EAST YORKSHIRE SOLAR FARM

East Yorkshire Solar Farm

EN010143

Environmental Statement

Volume 1, Chapter 14: Human Health
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14.1 Introduction

14.1.1 This chapter of the Environmental Statement (ES) presents the findings of an assessment of the likely significant effects on Human Health as a result of the proposed East Yorkshire Solar Farm (hereafter referred to as the Scheme). For a description of the Scheme, refer to **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.

14.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on Human Health, during the construction, operation, and decommissioning phases.

14.1.3 This chapter is supported by the following appendix in **ES Volume 2 [EN010143/APP/6.2]**:

a. **Appendix 14-1: Legislation, Policy and Guidance (Human Health).**

14.1.4 This chapter is supported by the following figure in **ES Volume 3 [EN010143/APP/6.3]**:

a. **Figure 14-1: Health and Wellbeing Study Area Wards**.

14.1.5 Human health interfaces with many other topics and as such, this chapter should be read in conjunction with the following chapters in **ES Volume 1 [EN010143/APP/6.1]:**

a. **Chapter 9: Flood Risk, Drainage and Surface Water**;

b. **Chapter 10: Landscape and Visual Amenity**;

c. **Chapter 11: Noise and Vibration**;

d. **Chapter 12: Socio-Economics and Land Use**;

e. **Chapter 13: Transport and Access**; and

f. **Chapter 16: Other Environmental Topics** (including Air Quality).

14.1.6 A glossary and list of abbreviations are defined in **Chapter 0: Table of Contents, Glossary and Abbreviations, ES Volume 1 [EN010131/APP/3.1].**

14.1.7 A Non-Technical Summary of the ES is presented in **ES Volume 4 [EN010143/APP/6.4]**.

14.2 Legislation, Policy and Guidance

14.2.1 Legislation, planning policy, and guidance relating to Human Health and pertinent to the Scheme comprises of the documents listed below. More detailed information can be found in **Appendix 14-1, ES Volume 2 [EN010143/APP/6.2].**

14.2.2 Legislation that has been considered in the assessment comprises:

a. The Health and Social Care Act 2022 (Ref. 14-1).

14.2.3 National policy that has been considered in the assessment includes:

a. Overarching National Policy Statement (NPS) for Energy (EN-1) (2011) (Ref. 14-2);

b. NPS for Renewable Energy Infrastructure (EN-3) (2011) (Ref. 14-3);

c. NPS for Electricity Networks Infrastructure (EN-5) (2011) (Ref. 14-4);

d. Draft Overarching NPS for Energy (EN-1) (2023) (Ref. 14-5);

e. Draft NPS for Renewable Energy (EN-3) (2023) (Ref. 14-6);

f. Draft NPS for Electricity Networks Infrastructure (EN-5) (2023) (Ref. 14-7); and

g. National Planning Policy Framework (NPPF) (2023) (Ref. 14-8).

14.2.4 National guidance that has been considered in the assessment includes:

a. National Health Service (NHS) Long Term Plan (2019) (Ref. 14-9);

b. Spatial Planning for Health: An evidence resource for designing healthier places (2017) (Ref. 14-10);

c. Public Health England (PHE) Strategy 2020 to 2025 (2020) (Ref. 14-11); and

d. National Planning Practice Guidance (NPPG) (2019) (Ref. 14-12).

14.2.5 Local policy that has been considered in the assessment includes:

a. East Riding of Yorkshire Local Plan (2016) (Ref. 14-13);

b. East Riding of Yorkshire Local Plan Update 2020-2039 (2022) (Ref. 14-14);

c. Selby District Core Strategy Local Plan (2013) (Ref. 14-15); and

d. Selby District Publication Version Consultation Local Plan (2022) (Ref. 14-16).

14.2.6 Local guidance that has been considered in the assessment includes:

a. East Yorkshire Health and Wellbeing Strategy (2019) (Ref. 14-17); and

b. North Yorkshire Health and Wellbeing Strategy (2016) (Ref. 14-18).

14.3 Consultation

14.3.1 A scoping exercise was undertaken in September 2022 to establish the content of the assessment and the approach and methods to be followed.

14.3.2 The Scoping Report (**Appendix 1-1, ES Volume 2 [EN010143/APP/6.2]**) was issued on 9 September 2022 and records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Scheme on Human Health.

14.3.3 The Scoping Opinion was received on 20 October 2022 (**Appendix 1-2, ES Volume 2 [EN010143/APP/6.2]**). The feedback received from stakeholders

at scoping and Applicant responses in relation to Human Health are presented in **Appendix 1-3, ES Volume 2 [EN010143/APP/6.2].** This is also summarised in **Table 14-1**.

Table 14-1. Scoping Opinion Responses (Human Health)

Consultee	Summary of comment	How matter has been addressed	Location of response
Planning Inspectorate	The ES should be informed by the outcome of assessments relating to flood risk, drainage and surface water/water quality.	Assessments relating to the outcomes of flood risk, drainage and surface water/water quality have been considered.	This chapter, section 14.7
Planning Inspectorate	The ES should demonstrate the measures taken to avoid the potential for Electric and Magnetic Fields (EMF) effects and considers the risks to Human Health arising from EMF to the extent that it is relevant to the nature of the development and where significant effects are likely to occur.	The impacts of EMFs have been scoped out of this assessment. The impacts of EMF are demonstrated to be not significant.	The justification for this can be found in section 16.8 of **Chapter 16: Other Environmental Topics** (Electric and Electro-magnetic Fields), **ES Volume 1 [EN010143/APP/6.1].**
Planning Inspectorate	The ES should confirm the threshold for determination of a significant effect in relation to human health impacts so that such effects can be described.	There are no specific thresholds for the determination of a significant effect in relation to human health. Significance of effect reflects the relationship between the scale of effect (magnitude) and the sensitivity of the affected receptor. Significance criteria of human health effects have been	Criteria for receptor sensitivity, impact magnitude and the significance of effect matrix can be found in section 14.4 of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
		assessed based on expert judgement and professional judgement of the author.	
UK Health Security Agency	Proposals do not appear to consider possible health impacts of EMFs. The ES should either confirm that the Proposed Development does not impact any receptors from potential sources of EMF, or ensure that an adequate assessment of the possible impacts is undertaken and included in the ES.	The impacts of EMFs have been scoped out of this assessment, as the impacts of EMF are demonstrated to be not significant.	The justification for this can be found in section 16.8 of **Chapter 16: Other Environmental Topics** (Electric and Electro-magnetic Fields), **ES Volume 1 [EN010143/APP/6.1].**
UK Health Security Agency (UKHSA)/ Office for Health Improvement and Disparities (OHID)	An assessment of significance will be required to form part of the ES and should include specific evaluation of vulnerable and disadvantaged populations (other than deprivation). It is strongly advised that any proposed approach is agreed with OHID/UKHSA and the local public health team.	In line with IEMA Guidance *IEMA Guide to Determining Significance for Health* published in November 2022, this chapter sets out a significance assessment of the potential Human Health effects of the Scheme. Additional consultation has been undertaken with OHID and the public health teams at East Riding of Yorkshire and North Yorkshire County Councils to agree the approach to the assessment.	This chapter, section 14.4 sets out the significance methodology. Vulnerable populations are considered within the Baseline (section 14.5) and Assessment of Impact (section 14.7) sections of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response

14.3.4 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEI Report), between 9 May and 20 June 2023. Responses to this statutory consultation are presented in the **Consultation Report [EN010143/APP/5.1]**. **Table 14-2** outlines the statutory consultation responses relating to Human Health and how these have been addressed through the ES.

14.3.5 Further detail on consultation can also be found in **ES Chapter 4: Consultation, ES Volume 1 [EN010143/APP/6.1]**.

Table 14-2. Statutory consultation responses (Human Health)

Consultee	Summary of comment	How matter has been addressed	Location of response
Foggathorpe Parish Council	The Council has been consulting with parishioners and concludes that the vast majority of parishioners are against the Scheme. The Council did not find one person who agreed with the Scheme. The main reasons given for these views included: the health and wellbeing of residents and the fear of increased crime in the area.	The likely effects of the Scheme relating to the health and wellbeing of residents have been considered in this chapter, with consideration given to: effects on healthcare services, social infrastructure, noise and vibration, air pollution, dust and odours, access to open space and active travel, access to employment and training and social cohesion and neighbourhoods. The Scheme incorporates fencing and various security measures such as lighting, CCTV and security guards which will mitigate against the risk of criminal activity. These measures are described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**	Section 14.7 of this chapter sets out the assessment of likely impacts and effects on Human Health. Fencing and other security measures aimed at designing out crime are set out in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**
Spaldington Parish Council	The Council is aware that a member of the community has been warned by their neurologist that living quite close to a large solar farm could be hazardous to their health. Can BOOM confirm if proper medical investigations have been undertaken to ensure that this development will not cause any ill health to any member of the community?	The assessment presented in section 16.8 of **Chapter 16: Other Environmental Topics (section 16.8 Electric and Electro-Magnetic Fields), ES Volume 1 [EN010143/APP/6.1]** concluded that no significant effects to residential receptors or users of Public Rights of Way (PRoW) are predicted associated with Electromagnetic Field (EMF). Therefore, the potential for Human Health effects associated with	Section 16.8 of **Chapter 16: Other Environmental Topics (section 16.8 Electric and Electro-Magnetic Fields), ES Volume 1 [EN010143/APP/6.1].** Section 14.7 of this chapter sets out the assessment of likely Human Health impacts and effects. The methodology for determining sensitivity can be found in section 14.4 (Assessment Methodology) of this chapter, and the baseline conditions that underly these

Consultee	Summary of comment	How matter has been addressed	Location of response
		potential exposure to EMF has been scoped out of this ES. As per the 2022 IEMA Guidance (Ref. 14-27), this Human Health assessment takes a population health approach, although it is recognised that 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. The Scheme has, where possible, aimed to be set back from residential dwellings and incorporated landscape mitigation and layout design measures to reduce the impact on residential dwellings in proximity to the Scheme.	conclusions can be found in section 14.5 (Baseline Conditions).
North Yorkshire Council	The IEMA Guidance states that the length of time an effect occurs is a key consideration for health and states that an appropriate reference period for duration should be applied. However, no clear definition has been set out in the PEI Report and its assumption that a 2-year construction period is 'short-term' would seem inappropriate. The construction period is expected to continue for 2 years, during which time the	Definitions relating to the duration of effects have been included in the assessment. Construction and decommissioning phase effects are considered to be short-term and temporary, as these phases are expected to take 24 months and many effects will not last the duration of this period. Operational phase effects are considered to be short-term, medium-term, reversible long-term or permanent effects, using the definitions set out in paragraph	Paragraphs 14.7.3 and 14.7.75 within section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	effects would be greatest, and repeated again at the decommissioning stage, which is also 2 years. A more appropriate time frame would be that 0 – 12 months is defined as short-term, 1 – 10 years is medium term, and 10 years and beyond (including the decommissioning) defined as long term. The assessment should be repeated with these time frames applied.	14.7.75 of this chapter. These have been agreed in consultation with North Yorkshire Council.	
North Yorkshire Council	We welcome the recognition of the higher sensitivity of the elderly population group, which are more likely to have a greater reliance on health services, including health and social care and social infrastructure. Notwithstanding, it is disappointing to see that this demographic profile doesn't seem to have been appropriately considered when making assumptions and drawing conclusions in relation to impacts upon Public Health. It would also be beneficial for the assessment to consider the sensitivity of the population who have long-term health issues or disabilities more	The sensitivity of more vulnerable sub-populations, including the elderly and those who have long-term health issues or disabilities has been considered within the Assessment of Likely Impacts and Effects of this chapter. These differing sensitivities have been considered when drawing conclusions around significance of effects, in line with the 2022 IEMA Guidance (Ref. 14-27).	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter. High sensitivity populations have been considered with reference to the effects on healthcare services, other social infrastructure, access to open space and active travel and social cohesion and neighbourhoods. The **Equality Impact Assessment [EN010143/APP/7.16]** also addresses impacts on age and disability groups.

Consultee	Summary of comment	How matter has been addressed	Location of response
	when drawing conclusions around significance of effects.		
North Yorkshire Council	When considering the wider determinants of health, the report does not appear to consider how child obesity, smoking, life expectancy and rates of respiratory disease may be impacted by the Scheme.	The sensitivity of the population has been assessed using baseline data, including child obesity, smoking rates, life expectancy and rates of respiratory disease. A more vulnerable sub-population has been identified as having a high sensitivity, which includes those who have long-term health issues and who are more elderly. These differing sensitivities have been considered when drawing conclusions around significance of effects, in line with the 2022 IEMA Guidance (Ref. 14-27).	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.
North Yorkshire Council	The assessment concludes that the population in the Study Area have better than average health, relative to regional and national comparators and as such, are less likely to be highly sensitive to health-related impacts. I would question these assumptions as the paragraphs identify a proportion of the population that are highly sensitive to health-related impacts and therefore we would welcome the acknowledgement of these within the assumed conclusion.	The sensitivity of more vulnerable and sensitive sub-populations, including the elderly and those who have long-term health issues or disabilities has been considered within the Assessment of Likely Impacts and Effects of this chapter. These differing sensitivities have been considered when drawing conclusions around significance of effects, in line with the 2022 IEMA Guidance (Ref. 14-27).	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
North Yorkshire Council	The effects upon healthcare services during the construction phase highlights that 400 FTE will be present on site per day, a proportion of whom may be from the local areas or who may require registration at local GP practices. In the worst-case scenario, 198 additional employees may need to be registered. Although there is capacity at present with local GP practices, there appears to be an error with the figures stating that 1750 patients per GP would rise to 1758 with the additional 198 predicted staff. Should this say 1,980 per GP? The assessment appears to split the 198 across all 26 GPs in The Ridings Medical Group (including Bubwith Surgery, which is the one within 2km of the Site). Given this includes GPs based in Brough and Hessle, we would question how realistic using The Ridings Group is as the baseline primary care provision when there are many closer GPs in e.g., Goole.	The patient to GP ratio has been updated with more accurate data regarding the number of GPs at Bubwith Surgery, as provided by North Yorkshire Council.	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.
North Yorkshire Council	The report identifies some highway routes are likely to experience significant traffic severance as a	The sensitivity of receptor and magnitude of effects associated with the Scheme are assessed in line with	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	result of the high level of traffic generated from the Site. Furthermore, the assessment highlights the potential for fear and intimidation of road users and accidents and safety. The conclusion that residents could experience adverse impacts from the Scheme is welcomed. However, the report doesn't appear to have considered the heightened risk to those most sensitive to health impacts, nor appropriately assessed the magnitude of these effects on the population due to the perceived short-term duration. When considered in the context of a medium-term duration, coupled with the sensitivity of the population who require to use the roads to access healthcare, or receive health and social care, the conclusion would more appropriately be Moderate (significant).	the 2022 IEMA Guidance. Definitions relating to the duration of effect are set out within the Assessment of Likely Impacts and Effects section of this chapter. High sensitivity populations have been considered with reference to the effects on access to healthcare services, other social infrastructure, access to open space and active travel and social cohesion and neighbourhoods. As set out in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**, with embedded mitigation in place there is only one link that would experience potentially significant effects and the actual predicted increase per hour/minute on this link is relatively small during the peak hours of construction.	Further details regarding the traffic severance effects of the Scheme can be found in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**.
	Chapter 13 of the PEI Report states that the Scheme will generate 50 HGV vehicle movements per day. Add that to the traffic generated from the staff accessing the site at the start and end of the day, which was stated to	The sensitivity of receptor and magnitude of effects associated with the Scheme are assessed in line with the 2022 IEMA Guidance. Severance impacts have been considered with reference to effects on healthcare services, social infrastructure, access	Section 14.7 (Assessment of Likely Impacts and Effects) of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	be 400 staff on site, there is a potential to cause a significant impact to communities. Impacts of severance would be not just in terms of isolation but also from essential services such as emergency services vehicles and health and social care providers. A more realistic conclusion would be to assess the impact as moderate adverse.	to open space and active travel, access to employment and training and social cohesion and neighbourhoods.	

14.3.6 For the purpose of developing the PEI Report and agreeing assessment parameters, four meetings were initiated and held with relevant stakeholders. The relevant stakeholders were:

a. East Riding of Yorkshire Council: planning case officer and public health lead (12 December 2022 and 11 January 2023, respectively);

b. Selby District Council: Senior Environmental Health Officer (15 December 2022);

c. North Yorkshire County Council: public health team (15 December 2022); and

d. Office for Health Improvement and Disparities (OHID): Healthy Places programme lead (18 January 2023).

14.3.7 Members of East Riding of Yorkshire Council's Environmental Protection team were also invited to the meeting on 12 December 2022, but determined that the points for discussion were not relevant to their remit.

14.3.8 The stakeholders were content with the proposed approach to the Human Health assessment, and the meetings provided an opportunity for an informative discussion regarding the potential health effects of the Scheme on the local community.

14.3.9 For the ES, a meeting was held (2 August 2023) with North Yorkshire Council with the purpose of discussing the comments received on the Human Health Assessment presented in the PEI Report. Additional information was requested from North Yorkshire Council by the Applicant to progress the assessment, which was received on 28 September 2023 and has been incorporated into this chapter.

14.4 Assessment Methodology

Assumptions, Limitations and Uncertainties

14.4.1 This assessment is based on baseline and design information available at the time of writing this ES chapter. The full assessment takes into account relevant comments raised during the consultation period.

14.4.2 The assessment of significance of Human Health effects has been carried out against a benchmark of current Human Health baseline conditions prevailing around the Scheme, noting that a limitation of such a baseline is that it is subject to a time lag between collection and publication. As with any dataset, conditions may be subject to change over time which may influence the findings of the assessment.

14.4.3 Baseline conditions cannot be accurately extrapolated forward to decommissioning but can be broadly estimated. The **Framework Decommissioning Environmental Management Plan (DEMP) [EN010143/APP/7.9]** contains a commitment to undertake a validation exercise, which comprises confirming the baseline and impacts prior to decommissioning, to ensure that the mitigation in the DEMP is adequate and delivers no worse than the significance of effect presented in this ES.

14.4.4 The assessment of likely health effects arising from the Scheme is based on professional judgement, drawing on relevant guidance as set out in section 14.4 (Assessment Methodology). It considers both the potential

beneficial and adverse impacts that the Scheme is likely to have on Human Health.

14.4.5 Effects on Human Health during the construction, operation and decommissioning phases are based on a range of related assessments, taking into consideration the results from the relevant environmental studies. These studies comprise **Chapter 9: Flood Risk, Drainage and Water Environment, Chapter 10: Landscape and Visual Amenity, Chapter 11: Noise and Vibration, Chapter 12: Socio-Economics and Land Use, Chapter 13: Transport and Access,** and **Chapter 16: Other Environmental Topics** (including Air Quality), **ES Volume 1 [EN010143/APP/6.1]**.

Matters Scoped In/Scoped Out

14.4.6 This assessment considers the following health and well-being determinants of relevance:

a. Access to healthcare services and other social infrastructure;

b. Access to open space and nature;

c. Air quality, noise and neighbourhood amenity;

d. Accessibility and active travel;

e. Access to work and training; and

f. Social cohesion and neighbourhoods.

14.4.7 Health and wellbeing perceptions and impacts to the mental health of local residents which may result from changes to neighbourhood amenity have been taken into account throughout the assessment.

14.4.8 The potential impacts of Electric and Magnetic Fields were assessed in **Chapter 16: Other Environmental Topics (section 16.8 Electric and Electro-Magnetic Fields), ES Volume 1 [EN010143/APP/6.1]**. Underground cables eliminate the electric field altogether as it is screened out by the sheath around the cable, but they still produce electro-magnetic fields. Therefore, as effects of electric fields do not occur, they were not included in the assessment. The assessment showed that threshold exposure levels for electro-magnetic fields will not be exceeded (either individually or in combination with other electricity infrastructure). Consequently, the assessment presented in **Chapter 16: Other Environmental Topics (section 16.8 Electric and Electro-Magnetic Fields), ES Volume 1 [EN010143/APP/6.1]** concluded that no significant effects to residential receptors or users of PRoW are predicted. Therefore, the potential for Human Health effects associated with potential exposure to Electric and Electro-Magnetic Fields (EMF) has been scoped out of this ES.

Study Area

14.4.9 The Study Area has been defined to include Human Health features likely to be at risk from possible direct and indirect impacts that might arise from the Scheme. The Study Area for Human Health is based on the extent and characteristics of the Scheme and the proximity of communities/wards to the Scheme. Based on this, it has been determined that Human Health

impacts are likely to occur in an area which is composed of the following four wards:

a. Howdenshire in East Riding of Yorkshire;

b. Howden in East Riding of Yorkshire;

c. Camblesforth and Carlton in the former Selby District; and

d. Cliffe and North Duffield (formerly Derwent) in the former Selby District.

14.4.10 On 1 April 2023 North Yorkshire County Council and its six constituent District Councils, including Selby District Council, were merged to form the new Unitary Authority of North Yorkshire Council. The Wards of Camblesforth and Carlton, and Derwent therefore now lie in the administrative area of North Yorkshire Council. These wards are still considered within the Study Area (and where Local Authority-level data is presented in the baseline, data is still presented for Selby District, as the data sets were produced prior to this change occurring).

14.4.11 The ward boundaries within the former Selby District (now North Yorkshire) were updated after the 2011 Census. Therefore, where data from the 2021 Census is available, data from the 2021 wards within which the Scheme is located have been used. These comprise Howden and Howdenshire (both within East Riding of Yorkshire) and Cliffe and North Duffield (formerly Derwent) and Camblesforth and Carlton (both within the former Selby District). Where older sources have been used, data has been presented for the ward names that were present at that time (i.e., Derwent rather than Cliffe and North Duffield).

14.4.12 Where the Human Health assessment draws on other chapters of the ES (as listed in paragraph 14.1.5), it reflects the Study Areas used within these other assessments. As reflected in these other chapters, the worst-case outcomes, and therefore the worst-case Human Health effects, have been assessed.

Sources of Information

14.4.13 The following assessment seeks to establish the potential Human Health effects and assesses these against the current baseline conditions at the Site and in the surrounding area.

14.4.14 Baseline data illustrating existing conditions surrounding the Site has been collected through a desk-based research exercise using publicly available sources, documents and web-based applications. These sources include:

a. Office for National Statistics (ONS) Census 2021 (Ref. 14-19);

b. Mid-Year Population Estimates 2020 (Ref. 14-20);

c. Annual Population Survey 2021 (Ref. 14-21);

d. Indices of Multiple Deprivation 2019 (Ref. 14-22);

e. Public Health England; Health Profiles (Ref. 14-23); and

f. Claimant Count, 2023 (Ref. 14-24).

Methodology

14.4.15 The World Health Organisation (WHO) Europe defines health as a "*state of complete physical, mental and social wellbeing not merely the absence of disease or infirmity*" (Ref. 14-26). Public health therefore encompasses general wellbeing, not just the absence of illness.

14.4.16 The health and wellbeing of individuals is determined by a broad range of individual constitutional and behavioural factors (or "determinants"), as well as broader environmental, social and economic factors. Some factors are direct and obvious, others are indirect.

14.4.17 The IEMA guidance 'Determining Significance for Human Health in Environmental Impact Assessment' (Ref. 14-27) forms the basis of the approach adopted to assess impacts on health in this chapter. In addition, NHS England's Healthy Urban Development Unit's (HUDU) Rapid Health Impact Assessment (HIA) Toolkit 2019 (Ref. 14-28) has been drawn upon to inform the identification of relevant health determinants.

14.4.18 The methodology presented in this ES differs from that outlined within the Scoping Report (**Appendix 1-1, ES Volume 2 [EN010143/APP/6.2]**). Prior to IEMA's guidance being issued in November 2022 there was no guidance which provided a justified definition of, or methodology for, determining the significance for health effects. The Scoping Report (issued in September 2022) therefore presented a proposed methodology for an assessment based upon HUDU's Rapid HIA Toolkit which would identify positive, neutral, negative or uncertain effects without a judgement as to whether these effects were significant. The IEMA guidance (developed by IEMA and specialists in the Human Health field) provides a methodology for determining the significance of health effects and therefore has been adopted in preference to the methodology proposed at Scoping. The change in methodology was agreed with consultees at the four meetings outlined in section 14.3 and is in line with what was recommended by the Planning Inspectorate and OHID in the Scoping Opinion (**Appendix 1-2, ES Volume 2 [EN010143/APP/6.2]**).

14.4.19 The impacts of the Scheme on Human Health are assessed qualitatively using professional judgement, best practice, and drawing upon other assessments within the ES.

14.4.20 The Human Health assessment follows the general Impact Assessment Methodology set out in **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1].** However, the specific impact magnitude and impact sensitivity criteria for this assessment have been set out below.

14.4.21 Effects are defined as follows:

a. Beneficial classifications of significance indicate an advantageous or positive effect on an area, which may be minor, moderate or major;

b. Negligible classifications of significance indicate imperceptible effects on an area;

c. Adverse classifications of significance indicate a disadvantageous effect on an area, which may be minor, moderate or major; and

d. No effect classifications of significance indicate that there are no effects on an area.

14.4.22 Duration of effect is also considered, with more weight given to permanent changes than to temporary ones.

14.4.23 'Significance' reflects the relationship between the scale of effect (magnitude) and the sensitivity of the affected receptor. As such, the significance criteria of Human Health effects have been assessed based on the expert judgement and professional experience of the author, and relies on the following considerations:

a. Sensitivity of receptors: specific values in terms of sensitivity are not attributed to Human Health receptors due to their diverse nature and scale; however, the assessment takes account of the qualitative (rather than quantitative) sensitivity of relevant populations and sub-populations and their ability to respond to change; and

b. Magnitude of impact: this entails consideration of the size of the effect on people or receptors in the context of the area in which effects will be experienced.

14.4.24 Criteria for receptor sensitivity and impact magnitude have been set out below. The significance of effect matrix has been provided following the receptor sensitivity and impact magnitude criteria.

14.4.25 **Table 14-3** identifies the sensitivity criteria that have been used to inform the assessment of effects relating to Human Health.

Table 14-3. Health Impact Sensitivity Criteria

Sensitivity	Description
High	Population or sub-populations who experience high levels of deprivation; are reliant on shared resources; within which there are wide inequalities between the most and the least healthy; whose outlook is predominantly anxiety or concern; who are prevented from undertaking daily activities; dependents; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Population or sub-populations who experience moderate levels of deprivation; have few alternatives to shared resources; experience widening inequalities between the most and the least healthy; whose outlook is predominantly uncertainty with some concern; who are highly limited from undertaking daily activities; who provide or require a lot of care; those with fair health status; and/or people with a limited capacity to adapt.
Low	Population of sub-populations who experience low levels of deprivation; have many alternatives to shared resources; experience narrowing inequalities between the most and least healthy; whose outlook is predominantly ambivalence with some concern; those who are slightly limited from undertaking daily activities; those who provide or require some care; those with fair health status; and/or people with a high capacity to adapt.

Sensitivity	Description
Very Low	Populations or sub-populations who experience very low levels of deprivation; rely on no shared resources; 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.

14.4.26 **Table 14-4** identifies the magnitude of impact criteria which have been used to assess the impacts on Human Health.

Table 14-4. Health Impact Magnitude Criteria

Magnitude	Description
High	An impact that is large in scale or a population has high exposure to; long-term in duration; continuous in frequency; its severity is predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; where the majority of a population is affected; that results in a permanent change; and/or has substantial service quality implications.
Medium	An impact that is moderate in scale or that a population has low exposure to; has a medium-term duration; is frequent; its severity is predominantly related to moderate changes in morbidity or major change in quality-of-life; that affects a large majority of the population; can be gradually reversed; and/or has small service quality implications.
Low	An impact that is small in scale or a population has very low exposure to; is short-term in duration; due to occasional events; its severity predominantly relates to a minor change in morbidity or moderate change in quality-of-life; that affects a small minority of the population; can be rapidly reversed; and/or has slight service quality implications.
Very Low	An impact that is negligible in scale or a population has negligible exposure to; is very short-term in duration; its severity predominantly relates to a minor change in quality-of-life; that affects very few people; that can be immediately reversed once the activity is completed; and/or that has no service quality implication.

14.4.27 As set out above in **Table 14-4**, magnitude of impact is determined considering a number of factors, including the length of duration of effect (long-term duration is one factor that is used to justify a high magnitude, medium-term duration for medium magnitude, short-term duration for low magnitude and very short-term for very low magnitude). Other factors considered include population exposure, frequency, severity related to mortality, the proportion of the population affected, the reversibility or permanence of the effect and the associated service quality implications. Each of these factors is considered when determining the magnitude of impact within the Human Health assessment.

14.4.28 Human health effects are a reflection of the relationship between the sensitivity of the affected receptor and the magnitude of impact. **Table 14-5** below shows how the assessment of the significance of effects is arrived upon. Possible significant effects are shown by the shaded cells. Where two options are shown for the assessment of significance (e.g., minor/negligible), professional judgement is used to determine which of the two options is more appropriate.

Table 14-5. Impact Assessment and Significance

Sensitivity or value of receptor	Magnitude of Change			
	High	**Medium**	**Low**	**Very Low**
High	Major	Major/ moderate	Moderate/ minor	Minor/ negligible
Medium	Major/ moderate	Moderate	Minor	Minor/ negligible
Low	Moderate/ minor	Minor	Minor	Negligible
Very Low	Minor/ negligible	Minor/ negligible	Negligible	Negligible

14.4.29 In accordance with the methodology set out within **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**, the following criteria are applied:

a. ‘Moderate’ or ‘major’ effects are classed as ‘**significant**’;

b. ‘Minor’ effects are classed as ‘**not significant**’, although they may be a matter of local concern; and

c. ‘Negligible’ effects are classed as ‘**not significant**’.

14.5 Baseline Conditions

14.5.1 This section describes the baseline environmental Study Area with specific reference to Human Health. First, a demographic and health profile of the local population is set out. Secondly, existing local infrastructure relevant to the health assessment is summarised; this draws largely on **Chapter 12: Socio-Economics and Land Use, ES Volume 1 [EN010143/APP/6.1]** and includes residential properties, community facilities and recreational routes such as Public Rights of Way (PRoW).

Existing Baseline

Demographic Profile

14.5.2 According to the 2021 Census (Ref. 14-19), the total population of the Study Area in 2021 was 32,810. The population in Howden was 5,370; in Howdenshire was 15,838; in Camblesforth & Carlton was 6,100 and in Cliffe & North Duffield was 5,502.

14.5.3 As shown in **Plate 14-1**, in 2021 the average proportion of residents aged 65 and over in the Study Area was 22.8%. This is higher than the rates recorded in Yorkshire and the Humber (19.0%) and England (18.4%).

14.5.4 Local data for Selby District also projects that the over-85 age group is expected to increase by 47% by 2030. This is much greater than the projected increase across England of 30% (Ref. 14-20). The health and wellbeing of this large population of over-65-year-olds is likely to be more sensitive than other sub-groups of the population and may have a higher reliance on health services and social infrastructure.

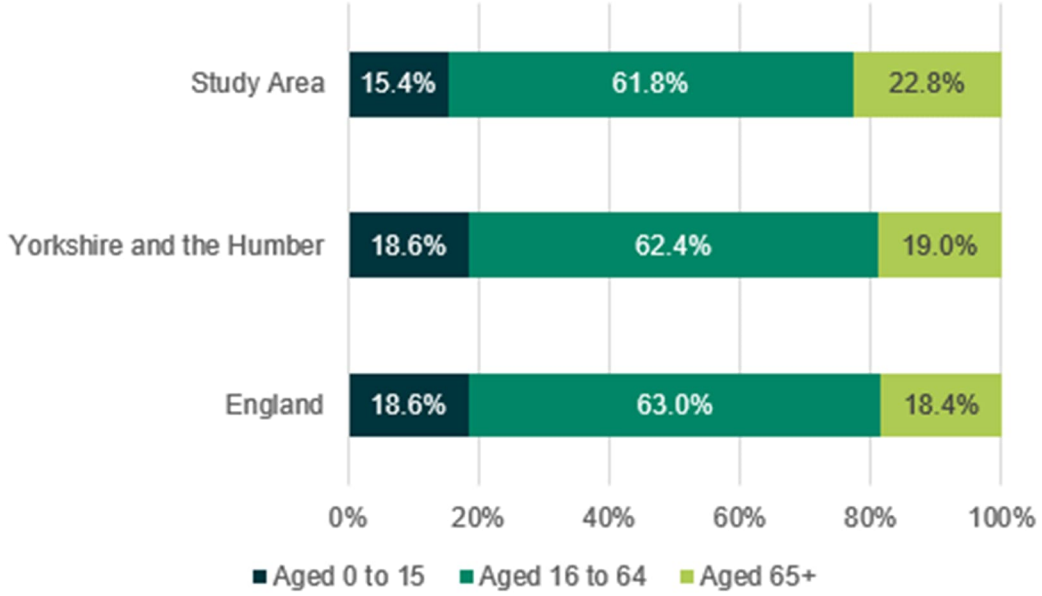

Plate 14-1. Breakdown by Geography

Source: ONS (2021) (Ref. 14-19)

14.5.5 At the time of the 2021 Census (Ref. 14-19), the proportion of residents in East Riding of Yorkshire who are White was 97.4%, while in Selby the proportion was 97.7%. Both these proportions are higher than the average of 85.4% in Yorkshire and the Humber and the national average in England of 81.0%.

14.5.6 There are also proportionally fewer residents of each ethnic minority group living in East Riding of Yorkshire and Selby than in Yorkshire and the Humber or England as shown in **Table 14-6**. For example, Asian and Asian British residents make up 1.1% of the population of East Riding of Yorkshire and 0.8% of population of Selby, whereas this group accounts for 8.9% and 9.6% of the population in Yorkshire and the Humber and England respectively. People from minority ethnic groups may have a higher sensitivity to health effects arising from changes to social cohesion.

Table 14-6. Ethnic Group by Geography

Ethnic Group	Study Area	East Riding of Yorkshire	North Yorkshire	Yorkshire and the Humber	England
White	98.6	97.4	96.9	85.5	81.1
Asian, Asian British or Asian Welsh	0.5	1.0	1.2	8.8	9.6
Black, Black British, Black Welsh, Caribbean or African	0.1	0.2	0.3	2.1	4.2
Mixed or Multiple ethnic groups	0.7	0.9	1.1	2.1	2.9
Other ethnic group	0.2	0.4	0.4	1.4	2.2

Source: ONS Census 2021 (Ref. 14-19)

14.5.7 According to the Annual Population Survey (Ref. 14-21), in 2022 the economic activity rate (amongst 16-to-64 year olds) was 80.0% in North Yorkshire, which is comparable to that in East Riding of Yorkshire (79.7%), England (78.7%) and Yorkshire and the Humber (77.4%).

14.5.8 The June 2023 claimant count (Ref. 14-24) as a proportion of residents aged 16-to-64 was 1.5% in the Study Area, which is lower than the rate in North Yorkshire (1.9%), East Riding of Yorkshire (2.4%), England (3.8%) and Yorkshire and the Humber (4.1%).

14.5.9 The 2019 Indices of Deprivation (Ref. 14-22) provide a set of relative measures of deprivation for Local Authorities and Lower Super Output Areas (LSOAs)[1] across England. East Riding of Yorkshire is the 217th most deprived local authority of 317 districts in England (where 1 is the most deprived). Within East Riding of Yorkshire, 13 of the 210 LSOAs are within the top 10% most deprived LSOAs in England. Regarding the health deprivation domain, East Riding of Yorkshire is the 200th most deprived local authority.

14.5.10 In comparison, Selby is the 252nd most deprived local authority in England. Within the local authority, one of the 50 LSOAs is within the top 10% most deprived in England. For health deprivation, Selby is ranked as the 218th most deprived local authority in England.

14.5.11 Although deprivation is relatively low in both East Riding of Yorkshire and Selby, local data for Selby shows that people living in the most deprived

[1] Lower Super Output Areas (LSOAs) are ONS-defined small geographic areas across England designed to allow data reporting across small areas. Each LSOA in England is of a similar population size, with an average of 1,500 residents of 650 households.

wards on average live 8.4 (men) and 10.2 (women) years less than those in the least deprived wards (Ref. 14-22). This is mirrored in East Riding of Yorkshire where a statistical positive correlation has been found between the level of deprivation of an area and a number of negative health indicators, including the percentage of people living with a limiting long-term illness or disability (Ref. 14-25).

14.5.12 More granular deprivation data is available at LSOA level. A best fit LSOA study area has been used to assess deprivation around the Site. The best fit LSOA study area across the local ward study area comprises the following LSOAs: Selby 008A, Selby 008D, East Riding of Yorkshire 018A, East Riding of Yorkshire O18B and East Riding of Yorkshire 038C.

14.5.13 In terms of relevant sub-domains of deprivation (Ref. 14-22), the health and disability domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. Of the LSOA study area, the most deprived LSOA is East Riding of Yorkshire 018B which is in the 5th most deprived decile. However, the four other LSOAs all fall within the 70% least deprived areas in England with respect to health deprivation.

14.5.14 The barriers to housing and services sub-domain of deprivation includes considerations of physical proximity to local services, as well as wider barriers including housing affordability. East Riding of Yorkshire 038C, 018A and 018B are all in the most deprived decile of LSOAs in this sub-domain. Selby 008A is slightly less deprived, falling in the 3rd most deprived decile. On the other hand, Selby 008D falls within the 10% least deprived area.

Health Profile

14.5.15 This section provides a Human Health profile of the Study Area, focusing on key determinants of health relevant to the assessment criteria provided within the HUDU/NHS England guidance (Ref. 14-28). This local health baseline will be used to assess potential health effects of the Scheme.

14.5.16 Based on the 2021 Census data (Ref. 14-19) for self-assessment of health, 4.4% of residents in the Study Area believed that they were living in ‘bad’ or ‘very bad’ health. This rate is lower than that in Yorkshire and the Humber (5.8%) and England as a whole (5.2%). This assessment accounts for overall rating of mental and physical health and is self-assessed. This is shown in **Plate 14-2**.

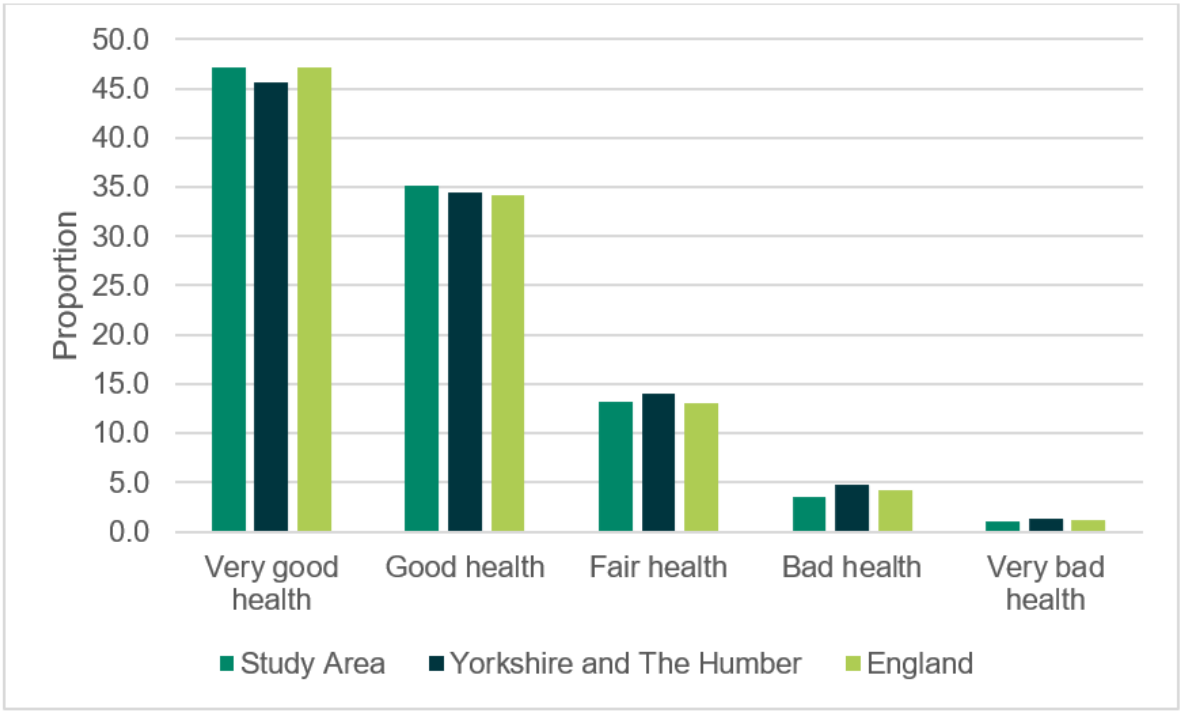

Plate 14-2. Self-Assessment of Health

Source: 2021 Census (Ref. 14-19)

14.5.17 In addition, **Plate 14-3** illustrates a self-assessment of long-term health or disability (Ref. 14-19). This is a problem that limits a person's daily activities and has lasted at least 12 months. The proportion of residents within the Study Area that experience limitations to their daily activities a little or a lot is 16.8%. This is slightly lower than the proportions of 18.6% in Yorkshire and the Humber and 17.3 % in England as a whole.

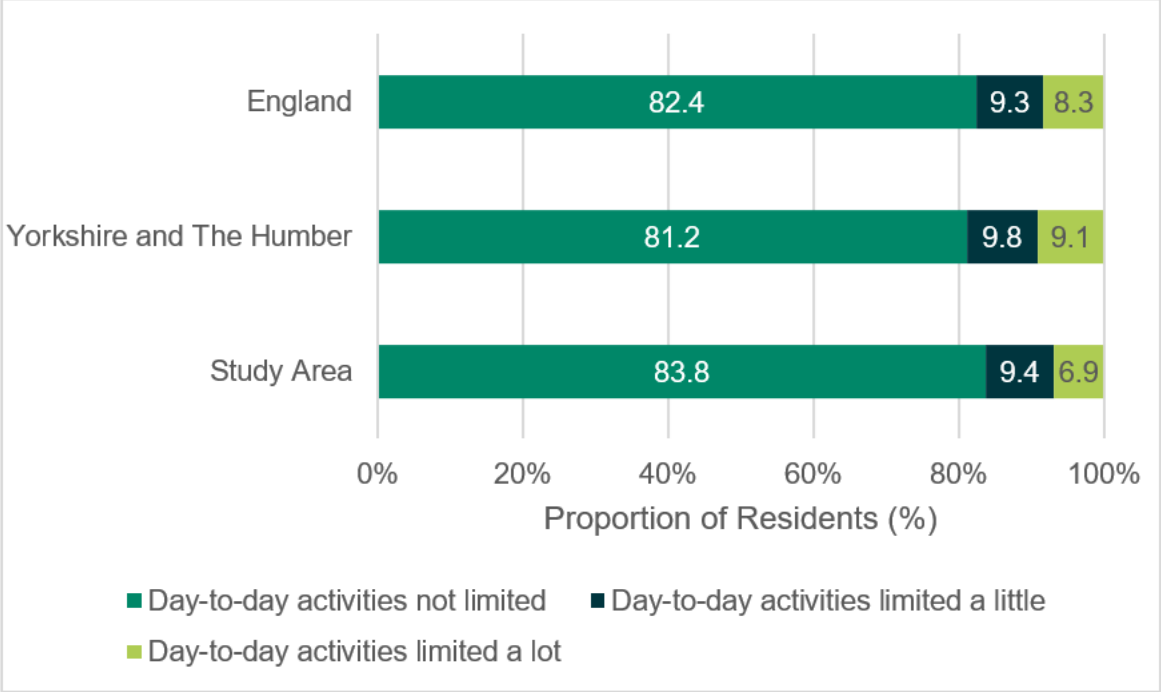

Plate 14-3. Self-Assessment of Long-Term Health or Disability

Source: 2021 Census (Ref. 14-19)

14.5.18 Wider determinants of health (Ref. 14-23) can also give an insight into the health profile of an area. The following indicators are compared to regional and national figures to illustrate how the area performs:

a. Life expectancy: ONS data states that the average life expectancy at birth for males in the Study Area is 80.9. This is slightly higher than both the average for Yorkshire and the Humber (78.4) and England (79.5). The life expectancy for females in the Study Area is 84.1, which is also higher than the averages for Yorkshire and the Humber (82.2) and England (83.2);

b. Childhood obesity: The average proportion of children in reception school year who are obese in the Study Area is 11.1%. This is slightly higher than the rates for Yorkshire and the Humber (10.2%) and England (9.9%);

c. Smoking prevalence: At age 15, the prevalence of regular smokers in the Study Area is 4.6%. This is lower than the proportions in Yorkshire and the Humber (6.2%) and England (5.4%); and

d. Deaths from respiratory diseases (standardised mortality ratio (SMR)): The average SMR for this indicator in the Study Area is 85.5 deaths per 100,000, which is lower (i.e., better) than the national average for England (100). An SMR below 100 indicates fewer than expected deaths, whilst an SMR above 100 indicates that there are excess deaths.

14.5.19 Evidence from the Joint Strategic Needs Assessment (JSNA) for North Yorkshire (Ref. 14-18) and East Riding of Yorkshire (Ref. 14-17) suggests that both Selby District and East Riding of Yorkshire perform well in mental health indicators compared to the national average. However, the suicide

rate per 100,000 in East Riding of Yorkshire is higher than the national average with 13.0 instances per 100,000 people compared to 10.4 across England. The suicide rate in Selby District is 9.4 per 100,000.

Community Profile Summary

14.5.20 According to the 2021 Census data, 4.4% of residents in the Study Area believed that they were living in 'bad' or 'very bad' health, which is lower than the rate in Yorkshire and the Humber (6.0%) and England (5.5%).

14.5.21 The proportion of residents within the Study Area that experience limitations to their daily activities a little or a lot is 16.8%, which is also below that of Yorkshire and the Humber (18.6%) and England (17.3%).

14.5.22 In addition to this, the Study Area has a higher economic activity rate, lower claimant count and higher life expectancy than at the regional or national level.

14.5.23 These metrics suggest that, generally, residents of the Study Area have better than average health, relative to the regional and national comparators. As such, they are not likely to be sensitive to health-related impacts.

14.5.24 The only highly sensitive sub-population that was identified through baseline analysis was the over-65s. The Study Area has a slightly lower proportion of residents of working age (16-to-64-year-olds) at 61.2% when compared to the average for Yorkshire and the Humber (62.1%) and England (62.3%). Local data also projects that the growth rate of this sub-population is likely to be much higher than other age groups. This sub-population is likely to be more sensitive to health-related impacts and may have a higher reliance on health services and social infrastructure.

14.5.25 It is also noteworthy that, of the five LSOAs which intersect with the local ward study area, one (East Riding of Yorkshire 018B) sits within the 5th most deprived decile for the health and disability deprivation domain; and three (East Riding of Yorkshire 038C, 018A and 108B) are within the most deprived decile for the barriers to housing and services deprivation domain.

Infrastructure Baseline

Healthcare Facilities

14.5.26 The nearest hospital (with an accident and emergency department) to the Order limits is York Hospital, which is approximately 21 km to the north-west of the Order limits.

14.5.27 There is one GP surgery within 2 km of the Order limits (2 km is the study area which **Chapter 12: Socio-Economics and Land Use, ES Volume 1 [EN010143/APP/6.1]** uses for community facilities) –Bubwith Surgery (part of the Ridings Medical Group) is approximately 1.3 km north-west of the Solar PV Site.

14.5.28 The latest General Practice (June 2023) data published by NHS Digital (Ref. 14-29) indicates that The Ridings Medical Group (including Bubwith Surgery) has 26 GPs that provide care to 45,761 registered patients. This corresponds to 1,756 patients per GP, which is below the Royal College of Practitioners target of 1,800 patients per GP. North Yorkshire Council provided confirmation in September 2023 that there are three GPs at

Bubwith Surgery, though North Yorkshire Council could not provide information on the number of patients registered at Bubwith Surgery and therefore the GP to patient ratio for Bubwith Surgery is not known.

Education Facilities

14.5.29 There are four schools within 2 km of the Order limits. One is located within 2 km of the Solar PV Site and three within 2 km of the Grid Connection Corridor.

14.5.30 The closest educational facility to the Solar PV Site is Howden School (a non-selective school for pupils from 11 to 16 years old), which is located approximately 1.8 km south-east of the Solar PV Site in the market town of Howden.

14.5.31 There are three schools within 2 km of the Grid Connection Corridor: Barmby on the Marsh County Primary School (a non-selective school for pupils from four to 11 years of age) in the village of Barmby on the Marsh; The Read School (an independent school catering for pupils from four to 18 years of age), which is located approximately 1 km south of the Grid Connection Corridor in the village of Drax; and Camblesforth Community Primary Academy (a non-selective school for pupils from three to 11 years od age) which is located approximately 1.7 km to the west of the Grid Connection Corridor in the village of Camblesforth.

Community and Recreational Facilities

14.5.32 There are a range of community and recreational facilities within 2 km of the Order limits.

14.5.33 The Order limits border Boothferry Golf Club, Spaldington Golf Range and Howden Footgolf and Golf. Additionally, Howden Train Station is approximately 750 m east of Solar PV Area 3c and 1.0 km west of Solar PV Area 2g, Wressle Village Hall is approximately 500 m north of the Grid Connection Corridor, Wressle Train Station is approximately 500 m north of the Grid Connection Corridor, Drax Village Hall is approximately 1.5 km south of the Grid Connection Corridor and Drax Golf Club is approximately 1.3 km south of the Grid Connection Corridor.

14.5.34 There are no police or fire stations within 2 km of the Order limits. The nearest are Howden Police Station and Howden Fire Station, both located approximately 2.5 km south-east of the Solar PV Site.

Public Rights of Way (PRoW)

14.5.35 The PRoW within the Order limits and a 500 m radius are illustrated in **Figure 2-2, ES Volume 3 [EN010143/APP/6.3]**. These are further discussed in **Chapter 2: The Scheme** and **Chapter 12: Socio-Economics and Land Use, ES Volume 1 [EN010143/APP/6.1].**

Residential Properties

14.5.36 The area around the Solar PV Site is mostly rural and relatively sparsely populated.

14.5.37 There are no residential properties within the Solar PV Site or Grid Connection Corridor. The Scheme will be located near the villages of Spaldington and Gribthorpe and the market town of Howden. At the closest point, the boundary of the Solar PV Site is located 1.5 km north-west of new residential developments in Howden and approximately 1.3 km east of

the villages of Breighton and Wressle. The closest properties in Gribthorpe, Spaldington and Brind and are approximately 20 m from the Order limits. The closest properties in Willitoft are approximately 120 m from the Order limits. Due to the provision of buffers, and land for landscaping and habitat enhancement, the actual distance of separation between residences and solar PV infrastructure will be greater than this.

14.5.38 There are residential properties within 500 m of the Grid Connection Corridor at Wressle and Barmby on the Marsh. At its closest point, the Grid Connection Corridor passes adjacent to a property at the Wood Lane/ Street Lane (B1228) junction and approximately 50 m north of properties in Brackenholme.

14.6 Embedded Mitigation

14.6.1 Where possible, mitigation measures have been incorporated into the Scheme design and/or how it shall be constructed. Through iterative assessment, potential impacts have been predicted and opportunities to mitigate them identified with the aim of preventing or reducing impacts as much as possible. This approach provides the opportunity to prevent or reduce potential adverse impacts from the outset. This embedded mitigation/mitigation by design approach has been taken into account when evaluating the significance of the potential impacts.

14.6.2 The Scheme has been designed to avoid any requirements for PRoW to be closed or diverted during the operational phase, with additional Permissive Paths provided within the Solar PV Site during the operational phase.

14.6.3 During the construction phase, where PRoW cross or are adjacent to Solar PV Areas, fencing will be erected from the inside without impacting the PRoW or preventing their use. Erection of the perimeter fencing is the first stage of construction and with this in place, construction activities can operate without impacts to PRoW. Where solar infrastructure is to both sides of a PRoW a minimum buffer of 20 m from the PRoW centreline the perimeter fencing will be applied (providing a 40 m strip around the PRoW). Where solar infrastructure is to one side of the PRoW only this is reduced to 15 m. There will be approximately a further 5 m from the perimeter fencing to any solar panels. Further information is presented in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.

14.6.4 Other PRoW which are crossed by Interconnecting Cables or Grid Connection Cables would only be impacted during the short-term trenching and restoration operations. These PRoW would remain open (likely managed through traffic management measures) although routes may be temporarily slightly diverted, for example moving from one side of a road to the other. If under a worst-case scenario any PRoW require diversion, these will be short-term in duration.

14.6.5 Two footpaths (WRESF12 and 35.35/9/1) are intersected by the Grid Connection Corridor and are associated with the Corridor’s crossing points over the Rivers Ouse and Derwent. These will not be impacted by the Grid Connection Corridor because the river crossings will be trenchless, achieved via horizontal directional drilling (HDD).

14.6.6 Permissive Paths to enhance the current PRoW network will be provided as part of the Scheme, which have been included as embedded mitigation.

Two indicative routes are shown on **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**. The first proposed Permissive Path is a continuation of Bridleway SPALB08 and runs northwards for approximately 340 m until it connects with the second proposed Permissive Path. This second proposed Permissive Path runs eastwards from footpath SPALF14, connecting with the first Permissive Path and continuing eastwards to the edge of the Habitat Enhancement Area. The path would be approximately 1.4 km in length.

14.6.7 Further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in **Chapter 11: Noise and Vibration**, **Chapter 12: Socio-Economics and Land Use**, **Chapter 13: Transport and Access** and **Chapter 16: Other Environmental Topics** (including Air Quality), **ES Volume 1 [EN010143/APP/6.1]**.

14.7 Assessment of Likely Impacts and Effects

14.7.1 The Scheme has the potential to affect Human Health (positively or negatively) during construction, operation and during decommissioning. Due consideration is given to the Scheme in terms of the following:

a. Effects on healthcare services/infrastructure;

b. Effects on other social infrastructure, including schools and community facilities;

c. Noise and vibration;

d. Air pollution and dust;

e. Access to open space and active travel;

f. Access to employment and training; and

g. Social cohesion and neighbourhoods.

14.7.2 The assessments have been undertaken following consideration of the embedded mitigation measures as described in section 14.6.

Construction Effects

14.7.3 Construction phase effects are those effects that result from activities during enabling works, construction and commissioning activities. The construction period of the Scheme is expected to be 24 months in duration. It is noted that construction of the Grid Connection Corridor is expected to take 12 months to complete, whereas the works within the Solar PV Site are expected to take up to 24 months. Additionally, some aspects of construction-related effects will last longer than others, with some effects likely to be relatively short in duration, with respect to the whole construction period. Furthermore, works will be phased across the Site so that not all construction phase impacts will occur across the entire Order limits throughout the 24 month construction phase. The assessment assesses a worst-case scenario, in which construction related effects last the length of the construction period, although this is not considered to be likely for many of the effects considered. By their nature, construction impacts will be temporary and reversible. Due to this, and in combination with the fact that many construction-related effects will not last the duration

of the construction phase, this Human Health assessment considers construction impacts to be short-term and temporary.

Healthcare Services

14.7.4 Activities related to the construction phase of the Scheme may restrict, or create severance to, the accessibility of hospitals, GPs and any other healthcare infrastructure for residents in the study area.

14.7.5 As set out in **Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010143/APP/6.1]**, the Applicant estimates (based on previous experience and benchmarking against other solar schemes) that the Scheme will require a peak construction workforce of 400 FTE staff per day, when both the solar farm and its grid connection are being constructed. The Scheme will require an average of 356 gross direct full-time equivalent (FTE) jobs on-site per day, of which approximately 160 are expected to be taken up by residents within the 60-minute study area (i.e., residents who live within a 60-minute drive time of the Site as illustrated in **Figure 12-2, ES Volume 3 [EN010143/APP/6.3]**) and approximately 196 are expected to be taken up by non-home-based workers (i.e., those that live outside of a 60-minute drive time of the Site). After applying displacement and multiplier assumptions, this results in a total net additional employment of 401 during the construction phase, approximately 181 of which are expected to be taken up by residents within the 60-minute study area and approximately 220 are expected to be taken up by non-home-based workers. The construction workers required to build the Scheme may place extra demand on healthcare services if they move to the area, or if emergency treatment is required.

14.7.6 Baseline analysis shows that GP practices local to the Site are operating below benchmark patient to GP ratios and are accepting registrations from new patients. Parts of the LSOA study area experience high levels of deprivation with respect to the IMD (2019) barriers to housing and services domain, but levels of poor health among the local population are lower than average. Therefore, existing healthcare services and their users have been assessed as having a medium sensitivity.

14.7.7 The average proportion of the population aged over 65 within the study area is higher than in Yorkshire and the Humber and England and is projected to increase as a proportion of the population much faster than in England. In addition to this, while the general population is considered to have medium sensitivity, there are likely to be some more vulnerable sub-populations within this; for example those experiencing high deprivation or with pre-existing health conditions, within the small pockets of deprivation identified in the baseline. Therefore, the elderly and more vulnerable sub-populations are likely to have higher reliance on health services and have therefore been assessed as having a high sensitivity to effects on healthcare services.

14.7.8 If workers reside locally already, they will likely be registered at a local practice currently and will not therefore place additional demand for services on local GPs. It is unlikely that many workers would move to live in the immediate area and access the Bubwith Surgery, which is the only GP practice within 2 km of the Order limits, or other local practices within the East Ridings Medical Group. However, under a worst-case, it is assumed that all of the approximately 196 construction workers who are not likely to

live locally require places at local GPs. There are three GPs at Bubwith Surgery, and it is assumed that the patients per GP provision at Bubwith Surgery is the same as the average across the East Ridings Medical Group (1,756 patients per GP). If the additional 196 patients register at Bubwith Surgery, this would increase the ratio for each GP there to 1,825 patients per GP, slightly above the national target.

14.7.9 Due to the limited scale of impacts upon healthcare services, the short-term duration of effect and reversibility, the magnitude of these adverse impacts is assessed to be very low.

14.7.10 Residents of properties in the villages surrounding the Scheme attempting to access healthcare facilities are likely to use the same strategic roads as construction traffic associated with the Scheme and workers attempting to access the Site.

14.7.11 **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** sets out a reasonable worst-case assessment of the traffic and transport effects of the Scheme during the construction phase. It is forecast that there would be up to 25 HGVs, 178 construction worker vehicles, and 50 tractor/trailer movements travelling to and from the Solar PV Site per day. No movements associated with the Scheme are anticipated during the road network's peak hours (08:00–09:00 and 17:00–18:00).

14.7.12 With embedded mitigation in place, there is only one road link that could experience significant traffic and transport effects: Link 15: between B1230 and Brind Lane junctions. The potential significant adverse effects at Link 15 have been identified as potentially occurring during the hours of 06:00–07:00 and 19:00–20:00. Over the course of a 24 hour period, during construction, it is anticipated that Link 15 will see a 6% increase in total traffic and a 0% increase in HGV traffic. This indicates that the overall impact on the road network will be low during the hours of 07:00–19:00.

14.7.13 Increased traffic flows and severance effects may inhibit local residents' ability to access healthcare facilities. It is assessed that there will only be a significant effect on one road link; the number of trips is relatively low, but it is due to the low baseline flows causing a large percentage increase. Given this, and that the duration of impact is short-term and that there is potential for only minor changes to quality-of-life and morbidity, the overall magnitude of impact is assessed to be low.

14.7.14 The assessment of effects on healthcare infrastructure reflects impacts related to increasing demand on GP services as well as potential traffic and severance effects described above. For the general population (with a medium sensitivity), it is judged that a **minor adverse** effect would result, which is not considered significant. For the over 65s and more vulnerable sub-populations, which have a high sensitivity, a **minor adverse** (not significant) effect also would result. The assessment matrix in **Table 14-5** indicates that a moderate effect may result where sensitivity is high and the magnitude of impact is low, as in the case of traffic and severance impacts. However, given that impacts relating to increasing demand on healthcare infrastructure are judged to be very low, it is deemed that overall, a **minor effect** on the more vulnerable sub-populations using local healthcare infrastructure is likely.

Other Social Infrastructure

14.7.15 Construction activities from the Scheme may restrict, or create severance to, the accessibility of other social infrastructure for residents in the Study Area.

14.7.16 As set out above, other social infrastructure in the local area includes schools, village halls, golfing facilities and train stations. The construction workers (net total of 401 on average each day, 220 of which are likely to come from outside of the 60-minute study area) may place extra demand on these facilities if they move to the area. It is likely, however, based on experience from comparable schemes, that many workers will likely stay in temporary accommodation and travel back to their permanent residence at the weekend. Impacts on the temporary accommodation sector are assessed within **Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010143/APP/6.1]**.

14.7.17 Given the high levels of deprivation experienced in some parts of the LSOA study area with respect to the IMD (2019) barriers to housing and services domain, but the lower than average levels of poor health among the local population, existing social infrastructure services and their users have been assessed as having a medium sensitivity.

14.7.18 As above, the elderly and more vulnerable sub-populations in the area are likely to have a higher reliance on social infrastructure and have therefore been assessed as having a high sensitivity to effects on social infrastructure.

14.7.19 **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** sets out a reasonable worst-case assessment of the traffic and transport effects of the Scheme during the construction phase. With embedded mitigation in place, there is only one road link that would experience a significant traffic and transport effects: Link 15: between the B1230 and Brind Lane junctions.

14.7.20 It is possible that local residents could experience adverse impacts related to their access to social infrastructure due to increased demand for services and increased traffic flows associated with the Scheme. However, the duration of impact would be short-term (given the 24-month construction period) and rapidly reversed once the construction phase is completed. Furthermore, there is only one significant transport effect identified in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**, which is due to the increase in trips against a low baseline traffic flow. This is likely to only lead to a minor change in quality-of-life for local residents and affect a small minority of the population. Therefore, the overall magnitude of change anticipated on other social infrastructure is assessed to be low.

14.7.21 For the general population (with a medium sensitivity), a low adverse impact on access to social infrastructure during construction results in a short-term temporary **minor adverse** effect, which is not considered significant.

14.7.22 For the elderly and more vulnerable population (with a high sensitivity), a low adverse impact on access to social infrastructure during construction results in a short-term temporary moderate or minor effect. Given that the significant effect identified in **Chapter 13: Transport and Access, ES**

Volume 1 [EN010143/APP/6.1] is caused by low baseline traffic flows and that predicted increase in traffic is relatively low, it is assessed that it is most likely that the effect will be **minor adverse**, which is not considered significant.

Noise and Vibration

14.7.23 The construction activities associated with the Scheme have the potential to produce noise and vibration impacts which could potentially lead to adverse health effects on residents within the study area. These impacts could include changes in affected individuals' health perceptions and mental health.

14.7.24 An assessment of the risk of noise and vibration impacts during the construction stage is provided in **Chapter 11: Noise and Vibration, ES Volume 1 [EN010143/APP/6.1]**.

14.7.25 In general, Field Stations will be located at least 250 m from residential properties. The exception to this is a specific exclusion area for a sensitive receptor in Spaldington. This exclusion area is defined in the **Outline Design Principles Statement [EN010143/APP/7.4]**.

14.7.26 The assessment of construction noise states that for Noise Generating Activities 1 (NGA1) (construction), noise predictions at sensitive receptors indicate that the daytime Lowest Observed Adverse Effect Level (LOAEL) (65 dB) will not be exceeded at any locations. For NGA2 (cable installation general works) and, noise predictions indicate that receptors within approximately 50 m of the Grid Connection Corridor may experience noise levels exceeding the LOAEL, and receptors within 15 m may experience noise levels exceeding Significant Observed Adverse Effect Level (SOAEL). However, these works will only occur during core daytime working hours, will be short in duration, and as per the CEMP and DEMP, occupants of nearby receptors will be notified in advance of all noisy activity. As these measures will be followed and cable laying works are unlikely to occur for periods of more than 10 days in close proximity to sensitive receptors, noise effects due to construction and decommissioning activities are considered to be not significant.

14.7.27 The construction traffic noise assessment in **Chapter 11: Noise and Vibration, ES Volume 1 [EN010143/app/.1]** assesses potential changes in road traffic noise at 10 m from the road and comparing the change. For each road link assessed, the effect level is considered to be negligible. The assessment sets out that it is unlikely that typical construction working routines would generate levels of vibration at local receptors that would cause adverse effects for local residents.

14.7.28 Baseline data with respect to noise indicates low levels of existing noise across the local study area. Given the rural setting, the local area could be sensitivity to changes in noise levels potentially impacting quality of life for local residents, should local tranquillity be impacted. The sensitivity of the local population with respect to noise and vibration is therefore assessed to be medium.

14.7.29 The noise and vibration impacts arising from the construction phase of the Scheme would be temporary over the 24-month construction period. Based on the conclusions of the assessment set out in **Chapter 11: Noise and Vibration, ES Volume 1 [EN010143/APP/6.1]**, local impacts are likely to

be minimal. Based on the short-term impact, low exposure and limited change in morbidity or quality of life for residents associated noise and vibration, these impacts on Human Health during the construction phase is assessed to be low.

14.7.30 Overall, the likely effect on Human Health arising from impacts on noise and vibration during the construction phase of the Scheme is assessed to be short-term temporary **minor adverse**, which is considered to be not significant.

Dust and Air Pollution

14.7.31 The construction activities associated with the Scheme have the potential to reduce air quality, which could potentially lead to adverse health effects on residents.

14.7.32 Section 16.2 Air Quality of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]** assesses the risk of dust and particulate matter impacts during the construction stage, as well as potential air quality effects.

14.7.33 The air quality impacts arising from the construction phase of the Scheme would be temporary over the approximately 24-month construction period. Based on **Chapter 16: Other Environmental Topics** (including Air Quality), **ES Volume 1 [EN010143/APP/6.1]**, local impacts are likely to be minimal, with background particulate matter concentrations being well below the objective value with negligible risk of exceedance as a result of the construction of the Scheme. Magnitude of impact is therefore assessed to be very low.

14.7.34 Baseline data with respect to air quality indicates good air quality and rates of deaths from respiratory diseases are also low in the study area, relative to national average rates. The sensitivity of the local population with respect to air quality is therefore assessed to be low.

14.7.35 Overall, the likely effect on Human Health arising from impacts on air quality during the construction phase of the Scheme is assessed to be **negligible**. This is not considered significant.

Access to Open Space and Active Travel

14.7.36 Construction activities associated with the Scheme may cross, or otherwise impact upon, accessibility to and safety of Public Rights of Way (PRoW) and active travel networks in the area.

14.7.37 As set out in baseline section above, there is an extensive existing network of PRoW in the area as illustrated in **Figure 2-2, ES Volume 3 [EN010143/APP/6.3]**. The ‘Howden 20’ recreational route along PRoW passes through or adjacent to the Solar PV Site at various locations, but there are no national trails or national cycle routes within the Solar PV Site. The Grid Connection Corridor intersects National Cycle Route 65. The PRoW in the study area do not connect rural areas to more urban areas or business parks and are therefore unlikely to be used for commuting. Given this, in combination with the relatively good health of the local population, the sensitivity of the local population with regard to access to open space and travel is assessed to be medium.

14.7.38 The elderly and more vulnerable sub-populations in the area may have a higher reliance on the existing PRoW network and active travel methods. Therefore, the sensitivity of these sub-populations to effects on open space and active travel are assessed to be high.

14.7.39 The Scheme has been designed to have minimal to no impact on PRoW and should not require any PRoW closures. Within the Solar PV Site, mitigation measures including fencing and a minimum 15 m buffer from the path centreline will be implemented to ensure that PRoW access is unaffected throughout construction.

14.7.40 Footpaths WRESF12, 35.35/9/1 and 35.47/1 are intersected by the Grid Connection Corridor and are associated with the Corridor's crossing points over the Rivers Ouse and Derwent. These will not be impacted during construction as river crossings will be trenchless.

14.7.41 The other PRoW crossed by the Grid Connection Corridor and all PRoW which are crossed by the Interconnecting Cables would only be impacted during the short-term trenching and restoration operations. These PRoW would remain open (likely managed through traffic management measures), although routes may be temporarily slightly diverted (for example, moving from one side of a road to another). In a worst-case, where PRoW require diversions, these will be short-term in duration.

14.7.42 **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** sets out a reasonable worst-case assessment of the traffic and transport effects of the Scheme during the construction phase. With embedded mitigation in place, there is one link that would experience significant traffic and transport effects: Link 15: between the B1230 and Brind Lane junctions.

14.7.43 **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** identifies no significant effects related to non-motorised amenity, severance, accidents and safety or fear and intimidation.

14.7.44 Only one road link is likely to experience a significant effect in relation to traffic and no road links are expected to experience amenity, severance, safety or fear effects. Given this, in combination with very low number of PRoW expected to be disrupted, and that the duration of impact would be short-term (due to the approximate 24-month construction period) and rapidly reversed once the construction phase is completed, the overall magnitude of change anticipated on access to open space and active travel is therefore assessed to be low.

14.7.45 This results in a temporary short-term **minor adverse** effect, which is considered not significant.

Access to Employment and Training

14.7.46 Construction activities associated with the Scheme will provide access to employment in this phase, which will provide a beneficial health impact to these workers. There is evidence that employment matters to health, not only from an economic perspective, but also in terms of quality of life. Good quality work protects against social exclusion through the provision of income, social interaction, identity and purpose.

14.7.47 The most rapid feasible construction programme, construction of the Grid Connection Cables is anticipated to require 12 months, whereas

construction of the solar farm will require an estimated 24 months. The Applicant estimates that the Scheme will require a peak of 400 full-time equivalent (FTE) jobs, and an average of approximately 356 gross direct FTE jobs on-site over the 24-month construction period. **Chapter 12: Socio-Economics and Land Use, ES Volume 1 [EN010143/APP/6.1]** estimates that, taking account of displacement and indirect and induced employment, the Scheme could result in 181 jobs that could be taken up by local residents living within the 60-minute Study Area and 220 by residents outside of the Study Area.

14.7.48 The jobs created will be in the renewable energy sector, specifically relating to solar installation, but also electricity transmission. As such, they will contribute to the development of skills needed for the UK's transition to net zero.

14.7.49 A **Framework Skills, Supply Chain and Employment Plan (FSSCEP)** [**EN010143/APP/7.15]** has been prepared to maximise the economic benefits of the Scheme for the local community. There will be a Requirement in the DCO for the FSSCEP to be developed into a full SSCE plan once consents are granted. The FSSCEP sets out that post-consent the Applicant will:

a. consider requiring contractors to provide opportunities for the creation of apprenticeships and training places during construction and decommissioning as part of its procurement process;

b. investigate the potential for a programme of activities which promote science, technology, engineering, and mathematics (STEM) education and careers;

c. investigate measures to promote take up of jobs generated by the Scheme by local people, including requiring contractors to promote local employment during construction and decommissioning; and

d. work with local partners to communicate purchasing and contracting opportunities arising from the Scheme to local businesses.

14.7.50 The sensitivity of the local workforce to employment and training changes has been assessed as low, due to the relatively low claimant count in the area.

14.7.51 The jobs arising from the construction phase of the Scheme would be temporary over the 24-month construction period. These would represent local jobs growth (with an estimated 181 jobs for workers living with a 60-minute drive time), although the overall change would be small in the context of the overall number of jobs locally.

14.7.52 Overall, the magnitude of change anticipated with respect to employment and income during the construction phase is therefore assessed to be low.

14.7.53 Overall, the likely beneficial effect on Human Health arising from impacts on employment and training during the construction phase of the Scheme is assessed to be temporary short-term **minor beneficial**, which is considered not significant.

14.7.54 Increased traffic flows and severance effects may inhibit local residents' ability to access employment and training. As set out in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**, with

embedded mitigation in place, one road link is likely to experience significant traffic effects: Link 15: between the B1230 and Brind Lane junctions.

14.7.55 The significant effect identified at Link 15 is due to the Scheme trips being added to low baseline traffic flows, causing a large percentage increase. This is likely to only lead to a minor change in quality-of-life for residents and affect a small minority of the population. Furthermore, the likely duration of impact is short-term (given the 24-month construction period). Therefore, the overall magnitude of impact is assessed to be low.

14.7.56 As above, the sensitivity of the local workforce to employment and training changes has been assessed as low, due to the relatively low claimant count in the area.

14.7.57 This results in a temporary short-term **minor adverse** effect, which is considered not significant.

Social Cohesion and Neighbourhoods

14.7.58 Roads bordering the Order limits may be used by construction traffic which could impact on travel between settlements and cause community severance.

14.7.59 As set out in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**, with embedded mitigation in place, there is one road link which is likely to experience significant effects: Link 15: between B1230 and Brind Lane junctions. However, no road links are expected to experience significant effects with regard to severance, driver delay, accidents and safety or fear and intimidation.

14.7.60 Baseline data with respect to Human Health indicates lower than average levels of poor health among the local population, and therefore the population is assessed to have a medium sensitivity.

14.7.61 Elderly and more vulnerable sub-populations may be more reliant on shared resources, have a lower capacity to adapt and may suffer from existing inequalities. Therefore, these sub-populations have been assessed to have a high sensitivity.

14.7.62 Increased traffic flows and severance effects may inhibit local residents' ability to access neighbouring communities and social contacts. **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** identifies one road link with a likely significant effect, which is a result of the Scheme trips being added to low baseline traffic flows, and therefore causing a high percentage change. Given this, and that the duration of impact is short-term and is likely to lead to only minor changes to quality-of-life for residents, the overall magnitude of impact is assessed to be low.

14.7.63 For the general population (with a medium sensitivity), a low adverse impact on social cohesion and neighbourhoods during construction results in a short-term temporary **minor adverse** effect, which is not considered significant.

14.7.64 For the more vulnerable sub-population (with a high sensitivity), a low adverse impact on social cohesion and neighbourhoods during construction results in a short-term temporary moderate or minor effect. Given that the significant effect identified in **Chapter 13: Transport and Access, ES**

Volume 1 [EN010143/APP/6.1] is driven by low baseline data and that no significant effects are identified in relation to severance or fear and intimidation, it is assessed that it is most likely that the effect will be temporary short-term **minor adverse**, which is not considered significant.

Flood Risk

14.7.65 An assessment of the likely impact of the Scheme on flood risk, drainage and surface water during the construction stage is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

14.7.66 **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]** considers there to be a slight adverse (not significant) effect on fluvial and tidal flood risk, a slight adverse (not significant) effect on surface water flood risk, and a neutral (not significant) effect from flood risk from groundwater and sewers and artificial sources. Overall, the magnitude of change anticipated with respect to flood risk impacts on Human Health during the operation phase is therefore assessed to be very low.

14.7.67 Baseline data with respect to Human Health indicates lower than average levels of poor health among the local population, and therefore the population is assessed to have a medium sensitivity.

14.7.68 For the general population (with a medium sensitivity), this results in a minor or negligible effect. Given that **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]** states that there would a slight adverse or neutral effect on flood risk as a result of the Scheme, it is assessed that the likely effect on Human Health related to flood risk during the construction of the Scheme is assessed as temporary short-term **negligible**, which is considered to be not significant.

Landscape and Visual Amenity

14.7.69 Residents, workers and visitors in communities close to the Scheme as well as visitors in the Study Area may experience changes to views, landscape and neighbourhood amenity as a result of the Scheme. These temporary changes may have an impact on the mental health and wellbeing of the population.

14.7.70 An assessment of the likely impact of the construction phase of the Scheme on the local landscape and visual amenity is provided in **Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010143/APP/6.1]**.

14.7.71 During the construction phase, significant visual effects may arise for residents at 15 viewpoints and PRoW users at six locations.

14.7.72 Given the rural setting, the local area could be sensitive to changes in visual effects potentially impacting quality of life for residents, should local tranquillity be impacted. The sensitivity of the population with respect to the Human Health effects of changes to the landscape and visual amenity is assessed to be medium.

14.7.73 Given that a low number of viewpoints will be affected, and the effects are likely to be short-term and reversible, the magnitude of impact in relation to Human Health is assessed to be low.

14.7.74 Overall, the likely effect on Human Health arising from impacts on landscape and visual amenity during the construction phase of the Scheme is assessed to be temporary short-term **minor adverse** which is considered to be not significant.

Operational Effects

14.7.75 As set out in **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**, operational effects are those effects associated with operational and maintenance activities during the generating lifetime of the Scheme. Timescales associated with these enduring effects fall into the following categories:

a. Short-term: endures for up to 12 months after construction or decommissioning;

b. Medium-term: endures for one to five years after construction or decommissioning;

c. Reversible long-term effects: long-term effects which endure throughout the lifetime of the Scheme, but which cease once the Scheme has been decommissioned; and

d. Permanent effects: those effects which cannot be reversed following decommissioning.

Healthcare Services

14.7.76 As a result of the operation of the Project and the associated employment, there is the potential for local healthcare services to be impacted due to restrictions to, or severance to, the accessibility of hospitals, GPs and other health infrastructure.

14.7.77 During the operational phase, the Applicant has estimated that there are expected to be approximately three full-time staff working on the Scheme per day (based on previous experience and benchmarking against other solar farm schemes, taking into account size and scale). Assuming a worst-case scenario whereby all three employees move to the area and require places at local surgeries, the impact of additional demand places on healthcare services in the area would be very low.

14.7.78 Due to the low number of operational staff, the Scheme is likely to only generate very low levels of traffic and will not impact on local residents' ability to access healthcare facilities. It is assessed that there would be a very low effect.

14.7.79 For the general population (with a medium sensitivity), these adverse impacts are judged to result in no effect, which is considered not significant. For the over 65s other more vulnerable sub-populations, which has a higher sensitivity, this is also judged to result in a **negligible effect**, which is considered not significant.

Other Social Infrastructure

14.7.80 As a result of the operation of the Project and associated employment, there is the potential for local social infrastructure to be impacted due to restrictions to, or severance to, the accessibility of other social infrastructure.

14.7.81 During the operational phase, there are expected to be three full-time staff working within the Site per day. This will place a very low level of additional demand on social infrastructure, if any at all. The impact magnitude has therefore been assessed as very low. The workers will also generate very low levels of traffic, which will not impact local residents' ability to access social infrastructure.

14.7.82 The sensitivity of the general population with respect to social infrastructure is assessed to be medium.

14.7.83 As above, for the elderly and more vulnerable populations, the sensitivity of these groups is assessed to be high.

14.7.84 For the general population (with a medium sensitivity), this is assessed to result in a **negligible** effect. For more vulnerable sub-populations(with a high sensitivity), this results in a minor effect. In a worst-case scenario, this results in a reversible long-term **minor adverse** effect. This is considered not significant.

Air Pollution caused by Traffic

14.7.85 Section 16.2 Air Quality of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]** does not specifically assess effects on air quality during operation. A significant change to traffic flows is not anticipated to occur once the Scheme is operational and there are no emissions from operational plant predicted during operation. A detailed assessment of emissions from the operational phase and the subsequent impact upon local air quality is therefore not required, as agreed with the Planning Inspectorate, and will not be considered further within this assessment.

14.7.86 It is anticipated that there will be up to three permanents (on-site) operational jobs. Traffic generation from operational staff is not expected to induce significant changes to traffic flows on the local road network and is therefore not expected to cause significant air pollution.

14.7.87 It is therefore considered that there will likely be **no effect** on Human Health associated with air pollution during the operational phase of the Scheme. This is considered not significant.

Noise Pollution

14.7.88 An assessment of the impact of operation of the Scheme on noise levels is provided in **Chapter 11: Noise and Vibration, ES Volume 1 [EN010143/APP/6.1]**.

14.7.89 There is not anticipated to be any noticeable impulsive or intermittent characteristics from plant noise emissions experienced at the receptors surrounding the Scheme. The SOAEL is not exceeded at any of the receptor locations.

14.7.90 Based on the conclusions of the assessment set out in **Chapter 11: Noise and Vibration, ES Volume 1 [EN010143/APP/6.1]**, impacts arising from the operation of the Scheme would be not significant. Overall, the magnitude of change anticipated with respect to noise and vibration impacts on Human Health during the operation phase is therefore assessed to be very low.

14.7.91 Baseline data with respect to Human Health indicates lower than average levels of poor health among the local population, and therefore the population is assessed to have a medium sensitivity.

14.7.92 Overall, the likely effect on Human Health arising from impacts on noise and vibration during the operation of the Scheme is assessed to be **negligible**, which is considered not significant.

Access to Open Space and Active Travel

14.7.93 The Scheme has been designed to ensure that there is no requirement for temporary or permanent diversions to PRoW during operation.

14.7.94 Permissive Paths to enhance the current PRoW network will be provided as part of the Scheme. Two indicative routes are shown on **Figure 2-2, ES Volume 3 [EN010143/APP/6.2]**. The first proposed Permissive Path is a continuation of Bridleway SPALB08 and runs northwards for approximately 340 m until it connects with the second proposed Permissive Path. This runs eastwards from footpath SPALF14, connecting with the first Permissive Path and continuing eastwards to the edge of the Habitat Enhancement Area. The path would be approximately 1.4 km in length.

14.7.95 As set out in **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**, the Scheme is anticipated to generate negligible additional traffic flows during the operation phase. Therefore, operational transport and access effects of the Scheme have been scoped out of the Transport and Access assessment, in agreement with the Planning Inspectorate.

14.7.96 As above, the sensitivity of the local population with respect to access to open space and active travel is assessed to be medium.

14.7.97 For the elderly population and more vulnerable sub-populations, the sensitivity is assessed to be high.

14.7.98 Overall, the magnitude of change anticipated on Human Health arising from impacts associated with access to open space and active travel is assessed to be low beneficial.

14.7.99 For the general population (with a medium sensitivity), this results in a **minor beneficial** effect on access to open space and active travel, which is considered not significant. For the more vulnerable sub-populations (with a high sensitivity), this results in a minor or moderate beneficial effect. Given the small number of permissive paths being provided relative to the existing PRoW network, it is considered that this would provide a **minor beneficial** effect, which is not considered significant.

Access to Employment and Training

14.7.100 As set out in **Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010143/APP/6.1]**, the Scheme will generate an estimated three FTE jobs during the operational phase. The jobs created will be in the renewable energy sector, assisting in the UK's transition to net zero. Where possible, there will be a preference for local staffing.

14.7.101 As above, the sensitivity of the local population with respect to access to employment and training is assessed to be low.

14.7.102 These direct additional jobs would represent local jobs growth, although the overall change would be very small in the context of the total number of jobs locally.

14.7.103 **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]** states that as predicted traffic levels owing to the operational phase are so low, consideration of the transport and access effects of the Scheme within the operational phase have been scoped out of the assessment, in agreement with the Planning Inspectorate. It is therefore not anticipated that there would be any adverse impacts on local employment and businesses due to traffic generation during the operational phase.

14.7.104 Overall, the magnitude of change with respect to employment and training during the operation phase is therefore assessed to be very low.

14.7.105 The likely effect on Human Health arising from impacts on employment and training during the operation phase is assessed to be **negligible**. This is considered not significant.

Social Cohesion and Neighbourhoods

14.7.106 As set out above, **Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010143/APP/6.1]** suggests that no effects on local community severance or users of PRoW are anticipated from the operational phase of the Scheme.

Flood Risk

14.7.107 An assessment of the impact of the Scheme on flood risk, drainage and surface water during the operation stage is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

14.7.108 Based on the conclusions of the assessment set out in this chapter, no significant effects are identified in relation to surface water features, groundwater or flood risk, for both the Solar PV Site and Grid Connection Corridor. The magnitude of associated impacts on human health during the operation phase is therefore assessed to be very low.

14.7.109 Baseline data with respect to human health indicates lower than average levels of poor health among the local population, and therefore the population is assessed to have a medium sensitivity.

14.7.110 Overall, the likely effect on human health related to flood risk during the operation of the Scheme is assessed to be **negligible**, which is considered not significant.

Landscape and Visual Amenity

14.7.111 An assessment of the impact of the Scheme on local landscape and visual amenity during the operation phase is provided in **Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010143/APP/6.1]**.

14.7.112 During Operation Year 1, receptors at 10 viewpoints and users of the Howden 20 long distance route may experience significant adverse effects. However, these will reduce to not significant at Operation Year 15 as a result of the establishment of proposed mitigation, enhancement and replacement planting and the management of existing hedgerows.

14.7.113 Given the rural setting, the local area could be sensitive to changes in visual effects potentially impacting quality of life for residents, should local tranquillity be impacted. The sensitivity of the population with respect to human health effects of changes to the landscape and visual amenity is assessed to be medium.

14.7.114 Given that a low number of viewpoints, residents and PRoW users will be affected in operation year 1 and any significant effects will be temporary and by operation year 15 considered not significant, the magnitude of impact in relation to human health is assessed to be low.

14.7.115 Overall, the likely effect on human health arising from impacts on landscape and visual amenity during the operational phase of the Scheme is assessed to be **minor adverse**. This is considered not significant.

Decommissioning Effects

14.7.116 Drawing on assessments set out in **Chapter 9: Flood Risk, Drainage and Water Environment**, **Chapter 10: Landscape and Visual Amenity**, **Chapter 11: Noise and Vibration**, **Chapter 12: Socio-economics and Land Use**, **Chapter 13: Transport and Access**, and **Chapter 16: Other Environmental Topics (including Air Quality)**, **ES Volume 1 [EN010143/APP/6.1]**, effects on Human Health during the decommissioning phase of the Scheme are anticipated to be in line with and no worse than effects during the construction phase of the Scheme.

Summary of Effects

14.7.117 **Table 14-7** summarises the findings of the assessment of effects on Human Health.

Table 14-7. Summary of magnitude of impact and significance of effect (Human Health)

Receptor	Sensitivity (Value)[2]	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Construction and Decommissioning Phases					
Healthcare Services	Medium	Pressure on healthcare services due to incoming construction workers, traffic and severance impacts on strategic roads used to access healthcare services.	Low	Minor adverse	No
	High		Low	Minor adverse	No
Other Social Infrastructure	Medium	Traffic and severance impacts on strategic roads used to access other social infrastructure.	Low	Minor adverse	No
	High		Low	Minor adverse	No
Noise and Vibration	Medium	Noise and vibration associated with the construction of the Scheme and associated amenity and mental health impacts.	Low	Minor adverse	No
Dust and Air Pollution	Low	Air quality impacts associated with dust and pollution from the construction phase of the Scheme.	Very Low	Negligible	No
Access to Open Space and Active Travel	Medium	Closures and diversions of PRoW and active travel networks.	Low	Minor adverse	No
	High		Low	Minor adverse	No
	Low	Generation of employment and income associated with the construction phase.	Low	Minor beneficial	No

[2] Where multiple sensitivities are listed, these reflect the sensitivities of the different sub-population groups that have been assessed, as explained in Section 14.4: Assessment Methodology and Section 14.7: Assessment of Likely Impacts and Effects of this chapter.

Receptor	Sensitivity (Value)[2]	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Access to Employment and Training	Low	Traffic and severance impacts associated with construction traffic.	Low	Minor adverse	No
Social Cohesion and Neighbourhoods	Medium	Traffic and severance impacts associated with construction traffic.	Low	Minor adverse	No
	High		Low	Minor adverse	No
Flood Risk	Medium	Impact of the Scheme in terms of flood risk, drainage and surface water	Very Low	Negligible	No
Landscape and Visual Amenity	Medium	Changes to views, landscape and neighbourhood amenity due to construction of the Scheme.	Low	Minor adverse	No
Operational Phase					
Healthcare Services	Medium	Operational workers additional demand on healthcare services and associated traffic and severance impacts	Very Low	Negligible	No
	High		Very Low	Negligible	No
Other Social Infrastructure	Medium	Operational workers additional demand on social infrastructure and associated traffic and severance impacts	Very Low	Negligible	No
	High		Very Low	Minor adverse	No
Air Pollution caused by Traffic	Low	Traffic generation from operational workforce	No effect	No effect	No
Noise Pollution	Medium	Plant noise emissions associated with the operational Scheme	Very Low	Negligible	No
Access to Open Space and Active Travel	Medium	Provision of permissive paths	Low	Minor beneficial	No
	High		Low	Minor beneficial	No

Receptor	Sensitivity (Value)[2]	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Access to Employment and Training	Low	Generation of operational employment and traffic associated with employment.	Very Low	Negligible	No
Social Cohesion and Neighbourhoods	High	Traffic and severance effects associated with the operational Scheme	No effect	No effect	No
Flood Risk	Medium	Impact of the Scheme in terms of flood risk, drainage and surface water	Very Low	Negligible	No
Landscape and Visual Amenity	Medium	Changes to views, landscape and neighbourhood amenity due to the operation of the Scheme.	Low	Minor adverse	No

14.8 Additional Mitigation, Enhancement, and Monitoring

14.8.1 No further mitigation, enhancement or monitoring measures are required with respect to Human Health effects arising from the Scheme, due to no significant adverse effects associated with Human Health being identified.

14.8.2 It is noted that Permissive Paths to enhance the current PRoW network will be provided as part of the Scheme, which have been included as embedded mitigation. Two indicative routes are shown on **Figure 2-2, ES Volume 3 [EN010143/APP/6.3]**. The first proposed Permissive Path is a continuation of Bridleway SPALB08 and runs northwards for approximately 340 m until it connects with the second proposed Permissive Path. This runs eastwards from footpath SPALF14, connecting with the first Permissive Path and continuing eastwards to the edge of the Habitat Enhancement Area. The path would be approximately 1.4 km in length.

14.8.3 In addition, the Applicant has developed a Framework Skills, Supply Chain and Employment Plan (FSSCEP) accompanying the DCO Application **[EN010143/APP/7.15]** which aims to enhance and pro-actively expand the economic benefits of the Scheme for the local community. The FSSCEP identifies activities relating to skills, supply chain and employment which the Applicant will take forward post-consent, in partnership with local stakeholders.

14.9 Residual Effects

14.9.1 Given no further mitigation or enhancement measures have been proposed, the potential effects identified in section 14.7 remain valid.

14.9.2 The residual effects therefore remain the same as stated in this chapter, with no significant effects identified relating to Human Health.

Table 14-8. Residual effects – Human Health (construction and decommissioning)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Healthcare services	Pressure on healthcare services due to incoming construction workers, traffic and transport impacts on strategic roads used to access healthcare services.	N/A	Minor adverse	Not required	Minor adverse (not significant)
Other Social Infrastructure	Traffic and transport impacts on strategic roads used to access other social infrastructure.	N/A	Minor Adverse	Not required	Minor adverse (not significant)
Noise and Vibration	Noise and vibration associated with the construction of the Scheme and associated amenity and mental health impacts.	N/A	Minor adverse	Not required	Minor adverse (not significant)
Dust and Pollution	Air quality impacts associated with dust and pollution from	N/A	Negligible	Not required	Negligible (not significant)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
	the construction phase of the Scheme.				
Access to Open Space and Active Travel	Closures and diversions of PRoW and active travel networks.	N/A	Minor adverse	Not required	Minor adverse (not significant)
Access to Employment and Training	Generation of employment and income associated with the construction phase.	N/A	Minor beneficial	Not required	Minor beneficial (not significant)
Access to Employment and Training	Traffic impacts associated with construction traffic.	N/A	Minor adverse	Not required	Minor adverse (not significant)
Social Cohesion and Neighbourhoods	Traffic and severance impacts associated with construction traffic.	N/A	Minor adverse	Not required	Minor adverse (not significant)
Flood Risk	Impact of the Scheme in terms of flood risk, drainage and surface water.	N/A	Minor adverse	Not required	Minor adverse (not significant)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Landscape and Visual Amenity	Changes to views, landscape and neighbourhood amenity due to construction of the Scheme.	N/A	Minor adverse	Not required	Minor adverse (not significant)

Table 14-9. Residual effects – Human Health (operation)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Healthcare Services	Operational workers additional demand on healthcare services and associated traffic and severance impacts.	N/A	Negligible	Not required	Negligible (not significant)
Other Social Infrastructure	Operational workers additional demand on social infrastructure and	N/A	Minor adverse	Not required	Minor adverse (not significant)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
	associated traffic and severance impacts				
Air Pollution caused by Traffic	Traffic generation from the operational workforce causing pollution.	N/A	No effect	Not required	No effect
Noise Pollution caused by Traffic	Plant noise emissions associated with the operational Scheme	N/A	Negligible	Not required	Negligible (not significant)
Access to Open Space and Active Travel	Provision of permissive paths	N/A	Minor beneficial	Not required	Minor beneficial (not significant)
Access to Employment and Training	Operational employment generation and associated traffic and severance impacts	N/A	Negligible	Not required	Negligible (not significant)
Social Cohesion and Neighbourhoods	Traffic and severance impacts associated with operational traffic	N/A	No effect	Not required	No effect

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Flood Risk	Impact of the Scheme in terms of flood risk, drainage and surface water.	N/A	Negligible	Not required	Negligible
Landscape and Visual Amenity	Changes to views, landscape and neighbourhood amenity due to operation of the Scheme.	N/A	Minor adverse	Not required	Minor adverse

14.10 Cumulative Effects

14.10.1 This section assesses the potential for two or more developments that are reasonably foreseeable and/or consented (but not yet forming part of the baseline environment) and within proximity to the Scheme to lead to significant cumulative environmental effects on the same receptor.

14.10.2 Effect interactions, that is the combined effect of individual impacts from the Scheme that are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own, are covered within **Chapter 17: Cumulative Effects and Interactions, ES Report Volume 1 [EN010106/APP/6.1**.

14.10.3 The cumulative schemes to be considered have been agreed in consultation with relevant Local Planning Authorities and are listed in **Appendix 17-2, ES Volume 2 [EN010106/APP/6.2].** The cumulative assessment methodology is presented within **Chapter 5: EIA Methodology, ES Volume 1 [EN010106/APP/6.1].**

14.10.4 There are six proposed developments that have been identified which could coincide with the Order limits, which are included on the list of developments presented in **Chapter 17: Cumulative Effects and Interactions, ES Report Volume 1 [EN010106/APP/6.1]**. In all instances, the overlap occurs between the Grid Connection Corridor of the Scheme and other developments.

14.10.5 The assessment of potential effects on access to healthcare services considers changes to additional service demand and traffic related to construction. The scale of the construction employment generated from cumulative schemes cannot be readily quantified as this information is commercially sensitive and not available. **Chapter 13: Transport and Access, ES Volume 1 [EN010106/APP/6.1]** states that it is considered unlikely that the other schemes will lead to a worsening of any effects from the Scheme, when considering their scale and distribution of traffic. It is therefore not anticipated that there will be any cumulative effects on access to healthcare services.

14.10.6 Cumulative noise effects during construction and operation phases may occur when developments are within 500 m of a common receptor. **Chapter 11: Noise and Vibration, ES Volume 1 [EN010106/APP/6.1]** states that it is not expected that cumulative schemes would elevate any of the residual effects identified.

14.10.7 It is currently not anticipated that there will be any cumulative effects on air quality, as like this Scheme, any cumulative schemes will also be mitigating for construction phase impacts on air quality.

14.10.8 The assessment of potential effects on access to open space and travel considers both physical changes to pedestrian and cyclist infrastructure in the vicinity of the Order limits, as well as changes to the environment that these road users are exposed to. Cumulative effects on pedestrians and cyclists are difficult to quantify from a physical infrastructure perspective, however, there are no proposed changes to PRoW within this Scheme and therefore it is considered unlikely that other schemes will lead to a worsening of any effects from the Scheme. The assessment also considers fear and intimidation, as set out in **Chapter 13: Transport and Access, ES**

Volume 1 [EN010106/APP/6.1]. The transport and access assessment incorporates TEMPro growth factors, which include an accurate forecast of local development growth. Therefore, the baseline includes cumulative growth, and the cumulative effects are considered within the assessment. Therefore, it is not expected that there would be any cumulative effects associated with transport and access.

14.10.9 For access to employment and training, **Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010106/APP/6.1]** states that the construction phases of the Scheme and other cumulative developments would be expected to generate employment. In the absence of commercially sensitive information relating to the construction costs of each of the cumulative schemes, it is not possible to make a quantitative assessment of the employment likely to be generated from the construction stages of other schemes. However, it is expected that there would be a cumulative temporary **minor beneficial** effect on construction related employment within the Study Area, which is considered **not significant**. The impact on PRoW is considered to be negligible and therefore cumulative effects on PRoW are not considered.

14.10.10 The assessment of social cohesion and neighbourhoods considers the traffic changes and severance which may affect travel between settlements. As set out in **Chapter 13: Transport and Access, ES Volume 1 [EN010106/APP/6.1],** the transport and access assessment considers cumulative growth within its baseline and it is not expected that there would be any cumulative effects. Therefore, it is considered unlikely that other schemes will lead to a worsening of any effects from the Scheme.

14.10.11 As set out in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010106/APP/6.1]** it is assumed that all cumulative schemes will adhere with industry best practice and avoid significant effects on the water environment. It is therefore expected that there will not be significant cumulative effects associated with flood risk.

14.10.12 As set out in **Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010106/APP/6.1],** it is not possible to definitively state the significance of cumulative impacts on landscape and visual amenity, however, based on professional judgment it is not anticipated that cumulative schemes would elevate any of the residual effects identified in this assessment.

14.11 References

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