	Pollutant emissions change	Physical health (adverse or beneficial)	Transport modes, access and connections	None applicable	Unlikely – operation phase traffic generation will be very low (see Chapter 14 [EN010162/APP/6.2.14])	No
	Travel delays/emergency vehicle delays, road accidents	Physical health (adverse)	Transport modes, access and connections	None applicable	Unlikely – operation phase traffic generation will be very low (see Chapter 14 [EN010162/APP/6.2.14])	No

### 16.4.5.3 Summary of Effects Scoped In

- 137 Table 16.7 identifies the following effects to be scoped into the human health impact assessment:
- Construction and decommissioning phases:
    - Pollutant emissions leading to lower air quality, with the potential to affect physical health (adverse);
    - Financial position of construction workers and the supply chain affects their ability to afford a healthy lifestyle, leading to an impact on physical health and concern/worry (beneficial);
  - Operation phase:
    - Closures, creation or direct or indirect changes to routes or other resources, changed ability to use/enjoy recreational resources have the potential to affect physical health (beneficial).
- 138 The receptors for these potential effects are set out below.
- 139 Health disbenefits from worsened air quality: receptors are people, and in particular more physically vulnerable people such as the very young and very old. Locations where these people spend a substantial amount of time are residential properties, care homes, schools and hospitals. Locations with the potential to be affected would be highly localised to the construction traffic routes, given that predicted Development traffic is so far below the thresholds for requiring an assessment (as set out in Section 16.2.6.1, Traffic Emissions), which is taken to be within 50 m of the construction routes from the A1 to the Development access points (as shown on Figure 14.1 [EN010162/APP/6.3.14.1]).
- 140 Health benefits of an improved financial position of construction workers and the supply chain will affect all those in the supply chain, who may be a mixture of local people, those further afield in the UK and some abroad.
- 141 Health benefits of improved recreational routes within the Order Limits would be experienced by people in the local area, and possibly wider area, who might realistically use such routes. C. 60% of surveyed adults walk for leisure once a week or more, with 55% spending one hour or more walking for leisure<sup>35</sup>. Chapter 13, Socioeconomics and Tourism, [EN010162/APP/6.2.13], Section 13.8.5, summarises that 27% of walkers in the local area are visitors. As the majority of walkers in the local area are not visitors, the receptors for this effect are local people (which is a worst-case assumption), particularly those who are recreational walkers.

### 16.4.6 Baseline

- 142 The population that might be affected is different depending on the nature and magnitude of the potential effect; where effects are predicted, the affected population is described in the impact assessment.

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<sup>35</sup> Department for Transport (2021). Walking Factsheet, England: 2021. (with data from “Active Lives Survey 2020 to 2021 (aged 16+ only, walks are at least 10 minutes”). Available at: <https://assets.publishing.service.gov.uk/media/64e5b97d3309b700121c9ca5/walking-factsheet-2021.pdf> [accessed on 01/06/2025]

- 143 Only one care home, school or hospital has been identified within 50 m of the construction traffic routes:
- Brooklyn Care Home, Lodge Farm (on the A617 near Upton).
- 144 Numerous residential properties lie within 50 m of the construction routes. In addition to more isolated rural roadside properties, there are higher concentrations in the villages of Kelham, Averham, Hockerton, Carlton on Trent, Sutton on Trent, Weston and Tuxford.
- 145 Local people, for the purposes of the assessment of improved health effects from the improved financial position of construction workers and the supply chain, and of improved recreational routes include the population living in Newark and Sherwood District. Walkers are likely to be more local to the Order Limits, and workers may be from further afield within the District.
- 146 Census health data has been reviewed for Newark and Sherwood District, which includes the following:
- Self-reported anxiety<sup>36</sup> - Newark and Sherwood was in the lowest quintile (the lowest 20%) of all lower tier/unitary authorities in the UK;
  - Feeling life is worthwhile<sup>37</sup> - Newark and Sherwood was in the highest quintile (the top 20%) of all lower tier/unitary authorities in the UK;
  - Happiness<sup>38</sup> - Newark and Sherwood was in the second highest quintile (between the top 40% and the top 20%) of all lower tier/unitary authorities in the UK;
  - Life satisfaction<sup>39</sup> - Newark and Sherwood was in the second highest quintile (between the top 40% and the top 20%) of all lower tier/unitary authorities in the UK;
  - Cigarette smokers<sup>40</sup> - Newark and Sherwood was in the second lowest quintile (between the lowest 20% and lowest 40%) of all lower tier/unitary authorities in the UK; and
  - Adult obesity<sup>41</sup> - Newark and Sherwood was in the second highest quintile (between the top 40% and top 20%) of all lower tier/unitary authorities in the UK;

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<sup>36</sup> ONS (2023). The average rating of those that felt anxious yesterday (where 0 is 'not at all anxious' and 10 is 'completely anxious'), for adults aged 16 years and over, in the UK, for periods 04/2011-03/2012 to 04/2022-03/2023. <https://explore-local-statistics.beta.ons.gov.uk/indicators/wellbeing-anxiety> [accessed on 01/06/2025].

<sup>37</sup> ONS (2023). Average rating that the things they do in life are worthwhile (0 = 'not at all worthwhile', 10 = 'completely worthwhile') for people aged 16 and over, 2022-23. <https://explore-local-statistics.beta.ons.gov.uk/indicators/wellbeing-worthwhile> [accessed on 01/06/2025].

<sup>38</sup> ONS (2023). Average rating of happiness (0 = 'not at all happy', 10 = 'completely happy') for people aged 16 and over, 2022-23. <https://explore-local-statistics.beta.ons.gov.uk/indicators/wellbeing-happiness> [accessed on 01/06/2025].

<sup>39</sup> ONS (2023). Average rating of life satisfaction (0 = 'not at all satisfied', 10 = 'completely satisfied') for people aged 16 and over, 2022-23. <https://explore-local-statistics.beta.ons.gov.uk/indicators/wellbeing-satisfaction> [accessed on 01/06/2025].

<sup>40</sup> ONS (2023). The percentage of adults (18+) who state they currently smoke cigarettes (excluding e-cigarettes), in the United Kingdom, for 2012 to 2023. <https://explore-local-statistics.beta.ons.gov.uk/indicators/cigarette-smokers> [accessed on 01/06/2025].

<sup>41</sup> ONS (2023). The percentage of adults aged 18 and over classified as living with obesity, in England, for 16/11/2015-15/11/2016 to 16/11/2022-15/11/2023. <https://explore-local-statistics.beta.ons.gov.uk/indicators/overweight-adults> [accessed on 01/06/2025].

- 147 Other demographic statistics are provided in Chapter 13, Socioeconomics and Tourism [EN010162/APP/6.2.13], though are not relied on in this Chapter.

#### 16.4.7 Assessment of Health Effects

- 148 This section considers the effects identified as being scoped into the assessment, as set out in section 16.4.5.3.

##### 16.4.7.1 Construction and decommissioning phase pollutant emissions

- 149 Section 16.2, Air Quality, of this chapter, assesses the potential for significant effects on air quality, including those arising from dust and emissions from Non-Road Mobile Machinery (NRMM) and construction/decommissioning road traffic. The assessment was made in accordance with relevant guidance, which is aimed at establishing whether there is a risk of national air quality objectives (as set in the Air Quality Strategy for England<sup>42</sup>) being exceeded as a result of the Development. The conclusion (section 16.2.6.1) was that the levels of NRMM and road traffic generated by the Development during all phases is so low that predictions of air pollution levels is not required, and a detailed assessment is scoped out as not being required.
- 150 The Air Quality Strategy for England notes that “*Poor air quality is the biggest environmental threat to public health*”. The air quality objectives are set with the aim of protecting human health, however, as noted by UKHSA and OHID in their scoping response (see Table 16.3), human health has a “non-threshold” response to some pollutants, meaning that there is no lower limit to the concentration of a pollutant below which there would be no impact on health.
- 151 Impacts of the Development on air quality were screened out (in section 16.2.6.1) based on criteria set by the EPUK and IAQM<sup>43</sup> on the basis that there is no possibility of significant effects arising (see paragraph 6.10 of the EPUK/IAQM guidance). Table 6.3 of the guidance sets out descriptors of impacts, and paragraph 7.6 sets out that, “*often, it is possible to be very clear when an impact is sufficiently slight that it has no effect on receptors and can therefore be described unequivocally as ‘not significant’*”. On the basis of Table 6.3 of the guidance, the largest change in a pollutant concentration at which an impact would be not “substantial” is 2% of the air quality assessment level, which is generally the relevant air quality objective. It may reasonably be assumed, therefore, that the maximum increase in pollutant concentrations from the Development would be 2% of the relevant air quality objective. Generally, effects would be much lower than this, given that the Development impacts were less than this threshold, based on worst-case parameters, and in particular the worst-case month, with the worst-case month during the construction/decommissioning phase expected to be less than fifth of the threshold level. These levels would also be for short

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<sup>42</sup> DEFRA (2023). The air quality strategy for England.

<https://www.gov.uk/government/publications/the-air-quality-strategy-for-england> [accessed on 01/06/2025].

<sup>43</sup> EPUK and IAQM (2017). Land Use Planning and Development Control: Planning for Air Quality. <https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [accessed on 01/06/2025].

periods of time, with construction in any one area typically being less than a year.

152 There is one notably sensitive receptor in the vicinity of the construction routes, Brooklyn Care Home, Lodge Farm (on the A617 near Upton), in addition to numerous residential receptors, where it may be assumed some people are particularly sensitive to air quality.

153 As a conservative approach, therefore, it is assumed that the people who might experience any deterioration in air quality have a “poor health status”, consistent with the sensitivity of the population relevant to this impact as being **Medium** (in accordance with Table 16.4).

154 From the health impact magnitude of change criteria in Table 16.5, the magnitude of the effect is assessed as being **Low**, given that the increase in traffic from the Development would be for a temporary period only, that the level of increase is so low compared to the thresholds for quantitative air quality assessment, and that a small proportion of the population may be affected.

155 On this basis, in accordance with Table 16.6, the effect is assessed as being of **Minor** significance, which is not significant in terms of the EIA Regulations.

#### **16.4.7.2 Construction and decommissioning workers’ financial position**

156 Workers employed by the Development in the construction and decommissioning phases would benefit financially from that employment, increasing their ability to afford a healthy lifestyle, and potentially leading to a beneficial impact on their physical health (and therefore a reduction in concern/worry).

157 The Development would create a net 173 FTE jobs (see Chapter 13, Socioeconomics and Tourism, [EN010162/APP/6.2.13] section 13.9.1.1) over the construction period (and the decommissioning period is likely to be similar, though for a shorter time period). Chapter 13 assesses this as an impact of medium magnitude which would be a moderate, beneficial and significant effect on unemployment locally. This is not necessarily the same as a significant effect on health, however.

158 It is assumed that the population that might benefit from employment are of **Low** sensitivity (in accordance with Table 16.4).

159 From the health impact magnitude of change criteria in Table 16.5, the magnitude of the effect for the majority of the affected population is assessed as being **Low to Medium** (based on professional judgement, as the table does not clearly describe the impact being assessed).

160 On this basis, in accordance with Table 16.6, the effect is assessed as being of **Negligible** significance, which is not significant in terms of the EIA Regulations.

#### **16.4.7.3 Operation phase changes to recreational resources**

161 The changes in recreational resources proposed in the Masterplan (see Figure 5.2), as part of the Development, are assessed in Chapter 18, Recreation, [EN010162/APP/6.2.18] and summarised as:



- No recreational resources have been closed without suitable alternatives having been provided;
  - 7 public footpaths have been diverted, with the same start and end points and approximately the same length; and
  - 21 new permissive paths and 6 permissive bridleways have been proposed, designed to link with, and improve the ability and/or amenity to use the existing public rights of way network. This includes the creation of a new long-distance circular route, made partly from existing routes and partly from new permissive routes.
- 162 There will be a net increase in the quantity of recreational resources available, and this accords with the local heath strategy priorities (see section 16.4.3) of improving healthy lifestyles and tackling physical inactivity. The provision of more recreational routes does not necessarily, however, mean that they will be used more, or by more people, and particularly the people that might benefit most from healthier lifestyles and increased physical activity, than is currently the case. As a worst-case approach, therefore, it is assumed that the people who might benefit from these footpaths are people who already have a “good health status”, consistent with the sensitivity of the population relevant to this impact as being **Very Low** (in accordance with Table 16.4).
- 163 From the health impact magnitude of change criteria in Table 16.5, the magnitude of the effect for the majority of the affected population is assessed as being **Medium** (based on professional judgement, as the table does not clearly describe the impact being assessed).
- 164 On this basis, in accordance with Table 16.6, the effect is assessed as being of **Negligible** significance, which is not significant in terms of the EIA Regulations.

#### 16.4.8 Conclusion

- 165 Key determinants to the protection of human health, including mental health aspects associated with changes to amenity as a result of the Development<sup>44</sup>, have been considered as part of this HHIA. The outcome of the HHIA indicates that the Development is unlikely to negatively affect people’s health and wellbeing in its widest sense. 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.
- 166 The only adverse effect scoped into the assessment was potential physical effects arising from slightly reduced air quality as a result of construction/decommissioning plant and traffic. This is assessed as being of **minor** significance, based on worst-case assumptions, which is **not significant** in terms of the EIA Regulations.

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<sup>44</sup> The ES assesses the likely significant effects of the Development during construction, operation and decommissioning. Effects as a result of the development process itself including consultation, environmental assessment and consent applications are a separate consideration outside of the scope of this ES.

- 167 Potential beneficial effects on health include effects the Development will have through employment and the creation of more recreational routes. These are assessed as being of **negligible** significance on human health, which is **not significant** in terms of the EIA Regulations.
- 168 In terms of NPS EN-1, there is no unacceptable risk to human health or public safety from the Development.

## 16.5 MAJOR ACCIDENTS OR DISASTERS

- 169 The Scoping Report prepared by the Applicant in November 2023 (TA A3.1 [EN010162/APP/6.4.3.1]) identified a list of potential major accidents or disasters that could affect the Development or potentially be caused or influenced by the Development. None of these were scoped out of the assessment, as confirmed in the Scoping Opinion issued by the Planning Inspectorate in December 2023 (TA A3.2 [EN010162/APP/6.4.3.2]).
- 170 These are covered in this ES, at the locations set out below:
- Flood – Chapter 9, Water Resources [EN010162/APP/6.2.9];
  - Fire – section 16.5.1, below;
  - Road Accidents – Chapter 14, Traffic and Transport [EN010162/APP/6.2.14];
  - Rail Accident – TA A16.1, Glint and Glare [EN010162/APP/6.4.16.1];
  - Aircraft Disaster – TA A16.1, Glint and Glare [EN010162/APP/6.4.16.1];
  - Flood Defence Failure – Chapter 9, Water Resources [EN010162/APP/6.2.9];
  - Utilities Failure (e.g., gas, electricity, water, sewage, oil, communications) – section 16.5.2, below;
  - Mining/Extractive Industry – section 16.5.3, below; and
  - Plant Disease – Chapter 8, Ecology and Biodiversity [EN010162/APP/6.2.8].

### 16.5.1 HSE Consultation

- 171 In response to consultation on the PEIR, the Health and Safety Executive (HSE) confirmed that the Order Limits were not within any HSE consultation zones.
- 172 It also commented, in relation to hazardous substance consents, that it was not clear whether the applicant has considered the hazard classification of any chemicals that are proposed to be present. This has been considered, and there are no hazardous substances proposed to be stored or used at or above the controlled quantities, and neither a hazardous substance consent nor a hazardous substances planning consent will be required.
- 173 The HSE states that, in PEIR, it was not clear if there was consideration of risk assessments arising from the development's vulnerability to major accidents, and recommended that this is considered further in line with Planning Inspectorate's advice on working with The Health and Safety Executive<sup>45</sup>. The Development will not be required to have a permit under

<sup>45</sup> Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-working-with-public-bodies-in-the-infrastructure-planning-process-annex-g-the-health-and> [accessed on 24/05/2025].

the COMAH Regulations<sup>46</sup>. The Development will therefore meet the requirement of health and safety legislation in respect of major accidents caused by the Development itself. Safety concerns related to any work activity would be addressed under the Health and Safety at Work, etc Act 1974<sup>47</sup> and its relevant statutory provisions via post-consent design and risk assessments (although potential concerns related to this would not comprise “major accidents or disasters”).

### 16.5.2 Battery Safety

- 174 Work no. 5a, BESS, includes a battery energy storage system (BESS). As set out in Chapter 5, Development Description, [EN010162/APP/6.2.5] Table 5.9, this could contain up to 754 battery containers and associated inverters, transformers and cabling. 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<sup>48</sup>, “*a number of high profile incidents have taken place and learning from these incidents continues to emerge*”.
- 175 Potential issues arise when a battery fault occurs, causing the battery to overheat. If overheating continues unchecked, certain battery technologies have risk of thermal runaway and a fire. The fire could spread to other battery cells within the same container, and potentially from container to container, if the fire is sufficiently strong and the containers are close enough and/or without intervening fire protection. The fire can cause toxic smoke, and fighting this with water can lead to contaminated water on the ground around the containers. This is a theoretical worst-case scenario, because well-established measures will be in place to prevent this occurring, as set out in this section.

#### 16.5.2.1 Siting

- 176 The proposed BESS unit, within Work no. 5 (as shown on Figure 5.1 [EN010162/APP/6.3.5.1]), is approximately 550 m northeast, at its closest point, from the nearest sensitive receptors, which are residential properties at Flash Farm. The next nearest are properties in Kelham, approximately 750 m northeast of the BESS. The BESS is located outside of any environmentally sensitive areas. The BESS has therefore been sited in a suitable location.

#### 16.5.2.2 Legislation

- 177 There is a substantial body of legislation governing the construction and operation of a BESS facility, which is set out in section A5.4.1.5 of TA A5.4, Outline Fire Safety Management Plan (FSMP) [EN010162/APP/6.4.5.4].

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<sup>46</sup> HMSO (2015). The Control of Major Accident Hazards Regulations 2015. UK Statutory Instruments 2015 No. 483. Available at: <https://www.legislation.gov.uk/ukSI/2015/483/contents> [accessed on 24/05/2025].

<sup>47</sup> HMSO (2025). Health and Safety at Work etc. Act 1974. Available at: <https://www.legislation.gov.uk/ukpga/1974/37/contents> [accessed on 24/05/2025].

<sup>48</sup> National Fire Chiefs Council (2022). Grid Scale Battery Energy Storage System planning – Guidance for FRS. <https://nfcc.org.uk/wp-content/uploads/2023/10/Grid-Scale-Battery-Energy-Storage-System-planning-Guidance-for-FRS.pdf> [accessed on 01/06/2025].

- 178 This legislation (as may be amended prior to construction of the BESS) will be complied with.

### 16.5.2.3 Design and Operational Management

- 179 An Outline Fire Safety Management Plan (FSMP) has been prepared for the Development and is included as TA A5.4 [EN010162/APP/6.4.5.4]. This Outline FSMP is relatively detailed, as it is based on the approved FSMP that was prepared for the consented Staythorpe BESS project. It includes a requirement to provide a 3 m spacing between battery containers, two emergency access points that approach the compound from different directions, onsite water provision of 228 m<sup>3</sup> and cooling surrounding areas rather than containers to reduce the risk of creating contaminative fire water.
- 180 A DCO Requirement will ensure that a full and final FSMP will be developed, based on the Outline FSMP, and agreed with Newark and Sherwood Council in consultation with Nottinghamshire Fire and Rescue Service prior to the start of construction of the Work no. 5a, BESS.
- 181 Given that the measures set out in the Outline FSMP are consistent with an approved FSMP for a comparable BESS project, there is confidence in its acceptability. On this basis, the risk associated with a potential fire in a battery unit is **not a significant effect** (in accordance with the general methods for assessing significance in this ES as set out in Section 2.3.5 of Chapter 2, EIA [EN010162/APP/6.2.2]).

### 16.5.3 Utilities Failure

- 182 The only utility with any substantial connection to the Development is the electrical grid. The potential effect on the road network is covered in chapter 14, with no significant effects identified. No other utility has the potential to be affected by the Development, nor to affect the Development.
- 183 The national electricity grid can operate without the Development. Should the Development go off-line due to an accident or some other reason, the grid will continue to operate.
- 184 If there is an accident or disaster that causes the grid elsewhere to cease to operate, this will not affect the Development. Essential systems that may import small quantities of electricity from the grid (when the Development is not itself generating electricity) will have battery or other back-up and will not be affected. The Development may support the grid by continuing to export electricity, even if other generating stations are no longer able to, as long as the Staythorpe substation and its immediate connections continue to operate. In this way, the Development assists the grid to be more robust to accidents and disasters. This is a beneficial effect that is not significant (in accordance with the general methods for assessing significance in this ES as set out in Section 2.3.5 of Chapter 2, EIA [EN010162/APP/6.2.2]).

### 16.5.4 Mining and Extractive Industry

- 185 The Development has no potential to have an impact on any mining or extractive industry due to an accident or disaster. No such industry is present within the Order Limits, and no activity of the Development has potential to affect off-site mining or extractive industry operations.

- 186 There is potential risk to the Development of subsidence, if subsidence is likely to occur, which is most likely as a result of historic underground mining and which would be most likely to substantially affect operation of the Development if serious damage was caused to the substations (Work no.s 4 and 5b), or BESS (Work no. 5a). There are few records of extractive industry activity under land within the Order Limits, these being limited to oil extraction in the Egmonton Oil boreholes and wells in the northern part of the Order Limits and not where any substations or BESS infrastructure is proposed. Chapter 10, Ground Conditions and Land Contamination [EN010162/APP/6.2.10], identifies that risks associated with these features have been assessed as being 'not applicable' or 'low' due to the shallow nature of excavations proposed as part of the Development and the absence of full-time future users during operation; further assessment was not required.
- 187 Hence there is assumed to be no potential for historic or current mining or extractive industry to lead to land collapse or subsidence that could affect the Development. Risks from, and to, the mining and extractive industry are assessed as being **not significant** (in accordance with the general methods for assessing significance in this ES as set out in Section 2.3.5 of Chapter 2, EIA [EN010162/APP/6.2.2]).

### 16.5.5 Summary

- 188 With the implementation of a Fire Safety Management Plan to be submitted to NSDC in consultation with Nottinghamshire Fire and Rescue Service, there are no significant effects to, or from, the Development associated with major accidents and disasters.

## 16.6 ELECTROMAGNETIC FIELDS

- 189 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.
- 190 Electric fields depend on the operating voltage of the equipment. Magnetic fields depend on the electrical currents flowing and are not significantly limited by most common materials. Typically, ground-level magnetic fields from underground cables fall much more rapidly with distance than those from a corresponding overhead line but can be higher at small distances from the cable.
- 191 NPS EN-5<sup>49</sup>, paragraph 2.9.49, and guidance<sup>50</sup> published by the Department for Energy and Climate Change (DECC – since renamed the Department for

<sup>49</sup> DESNZ (2023). National Policy Statement for electricity networks infrastructure (EN-5). <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [accessed on 01/06/2025].

<sup>50</sup> DECC (2012). Power Lines: Demonstrating compliance with EMF public exposure guidelines – A voluntary Code of Practice. Available at:



Energy Security and Net Zero) in 2012 suggest that guidelines for both public and occupational exposure published by the International Commission on Non – Ionizing Radiation Protection (ICNIRP) in 1998 should be taken into account. NPS EN-5 states that, *“The reference levels are such that compliance with them will ensure that the basic restrictions are not reached or exceeded”*.

192 The DECC guidance states that *“overhead power lines at voltages up to and including 132 kV, underground cables at voltages up to and including 132 kV and substations at and beyond the publicly accessible perimeter”* are not capable of exceeding the ICNIRP exposure guidelines and therefore no assessment is required for these nor other types of infrastructure listed on the Energy Networks Association website.

193 Therefore, the scope of the assessment of EMFs in the ES 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 Work no. 5b, 400 kV Compound, area and Work no.s 7, Consented Staythorpe BESS and Connection, and 6, the existing National Grid Staythorpe Substation, which will be a 400 kV cable. The Work no. 5a, BESS, would connect into the Work no. 5b, 400 kV Compound, at a voltage of 132 kV or less.

194 The assessment follows the approach set out in the DECC guidance.

#### 16.6.1 Threshold Values and Methods

195 The DECC guidance refers to the 1998 ICNIRP exposure guidelines: *“The 1998 ICNIRP exposure guidelines specify a basic restriction for the public which is that the induced current density in the central nervous system should not exceed 2 mA m<sup>-2</sup>. The Health Protection Agency... specify that this induced current density equates to uniform unperturbed fields of 360 μT for magnetic fields and 9.0 kV m<sup>-1</sup> for electric fields. Where the field is not uniform, more detailed investigation is needed. Accordingly, these are the field levels with which overhead power lines (which produce essentially uniform fields near ground level) shall comply where necessary. For other equipment, such as underground cables, which produce non-uniform fields, the equivalent figures will never be lower but may be higher and will need establishing on a case-by-case basis in accordance with the procedures specified by HPA”*.

196 The DECC guidance sets out that these thresholds should apply at residential and other properties where people spend an appreciable amount of time. At other locations, the ICNIRP occupational guidelines (rather than general public guidelines) would apply.

197 The DECC guidance states that *“when evidence of compliance with exposure guidelines is needed, the following will be provided: • A calculation or measurement of the maximum fields (ie directly under the line, or directly above the cable)”*.

198 If this maximum value is less than the ICNIRP guideline levels, it may be assumed that all fields and exposures from that source will be compliant. If

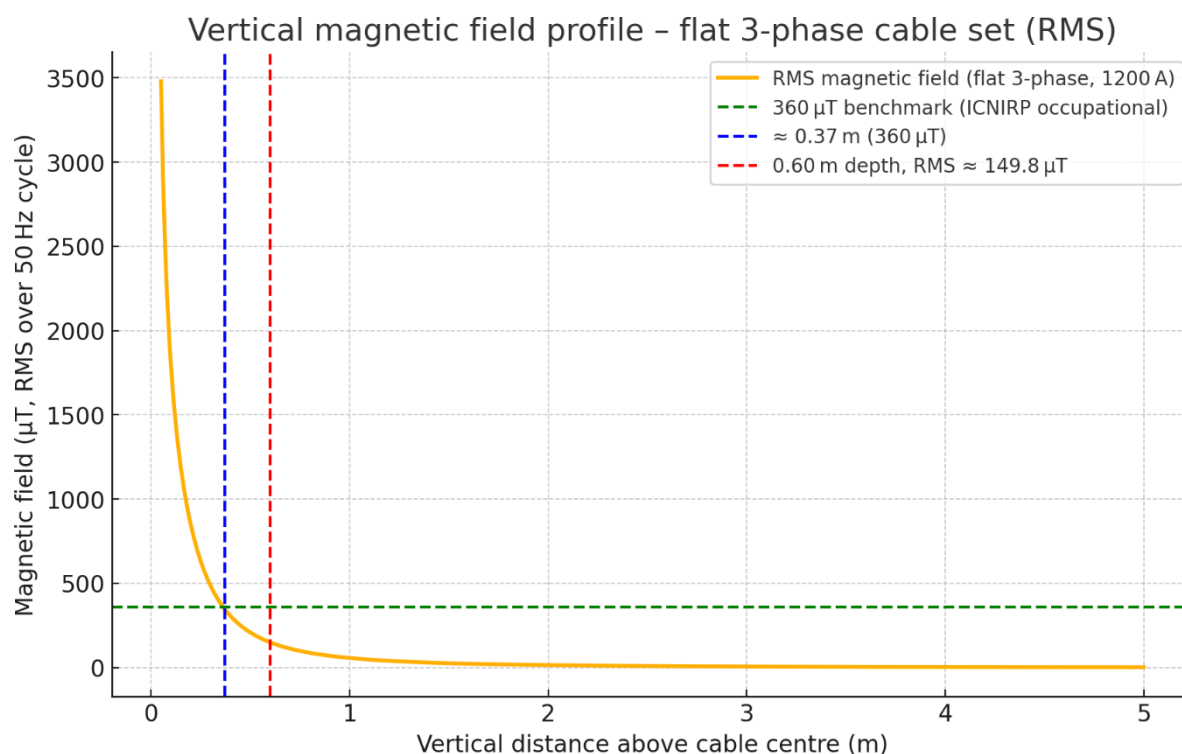


this maximum value exceeds the ICNIRP guideline levels, then it would be necessary to provide a calculation or measurement of the field at the location of the closest property at which the public exposure guidelines apply.

## 16.6.2 Predicted Values

- 199 The magnetic field strength has been calculated as a function of distance from the cable, as shown in Inset 16.1, below. The values shown are for a 400 kV, 1,200 A, underground cable.

### ***Inset 16.1:***



- 200 The 360  $\mu\text{T}$  threshold value occurs at a distance of c. 37 cm from the cable. At all distances greater than this, it may be assumed that all fields and exposures from that source will be compliant. The 400 kV cable for the Development is expected to be installed at a depth of at least 60 cm below the surface of the ground. At this distance from the cable (shown by the red dashed line in Plate 16.1), the magnetic field strength is 149.8  $\mu\text{T}$ , which is less than the 360  $\mu\text{T}$  threshold value. Hence, at all locations where members of the public may be, the magnetic field strength is below the threshold value.
- 201 For reference, the shortest distance from a residential property to the nearest part of a Work no. that could contain a cable is 20 m, using the Work no. definitions set out in Chapter 5, Development Description [EN010162/APP/6.2.5]; namely, Work no.s 1 (solar PV), 2 (cables), 4 (intermediate substations), 5a (BESS), 5b (400 kV compound), 6 (consented Staythorpe BESS) and 7 (National Grid Staythorpe Substation). In practice, the 400 kV cable is not likely to be at the extreme edge of the Work area; the Illustrative Design (shown in Figure 5.4 [EN010162/APP/6.3.5.4] shows the 400 kV cable as being 50 m from the nearest residential property.
- 202 **No significant effects** from electromagnetic fields are anticipated.

## 16.7 WASTE

### 16.7.1 Introduction

- 203 The EIA Regulations<sup>51</sup>, Schedule 4, 1(d), state that the ES should include *“an estimate, by type and quantity, of expected residues and emissions (... quantities and types of waste produced during the construction and operation phases”*.
- 204 However, waste is not one *“of the factors specified in regulation 5(2) likely to be significantly affected by the development”* (as noted in the EIA Regulations, Schedule 4, 4, as being likely to be significantly affected). Depending on how the waste is handled, it could potentially have effects on other categories of environmental receptor, which are assessed in other chapters:
- Ecology and Biodiversity, Chapter 8 [EN010162/APP/6.2.8];
  - Water Resources, Chapter 9 [EN010162/APP/6.2.9];
  - Ground Conditions and Land Contamination, Chapter 10 [EN010162/APP/6.2.10];
  - Climate Change, Chapter 15 [EN010162/APP/6.2.15]; and
  - Agricultural Land, Chapter 17 [EN010162/APP/6.2.17].
- 205 The principal legislation controlling the handling of waste in England is the Environmental Protection Act 1990. The Applicant is legally obliged to comply with the requirements of this. Beyond the minimum requirements, the main environmental control document for each phase of the Development includes provision for a Site Waste Management Plan (SWMP). Each of these will be secured via a DCO Requirement. They are:
- Outline Construction Environmental Management Plan (outline CEMP) (TA A5.3 [EN010162/APP/6.4.5.3]);
  - Outline Operational Environmental Management Plan (outline OEMP) (TA A5.5 [EN010162/APP/6.4.5.5]); and
  - Outline Decommissioning and Restoration Plan (outline DRP) (TA A5.6 [EN010162/APP/6.4.5.6]), which includes provision for a Decommissioning Environmental Management Plan, including an SWMP.
- 206 The application of these controls will mean that waste is handled in accordance with the law and with best practice, and as a result there are **no likely significant effects associated with waste** in respect of the environmental aspects set out above. This assessment is in accordance with the general methods for assessing significance in this ES as set out in Section 2.3.5 of Chapter 2, EIA [EN010162/APP/6.2.2].
- 207 IEMA Guidance<sup>52</sup> suggests that the sensitive receptor for waste is landfill capacity. This is commented on in Section 16.7.3.3, below.

<sup>51</sup> HMSO (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: <https://www.legislation.gov.uk/ukxi/2017/572/contents> [accessed on 01/06/2025].

<sup>52</sup> IEMA (2020). Materials and Waste in Environmental Impact Assessment. Available at: <https://www.iema.net/content/materials-and-waste-in-environmental-impact-assessment-march-2020/> [accessed on 24/05/2025].

### 16.7.2 Consultation

- 208 In the EIA Scoping Opinion [EN010162/APP/6.4.3.2], the Planning Inspectorate noted that,
- 209 *“an assessment of waste generation during the operational phase can be scoped out of the ES, provided that the ES details the anticipated operational waste streams, including solar infrastructure, water or other disposal from welfare and grass cuttings / vegetation management.*
- 210 *The ES should also explain if extensive replacement of solar panels or other infrastructure is likely to be required during the lifetime of the Proposed Development. If significant replacement of infrastructure is required, the ES should provide an assessment of this, including any inter relationships such as traffic movement.”*
- 211 These are set out in Section 16.7.3.2, below.
- 212 In its response to consultation on the EIA Scoping Report [EN010162/APP/6.4.3.1], the Environment Agency noted, in relation to the Producer Responsibility Regulations, that,
- 213 *“Under the Regulations, industrial battery producers are obliged to:*
- 214 *take back waste industrial batteries from end users or waste disposal authorities free of charge and provide certain information for end users;*
- 215 *ensure all batteries taken back are delivered and accepted by an approved treatment and recycling operator;*
- 216 *keep a record of the amount of tonnes of batteries placed on the market and taken back”...*
- 217 *“The Waste Batteries and Accumulators Regulations 2009 also introduced a prohibition on the disposal of batteries to landfill and incineration. Batteries must be recycled or recovered by approved battery treatment operators or exported for treatment by approved battery exporters only.”*
- 218 In response to consultation on the PEIR, Nottinghamshire County Council (NCC) commented on decommissioning waste, and in particular the solar PV modules:
- 219 *“whilst preferable that the panels are fully recycled, such an industry is not yet established, particularly at the scale that would be required for this scheme and others. Other solar NSIP schemes in the area, for example Gate Burton, considered the worse-case scenario that the panels would need to be disposed of.*
- 220 *The County Council believes such an approach should continue to be taken, with consideration given to whether additional disposal capacity requirements would be required with reference to the current capacity forecasts set out in the Nottinghamshire and Nottingham Waste Needs Assessment that accompanies the emerging Waste Local Plan. This would lead to potential understanding of capacity requirements, which the Council could consider in future Plans.”*
- 221 Estimates of waste arisings during decommissioning are set out in Section 16.7.3.3.

- 222 Some comments have been provided by members of the public in response to consultation on the PEIR, including concern about a potential increase in fly-tipping. All points where access and egress could be taken from the public highway into the parts of the Order Limits containing infrastructure (Work no.s 1, 4, 5a, 5b, 6 and 7) will be gated. The Development will not increase access to off-road locations for vehicles.

### 16.7.3 Estimates of Waste

#### 16.7.3.1 Construction Phase

- 223 The majority of construction equipment will be delivered to site for assembly and installation (mounting structures) and connection (solar PV modules) and the only expected waste streams would be packaging, small quantities of off-cuts and other excess purchased materials that cannot be used on subsequent projects by the Applicant or contractors, and *de minimis* levels of office/welfare waste.
- 224 Excavated soil would be either stored for re-use as described in the Outline Soil Management Plan (TA A17.2 [EN010162/APP/6.4.17.2]) or re-used within the Order Limits as part of the landscaping described in the Outline Landscape and Ecological Management Plan (TA A5.1 [EN010162/APP/6.4.5.1]) and Sustainable Drainage Systems (SuDS) described in the Flood Risk Assessment (TA A9.1 [EN010162/APP/6.4.9.1]).
- 225 Clearly there is an incentive for the Applicant to avoid the generation of waste during construction, as this would represent a cost, for no benefit. However, some waste is inevitable, and worst-case estimates of the principal waste arisings (excluding *de minimis*), are set out in Table 16.8.

**Table 16.8: Principal Waste Arisings During Construction**

Waste Category	Quantity (te)	Commentary
Concrete	1	Excess/spills
Aggregate	360	Excess/spills
PV modules	293	Faulty modules, transport damage
PV support structures	683	Faulty cuts, excess
Copper (from cables)	15	Contingency (excess)
Plastic	299	PV module packaging
Paperboard	1,493	PV module packaging

#### 16.7.3.2 Operation Phase

- 226 During the operation phase of the Development the site would be unmanned, although given the scale of the Development maintenance personnel would be expected to be present on site most days. Waste routinely arising could include:
- Welfare facility waste;
  - Office waste; and
  - Routine maintenance waste.

- 227 These elements are de minimis, and are not considered further.
- 228 Cut grass in Work no. 1 Solar PV areas, if the land is not (sufficiently) grazed by sheep, will be managed and will not be left in piles to rot, as set out in section A5.1.6 of TA A5.1, Outline Landscape and Ecology Management Plan (LEMP) [EN010162/APP/6.3.5.1].
- 229 Some components are anticipated to need replacing during the operation phase. An estimate of the waste arising from replacement components during the operation phase is set out in Table 16.9. The transport related to these activities is assessed in ES Chapter 14, Traffic and Transport [EN010162/APP/6.2.14].

**Table 16.9: Principal Waste Arisings During Operation**

Waste Category	Quantity (te)	Commentary
PV modules	5,859	10% replacement
PV support structures	6,832	10% replacement
BESS cells	11,466	150% replacement
Inverters	4,625	150% replacement
Transformers	51	5% replacement

- 230 PV panels, inverters, BESS and transformers are all electrical equipment, and the PV support structures are metal. All of these would be fully recycled. The management of this waste would be set out in an operation phase waste management plan as part of the Operational Environmental Management Plan (OEMP), which is required to be finalised in accordance with the Outline OEMP (TA A5.5 [EN010162/APP/6.4.5.5]).

### **16.7.3.3 Decommissioning Phase**

- 231 All of the Development (other than vegetation) is assumed, as a worst-case, to be removed at the decommissioning stage although, as set out in the Outline Decommissioning and Restoration Plan (DRP; TA A5.6 [EN010162/APP/6.3.5.6]), the substation elements and access tracks may be retained, subject to the agreement of this in the final DRP. The final DRP, which will accord with the Outline DRP and which will be secured by DCO Requirement to be prepared prior to decommissioning, will include estimates of waste arising at that time, and how and where they will be disposed of, based on specific proposals of what elements will be decommissioned.
- 232 An estimate of the principal waste arisings from the complete removal of components at decommissioning (excluding de minimis) is set out in Table 16.10.

**Table 16.10: Principal Waste Arisings During Decommissioning**

Waste Category	Quantity (te)
Concrete	640
Aggregate	36,000
PV modules	58,585
PV support structures	68,320
Copper (cables)	736
BESS cells	7,644
Inverters	3,084
Transformers	1,020

233 *Consideration of Landfill Capacity*

234 As noted in Section 16.7.2, NCC provided consultation responses requesting that the ES include consideration of whether additional disposal capacity requirements would be required with reference to the current capacity forecasts set out in the Nottinghamshire and Nottingham Waste Needs Assessment that accompanies the emerging Waste Local Plan. NCC referred to the Gate Burton Solar Park application document entitled “Waste”, suggesting an equivalent approach should be taken.

235 The waste assessment for Gate Burton Energy Park (PINS Project Reference EN010131, document EN010131/APP/8.33), set out why a meaningful assessment of potential waste arisings against existing landfill capacity is not possible. This references the Institute of Environmental Management & Assessment (2020) “Guide to Materials and Waste in Environmental Impact Assessment” (the IEMA Guide)<sup>53</sup>.

236 These points and others are applicable to this Development:

- There is no published information on landfill capacity at 2069, the expected decommissioning date;
- The Nottinghamshire and Nottingham Waste Needs Assessment<sup>54</sup> states that “*In conclusion, the capacity for CD&E waste recycling remains at a surplus during the plan period, although deposit to land capacity is likely to be full earlier in the plan period. The capacity available for inert landfill declines as the void space in the landfill sites is filled, with a deficit in capacity likely to arise during the latter part of the plan period under the low-medium recycling scenario.*” The prediction is therefore that there will be no capacity for any further CD&E waste before the end of the plan period (which is 2038, 30 years earlier than the Development’s expected decommissioning date). The only reasonable assumption is therefore that either additional capacity will be

<sup>53</sup> IEMA (2020). Materials and Waste in Environmental Impact Assessment. Available at: <https://www.iema.net/content/materials-and-waste-in-environmental-impact-assessment-march-2020/> [accessed on 24/05/2025].

<sup>54</sup> Nottinghamshire County Council (2023). The Nottingham and Nottinghamshire Waste Needs Assessment. Available at: <https://www.nottinghamshire.gov.uk/media/5082576/waste-needs-assessment-2023.pdf> [accessed on 24/05/2025].



made available, or alternatives to landfill will be developed to meet capacity. This would be addressed in the final DRP as noted above;

- The IEMA Guide recognises this difficulty and states: “*Due to uncertainties relating to future technologies and infrastructure, this first edition of the guidance does not incorporate a proposed methodology to assess impacts and effects during decommissioning or end of first life.*”;
- The construction and decommissioning waste recovery rate for England is approximately 92.6% (2020) which is an increase of 3% from the 2010 figure<sup>55</sup>; and
- Arising materials will be recycled, where this is practicable, which is expected to be entirely or almost entirely. Solar panel recycling exists already, in 2024, despite the solar PV industry only having been substantially active in the UK for approximately 15 years and recycling having been a waste priority for only c. 35 years. By the time of decommissioning of the Development, in c. 2070, it is highly likely that solar PV recycling will be a well-developed and active industry<sup>56</sup>. It is fully expected that the metals comprising the cabling, solar PV mounting pole structures, inverters/transformers and fencing as well as other components, including inert waste, will be recycled to at least the extent it is now.

237 The decommissioning phase effect of the Development on landfill capacity is therefore assessed as **negligible**, and **not significant** in terms of the EIA Regulations.

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<sup>55</sup> DEFRA (2024). Official UK Statistics on Waste. Table 7. Available at: <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste> [accessed on 24/05/2025].

<sup>56</sup> It is not considered to be realistic that there will not be a well-developed solar PV recycling industry by c. 2070. Legislation and financial regulatory drivers relating to resource use and waste management would have to significantly relaxed compared to the present day, which goes against current trends and logic based on resources becoming more scarce and the impacts of disposal of waste being amplified due to increased pressure on land. Already, in 2025, there exists the ability to recycle solar PV modules in numerous locations, despite the market for this being very small, with most solar PV modules ever installed in the UK still being within their expected lifetimes. In EIA terms, it is “not likely” that the main waste streams from the Development at decommissioning will be disposed of rather than recycled.