Springwell Solar Farm

Health and Wellbeing Summary Statement

EN010149/APP/8.10
Revision 1
Deadline 1
June 2025
Springwell Energyfarm Ltd

APFP Regulation 5(2)(a)
Planning Act 2008
Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations 2009

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1. Introduction

1.1. Purpose of the Document

1.1.1. This **Health and Wellbeing Summary Statement** has been prepared by Springwell Energy Farm Limited (The Applicant) and submitted to the Examining Authority (ExA) at Deadline 1 of the Examination Phase for Springwell Solar Farm (the Proposed Development).

1.1.2. This statement summarises, in a single document, the approach to the consideration and assessment of effects of the Proposed Development on human health and wellbeing (both physical and mental health).

1.2. Structure of this document

1.2.1. This **Health and Wellbeing Summary Statement** is structured as follows:

- **Section 1 – Introduction** – this section sets out the purpose of the Health and Wellbeing Summary Statement, and provides an overview of the structure. It provides a 'wayfinding' guide to where health has been considered in application documents including Environmental Statement (ES) assessments, management plans and other documents.
- Section 1 also provides a background to the Applicant's approach to consideration of health pathways, determinants and populations / sub-populations through the scoping, pre-application, consultation phases of this application, in the context of guidance around the consideration of health in Environmental Impact Assessment (EIA).
- This confirms the Applicant's inherent approach to considering the wider determinants and pathways of human health on 'receptors' (people, including different and disproportionate effects on people depending on their characteristics), in-line with industry standard guidance.
- **Section 2 – Health and Wellbeing Policy Context & Evidence Base** – provides an overview of the national and local policy and strategy of relevance to health and wellbeing in the context of the Proposed Development.
- This section then refers to relevant baseline information that informs the location, scale and sensitivity of populations to experiencing health effects, and provides a health-specific baseline not previously included within the ES.
- **Section – Environmental Effects and Health Pathways** – provides a summary of all of the significant (moderate and above) and minor significance effects reported within the ES, and describes them in terms

of their relevance to health in-line with guidance. This section identifies how mitigation has been considered within the assessment to avoid or reduce significant effects, where practicable.

- **Section 4 – In-Combination and Cumulative Effects** – provides a summary of all of the significant (moderate and above) and minor significance in-combination and cumulative effects reported within the ES, and describes them in terms of their relevance to health in-line with guidance – this includes a consideration of the in-combination effects on PRoW users, which wasn't previously included within a single location in the ES.
- **Section 5 – Commentary on Mental Health and Wellbeing** – provides contextual information on the Applicant's consideration of mental health and wellbeing effects, determinants, pathways and receptors in particular, and identifies the measures undertaken to address them within the Proposed Development and DCO Application

1.3. Wayfinding

1.3.1. Within the DCO application, reference to environmental impacts on health and wellbeing is provided in Table 5.2 of **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]** [APP-045], and from paragraph 8.1.38 to 8.1.47 in the **Planning Statement [EN010149/APP/7.2.2]** [AS-018].

1.3.2. This **Health and Wellbeing Summary Statement** combines conclusions from ES Chapters, Management Plans and Other DCO Documents on how the project will influence health, including changes to social, economic and physical environment.

1.3.3. The following documents already within the DCO Application are drawn upon within this report:

- ES Assessments:
  - **Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]** [APP-045];
  - **Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1]** [APP-046];
  - **Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1]** [APP-050];
  - **Volume 1, Chapter 11 Land, Soil and Groundwater [EN010149/APP/6.1.2]**;
  - **Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]**;
  - **Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]**;

  - **Volume 1, Chapter 14: Traffic and Transport[EN010149/APP/6.1.2]** [AS-010];
  - **Volume 1 Chapter 16: Cumulative Effects [EN010149/APP/6.1.2]**;

- The following additional assessments:
  - **Volume 3, Appendix 5.4: Glint and Glare Study [EN010149/APP/6.3.2];**
  - **Volume 3, Appendix 5.5 High-Level Electromagnetic Field Assessment [EN010149/APP/6.3]** [APP-079];
  - **Flood Risk Assessment [EN010149/APP/7.16.3];**
  - **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151]; and
  - **BESS Plume Assessment [EN010149/APP/7.19.2]**.

1.4. Management Plans, Mitigation and Control Documents

1.4.1. These plans have been directly influenced by the assessment of likely significant effects, and through the application of good practice to avoid, reduce or monitor and manage environmental effects with an inherent and specific consideration of the health implications on populations and sub-populations of those environmental effects.

1.4.2. These plans and strategies include the design and implementation of tangible measures to physically mitigate effects.

1.4.3. Importantly, they also include the provision of information to affected communities and users of the accessible natural environment, and opportunities for engagement and feedback to ensure that people are able to gain information and review the approach to be taken by the Applicant, which is considered an important factor to reducing the potential for adverse mental health and wellbeing effects.

- **ES Volume 1 Chapter 17: Mitigation Schedule [EN010149/APP/6.1]** [APP-057];
- **Design Commitments [EN010149/APP/7.4]** [APP-0138];
- **Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7.2]**. Within the **oCEMP**, Mitigation on various topics within ES Volume 1 of relevance to human health can be found at the following:
  - Air Quality – Table 3;
  - Climate – Table 5;
  - Landscape and Visual – Table 7;

  - Land, soil and groundwater – Table 8;
  - Noise and Vibration – Table 9; and
  - Water – Table 10.
- **Outline Construction Traffic Management Plan (oCTMP) [EN010149/APP/7.8.2];**
- **Outline Landscape and Ecology Management Plan (oLEMP) oLEMP [EN10149/APP/7.9.2]**;
- **Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10.2]**. Mitigation on various topics within ES Volume 1 of relevance to human health can be found at the following:
  - Air Quality – Table 2;
  - Biodiversity – Table 3;
  - Climate – Table 4;
  - Land, soil and groundwater – Table 6;
  - Noise and Vibration – Table 7; and
  - Water – Table 8.
- **Outline Soil Management Plan (oSMP) [EN010149/APP/7.11.2]**;
- **Outline Public Rights of Way and Permissive Paths Management Plan (oPRWPPMP) [EN010149/APP/7.12.2]**;
- **Outline Decommissioning Environmental Management Plan (oDEMP) [EN010149/APP/7.13.2]**. Mitigation on various topics within ES Volume 1 of relevance to human health can be found at the following:
  - Air Quality – Table 2;
  - Biodiversity – Table 3;
  - Climate – Table 4;
  - Landscape and visual – Table 6;
  - Land, soil and groundwater – Table 7;
  - Noise and Vibration – Table 8; and
  - Water – Table 8.
- **Outline Battery Safety Management Plan (oBSMP) [EN010149/APP/7.14.2]**; and
- **Outline Employment, Skills and Supply Chain Plan (oESSCP) [EN010149/APP/7.20]** [APP-0153];
- **Consultation Report [EN010149/APP/5.1]** [APP-019].

1.5. Background

Health Determinants and Pathways

1.5.1. Mental and physical health[1] and wellbeing is influenced by a combination of biological and environmental factors. Biological factors are largely inherent. However, environmental factors can be influenced through design and management of development which may be able to impact on health outcomes.

1.5.2. An ever-growing body of research indicates that the environment in which we live is inextricably linked to our health, and whilst the causal links between development and health are often complex, research consistently reports that most health outcomes are influenced by factors other than genetics and healthcare [**Ref. 2**]. For example, the design of development can influence physical activity levels, travel patterns, social connectivity and mental and physical health outcomes.

1.5.3. These are recognised as the **'wider determinants of health'** and include the following (as defined by the WHO and used by guidance such as that published by the Institute of Environmental Management and Assessment (IEMA) [**Ref. 3 and Ref. 4**] and Healthy Urban Development Unit (HUDU) [**Ref. 5**]) – see **Table 1.**

Table 1: Wider determinants of Health (WHO)

Categories	Wider Determinants of Health
Health Related Behaviours	Physical activity
	Risk taking behaviors
	Diet and nutrition and access to healthy food
Social Environment	Housing, including design and affordability
	Relocation
	Access to open space, nature leisure and play
	Transport modes, accessibility, active travel and connections
	Community safety and crime
	Community identity, culture, resilience and influence

[1] The World Health Organisation (WHO) [**Ref. 1**] defines health as a state of complete physical, mental and social well-being, and not the absence of disease or infirmity

Categories	Wider Determinants of Health
	Social participation, cohesion, interaction and support
	Access to health and social care services and other social infrastructure
Economic Environment	Education and training
	Employment and income
Bio-physical Environment	Climate change and adaption
	Air quality
	Water quality or availability
	Land quality
	Noise and vibration
	Radiation

1.5.4. To determine potential health impact, health pathways are identified. Health pathways are the mechanisms through which planning and development can affect health.

1.5.5. These are informed by an extensive literature including the Marmot Review into Health Inequalities [**Ref. 6**], Public Health England's Spatial Planning for Health evidence resource [**Ref. 2**] and the Environment Agency's scoping the environmental impacts of carbon capture, transport and storage guidance [**Ref. 7**].

1.5.6. Health pathways provide a qualitative approach to understand the potential effects. Health pathways do not produce predictable or equal health effects in individuals. When exposed to the same health pathway, different individuals may react differently as a result of a complex mixture of underlying levels of health, lifestyle factors and personal preferences and therefore aggregation at a population level is necessarily qualitative

1.5.7. The Applicant has reviewed the above determinants and pathways, concluded that – where relevant to the Proposed Development – these have been considered, assessed and mitigated within the application documents listed above ('Wayfinding').

1.6. Scoping of Health Effects in the EIA for the Proposed Development

1.6.1. At an early stage, the Applicant advised of its intention to consider effects on human health through individual topic chapters within **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]** [APP-075] specifically set out (at paragraphs 5.6.1 to 5.6.5) that (emphasis added):

"It is proposed that consideration of the potential effects to human health as a result of the Proposed Development will be covered through the findings of other assessments undertaken as part of the EIA process, as follows: Air quality; Landscape and visual; Noise and vibration; and Traffic and transport.

Each of these chapters within the EIA Scoping Report and subsequent PEIR and ES will consider the potential effects to human health within their own assessments. Outside of the EIA process, a glint and glare assessment will be undertaken which will consider the potential human health effects from glint and glare.

Any changes to PRoW will be agreed in consultation with North Kesteven District Council and Lincolnshire County Council in order to ensure there are suitable diversions or replacements in place. Impacts to users of PRoW are therefore expected to be minimised and where they do occur they will be short term and temporary. As such, it is not expected that changes to the PRoW will significantly impact recreational use of the Site and therefore it is proposed to scope this matter out of further assessment.

As any potential human health impacts will be captured by the aforementioned assessments and there are not expected to be any significant human health impacts outside of these assessments, it is proposed that human health is not subject to dedicated assessment and therefore excluded from the scope of the EIA."

1.6.2. The Scoping Opinion (**ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]** [APP-076]) received from the Planning Inspectorate (PINS), as well as Lincolnshire County Council (LCC) and North Kesteven District Council (NKDC) confirmed that this approach was acceptable. PINS noted at paragraph 2.3.5 that:

"The Scoping Report proposes that impacts to human health will be considered in other relevant Chapters including Air quality; Landscape and visual; Noise and vibration; Traffic and transport. Potential human health effects from glint and glare will be considered in the glint and glare assessment. The Inspectorate is content with this approach, however the ES should clearly set out potential impacts to human health from the Proposed Development during construction, operation and decommissioning and cross-reference where impacts are assessed within the ES; this may extend beyond the chapters proposed above, e.g. Land Contamination."

1.6.3. PINS further noted at paragraph 2.3.15 that:

"Given the uncertainty surrounding the location of the substation and proximity to receptors, the ES should address the risks to human health arising from EMF to the extent that it is relevant to the nature of the development, taking into account relevant technical guidance, and where significant effects are likely to occur. The Inspectorate considers that the

ES should demonstrate the design measures taken to avoid the potential for EMF effects on receptors from the substation infrastructure."

1.6.4. Lincolnshire County Council and North Kesteven District Council both note in **ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]** [APP-076] that they:

"agree this [human health] can be scoped out as a specific chapter in the ES and that considerations will form part of other topics/chapters".

1.6.5. In **ES Volume 3, Appendix 5.3: Scoping Opinion Response Matrix [EN010149/APP/6.3]** [APP-077], the Applicant set out that consideration of impacts upon human health as a result of the Proposed Development are covered through the findings of other assessments undertaken as part of the EIA, such as air quality, landscape and visual, noise and vibration and traffic and transport.

1.7. Consultation and Engagement

1.7.1. Following the scoping phase, further consultation pre-application with statutory and local health bodies and healthcare providers has been undertaken by way of Section 42 statutory consultation as set out within the **Consultation Report Appendix A [EN010149/APP/5.2]** [APP-020] and **Appendix J [EN010149/APP/5.2]** [APP-028].

1.7.2. The Applicant is confident that the scope and methodology of the human health and wellbeing assessment undertaken has sufficiently addressed concerns raised during the pre-application process, and that any comments raised during the examination process have been adequately responded to.

1.7.3. However, following submission of the application, the Applicant has reviewed Relevant Representations from Local Authorities, statutory and non-statutory groups and organisations and members of the public, and considers that it would be helpful to all parties to produce this document.

1.7.4. Given the representations received (noting that mental health can be affected by the clear provision and articulation of information), the position of key stakeholders and the fact that the approach to consideration of health and wellbeing is split across a number of different ES chapters, Management Plans and Other Documents (such as the **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151], the Applicant considers that it would be beneficial to provide a comprehensive summary document that consolidates these elements in one place to demonstrate the consideration of health pathways.

2. Health & Wellbeing Policy Context & Evidence Base

2.1. National Policy

National Policy Statement for Energy (NPS EN-1)

2.1.1. Overarching National Policy Statement for Energy (NPS EN-1) (2023) [**Ref. 8**] highlights the matters that need to be considered in relation to impacts on health and wellbeing, with the construction of energy infrastructure and the production, distribution and use of energy having the potential to impact some people's lives in a negative manner.

2.1.2. It sets out that direct health impacts that may arise as a result of new energy infrastructure include increased traffic, air or water pollution, dust/odour, hazardous waste, exposure to radiation and an increase in pests, as well as changes to the composition and size of the local population which could have indirect health impacts on public services, transport and the use of open space.

2.1.3. EN-1 (Paragraph 4.4.1) goes on to state that where development has the potential to affect human beings, the ES should assess those effects for each element of the project, identifying any adverse health impacts and measures to avoid, reduce, or compensate for the impacts as appropriate.

2.1.4. Paragraph 4.4.7 of NPS EN-1 advises that the aspects of energy infrastructure which are "*most likely to have a significantly detrimental impact on health are subject to separate regulation (for example air pollution) which will constitute suitable mitigation of them, so that it is unlikely that health concerns will either by themselves constitute a reason to refuse consent or require specific mitigation*".

National Policy Statement for Energy (NPS EN-3)

2.1.5. This National Policy Statement (NPS EN-3) (2023) **[Ref. 9]** sets various requirements that a development is expected to meet in order to progress through the planning process and gain consent from the Planning Inspectorate. These include several aspects that are relevant to determinants and pathways for health effects including PRoW and access, design and visual amenity and agriculture.

National Policy Statement for Energy (NPS EN-5)

2.1.6. This National Policy Statement (NPS EN-5) (2023) [**Ref. 10**] was drafted to support the transition to clean power by 2030 and to ensure the security and reliability of the UK's electricity supply.

2.1.7. When looking at components of the policy statement of relevance to health, the policy highlights the direct and indirect EMFs can have on human health, aquatic and terrestrial organisms. In order to prevent these effects, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) created health protection guidelines to protect the public and occupational workers from exposure. All new electricity infrastructure is expected to comply with these guidelines.

National Planning Policy Framework (NPPF)

2.1.8. The National Planning Policy Framework (NPPF) **[Ref. 11]** sets out the governments planning policies for England. Chapter 8 'Promoting Healthy and Safe Communities' sets out a planning policy framework of direct relevance to human health, emphasising that planning and development should aim to 'achieve healthy, inclusive and safe places'.

2.2. Local Planning Policy & Community Strategy

Lincolnshire County Council Corporate Plan

2.2.1. The Lincolnshire County Council Corporate Plan **[Ref. 12]** highlights the council's overarching objectives around ensuring that local people and communities have high aspirations, the opportunity to enjoy life to the full, thriving environments and good-value council services.

Lincolnshire Social, Emotional and Mental Health Strategy

2.2.2. The Lincolnshire Social, Emotional and Mental Health (SEMH) Strategy **[Ref. 13]** sets out the aims and strategic direction that Lincolnshire County Council have committed to taking between 2023 and 2026 to ensure that children and young people in Lincolnshire are supported within their school settings to enjoy good mental health and wellbeing, and ensuring that everyone has a shared understanding of social, emotional and mental health to promote resilience and emotional wellbeing within work, practice and support.

Central Lincolnshire Local Plan

2.2.3. The Central Lincolnshire Local Plan **[Ref. 14]** is a joint local plan for the districts of the City of Lincoln, North Kesteven and West Lindsey to deliver the shared vision of Central Lincolnshire being a place of positive growth but not at the expense of the environment, and renewable energy will be generated to heat and power homes, moving Central Lincolnshire towards net zero.

2.2.4. The vision suggests that (economic) growth will assist in addressing the current problems that some areas of Central Lincolnshire have with health inequalities and community deprivation.

2.2.5. Key objectives of direct relevance to human health include:

- To reduce health inequalities, promote healthy lifestyles and maximise health and wellbeing;
- To protect, enhance and create and improve high quality green and blue spaces; and
- Minimising the effects of climate change by developing the area's renewable and low carbon energy.

2.2.6. Policies of particular relevance to human health are as follows:

- Policy S14 'Renewable Energy'
- Policy S47 'Accessibility and Transport'
- Policy S48 'Walking and Cycling Infrastructure'
- Policy S50 'Community Facilities'
- Policy S53 'Design and Amenity'; and
- Policy S59 'Green and Blue Infrastructure Network'

2.2.7. Of specific relevance to health, Policy S54 'Health and Wellbeing' suggests that the applicants will need to demonstrate how any potential adverse health impacts will be mitigated against/addressed, while development proposals will also be expected to promote, support and enhance physical health and wellbeing, in order to reduce health inequalities;

The Draft Lincolnshire Rights of Way Improvement Plan

2.2.8. The Draft Lincolnshire Rights of Way Improvement Plan [**Ref. 15**] highlights the fact that access to the natural environment can improve health while reducing the likelihood of disease and helping people recover from illness. It states that as a result of this, any improvements to PRoW and the promotion of these facilities would lead to more people partaking in physical activity and potentially, an increase in local people adopting walking or cycling as their main modes of transport.

Lincolnshire Older People's Five Year Strategy 2023 – 2028

2.2.9. The Lincolnshire Older People's Five Year Strategy **[Ref. 16]** sets out the county's ambitions of improving health and wellbeing for elderly residents of Lincolnshire.

North Kesteven Plan

2.2.10. The **North Kesteven Plan (2024-2027) [Ref. 17]** outlines commitments to enhancing the health and wellbeing, safety and resilience of communities,

with the key ambition based around promoting participation and engagement. Part of this ambition involves the promotion of healthy lifestyles by providing various leisure and cultural opportunities, and protecting existing jobs and the creation of new jobs.

North Kesteven Community Strategy

2.2.11. The North Kesteven Community Strategy 2030 **[Ref. 18]** highlights key challenges for North Kesteven's community - including high levels of obesity, an ageing population with associated health & wellbeing challenges, low levels of physical activity and rurality risks around social isolation, digital exclusion and fuel poverty. The Strategy aspires to reduce health inequalities to a minimum level.

2.3. Local Health Priorities

Lincolnshire Joint Strategic Needs Assessment (JSNA) and Lincolnshire Joint Health and Wellbeing Strategy

2.3.1. The JSNA **[Ref. 19]** provides a snapshot of the current and future health care needs of the local population in Lincolnshire County.

2.3.2. **Lincolnshire's Joint Health and Wellbeing Strategy [Ref. 20]** enables the Health and Wellbeing Board to champion the shared ambitions and aims while setting out the direction of travel for health and wellbeing in Lincolnshire.

2.3.3. Key priority areas that were identified as part of the health and wellbeing strategy include:

- Healthy Weight;
- Mental Health and Dementia; and
- Physical Activity.

2.4. Neighbourhood Plans

Scopwick and Kirkby Green Neighbourhood Plan (2021-2036)

2.4.1. **Scopwick and Kirkby Green Neighbourhood Plan [Ref. 21]** includes specific community objectives of relevance to human health are as follows:

- To reduce car usage and promote health by encouraging accessibility on foot and bike within the villages, out to the countryside and to the wider area (especially to access the railway station at Metheringham) both for leisure and to access services; and
- To ensure that new development is well connected so that it is integrated to the existing settlements. This means a layout that provides

safe and direct access (on foot and cycle) to the existing settlement(s) and between them and to the wider countryside.

2.5. Health Baseline and Context

2.5.1. The **Health and Wellbeing Summary Statement** does not seek to repeat baseline data presented elsewhere within the Environmental Statement – but considers that relevant information is included within:

- **Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1]** [APP-046];
- **Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1]** [APP-050];
- **Volume 1, Chapter 11 Land, Soil and Groundwater [EN010149/APP/6.1.2]**;
- **Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052];
- **Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]**; and
- **Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1.2]** [AS-010].

2.5.2. In line with IEMA Guidance **[Ref. 3 and 4],** this **Health and Wellbeing Summary Statement** focuses on significant residual adverse effects identified through the EIA process which could have an impact on human health at a population level and, if relevant, a sub-population level (and not an individual level).

2.5.3. Sub-populations(s) are identified in the IEMA guidance as those with vulnerability due to:

- Young age;
- Older age;
- Income or unemployment;
- Health status;
- Social disadvantage; and
- Access or geographic factors.

2.5.4. Where these relate to Protected Characteristics under the Equality Act, they are referred to in the baseline section of the **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151].

2.5.5. Otherwise, the baseline section of **Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** considers the demographic and economic context of study areas in-line with the above sub-population characteristics, with

North Kesteven recorded to have an older and ageing population when compared to the age profile at the national level.

2.5.6. The Lincolnshire Joint Strategic Needs Assessment highlights the fact that Lincolnshire has an ageing population, with just under a quarter of Lincolnshire's population being over the age of 65, and both carers and dementia care identified to be key priorities within the Joint Health and Wellbeing Strategy.

2.5.7. **Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** also suggests that the proportion of individuals that are economically inactive due to long-term sickness or disability is fairly similar between at all scales, suggesting that there would be limited disproportionate effects on this group.

2.5.8. In addition to this baseline information, the following section sets out health-specific baseline information that helps to identify the sensitivity of populations to environmental, economic and social changes that may have the potential to influence health pathways.

2.5.9. In general, populations and sub-populations are considered to have greater **sensitivity** if they experience higher levels of deprivation and wider pre-existing health inequalities, shared resources, higher levels of anxiety, uncertainty or concern relating to an intervention, and poor health indicators with an overall limited capacity to adapt to change.

2.5.10. Tables 2 and 3 provide a health summary to identify local health priorities. Most data is drawn from OHID Public Health Profiles [**Ref. 22**], supported by ONS and 2021 Census data [**Ref. 23**].

2.5.11. For the purposes of this baseline, a local ward area has been identified which shows includes the areas that the Order Limits Boundary falls within. These ward areas are based on the 2021 Census and are as follows:

- Ashby de la Launde and Cranwell;
- Cliff Villages; and
- Metheringham.

Table 2 – Health Profile Summary

Health Indicator		Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Health Outcomes								
Life Expectancy at Birth (years) 1-year range (2023)	Male	n/a	n/a	n/a	81.0	78.2	78.9	79.3
	Female	n/a	n/a	n/a	82.5	82.3	82.7	83.2
Inequality in life expectancy at birth (years) 3-year range (2021-2023)	Male	n/a	n/a	n/a	5.6	8.8	5.6	10.5
	Female	n/a	n/a	n/a	3.7	6.6	3.7	8.3
Under 75 mortality rate from all causes 1-year range (2023)	Directly standardised rate per 100,000	n/a	n/a	n/a	143.0	175.0	161.7	153.0
Under 75 mortality rate from cardiovascular disease (2023)	Directly standardised rate per 100,000	n/a	n/a	n/a	71.0	86.7	80.3	77.4
Under 75 mortality rate from cancer (2023)	Directly standardised	n/a	n/a	n/a	121.3	131.1	126.4	120.8

Health Indicator		Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
	rate per 100,000							
Under 75 mortality rate from respiratory disease (2023)	Directly standardised rate per 100,000	n/a	n/a	n/a	25.1	34.0	33.2	33.7
Suicide rate, directly standardised rate per 100,000 population (2021-23)		n/a	n/a	n/a	13.1	14.0	11.3	10.7
Depression: QOF prevalence - retired after 2022/23		n/a	n/a	n/a	12.6%	14.5%	13.9%	13.2%
Emergency hospital admissions for coronary heart disease, standardised admission ratio (2016/17 – 2020/21)		48.3	60.5	75.7	71.1	81.8	-	100
Emergency hospital admissions for myocardial infarction (heart attack), standardised admission ratio (2016/17 – 2020/21)		50.8	73.1	85.1	83.7	87.8	-	100

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Emergency hospital admissions for intentional self-harm, standardised admission ratio (2016/17 - 2020/21)	38.2	22.4	77.6	64.0	80.2	-	100
Utilisation of outdoor space for exercise or health reasons (March 2015)	n/a	n/a	n/a	n/a	19.0	18.5	17.9
Percentage of adults meeting the '5-a-day' fruit and vegetable consumption recommendations (new method) (2023/24) (Persons, 16+ years)	n/a	n/a	n/a	35.8%	30.7%	30.1%	30.1%
Risk Factors							
Excess weight in adults (2022/23) (percentage of adults aged 18 years over classified as overweight or obese)	n/a	n/a	n/a	68.2%	67.3%	66.1%	64.0%
Excess weight (overweight and obese) prevalence in children (3 years data combined from 2021/2022 - 2023/2024) in Year 6	29.3%	24.2%	36.8%	33.0%	37.5%	36.7%	36.7%
Excess weight (overweight and obese) prevalence in children (3 years data	24.2%	17.4%	26.7%	22.9%	23.7%	21.8%	21.9%

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
combined from 2021/2022 - 2023/2024) in Reception							
Percentage of physically active adults (2022/23)	n/a	n/a	n/a	66.5%	67.0%	66.5%	67.1%
Percentage of physically active children and young people (2023/24)	n/a	n/a	n/a	54.6%	45.9%	45.7%	47.8%
Wider Determinants							
Proportion living in fuel poverty (low income, low energy efficiency methodology) (2022)	n/a	n/a	n/a	12.8%	15.4%	15.1%	13.1%
Percentage of households in fuel poverty (2020)	15.8%	12.2%	12.8%	12.1%	14.2%	-	13.2%
Winter mortality index (%) (August 2021)	n/a	n/a	n/a	16.7%	6.8%	6.5%	8.1%
Child poverty, income deprivation affecting children index (IDACI) (2019) (%)	4.5%	7.1%	12.5%	10.1%	16.4%	-	17.1%

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Older people in poverty, income deprivation affecting older people Index (IDAOPI) (2019) (%)	10.5%	7.8%	10.9%	9.8%	12.4%	-	14.2%
Children in low income families (all dependent children under 20) (2016)	n/a	n/a	n/a	10.1%	15.9%	16.3%	17%
16 to 17 year olds not in education, employment or training (NEET) or whose activity is not known (2022/23)	n/a	n/a	n/a	-	7.2%	4.9%	5.2%
19 to 24 year olds not in education, employment or training (%) (2021)	n/a	n/a	n/a	n/a	n/a	13.5%	13.2%
Percentage of people in employment (%) (2023/24)	n/a	n/a	n/a	83%	73.7%	75.4%	75.7%
Average attainment 8 score (2022/23)	n/a	n/a	n/a	46.4	44.9	45	46.2
Violent Crime (violent offenses per 1,000 population) (2023/24)	n/a	n/a	n/a	19.1	29.6	31.7	32.7
Number of people reported killed or seriously injured (KSI) on the roads, (per 100,000 population) (2023)	n/a	n/a	n/a	-	139.4	89.6	91.9

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Pollution: fine particulate matter (concentration of PM2.5) (2023)	n/a	n/a	n/a	7.2	7.1	7.5	7.0
Fraction of mortality attributable to particulate air pollution (2023)	n/a	n/a	n/a	5.3%	5.3%	5.6%	5.2%
The percentage of the population exposed to road, rail and air transport noise of 65dB(A) or more during daytime (2021)	n/a	n/a	n/a	1.3%	2.4%	3.0%	4.3%
The percentage of the population exposed to road, rail and air transport noise of 55dB(A) or more during the night-time (2021)	n/a	n/a	n/a	4.5%	6.2%	6.2%	8.4%
The rate of complaints about noise (per 1,000 population) (2023/24)	n/a	n/a	n/a	2.7	4.6	5.3	5.9
Percentage of adults walking for travel at least three days per week (%) (2022/23)	n/a	n/a	n/a	14.5%	15.0%	16.0%	18.6%

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Percentage of adults cycling for travel at least three days per week (%) (2022/23)	n/a	n/a	n/a	n/a	n/a	1.8%	2.5%

Source: OHID (2025)

Table 3 – Self-Reported Health Summary

Health Indicator	Ashby de la Launde and Cranwell	Cliff Villages	Metheringham	North Kesteven	Lincolnshire	East Midlands	England
Self-Reported General Health (Census 2021)							
'Very Good' and 'Good'	86%	81%	81%	82%	79%	81%	82%
'Fair'	11%	15%	14%	13%	15%	14%	13%
'Bad' and 'Very Bad'	4%	4%	5%	5%	6%	5%	5%
Self-Reported General Health (Census 2021)							
Day-to-day activities limited a little	11%	12%	12%	11%	12%	11%	10%
Day-to-day activities limited a lot	6%	7%	8%	7%	8%	8%	7%

2.6. Health Outcomes

2.6.1. The life expectancies presented are collected from 2023. This data is not available at the ward level. Life expectancy at birth for men in North Kesteven (81 years) is recorded to be greater than rates across Lincolnshire (78.2), East Midlands (78.9) and England (79.3). When looking at females, North Kesteven was also recorded to have the highest life expectancy when compared to regional and national averages, while Lincolnshire was recorded to have the lowest life expectancy.

2.6.2. The 2021 Census [**Ref. 23**] asked residents to self-assess their health, and the results suggest that only Ashby de Launde and Cranwell (86%) residents have a better self-perceived health than England as a whole (82%), with North Kesteven recorded to have equal proportion 'very good' and 'good' self-perceived health, and Cliff Villages, Metheringham, Lincolnshire and the East Midlands recorded to have lower rates.

2.6.3. Data from the 2021 Census [**Ref. 23**] on disability suggests that the local ward area, North Kesteven and Lincolnshire are all recorded to have a higher proportion of individuals that have their day-to-day activities limited as a result of a disability or long-term health problem.

2.7. Risk Factors

2.7.1. Healthy weight is identified as a key priority area within the Lincolnshire Joint Health and Wellbeing Strategy [**Ref. 20**], with tackling unhealthy weight being seen as fundamental to assisting more people in Lincolnshire benefit from good long term health. This is shown by excess weight in adults being higher within Lincolnshire when compared to proportions with North Kesteven, East Midlands and England.

2.7.2. The prevalence of excess weight within year 6 children was lower in Ashby de la Launde & Cranwell and Cliff Villages wards when compared regional and national proportions. Conversely, the proportion in Lincolnshire was recorded to be greater than these rates, highlighting the obesity challenge that the county is currently facing.

2.7.3. The prevalence of excess weight within year 6 children was lower in Ashby de la Launde & Cranwell and Cliff Villages wards when compared regional and national proportions. Conversely, the proportion in Lincolnshire was recorded to be greater than these rates, highlighting the obesity challenge that the county is currently facing.

2.7.4. Data from the Department of Health and Social Care [**Ref. 22**] also suggests that that the proportions of adults partaking in physical activity in North Kesteven (66.5%) and Lincolnshire (67.0%) are marginally lower than the proportion at the national level (67.1%). North Kesteven is also recorded to have a higher proportion of children and young people

partaking in physical activity when compared to regional and national rates.

2.7.5. As such, another overarching priority of the Joint Health and Wellbeing Strategy [**Ref. 20**] is the promotion of physical activity, with the strategy highlighting the intrinsic link between physical inactivity and health inequality, and the prevalence of low rates of physical activity participation for lower socio-economic groups, women and girls, elderly adults, minority ethnic groups and the LGBTQ+ community.

2.8. Mental Health

2.8.1. Mental health and physical health are intricately linked: poor physical health can cause mental health problems and vice versa. Those that suffer from obesity, substance misuse, smoking, cancer and cardiovascular disease are particularly likely to also have a mental health problem

2.8.2. Having a chronic physical condition was also associated with having a lower level of mental wellbeing. Chronic health conditions (including asthma, cancer, high blood pressure) have a strong association with mental ill-health [**Ref. 24**]. In people with severe “common medical disorders (CMD)”, 37% reported a chronic physical condition [**Ref. 24**].

2.8.3. Improving mental health has also been identified as a priority within the Lincolnshire Joint Health and Wellbeing Strategy [**Ref. 20**]. , with the strategy highlighting the fact that good mental health is fundamental to living a happy and healthy life.

2.8.4. Suicide is a significant cause of death in young adults (when considering the overall mortality rate of this group) and is an indicator of underlying rates of mental ill-health. Suicide rates in both North Kesteven (13.1 per 100,000 resident population) and Lincolnshire (14.0 per 100,000 resident population) are greater than rates at the regional and national levels.

2.8.5. According to data from the ONS on personal wellbeing [**Ref. 25**], Lincolnshire is recorded to have a mean anxiety score of 2.67 out of 10, which is lower than the score at the national level (3.23).

2.8.6. Data from OHID Health Profiles suggests that the standardised ratio of emergency hospital admissions for intentional self-harm is lower in North Kesteven and Lincolnshire when compared to the national average. Regarding the local population, the rate of emergency hospital admissions for intentional self-harm, as a general indicator relevant to mental health, is also significantly lower across local three wards when compared to the national level.

2.8.7. Conversely, the percentage of the population with a clinical diagnosis of depression is slightly higher in Lincolnshire when compared to regional

and national levels, supporting the Lincolnshire Joint Health and Wellbeing Strategy priority of improving mental health.

2.8.8. Data from the 2021 Census [**Ref. 23**] suggests that the percentage of people who cannot speak English well or at all is lower within the local ward areas, North Kesteven and Lincolnshire than the national average, an indicator relevant to the extent to which the actual risks of the Project may be understood by the population.

2.9. Air Quality

2.9.1. North Kesteven's 2024 Air Quality Annual Status Report [**Ref. 26**] highlights the fact that poor air quality and air pollution can be recognised as contributing factors towards cancer, heart disease, increases in hospital admissions, exacerbation of asthma and mortality. Air pollution is known to have a particular effect on the elderly population, children, and those with pre-existing health conditions, with air pollution expected to be responsible for a reduction in healthy life expectancy equivalent to 29,000 to 43,00 deaths per year.

2.9.2. The report highlights that the maximum NO2 annual mean concentration recorded at a tube site was equal to 23.4 µg/m3, which was a reduction from the maximum concentration in the previous reporting year (27.0 µg/m3).

2.9.3. With no reported exceedances of the annual mean NO_2 objective in the last five years, no AQMAs have been declared within North Kesteven.

2.9.4. Despite this both the concentration of PM2.5 and the fraction of mortality attributable to particulate air pollution are recorded to be higher in North Kesteven and Lincolnshire when compared to the regional and national averages.

2.9.5. When looking at the site specific population, emergency hospital admissions for coronary heart disease and myocardial infarction (heart attack) are all significantly lower within the local wards when compared to regional and national levels, noting that air quality is only one contributing factor to these admissions.

2.10. Noise and Vibration

2.10.1. Very high noise levels can have direct impacts on health (hearing loss or tinnitus)[2]. Lower levels (nuisance or annoyance levels) have indirect health

[2] Noise exposure level beyond 80 dB during 40 years of working a 40 hour work week can give rise to permanent hearing impairment. Given that environmental exposure to noise is much lower than these levels and that noise-related hearing impairments are not reversible, the GDG considered that there

effects including through stress-related illness and disturbances in sleep. These nuisance levels do not affect people equally. Nuisance and annoyance can have higher or lower relative importance assigned by those affected by them. Such importance varies within and across populations, and this importance or variability can be uncertain [**Ref. 27**]. As such it is challenging to predict with any certainty the degree to which nuisance and annoyance from noise will affect people at an individual level.

2.10.2. When looking at environmental health factors, only 2.4% of the population within Lincolnshire were recorded to be exposed to road, rail and air transport noise of 65 dB(A) or more during daytime, which was lower than rates in the East Midlands (3.0%) and England (4.3%).

2.10.3. The rate of complaints per 1,000 population about noise in North Kesteven (2.7) and Lincolnshire (4.6) are lower than rates at the regional and national levels (5.3 and 5.9, respectively).

2.11. Other Wider Determinants

2.11.1. Data from the Department of Health and Social Care [**Ref. 22**] suggests that the local ward areas, North Kesteven and Lincolnshire are less poverty stricken when compared to the England as a whole, with rates of children in poverty and older people in poverty being lower in these areas in comparison to national proportions.

2.11.2. This is also true for rates of children in low income families, with proportions of 10.1% in North Kesteven and 15.9% in Lincolnshire, compared to a higher rate of 17% at the national level.

2.11.3. Contrastingly, the proportion of 16 to 17 year olds not recorded to be in education, employment or training is greater within Lincolnshire (7.2%) when compared to rates at the regional (4.9%) and national (5.2%) levels. When looking at other socio-economic health outcomes, Lincolnshire was also recorded to have a lower proportion of residents in employment and a lower average attainment 8 score when compared to the national level.

2.11.4. While the rates of violent offences per 1,000 people was recorded to be lower in Lincolnshire (29.6) when compared to East Midlands (31.7) and England (32.7), the number of people reported killed or seriously injured on the roads was recorded to be considerably higher in Lincolnshire 139.4

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should be no risk of hearing impairment due to environmental noise and considered any increased risk of hearing impairment relevant. WHO, (2018). Environmental Noise Guidelines for the European Region, p. 23.

per 100,000 population) when compared to regional and national rates (at 89.6 and 91.9 per 100,000 population, respectively).

2.12. Deprivation Associated with Poor Health

2.12.1. The Government's Index of Multiple Deprivation (IMD) (2019) [**Ref. 28**] measures deprivation by combining a range of social, economic and housing factors, to establish a single deprivation score and rank for each small area (Lower-layer Super Output Area, LSOA) across England. All LSOAs are ranked relative to one another according to their level of deprivation.

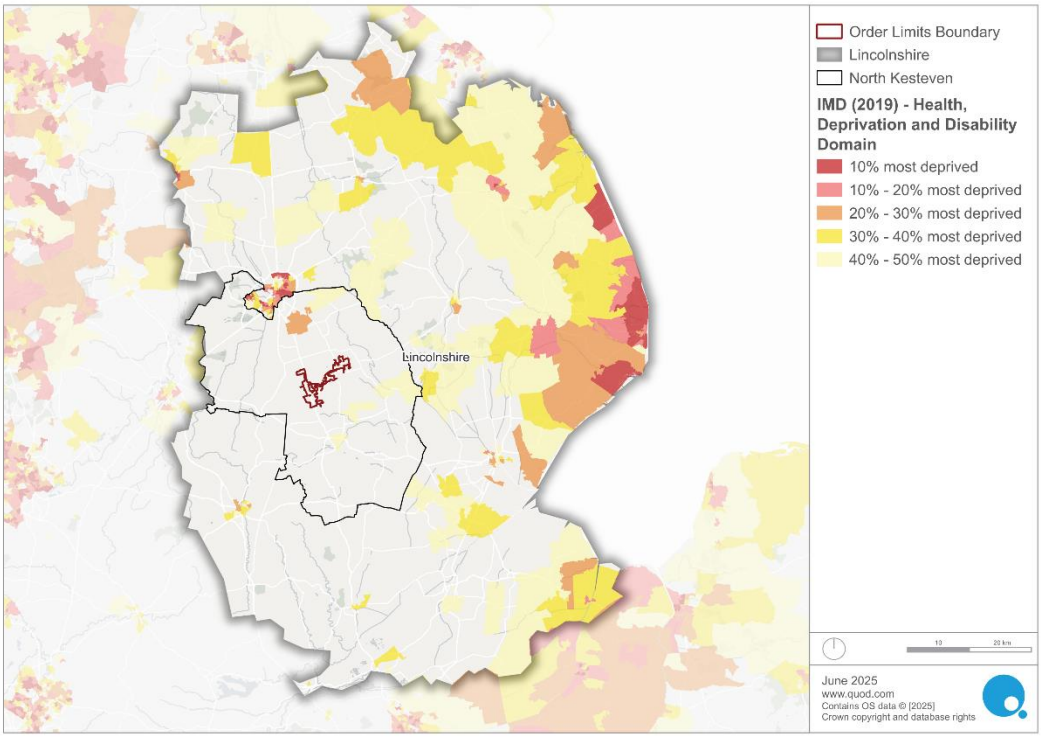
2.12.2. There are seven "domains" of deprivation, outlined as follows:

- Income deprivation;
- Employment deprivation;
- Education, skills, and training deprivation;
- Health deprivation and disability;
- Crime;
- Barriers to housing services; and
- Living environment deprivation.

2.12.3. IMD (2019) data also suggests that deprivation within North Kesteven is low, with no lower super output area being ranked within the top 10% most deprived areas of the country.

2.12.4. Health deprivation and disability measures *"the risk of premature death and the impairment of quality of life through poor physical or mental health"* . Measures of health include morbidity, disability and premature mortality.

2.12.5. The site does not fall within the top 30% most deprived neighbourhoods in England for the domain of health, and no LSOA within communities adjacent to the Order Limits are within the 50% most deprived areas in England – suggesting that the indicators that contribute to health deprivation in local communities are above average (and as such sensitivity is likely to be lower than average). However, the are some pockets of health deprivation within Lincoln, in addition to Winthorpe and Skegness to the eastern boundary of Lincolnshire, where some LSOAs fall amongst the top 10% most deprived for the health domain:



2.13. Equality and Sensitivity of Vulnerable Groups

2.13.1. Within a defined population, individuals will range in their levels of sensitivity to health outcomes due to factors such as age, socio-economic deprivation and pre-existing health conditions. It is clear that some groups may be particularly vulnerable to changes whereby they could experience differential or disproportionate effects when compared to the general population.

2.13.2. The **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151] notes that while the Local Area's (Ashby de la Launde, Digby and Scopwick wards) age profile isn't particularly sensitive, younger and older residents might be more affected by the Proposed Development. This is because elderly people are often home during the day, young children have daytime sleep patterns, and older residents are more susceptible to changes in accessibility and air quality.

2.13.3. Disability may also influence the sensitivity of a population, for example to changes in environmental amenity and accessibility. The proportion of individuals that were disabled under the Equality Act 2010 and had day to day activities limited was also greater in the Local Area and North Kesteven when compared to the national average.

2.13.4. There are location-specific sensitive receptors in close proximity to the Site that are recognised as having the potential to be more sensitive to change in environmental amenity as a result of their characteristics. In

each case these receptors (which include community facilities, charitable organisations with a fixed location, or businesses) have been considered within the **ES** and **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151] and their sensitivity has influenced the assessment of significance of each individual environmental topic.

2.14. Conclusion of Health Baseline

2.14.1. Based on the baseline profile and the national, regional and local policy in relation to health, the Applicant has identified that the general population is considered to be of medium sensitivity, but with some higher sensitivity receptors and sub-populations.

2.14.2. Overall, sub-populations with a higher sensitivity to health effects related to environmental change resulting from the Proposed Development are anticipated to be:

- Children and young people;
- Older people;
- People with social disadvantage, e.g. low income, those experiencing discrimination;
- Fixed-location community facilities and social infrastructure with a greater sensitivity to change as a result of their operations and characteristics of users (for example, with higher concentrations of people with different neurodiversity, such as autism);
- People with existing poor health (physical and mental); and
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

2.14.3. Based on the baseline profile and the national, regional and local policy in relation to health, the Applicant has identified the following health priorities:

- Promoting mental wellbeing and improving the level of care available for those suffering from mental health;
- Tackling health inequality across the county;
- Tackling obesity and related life choices; and
- Working to prevent long-term health conditions.

3. Environmental Effects and Health Pathways

3.1. Overview

3.1.1. This section of the **Health and Wellbeing Summary Statement** sets out the assessment of likely significant effects reported within the ES during the construction and operational (including maintenance) phase with regards to health determinants, pathways and the characteristics of receptors within the baseline context and policy / strategy environment.

3.1.2. For each potential significant effect, this section highlights the scale of effect reported, its relationship to health pathways and determinants, and provides a summary or signposting to embedded and additional mitigation (and/or enhancements) developed as a result.

3.1.3. In-line with IEMA Guidance [**Ref 3** and **4**]), effects with greater magnitude to affect sensitive populations and sub-populations in relation to health and wellbeing are generally those with high anticipated levels of exposure or scale, high or continuous frequency, with severity demonstrably related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes and major change in quality-of-life, with a majority of a population affected by permanent or long-term change.

3.2. General Construction/Operational Activity, Behaviours, Health and Safety

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.2.1. Moreover, general change and activity as a result of construction and operational activity – rather than linked to specific environmental effects - is raised by stakeholders as a contributor to mental and physical health.

3.2.2. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Risk taking behaviours;
- Community safety and crime;
- Community identity, culture, resilience and influence; and
- Social participation, cohesion, interaction and support.

3.3. Approach to Mitigation / Enhancement

3.3.1. The Applicant is committed to minimising impacts from construction on local residents and businesses.

3.3.2. Mitigation measures as set out in the relevant control documents, primarily (for construction) the **oCEMP [EN010149/APP/7.7.2]**, have been provided in response to the assessed likely impacts. These include:

- Committing that normal working hours will be between 7am to 7pm from Mondays to Fridays, and 7am to 12pm on Saturdays. No works will be take place on Sundays or Public Holidays.
- Measures relating to community safety and security, noting that site security during the construction phase will be managed by the Principal Contractor, with the Site set to be fenced off during construction and storage of materials to be kept secure to prevent theft or vandalism.
- Security risk management threat assessments, with the boundary of the Proposed Development set to be secured by fencing and the provision of night-vision CCTV.
- Adopting The Considerate Constructors Scheme (CCS) to assist in reducing pollution and nuisance from the Scheme, by employing good practice measures which go beyond statutory compliance.
- Measures relating to the management of and response to emergencies. An Emergency Preparedness and Response Plan will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environmental Agency.
- Measures relating to the provision of information and community engagement during the construction phase. A Community Liaison Group (CLG) will also be established for the duration of the construction period, whose aim is to facilitate liaison between representatives of people living in the vicinity of the Order Limits and other relevant organisations in relation to the construction of the Proposed Development.

3.3.3. The above measures would also be in place for the decommissioning phase – as set out within the **oDEMP [EN010149/APP/7.13.2]**.

3.3.4. Whilst these measures predominantly are in place to mitigate physical impacts, it is considered that full implementation of these measures will help to reduce negative perception and experience of construction activities in the local population.

3.3.5. During the operational (including maintenance) phase, the **oOEMP[EN010149/APP/7.10.2]** includes measures to minimise disruption to communities – including:

- Site management for safety purposes, with staff onsite during working hours (8am to 6pm) from Monday to Friday, with additional staff attending when maintenance is required. Onsite activities would include

routine servicing, maintenance and replacement equipment when required, with only 24 operational staff expected to be onsite during this phase.

- Security risk management threat assessments, with the boundary of the Proposed Development set to be secured by fencing and the provision of night-vision CCTV.
- No continual lighting, but manually operated and motion detection lighting to be utilised for safety purposes.

3.3.6. Concerns may also relate to the health and safety of the construction and operational workforce employed at the site. The Applicant acknowledges this and has worked to commit that:

- Construction of the Proposed Development will be undertaken in accordance with the **oCEMP [EN010149/APP/7.7.2]** which includes measures to ensure the safety of on-site staff and reduce risks to the general public. The **oCEMP [EN010149/APP/7.7.2]** requires the Principal Contractor to prepare a Construction Method Statement (CMS).
- The Project Director will be responsible for providing appropriate resources in the team (including competent staff and training) while the Principal Contractor is responsible for ensuring that all personnel working on the site has been appropriately trained. This will minimise the risk of accidents, injuries and risk-taking behaviour during works on-site.
- At the operational stage, the proposed uses are not expected to support risk-taking behaviours. Such behaviours are generally influenced by individual personal characteristics and social behaviour. The extent to which planning and development can have an effect on human behaviour is limited beyond the influence of good design and management practices.

3.4. Air Quality

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.4.1. Air quality is a key influence in the quality of the environment in which a population lives, with implications for long-term health. Poor air quality is associated with negative health outcomes, such as chronic lung disease, heart conditions and asthma, particularly among children.

3.4.2. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Air quality.

3.4.3. The more vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- Older people;
- People with existing poor health (physical and mental health); and
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

Summary of Environmental Effects: Construction Phase

3.4.4. **ES Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1]** [APP-046] has assessed the increased risk of health effects due to release of dust and particulate matter emissions from the Proposed Development activities and road traffic exhaust emissions during the construction and decommissioning phase of development.

3.4.5. The impact of dust and road traffic exhaust emissions during the construction phase was quantified at sensitive receptors (e.g. residential properties, hospitals, schools and residential care homes) within 250m of the Order Limits.

3.4.6. Receptors were classified as follows:

- High – locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
- Medium – locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).
- Low - Locations where human exposure is transient (such as for users of PRoW).

3.4.7. The assessment suggests that human health impacts from dust and particulate emissions generated from activities at the Proposed Development would be low risk for demolition, (during decommissioning), earthworks, construction and trackout activities, and **negligible** risk for demolition (during construction activities), without mitigation.

3.4.8. When adopting measures outlined within the **oCEMP [EN010149/APP/7.7.2]** and the **oDEMP [EN010149/APP/7.13.2]**, there would be a negligible risk for all activities within the construction and

decommissioning phase, resulting in the residual effect on human health being **not significant**.

Summary of Environmental Effects: Operational Phase

3.4.9. **ES Volume 1, Chapter 6: Air Quality [EN010149/APP/6.1]** [APP-046] has assessed the increased risk of health effects due to road traffic exhaust emissions during the operational phase of development.

3.4.10. The impact of dust and road traffic exhaust emissions during the operational phase was quantified at human receptors (e.g. residential properties, hospitals, schools and residential care homes) within 250m of the Order Limits Boundary.

3.4.11. Due to the nature of the Proposed Development, the principal operational (including maintenance) phase air quality impact is likely to be associated with traffic emissions as a result of any changes in traffic flows or flow composition the Proposed Development may bring.

3.4.12. The assessment suggests that EIA effects from road traffic exhaust emissions generated from activities at the Proposed Development during operation would be not significant for either human receptors or Local Wildlife Sites (LWFs), suggesting that adverse effects on human health would be limited. This is assuming that the **oOEMP [EN010149/APP/7.10.2]** is adhered to.

Approach to Mitigation / Enhancement

3.4.13. Key embedded mitigation measures considered within the air quality assessment, and determined by delivering against best practice for environmental management relating to the link between air quality and health effects, include key infrastructure being at least 250m from residential properties. This is secured within the **Design Commitments [EN010149/APP/7.4]** [APP-0138].

3.4.14. The **oCTMP [EN010149/APP/7.8.2]** includes measures that will manage the potential for air quality effects from construction traffic relating to human health. The proposed delivery routes for HGV construction traffic will assist in mitigating the impacts from vehicle emissions on air quality by routeing HGV traffic away from large settlements in the area, while the principal contractor reducing deliveries during peak hours to minimise impacts on other users;

3.5. Noise and Vibration

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.5.1. Noise has tangible links to the health of a population, particularly in places where people live or work in close proximity to sources of noise. Excessive noise is associated with mental health illnesses, stress-related illness, memory and cognitive function and disturbances in sleep, although the definition of excessive is subjective and not uniform in a population.

3.5.2. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Noise and vibration.

3.5.3. The more sensitive vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- People with existing poor health (physical and mental health);
- Fixed-location community facilities and social infrastructure with a greater sensitivity to change as a result of their operations and characteristics of users (for example, with higher concentrations of people across with different neurodiversity, such as autism);
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

Summary of Environmental Effects: Construction Phase

3.5.4. **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] outlines an assessment of likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon noise and vibration.

3.5.5. The construction noise impacts within the Order Limits have been assessed in fields where development is proposed as highlighted within **ES Volume 2, Figure 3.1: Zonal Masterplan [EN010149/APP/6.2.2]**, with the assessment accounting for construction activities occurring concurrently across the area.

3.5.6. Noise from construction traffic outside of the Order Limits is based on assumptions in relation to future baseline traffic as outlined within **ES Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1.2]** [AS-010], with assessment of short term construction traffic impacts looking at a 2028 Construction Year Baseline against a 2028 baseline plus construction and committed development.

3.5.7. By adopting the additional control measures outlined within the **oCEMP [EN010149/APP/7.7.2]** and the **oDEMP [EN010149/APP/7.13.2]**, it is considered that noise levels from all construction activities would not exceed 65 dB $L_{Aeq,T}$ at any of the receptors considered as outlined within

BS 5228-1: 2014+A1: 2019 **ES Volume 1, Chapter 12: Noise and Vibration, Ref. 12-11 [EN010149/APP/6.1]** [APP-052]**.**

3.5.8. Construction and decommissioning traffic noise is predicted to be less than 1 dB $L_{A10,18hour}$ apart from Temple Road where the difference between baseline and construction traffic is larger due to the existing nature of the road. Predicted noise levels along the B1191 (between Scopwick and RAF Digby), opposite Heath Farm (Autism UK) are to increase by 0.7 dB $L_{A10,18hour}$.

3.5.9. As a result, effects from both construction activities and construction traffic noise are **minor adverse** and **not significant**, and therefore unlikely to influence health pathways for the general population.

3.5.10. However, it is noted that in some instances, receptors may be more sensitive to changes in noise due to complex audio-sensory processing difficulties, and they may be disturbed by unusual tonal elements or unexpected sounds related to construction activity where the baseline environment benefits from predictability in the noise environment.

3.5.11. This is likely to be the case for Heath Farm (Autism UK) positioned approximately 240 metres to the west of the nearest receptor considered in **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] (R6 – The Lodge, Digby).

3.5.12. The measured daytime ambient noise level in the vicinity of Heath Farm Autism Centre is 51 dB $L_{Aeq, 16hr}$ and 48 dB $L_{Aeq, 16hr}$ at night. It should be noted that measured noise levels were located at an increased distance from Heath Road and therefore existing noise levels at Heath Farm (Autism UK) are likely to be higher as a result due to the proximity to the nearby road and RAF Digby.

3.5.13. For the assessment of construction related noise, it is standard practice to adopt a threshold daytime criterion of 65 dB(A) as outlined within BS 5228-1: 2014+A1: 2019 **ES Volume 1, Chapter 12: Noise and Vibration, Ref. 12-11 [EN010149/APP/6.1]** [APP-052], where existing ambient noise levels, when rounded to the nearest 5 dB(A) are less than 65 dB(A) for receptors of high sensitivity. It is recognised however, that receptors with special auditory needs, may be more susceptible to noise of a construction nature.

3.5.14. There are no recommended guidance criteria specifically for those living with autism. An appropriate method of assessment would be to consider the guideline noise levels provided in the 2015 Institute of Acoustics and ANC guidance document ‘Acoustics of Schools: a design guide’, which suggests levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55 dB $L_{Aeq,30min}$ with at least one area suitable for outdoor teaching activities where noise levels are below 50 dB

$L_{Aeq,30min}$. The Applicant notes that a similar approach has been adopted as part of the HS2 project, with the relevant control documents recommending an outdoor free field noise impact level from daytime (07:00 – 23:00) construction noise of 50 dB $L_{Aeq, T}$ for schools, colleges, hospitals and libraries.

3.5.15. The highest predicted noise level during the construction phase (in the absence of additional mitigation) at Heath Farm (Autism UK) is 50 dB $L_{Aeq,T}$ from site clearance activity (Construction Task 1). Predicted noise levels therefore comply with the adopted external noise criteria for construction related noise. Noise from site clearance works would invariably be stop/start in nature, and likely dominated by noise from chainsaws and a chipping machine. The noise would therefore only occur for a short period of time where vegetation clearance is necessary. The remaining construction tasks are predicted to be substantially below the adopted criteria of 50 dB $L_{Aeq,T}$.

3.5.16. The assessment of construction noise accounts for all the plant items associated with each task occurring simultaneously across the construction area(s), positioned at the nearest distance to each receptor. This approach is deemed as being a robust approach within the confines of uncertainty that are inevitable given the early stage construction information. The approach adopted is likely to be an overestimation of noise impacts given that all plant items (associated with a given task) would not operate concurrently at the absolute closest distance to the receptors. In reality, the movement of vehicles and plant would be transient across the area, which would serve to increase the separation distance and therefore reduce the resultant noise levels at offsite receptors.

3.5.17. The Applicant has met with Heath Farm (Autism UK) prior to the launch of the Proposed Development to share information about the scheme and provide contact details. As an address within the inner zone of consultation Heath Farm (Autism UK) would have received information about Phase One Consultation, Phase Two Consultation and the community update upon acceptance directly.

3.5.18. Through the implementation of the **oCEMP [EN010149/APP/7.7.2], oCTMP [EN010149/APP/7.8.2]**, **oDEMP [EN010149/APP/7.13.2]**, and Best Practicable Means (BPM) as defined by the Control of Pollution Act 1974, the noise impacts in the vicinity of the construction and decommissioning phase activities would be minimised. Based on the application of suitable control measures, the magnitude of noise impact from activities during the construction phase at Heath Farm (Autism UK) is considered **low**, resulting in a short term **minor adverse** effect, which is considered **not significant**.

3.5.19. It is recognised that whilst Heath Farm Autism Centre was not incorporated within **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052], a sensitivity test is deemed appropriate as a means to validate the conclusions of the previous noise assessment which remain consistent, with no significant effects anticipated.

3.5.20. A key element relating to predictability of the environment is the commitment (secured within the **oCEMP [EN010149/APP/7.7.2]**) to the provision of information and community liaison which would ensure occupiers of neighbouring properties are informed in advance of the construction works. The community liaison officer would provide the community including particularly sensitive receptors with an appropriate person who would be appointed to lead discussions and act as the primary point of contact should there be any queries or complaints.

Summary of Environmental Effects: Operational Phase

3.5.21. **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] outlines an assessment of likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon noise and vibration.

3.5.22. Within **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] , operational noise impacts have been predicted using a computer noise model of the Proposed Development as highlighted within **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1.2]**.

3.5.23. The operational noise impacts within the Order Limits have been assessed in fields where development is proposed as highlighted within **ES Volume 2, Figure 3.1: Zonal Masterplan [EN010149/APP/6.2.2]**, with the assessment accounting for operational activities occurring concurrently across the area.

3.5.24. In terms of the assessment of effects, it is reported in **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] that:

- Predicted daytime noise levels, considering the plant source noise levels, positioning and numbers within each field, are below agreed threshold levels for both day and night time at all receptors considered.
- This complies with the adopted criteria outlined in Table 12.12 of **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052] and agreed with North Kesteven District Council (refer to Table 12.1 of **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]** [APP-052]) and secured in Requirement 15 of the **Draft DCO [EN010149/APP/3.1.2]**

3.5.25. Based on the application of embedded mitigation measures, the high sensitivity of those receptors considered, the magnitude of impact during the operational phase is considered low, resulting in a permanent **minor adverse** effect, which is considered **not significant**.

3.5.26. With regards to Heath Farm Autism Centre, there are no recommended guidance criteria for long term operational phase developments specifically for those living with autism. The most appropriate criteria in this case, is to adopt the guidance for special educational needs space (SEN - teaching spaces for students with special hearing and communication needs/calming room) within Building Bulletin 93 (BB93). BB93 recommends a lower internal criterion of 30 dB $L_{Aeq, 30mins}$, which can reasonably be equated to an external noise level criterion of 40 dB $L_{Aeq, 30mins}$ (by adopting a conservative 10 dB level of reduction for an open window).

3.5.27. Given the autism centre is also a residential home for overnight stay, it would be appropriate in this instance to adopt a consistent approach with the assessment of night-time operational noise and incorporate an external criteria of 35 dB L_{Ar} for periods where sleep and resting are required.

3.5.28. Predicted rated noise levels, considering the plant source noise levels, positioning and numbers within each field, are 29 dB $L_{Ar,1hour}$ during the daytime, and 30 dB $L_{Ar,15min}$ during the night at Heath Farm (Autism UK). It should be noted that given the location of Heath Road, predicted noise during the operational phase of the Proposed Development would be more than 10 dB(A) below the existing noise. Noise from Heath Road and existing operations at the RAF base, such as the movement of vehicles, logistics and training exercises would likely be dominant. In this instance, noise from the operational phase, including potential tonal components would likely be inaudible, due to the masking effect by those existing sources outlined above.

3.5.29. Through the implementation of best practice measures as outlined in the **oOEMP [EN010149/APP/7.10.2]** and the adopted criteria of 40 dB $L_{Ar,1hour}$ daytime and 35 dB $L_{Ar,15minute}$ night-time which is secured in Requirement 15 of the **Draft DCO [EN010149/APP/3.1.2]**, the potential noise impact of the operational (including maintenance) phase activities would be minimised. Based on the application of suitable control measures, the magnitude of impact of noise from activities during the operational phase at Heath Farm Autism Centre is considered **negligible**, resulting in a permanent **negligible** effect, which is considered **not significant**.

Approach to Mitigation / Enhancement

3.5.30. There are a number of embedded design commitments secured by the **Draft DCO [EN010149/APP/3.1.2]** and described in the **Design**

Commitments [EN010149/APP/7.4] [APP-0138] that would reduce the likelihood of health effects relating to noise that would otherwise be experienced, including development being offset at least 250m from residential properties.

3.5.31. The Applicant will adopt measures outlined within the **oCEMP [EN010149/APP/7.7.2]** and the **oDEMP [EN010149/APP/7.13.2]** such as ensuring that plant and equipment is fitted with noise reduction modifications, the erection of temporary hoardings to screen construction activities and maintaining all vehicles, equipment and noise control measures in good and efficient working order.

3.5.32. The adoption of the **oOEMP [EN010149/APP/7.10.2]** includes mitigation related to the optimised selection of plant and equipment.

3.6. Landscape and Visual

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.6.1. Visual amenity is a key influence in the quality of the environment in which a population lives, with implications for long-term health. Poor visual amenity is associated with increased stress and an overall diminished quality of life.

3.6.2. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Physical activity;
- Access to open space, nature leisure and play; and
- Community identity, culture, resilience and influence.

3.6.3. The more sensitive vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- Older people;
- People with existing poor health (physical and mental health); and
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

Summary of Environmental Effects: Construction Phase

3.6.4. **ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1]** [APP-050] presents an assessment of likely significant effects arising from construction, operation and decommissioning of the Proposed Development on landscape and visual amenity. The chapter considers the

impacts on residential amenity and the users of PRoW, in addition to assessing visual impacts and considering how the project might alter views for nearby residents.

3.6.5. **Significant major** and **moderate adverse** visual effects during the construction and decommissioning phases were reported for PRoWs between Blankney, Scopwick and Kirkby Green extending up to Blankney Walks Lane and the railway on the eastern site boundary.

Summary of Environmental Effects: Operational Phase

3.6.6. Receptors scoped into the assessment of likely significant effects arising from the operation of the Proposed Development of landscape a visual amenity are as follows:

- Landscape Character Area 7 (LCA 7): Limestone Heath and Landscape Character Area 11 (LCA 11): Central Clays and Gravels (North Kesteven Landscape Character Assessment;
- Users of A15 and B1191;
- Users of the PRoWs and minor road network which passes through and within 3km of the Site (including the Spires and Steeples Trail and the Stepping Out walks);
- Residents and visitors to the villages of Scopwick, Kirkby Green, Blankney and Ashby de la Launde;
- Residents of the barracks at RAF Digby; and
- Isolated farmsteads and residential properties.

3.6.7. **Significant major** or **moderate adverse** operational effects were recorded within the assessment on the following receptors:

- Landscape fabric (moderate adverse);
- LCA 7: Limestone Heath (major/moderate adverse in year 1 of operation);
- Digby; on the eastern side of Heath Road extending up to a series of plantations to the east (major/moderate adverse);
- LCA 11: Central Clays and Gravels (major/moderate adverse in year 10 of operation);
- PRoWs between Blankney, Scopwick and Kirkby Green extending up to Blankney Walks Lane and the railway (major/moderate adverse in year 10 of operation);
- PRoW between RAF Digby and B1188 (Footpath R5/1) (major/moderate adverse in year 1 of operation);

- Bloxholm Woods Local Nature Reserve Footpath (moderate adverse in year 1 of operation)
- Minor Roads to Temple Bruer and Thompsons Bottom Farm (major/moderate adverse in year 1 of operation);
- PRoWs and lanes north-west between A15 and Wellingore Heath including New England Lane and Gorse Hill Lane (major/moderate adverse in year 1 of operation);
- Spires and Steeples Trail (moderate adverse in year 1 of operation); and
- A15 Trunk Road (major/moderate adverse in year 1 of operation);

3.6.8. There were also a number of other minor and moderate adverse effects on receptors that were not deemed to be significant, while a moderate beneficial effect was identified on the landscape fabric during the tenth year of operation.

3.6.9. **ES Volume 3, Appendix 10.5: Residential Visual Amenity Assessment [EN010149/APP/6.3]** [APP-111] assesses potential effects on residential properties specifically, which are summarised in **ES Volume 1, Chapter 10: Landscape and Visual [EN010149/APP/6.1]** [APP-050].

3.6.10. In total, it has been assessed that the residents of 25 dwellings would experience significant visual effects during year 1 but in most cases by year 10 these effects would reduce in magnitude due to the establishment of mitigation and by year 10 would be not significant.

3.6.11. The assessment concludes that no residential property would experience a visual effect which was so overbearing that it would render the dwelling an unpleasant or unattractive place to live.

Approach to Mitigation and Enhancement

3.6.12. The Applicant has developed the design of the Proposed Development to provide a sensitive response to the local environment and reduce potential impacts in accordance with the Project Principles set out in the **Design Approach Document [EN010149/APP/7.3.2]**.

3.6.13. The design includes embedded screening measures to reduce visibility where possible, while additional mitigation measures include the adoption of:

- **oCEMP [EN010149/APP/7.7.2]**;
- **oLEMP [EN10149/APP/7.9.2]**;
- **oSMP [EN010149/APP/7.11.2]** and
- **oDEMP [EN010149/APP/7.13.2]**.

3.6.14. The **oLEMP [EN10149/APP/7.9.2]** provides a framework for delivering the Green Infrastructure elements of the Proposed Development for the construction and operational phases of the development including the successful establishment and future management of the proposed landscape and ecological works for the duration of its operation.

3.6.15. The creation of larger areas of semi-natural habitat will facilitate flora and fauna movement within the landscape.

3.6.16. The Proposed Development will:

- retain existing vegetation wherever reasonably possible to retain the fabric of the site and aid assimilation of development into its context (e.g. retention of existing field pattern and wildlife corridors, LWS vergers, existing habitat for nesting birds and foraging and the functionality and ecosystem services of the landscape);
- be managed to respond to the distinctive and unique local character of the site, informed by relevant local studies such as the North Kesteven landscape character assessment;
- extend/enhance local wildlife sites and priority habitats, including the creation of the calcareous grassland adjacent to the A15;
- create a mosaic of habitats such as new grassland and arable margins, to support farmland birds such as skylark and grey partridge and species such as brown hare;
- use locally native species wherever possible to create new habitats, increase the number of pollinator species and create food sources for birds such as skylark and yellow hammer and other animals during winter months;
- use land under and between solar panels to deliver biodiversity benefit for pollinators and farmland birds;
- establish new planting and landforms at the earliest practicable opportunity;
- deliver biodiversity net gain of at least 10%;
- retain all existing PRoW and protect their amenity; and
- enhance the footpath and cycle network by providing new and improved routes to increase connectivity and link local settlements such as RAF Digby, Scopwick and Blankney
- provide education and interpretation of the solar farm and the site; and
- design for resilience and adaptation to future climate change.

3.6.17. In undertaking this mitigation, the Applicant has considered the reasonably practicable measures to address change in visual amenity, acknowledging

that there would be a residual significant effect in some instances simply due to the presence of the Proposed Development.

3.6.18. The Applicant considers that adverse visual effects have been mitigated as far as practicable and the design response is proportionate and appropriate to the landscape context of the Proposed Development.

Landscape & Visual Effects and Mental Health and Wellbeing

3.6.19. Stakeholders and members of the community have raised through Relevant Representations that the change to the landscape character of the area as a result of the Proposed Development may have a wide-ranging detrimental impact on the desirability of the locality to live and visit, thus having a negative impact on residential amenity and enjoyment of where people live, resulting in effects on mental health and wellbeing.

3.6.20. The Applicant notes that assigning an effect on personal perception of the landscape and its mental health and wellbeing value is dependent on subjective interpretation of the landscape as a whole, and of individual views by an individual and collective set of receptors.

3.6.21. Changes to visual amenity on PRoW will be mitigated against as far as is reasonably practicable, in the form of new hedgerow planting or structural planting belts where impacts are expected to be significant, which will result in these impacts becoming insignificant by the tenth year of operation.

3.6.22. The design includes embedded screening measures to reduce visibility where possible, while additional mitigation measures include the adoption of the:

- **oCEMP [EN010149/APP/7.7.2]**;
- **oLEMP [EN10149/APP/7.9.2]**;
- **oSMP [EN010149/APP/7.11.2]**; and
- **oDEMP [EN010149/APP/7.13.2]**.

3.6.23. Effects relating to the in-combination environmental impacts on users of PRoW (active recreation in the environment) including landscape and visual amenity effects are considered in **Section 6**. Effects and mitigation relating to mental health and wellbeing are considered further in **Section 7**.

3.7. Traffic, Transport and Access

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.7.1. There is the potential for health and wellbeing effects should changes to access (both for drivers and walkers, cyclists and horse riders (WCH)) prevent access between residential and community facilities, and/or dissuade individuals from walking or cycling (either recreationally or for other purposes).

3.7.2. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Physical activity;
- Access to open space, nature leisure and play;
- Transport modes, accessibility, active travel and connections;
- Community safety and crime;
- Social participation, cohesion, interaction and support; and
- Access to health and social care services and other social infrastructure.

3.7.3. The vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- Older people; and
- People with existing poor health (physical and mental health).

Summary of Environmental Effects: Construction Phase

3.7.4. **ES Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1.2]** [AS-010] outlines potential impacts to amenity or safety (related to fear and intimidation on and by road users) and driver and passenger delay which could have health and wellbeing impacts, with the community links and access to facilities and employment subject to change. It assesses potential traffic-related impacts during construction, focusing on increases in vehicle numbers, routing, and timing to mitigate disruptions for local communities.

3.7.5. **ES Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1.2]** [AS-010] concludes that impacts on local highway network links and other minor links used to access the Primary Construction Compounds to be **negligible**. In addition to this, residual effects on both junctions and road closures range from **negligible** adverse to **minor adverse**.

3.7.6. The assessment concludes that the distribution of construction-related HGVSs throughout the day are not considered to have an impact on severance, so the overall impact on severance would be **negligible**.

3.7.7. **ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** [APP-053] assesses the impact of the Proposed Development on walkers, cyclists and horse riders during the construction phase of development.

3.7.8. Despite existing PRoW that crosses the site being retained, there will be some temporary diversions during the construction phase. PRoW may be stopped-up for up to six-months during the construction phase, outlining the potential impacts to users of PRoW and permissive paths which could have an impact on mental and physical health and wellbeing As a result, the residual effect on walkers, cyclists and horse riders would be a **slight adverse** effect (**not significant**).

3.7.9. Assessment of pedestrian amenity is undertaken within **ES Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1.2]** [AS-010], It is the aim of the Applicant to maintain access to all PRoW routes where possible, with any diversions required to be temporary in nature (6 month closures).

3.7.10. Overall, residual effects on driver delay, pedestrian delay, non-motorised user amenity and road safety are recorded to be either **adverse** but **not significant** or **beneficial** and **significant**.

Summary of Environmental Effects: Operational Phase

3.7.11. **ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** suggests that operational effect of the Proposed Development on walkers, cyclists and horse riders would be slight beneficial (not significant), given that the Proposed Development would result in an increase in the use and connectivity of PRoW and permissive paths within the study area.

3.7.12. Any impacts on road users (motorists and non-motorised users) and sensitive locations (e.g. hospitals and schools) were scoped out of the assessment due to the effect on the local road system set to be minimal, with access to the Proposed Development set to utilise the same junctions delivered for the construction phase.

Approach to Mitigation and Enhancement

3.7.13. The **Design Approach Document [EN010149/APP/7.3.2]** demonstrates how the Proposed Development has been designed to create a safe and accessible environment for PRoW users within the Order Limits. This includes minimum offsets to Solar PV development (to create a wide walking corridors), new routes to provide a better-connected network and new surfacing, signage and /or waymarking. These are secured by the **Works Plans [EN010149/APP/2.3]** [APP-007] and **Design Commitments [EN010149/APP/7.4]** [APP-0138] within the **Draft DCO [EN010149/APP/3.1.2]**.

3.7.14. Additional mitigation to address the potential for significant adverse effects include the adoption of the **oCTMP [EN010149/APP/7.8.2]**. This sets out that:

- The Applicant will minimise disruption to the PRoW/permissive path network through the use of signage, short term temporary closures and the provision of new links as part of the Proposed Development.
- The contractor would ensure that impacts from construction traffic on the local community, businesses and users of the transport network are minimised.

3.7.15. The **oCTMP [EN010149/APP/7.8.2]** includes important measures to ensure accessibility to and from residential property and within and between communities with key social infrastructure is maintained. Access to existing properties will be maintained at all times, with the existing road network set to remain available throughout the construction period and only short term lane closures with appropriate traffic management to facilitate construction of site accesses, junction improvements and cable route crossings (apart from Gorse Hill Lane where full closure will be required);

3.7.16. The **oCTMP [EN010149/APP/7.8.2]** also includes measures related to the management of incidents on the road network shared by construction traffic and members of the public. If an incident along the identified delivery routes were to occur, arrangements would be implemented to minimise disruption to other road users and construction activities, encompassing immediate issues such as road traffic collision.

3.7.17. The **oPROWPPMP [EN010149/APP/7.12.2]** provides further details on how the PRoWs and Permissive Paths within the Order Limits, particularly where they cross construction traffic access tracks, will be managed by the Applicant to ensure they are safe and accessible throughout construction, operation (including maintenance) and decommissioning of the Proposed Development.

3.7.18. Management of PRoW and permissive paths will be undertaken in accordance with the measures set out in the **oPROWPPMP [EN010149/APP/7.12.2]**. This includes commitments that the Applicant and principal contractor will:

- Minimise as far reasonably practicable any physical disruption or any other reductions on existing PRoW;
- Minimise reductions in connectivity in and around the development;
- Comply with legal requirements set out within the 2010 Equality Act;
- Construct new surfaces that are easy to use;

- Minimise the need for temporary path closures and beyond those listed in Schedule 6 of the **Draft DCO [EN010149/APP/3.1.2]**;
- Minimise road crossing points where possible;
- Apply and maintain best practice in terms of signage and other information provision; and
- Manage and agree temporary closures beyond those listed in Schedule 8 of the **Draft DCO [EN010149/APP/3.1.2]**.

3.7.19. The Applicant will provide the diversion/alternative routeing as appropriate prior to construction to ensure that users can continue to enjoy the local area during this construction phase of the Proposed Development.

3.7.20. The potential alternative routes that could be used while other PRoW/Permissive paths are closed are outlined in Table 3.1 of the **oPROWPPMP [EN010149/APP/7.12.2]**.

3.7.21. Where any alternative approaches to PRoW and permissive path management emerge through the detailed design stage, these would be subject to agreement with the relevant planning authority under the requirements of the DCO.

3.7.22. Appropriate safety measures such as temporary fencing or distancing tactics (via banksperson) will be put in place by the Principal Contractor to form safe corridors for users of PRoW and permissive paths where it is proposed to retain access to PRoW and permissive paths in areas adjacent to construction works.

3.7.23. The Proposed Development includes proposals to enhance the existing PRoW network, as detailed in the **Streets, Rights of Way and Access Plans [EN010149/APP/2.4.2]** [AS-005]. Where possible, plants, hedges and trees will be retained or more will be planted in order to provide a visual barrier close to residential properties and Public Rights of Way (PRoW).

3.7.24. The **oLEMP [EN10149/APP/7.9.2]** secures proposed enhancements and improvements to the local footpath and cycle network including the provision of new PRoWs:

- A new PRoW linking RAF Digby to Scopwick (approx. length 1,670m).
- A new PRoW connecting the existing PRoW (AshL/4/1) west of the A15 (near Navenby Lane) to New England Lane. (approx. length 990m).
- A new PRoW from Temple Road (north of Brauncewell) to the Bloxham Woods Car Park to provide a connection across the A15 (approx. length 860m).

3.7.25. The **oLEMP [EN10149/APP/7.9.2]** also secures the creation of four new permissive paths:

- A new permissive path along the western edge of the Proposed Development linking New England Lane to Temple Road, north of Brauncewell (approx. length 4,130m).
- A new permissive path connecting the B1191 (Heath Road) with the existing PRoW between RAF Digby and Rowston (Rows/5/1) (approx. length 1,610m).
- A new permissive path linking Bloxholm Wood to Brauncewell Village (approx. length 1,120m).
- New permissive paths to provide a series of circular walking loops from Bloxholm Woods (approx. length 1,830m).

3.7.26. In addition to this, proposals include the enhancement of 2km of existing PRoW, which will attract new users to the area and make this green infrastructure more accessible to local residents and tourists.

3.7.27. The proposed improvements to the PRoW network have been informed by community feedback, and through observations of groups using formal and informal routes in the local area. For example, community feedback and site visits have led to the Applicant observing that groups of walkers were using the field margins and road verges along the B1191 between RAF Digby and Blankney. These groups included Heath Farm (Autism UK), who the Applicant understands had an informal arrangement with the landowner to access this area.

3.7.28. This is described within Section 5 of the **Design Approach Document [EN010149/APP/7.3.2]**, which sets out the development of Project Principle 5.4 to '*Enhance the footpath and cycle network by providing new and improved routes to increase connectivity and link local settlements such as RAF Digby, Scopwick and Blankney'* in particular, with regard to user groups who would benefit from these new links (which the Applicant understands to include Heath Farm (Autism UK).

3.7.29. The proposed, new PRoW to be provided along the B1191 and the proposed, new permissive path between the B1191 and Rowston Top formalises the 'loop' route referred to above that is used by Heath Farm (Autism UK). This will be delivered prior to the start of construction works in this area. The **oPROWPPMP [EN010149/APP/7.12.2]** secures that the Applicant will construct the new link between RAF Digby and Scopwick before use of the B1191 by construction HGVs, and that the Applicant will liaise with Heath Farm (Autism UK) to discuss any other 'soft' measures that could be adopted.

3.8. Socio-economic Effects

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.8.1. Employment and income is intrinsically linked to health, with good quality employment leading to positive impacts on health and wellbeing, and the availability of high quality jobs being key to achieving inclusive economic growth. In the same way, employment can also be associated with health inequality, with adverse physical and psychological conditions of work, the risk of job loss/redundancy and poor pay having the potential to have an adverse impact of human health.

3.8.2. Research published by the UK Parliament considers that farmers and agricultural workers are at a particular high risk of mental health illness and suicide [**Ref. 29**]. Particular drivers of the mental health problems for agricultural workers include working long hours, living at work, family pressures, poor physical health and agricultural crime. Agricultural work and farming cultures can also bring about the problem of social isolation, caused by lone-working in isolated rural areas and the constant need to be available [**Ref. 30**].

3.8.3. Health impacts can also arise from financial insecurity which can contribute to a feeling of unpredictability and uncertainty amongst farm workers. Economic, regulatory and administrative pressures such as credit accessibility and reductions in bargaining power can also result in adverse mental health outcomes.

3.8.4. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Social participation, cohesion, interaction and support;
- Education and training; and
- Employment and income.

3.8.5. The more sensitive vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- Older people;
- People with existing poor health (physical and mental health); and
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

Summary of Environmental Effects: Construction Phase

3.8.6. **ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** has assessed the effects of the Proposed Development on construction

employment, GVA and spending, and effects on the agricultural economy and agricultural land holdings.

3.8.7. As highlighted within **ES Volume 1, Chapter 13: Population [EN010149/APP/6.1.2]** there are two agricultural operations within the study area. During the construction phase, it is expected that both operations will lose access to a portion of the land normally available. As the construction phase progresses this land loss is expected to increase. As a result, it is likely that the output of the farming operation will reduce year on year across the approximate four year construction period.

3.8.8. The short-term, temporary land-take at the Site during the 4 year construction phase would result in 0.3% of agricultural land in Lincolnshire being taken out of agricultural use. Indicatively, based on County-wide average employment per ha this would result in the reduction of the indicative capacity for around 30 FTE jobs (total agricultural employment in Lincolnshire is estimated at approximately 8,653 FTE jobs).

3.8.9. However, engagement with the agricultural operators has confirmed that the employment supported by the agricultural activities within the Site would reduce and this would be met entirely through retirement and a pause on recruitment, and would not be expected to result in redundancies.

3.8.10. As the sites are currently operated by landowner farm businesses, some employment is likely to be able to be retained on other parts of the business' land not covered by the Order Limits. With this in consideration, the level of adverse impacts upon the mental health and wellbeing of agricultural workers is likely to be low.

3.8.11. Increases in (construction) employment and employee spending will have positive impacts on the health and wellbeing of the wider population, providing population groups with a sense of financial stability while improving mental health and access to resources. During the construction phase:

- Net additional construction employment supported by the Proposed Development is estimated at around 300 to 360 FTE jobs in the CLMA per year of construction, and 140 within the CLMA Focus Area;
- Construction GVA is substantial at an estimated at £16.6bn in the CLMA and £411m in the CLMA Focus Area each year; and
- Net additional operational employment supported by the Proposed Development is estimated at around 20 FTE jobs in Lincolnshire.

Summary of Environmental Effects: Operational Phase

3.8.12. During the operational (including maintenance) phase, the agricultural activity on the site would cease – as set out above, engagement with the agricultural operators has confirmed that the employment supported by the agricultural activities within the Site would reduce and this would be met entirely through retirement and a pause on recruitment, and would not be expected to result in redundancies.

3.8.13. As the sites are currently operated by landowner farm businesses, some employment is likely to be able to be retained on other parts of the business' land not covered by the Order Limits. With this in consideration, the level of adverse impacts upon the mental health and wellbeing of agricultural workers is likely to be low

3.8.14. Increases in employment and employee spending will have positive impacts on the health and wellbeing of the wider population, providing population groups with a sense of financial stability while improving mental health and access to resources. During the operational phase:

- Net additional operational employment supported by the Proposed Development is estimated at 24 FTE jobs, with approximately 20 of these FTE jobs being in Lincolnshire;
- Operational GVA is substantial at an estimated at £4.4m per year of operation, including £3.3m in Lincolnshire;
- The gross effect based on average daily workforce expenditure on subsistence would be equivalent to approximately £74,000 on average per year during the operational (including maintenance) phase.

Approach to Mitigation / Enhancement

3.8.15. The Applicant is required to negotiate and provide compensation for the loss of land, or for changes to access or environmental quality should this affect business viability, and subject to meeting the thresholds of the appropriate statutory tests.

3.8.16. The Applicant is progressing negotiations with all tenants in order to meet statutory tests and demonstrate that although the agricultural capacity of the Order Limits is reduced, that where appropriate and in-line with statutory requirements, agricultural businesses are fairly compensated such as significant impacts on their operation are avoided.

3.8.17. To help maximise the positive gain for the local economy from the beneficial effect arising from employment generation during the construction and operational (including maintenance) phase, an **Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20]** [APP-0153] supports the DCO Application.

3.8.18. This details commitments to work with partners and the local and regional construction supply chain to enhance the proportion of activities that can be accessed by local people (both in employment, unemployed and economically inactive or outside of the current labour market) and firms with relevant experience and competencies. The main objectives of the **Outline Employment, Skills and Supply Chain Plan [EN010149/APP/7.20]** [APP-0153] are detailed below:

- Demonstrate the use of local labour from within the lead contractor's organisation;
- Where economically and practically feasible, procure goods and services from local contractors, sub-contractors and suppliers to support the employment of the local community;
- Demonstrate recruitment and training opportunities within the lead contractor's organisation and provide opportunities for upskilling local people;
- Provide opportunities for local residents to access employment opportunities created during the construction phase; and
- Support the development of skills within the local community.

3.8.19. Opportunities for how this can be achieved are being considered but may be delivered through the applicant, main construction organisation, third party organisation or financial contribution to a relevant existing organisation.

3.8.20. Through this enhancement strategy, existing workers and firms may be able to up/re-skill to the benefit of the Proposed Development but also supporting their own career development and strategic policy objectives to improve the skills base in green construction sectors that will aid future cumulative demand for similar skills across the Region's renewable energy sector.

3.9. Other Health Determinants and Pathways Considered within the Application

Glint and Glare (Operational Phase)

3.9.1. Glint and Glare has the potential to have several impacts on both psychological and physical health, with the most notable impacts being around discomfort and visual fatigue, eye damage and temporary disability. In the context of solar farms, glint and glare impacts can often be associated with permanent damage, retinal burns and after-images.

3.9.2. Poor visual amenity is associated with increased stress and an overall diminished quality of life.

3.9.3. The more sensitive vulnerable population groups (sensitive receptors) relevant to this assessment are:

- Children and young people;
- Older people;
- People with existing poor health (physical and mental health); and
- People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the Order Limits Boundary.

3.9.4. **ES Volume 3, Appendix 5.4: Glint and Glare Study [EN010149/APP/6.3.2]** outlines potential impacts of glint and glare that could cause nuisance to people living in nearby residential properties.

3.9.5. There are a total of 206 road receptors and an assessment of each receptor suggests that there will be no significant impacts from the Proposed Development with regards to Glint and Glare.

3.9.6. The assessment of impacts from the Proposed Development with regards to Glint and Glare on dwelling receptors suggested that impacts on the majority of dwellings would be negligible, while the predicted impact classification at receptors 118, 120, 121 and 130 is low.

3.9.7. PRoW were not assessed as no significant effects were predicted, with professional experience suggesting that rural areas, pedestrian density on Public Rights of Way (PRoW) in rural areas is low, making glint and glare effects less serious compared to roads. These effects are brief and location-specific, allowing pedestrians to easily avoid them without safety concerns.

3.9.8. In conclusion, likely significant effects to human health are not expected as a result of the Proposed Development.

Electromagnetic Field Effects (Operational Phase)

3.9.9. As highlighted by the World Health Organization (WHO), electromagnetic field fields can be defined as physical fields that represents both the electric (created through differences in voltage) and magnetic (created when electric current flows) influences. Potential health effects as a result of exposure to electromagnetic fields include headaches, anxiety, nausea, depression, and in extreme cases, suicide.

3.9.10. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Radiation.

3.9.11. A standalone EMF study has been undertaken and is presented in ES **Volume 3, Appendix 5.5: High Level Electromagnetic Field Assessment [EN010149/APP/6.3]** [APP-079] which sets out the proposed siting zone for the cabling and includes an assessment of EMF.

3.9.12. Potential effects on human health caused by time-varying magnetic fields are due to induced current on functions of the central nervous system. As part of the assessment, various sources of information in relation to safe exposure levels have been reviewed, including UK policy on public exposure limits to EMF radiation.

3.9.13. The assessment shows that levels of electromagnetic radiation are predicted to be below the International Commission on the Non-Ionizing Radiation Protection reference levels, while radiation from Springwell Substation's transformers is predicted to be less significant due to equipment being housed in protective enclosures.

3.9.14. The assessment recommends a minimum clearance distance of 25m relative to public exposure limits for magnetic and electric fields related to the 400kV cable route, which is secured in the **Works Plans [EN010149/APP/2.3]** [APP-007] and concludes that there would be no electromagnetic effects to sensitive receptors.

3.9.15. In summary, EMF levels will be within safe limits as defined in the by UK exposure guidelines.

Major Accidents and Disasters

3.9.16. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Community safety and crime;
- Radiation;
- Air quality;
- Water quality or availability; and
- Risk taking behaviours.

3.9.17. The risk of major accidents and disasters has been considered throughout the design process of the Proposed Development. This includes siting the potentially hazardous equipment, such as the BESS and grid infrastructure, at a suitable distance from sensitive receptors. Consideration of the risks associated with major accidents and disasters have been included in **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]** [APP-045].

3.9.18. No significant effects in relation to major accidents and disasters are anticipated during the construction, operation (including maintenance) and decommissioning phases.

3.9.19. Impacts of major accidents and disasters are considered within the **BESS Plume Assessment [EN010149/APP/7.19.2]** and **ES Volume 1, Chapter 15: Water [EN010149/APP/6.1]** [APP-055].

Battery Failure / Plume Assessment / Fire

3.9.20. The **BESS Plume Assessment [EN010149/APP/7.19.2]** concludes that the potential impacts from all types of battery failures are expected to be minimal, with nearby receptors likely to remain unaffected relative to thresholds outlined within existing guidance as a result of the design measures that protect receptors sensitive to BESS failure emergencies.

3.9.21. Issues raised through Relevant Representations cite concern from the community and the UKHSA about toxic smoke deposition on communities, in the event of a battery failure. The **BESS Plume Assessment [EN010149/APP/7.19.2]** demonstrates that should a 'thermal runaway' event occur, it would not pose significant risks to nearby human health receptors, including the closest residential receptors to the proposed BESS compound (approx. 440m to the southeast).

3.9.22. In the very unlikely event that harmful impacts could occur, harmful impacts are predicted to only occur within tens of metres from the specific BESS enclosure involved in any thermal runaway event. The Applicant is confident that any toxic gas emissions to sensitive receptors will be below Public Health England (PHE) guideline exposure limits.

3.9.23. The **oBSMP [EN010149/APP/7.14.2]** stipulates that prior to commencement of the construction of the BESS, an emergency response plan (ERP) would be prepared by the Applicant in consultation with Lincolnshire FRS (LFR) and other relevant stakeholders. This would be maintained and reviewed regularly throughout the operating life of the BESS. The plan would be developed in accordance with National Fire Chiefs Council (NFCC) guidance and other guidance and best practice in place at the time.

3.9.24. Section 5.6.4 of the **oBSMP [EN010149/APP/7.14.2]** also covers likely general emergency response incident protocols which could be adopted.

3.9.25. Additionally, Section 6.1.1 of the **oBSMP [EN010149/APP/7.14.2]** outlines key risk assessments which must be conducted based upon the selected BESS system and site layout, ERP content and incident response protocols are heavily informed by these risk assessments.

3.9.26. The Applicant has specified in the **oBSMP [EN010149/APP/7.14.2]** that the ERP will be developed in accordance with NFCC guidance and additional guidance and best practice at the time. An ERP is always developed post planning consent to facilitate effective and safe emergency response.

3.9.27. The Applicant has drafted a Statement of Common Ground with the UK Health Security Agency (UKHSA), and will continue to work with the UKHSA to ensure that the assessment and mitigation measures secured within the DCO Consent are appropriate, in order to mitigate for the potential for physical health effects, but also to reduce anxiety, stress and mental health concerns within the community.

Land and Water Contamination

3.9.28. **ES Volume 1, Chapter 15: Water [EN010149/APP/6.1]** [APP-055] suggests construction and decommissioning activities (e.g. topsoil, stripping, stockpiling of material and establishment of construction compounds) will have the potential to result in silt-laden runoff, which could result in environmental disaster.

3.9.29. In addition to this, construction and decommissioning activities also have the potential to lead to spillages and leaks of fuels and chemicals, which could negatively impact the water quality of local watercourse. The operational (including maintenance) phase will not increase the risk of pollution discharge to watercourses and degrading water quality at Metheringham Beck during operations will be relatively low risk.

3.9.30. There are no expected leaks of chemicals from the PV and BESS as part of normal operation. With faulty, damaged or end-of-life assets, a key method to reducing the risk of chemical impacts is to ensure they are removed and disposed of responsibly. Should there be any unexpected contamination, this would be mitigated and managed in accordance with the **oCEMP [EN010149/APP/7.7.2]**, **oOEMP [EN010149/APP/7.10.2]** and **oDEMP [EN010149/APP/7.13.2]**].

3.9.31. Relevant mitigation measures are secured within the following documents which are submitted in support of the Development Consent Order Application:

- **oCEMP [EN010149/APP/7.7.2]**;
- **oOEMP [EN010149/APP/7.10.2]**; and
- **oBSMP [EN010149/APP/7.14.2]**.

Measures outlined within these management plans suggest that all residual effects on water receptors would be negligible and not significant.

ES Volume 1, Chapter 15: Water [EN010149/APP/6.1] [APP-055] assesses the impact on Proposed Development on water quality of watercourses, water resources and a local WFD waterbody. The assessment also concludes that there will be no significant adverse on these receptors, suggesting that effects on human health are unlikely to be significant.

3.9.32. **Volume 1, Chapter 11 Land, Soil and Groundwater [EN010149/APP/6.1.2]** considers effects during the construction, decommissioning and operational phases on land contamination, groundwater, soil and agricultural land.

3.9.33. During the construction, decommissioning and operational phases of development, residual effects on land and groundwater (contamination of land), and soil and agricultural land are recorded to be not significant when mitigation measures outlined within the following documents are adhered to:

- **oCEMP [EN010149/APP/7.7.2]**;
- **oSMP [EN010149/APP/7.11.2]**; and
- **oCTMP [EN010149/APP/7.8.2]**.

3.9.34. The assessment concludes no significance adverse effects in relation to groundwater which suggests that groundwater effects on human health are unlikely to be significant.

3.9.35. There are no expected leaks of chemicals from the PV and BESS as part of normal operation. With faulty, damaged or end-of-life assets, a key method to reducing the risk of chemical impacts is to ensure they are removed and disposed of responsibly. Should there be any unexpected contamination, this would be mitigated and managed in accordance with the **oCEMP [EN010149/APP/7.7.2]**, **oOEMP [EN010149/APP/7.10.2]** and **oDEMP [EN010149/APP/7.13.2]**.

Potential for Effects on Property Value

3.9.36. A number of members of the public and other stakeholder groups have raised concern about the mental health concerns relating to the impact of the Proposed Development on house prices.

3.9.37. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Housing, including design and affordability; and
- Relocation.

3.9.38. National Planning Practice Guidance advises that in general, planning is concerned with land use in the public interest. As a result of this, the

protection of purely private interests such as the impact of a development on the value of neighbouring property could not be considered as a material planning consideration and is not a matter for assessment under the 2017 EIA Regulations [**Ref. 31**].

3.9.39. As a result of this, an assessment of the effects of development on property value was not required as part of the socio-economic assessment within the Environmental Impact Assessment for this scheme.

3.9.40. The Applicant can confirm, however, that the ES evidences how design principles to limit impacts on properties have been achieved as part of the design of the Proposed Development, including:

- The Proposed Development would not be visible from any locations within surrounding local villages or affect their individual characters;
- While residents of 25 dwellings would experience significant adverse visual effects during year 1 of operation, in most cases by year 10 these effects would reduce in magnitude due to the establishment of mitigation planting and would be not significant. No residential property would experience a visual effect which was so overbearing that it would render the dwelling an unpleasant or unattractive place to live; and
- Following the implementation of appropriate mitigation, no significant adverse environmental effects are expected from the Proposed Development on: air quality, biodiversity, cultural heritage, noise and vibration, traffic and transport and water resources.

3.9.41. Part 1 of The Land Compensation Act 1973 (LCA) **[Ref. 32]** makes statutory provision for payment of compensation to qualifying property owners of properties that are depreciated in value as a result of the physical effects (including noise, smoke and fumes, but (not including loss of value due to a diminished view or visual impact) of the use of development works such as this.

3.9.42. Therefore, if there were to be any negative effects on property prices from the physical effects of the development, the provisions of the Land Compensation Act would apply and provide for payment of compensation to fully cover any loss in value.

3.9.43. In order to address concerns – and as required by law, the Applicant has set out a **Book of Reference [EN010149/APP/4.3.2]** [AS-007] which confirms that there are no sole Category 3 land interests. It has been important to address the potential for anxiety and mental health issues through engagement - all 154 persons that the Applicant previously consulted under Category 3 as part of the statutory pre-application period were removed due to refinements to the design of the Proposed Development.

3.9.44. Notwithstanding this, the Applicant acknowledges representations from the local community about the potential effect of the Proposed Development on individual property values. The Applicant has designed the Proposed Development to limit impacts on properties in accordance with Project Principles set out in the **Design Approach Document [EN010149/APP/7.3.2]**. This includes the provision of appropriate offsets to local settlements and dwellings on a case-by-case basis (Principle 1.2) and maintaining the rural separation between local villages (Principle 2.3).

Climate Change and Adaptation

3.9.45. Health pathways linked to climate may include direct, tangible effects such as increased exposure to extreme weather events due to climate change, and mental health and wellbeing effects linked to 'climate anxiety'.

3.9.46. Relevant health and wellbeing determinant(s) / pathway(s) (see **Table 1**):

- Climate change and adaptation.

3.9.47. **ES Volume 1, Chapter 8: Climate [EN010149/APP/6.1]** [APP-048] assess the impacts of the Proposed Development in relation to climate change. The assessment concludes that there would be no significance adverse effects which suggests effects on human health are unlikely to be significant.

3.9.48. Nonetheless, in regard to the overwhelming national need set out in EN-1 for the UK to transition to low carbon, sustainable forms of energy, it is likely that the Proposed Development would contribute to reduced anxiety amongst the general population concerned about climate change.

4. In-combination (Intra-Project) and Cumulative (Inter-Project) Effects

4.1. The Applicant's Approach

4.1.1. As set out in **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]**, cumulative effects occur as a result of several actions on an environmental receptor which may overlap or act in combination. The following types of cumulative effects have been considered in accordance with Environmental Impact Assessment (EIA) Regulations and best practice guidance:

- **Intra-project combined** effects – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
- **Inter-project cumulative** effects – the combined residual (post mitigation) effects of the Proposed Development and 'other existing development and/or approved development' on a single receptor/resource.

4.1.2. Regulation 5(2) of the EIA Regulations [**Ref. 31**] states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape.

4.2. In-combination / Intra-project Effects

4.2.1. The IEMA *Guide to Determining Significance for Human Health (November 2022)* [**Ref. 4**] suggests that **in-combination** effects (also known as **intra-project** effects) should be determined, and that this requires collating the effects identified (excluding negligible effects) for each determinant of health by population or subpopulation(s).

4.2.2. The IEMA *Effective Scoping of Human Health in EIA Guidance (July 2022)* [**Ref. 3**] provides advice that assessments should provide a narrative of likely interactions, and if appropriate a professional judgement as to a combined significance conclusion for a population or sub-population.

4.2.3. This may include multiple significance conclusions, for example one combining positive effects and one combining negative effects, and may then feed into a description of the appropriate mitigation.

4.2.4. The guidance also notes that:

- Interactions between determinants of health are complex as the changes may affect either the same or different risk factors; and independently, the same or different health outcomes;
- Whilst overlaps in health determinants occur, positive and negative health effects usually don't cancel each other out; and
- Similarly (and importantly), positives or negatives do not necessarily reinforce each other in combination - clearly stating whether a population experiences an overlap in effects from a range of determinants of health is usually more appropriate than calculating a net effect on public health.

4.2.5. For Springwell Solar Farm, in-combination effects have been assessed in each of the relevant ES chapters (**ES Volume 1, Chapters 6 – 15 [EN010149/APP/6.1]** [APP-046] – [APP-055]) in compliance with paragraph 5(2)(a) to (d) of the EIA Regulations 2017 [**Ref. 31**].

4.2.6. A review of the sensitive receptor (or sensitive receptor group) identified in each technical chapter, and whether the same receptor is exposed to more than one type of residual (post-additional mitigation) effect of 'slight/minor' significance or greater, during the construction, operation (including maintenance) and/or decommissioning phases of the Proposed Development has been completed. This has been undertaken using each of the summary tables presented in the final sections of **ES Volume 1, Chapters 6 – 15 [EN010149/APP/6.1]** [APP-046] – [APP-055].

4.2.7. This has identified only one receptor which may experience intra-combination effects during construction, from a change in traffic volume and temporary visual amenity changes - users of the B1191. Both specific residual effects were identified as slight/minor. Mitigation measures have already been identified in each individual chapter to minimise the individual effects, which will be secured through the implementation of the **oCEMP [EN010149/APP/7.7.2]**.

4.2.8. Construction effects at each receptor are considered to be temporary, and the effects on these receptors would be transient and only during use of certain sections of the B1191 where the Proposed Development can be viewed. On this basis, the intra-combination effect is considered to be slight/minor and not significant.

4.2.9. Notwithstanding this, the Applicant recognises that concern has been raised by stakeholders and members of the public (through Relevant Representations) regarding mental health pathways related to the recreational experience of users of PRoW including local residents, as a result of intra-project effects including:

- Temporary and permanent diversions, closures and the provision of new PRoW (assessed within **ES Volume 1, Chapter 13 Population [EN010149/APP/6.1.2]**;
- Temporary and permanent effects on community severance, user amenity, fear and intimidation and pedestrian delay (assessed within **ES Volume 1, Chapter 14 Traffic and Transport [EN010149/APP/6.1.2]** [AS-010]);
- Air quality effects experienced by PRoW users (assessed within **ES Volume 1, Chapter 6 Air Quality [EN010149/APP/6.1]** [APP-046]; and
- Visual amenity of users of PRoW (assessed within **ES Volume 1, Chapter 10 Landscape and Visual [EN010149/APP/6.1]** [APP-050].

4.2.10. Due to the transient and temporary nature of users along PRoW through the Proposed Development, and the proposed distance between PRoW and equipment detailed in **Design Commitments [EN010149/APP/7.4]** [APP-0138][3], noise impacts along these areas is not assessed within the EIA and this has been agreed through Scoping.

4.2.11. Following the consideration of embedded and additional mitigation, during the construction phase, users of PRoW will experience:

- **Negligible** effects relating to severance; pedestrian delay; user amenity; fear and intimidation; road safety; and hazardous loads;
- **Negligible** air quality effects relating to human health as a result of construction activity causing dust and PM_{10} and **not significant** effects relating to road traffic exhaust emissions during construction activity;
- **Slight adverse** effects related to temporary PRoW closures - Existing PRoW that cross the site will be retained. However, there may be temporary diversions during the construction phase. Any diversions will be discussed with the related stakeholders. The Applicant will provide the diversion/alterative routeing as appropriate prior to construction to ensure that users can continue to enjoy the local area during the construction phase of the Proposed Development. Any required temporary closure and diversion will be agreed with Lincolnshire County Council PRoW officers, likely to be for periods of 6-months at a time; and
- **Major adverse** visual effects caused by associated with large or medium scale visual change due to construction compounds, highways work and management and construction at three PRoW receptor locations (PRoWs between Blankney, Scopwick and Kirkby Green

[3] Independent Outdoor Equipment (transformer, switchgear and central inverters) and ITS will be offset at least 50m from all existing and proposed statutory PRoW; and Perimeter fencing surrounding the Solar PV development will be offset at least 15m from either side of existing and proposed statutory PRoW.

extending to the Blankney Walks Lane and the railway located to the east of the Site within Springwell East (including several 'Stepping Out' walks); PRoWs between Bloxham, Ashby de la Launde and Health Road; and PRoWs and lanes north-west between A15 and Wellingore Heath including New England Land and Gorse Hill Lane), and **moderate adverse** visual effects at three others (Footpath R5/1, Bloxholm Woods Local Nature Reserve Footpath and Spires and Steeples Trail).

4.2.12. Following the consideration of embedded and additional mitigation, during the operational phase, users of PRoW will experience:

- **Moderate beneficial** effects relating to severance; pedestrian delay; user amenity; fear and intimidation; road safety; and hazardous loads as a result of the addition of new permanent PRoW;
- **Not significant** effects relating to road traffic exhaust emissions during operational activity;
- **Slight beneficial** effects as a result of an increase in use and connectivity of PRoW and permissive paths secured by the Proposed Development; and
- **Major/moderate adverse** visual amenity effects at:
  - PRoWs between Blankney, Scopwick and Kirkby Green extending up to Blankney Walks Land and the railway on the east of the Site (including several 'Stepping Out' walks);
  - PRoW between RAF Digby and B1188 (Footpath R5/1);
  - PRoWs and lanes north-west between A15 and Wellingore Heath including New England Land and Gorse Hill Lane; and
  - Spires and Steeples Trail.

4.2.13. It is recognised that experience of the natural environment through recreational and other use of PRoW is an important aspect contributing to mental and physical health and wellbeing.

4.2.14. The Applicant has proposed mitigation for the above effects through management plans and embedded mitigation described in each individual assessment listed above, in order to reduce as far as is practicable the potential for adverse effects.

4.2.15. As set out in the previous section, at the operational phase, a number of new PRoW and permissive paths will also be in place to enhance the user experience and maximise accessibility, albeit within a different visual environment.

4.2.16. As such, in terms of the health determinant / pathways relevant to the effects on amenity and recreational use of PRoW (see **Table 1**), the Applicant considers that:

- Effects during the construction phase are temporary, short-term and managed where practicable through embedded mitigation and management plans – the Proposed Development has been carefully designed through consultation to provide physical mitigation for potential changes to amenity;
- While there would be some short-term closures and disruption, this is limited and well managed and communicated, and is within the context of wider accessibility of routes in the local area and diversions that would be provided by the Applicant;
- Following construction, there would be permanent, long-term improvements in accessibility within the local area and across the Site.

4.3. Cumulative / Inter-Project Effects

4.3.1. The IEMA *Guide to Determining Significance for Human Health (November 2022)* [**Ref. 4**] suggests that the level of cumulative effects (also known as **inter-project** effects) should be determined.

4.3.2. This means, for each determinant of health (or health pathway), listing the relevant reasonably foreseeable cumulative projects and using professional judgement (further sensitivity analysis is not required as the receptor remains the same, however magnitude should be appraised in light of the combined effect), providing a combined level of effect to reflect the likely implications for public health.

4.3.3. The priority is the identification of likely significant effects and the identification and description of any further mitigation necessary.

4.3.4. The guidance notes that:

- A combined public health effect is most likely where a population is affected by multiple determinants of health and a large proportion of the same individuals within that population experience the combination of effects.
- Some impacts are relatively localised, e.g., dust from a construction site, whilst others may be more far-reaching, e.g., job creation or noise along shared transport corridors.

4.3.5. The guidance also notes that an element of the cumulative assessment should articulate where a project contributes to a trend of incremental additional pressures on public health that whilst individually is not significant, collectively gives rise to significant public health effects.

4.3.6. For Springwell Solar Farm, an assessment of the **inter-project cumulative effects** with other existing development and/or approved developments, which includes the Fosse Green Solar Farm, Navenby Heath BESS and National Grid Navenby Substation is presented in **ES Volume 1, Chapter 16: Cumulative Effects [EN010149/APP/6.1.2]**. This has since been updated (for submission at Deadline 1) to include Leoda Solar Farm. This assessment considers the potential combined impacts of Springwell Solar Farm alongside other nearby projects and outlines that no significant residual inter-project cumulative effects are anticipated, assuming the other developments have adequate mitigation in place.

4.3.7. Inter-Project effects are considered at Section 16.6 and Table 16.4 of **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** for interactions between the Proposed Development and Navenby Substation; and Section 16.7 for the Proposed Development and Other Projects. Section 16.9 shows cumulative socio-economic effects (relating to employment and economic activity including effects on construction, energy and agricultural and tourism sectors) at the population / economic scale[4].

4.3.8. The assessment considers the individual environmental effects that may have the potential to influence health pathways, for example – air quality, noise, transport and access, and socio-economics – that may have the potential to result in significant cumulative effects.

4.3.9. This assessment considers the potential combined impacts of Springwell Solar Farm alongside other nearby projects and outlines in summary that no significant inter-project cumulative effects are anticipated.

4.3.10. The following summarises the cumulative effects, receptors and Zones of Influence (ZoIs) relevant to determinants of health / health pathways reported in **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2].**

Air Quality

4.3.11. The Zone of Influence (ZoI) for air quality is 250m from the Order Limits, influenced by the study area for sensitive human receptors for demolition, earthworks and general construction activities and based on the Institute of Air Quality Management (IAQM) construction dust guidance which inherently considers thresholds for effects on human health. As such, the potential for cumulative effects on receptors is spatially limited.

[4] 'population' effects should not be conflated with inter-project effects on population receptors (people, property and communities, community facilities etc) which are inherently the same receptors as considered through cumulative effects for individual environmental topics

4.3.12. The cumulative assessment considers the potential for construction phase effects from dust and particulate matter emissions from Site activities, including the operation of the construction equipment, and effects from road traffic exhaust emissions during construction operation.

4.3.13. The assessment at **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** summarises that regarding the cumulative effect of the Proposed Development and National Grid Navenby Substation (See **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** Table 16.4], for human health impacts there is negligible risk for every activity.

4.3.14. Regarding the cumulative effect of the Proposed Development and other existing development and/or approved developments (see **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** paragraphs 16.7.1 to 16.7.8), it is noted that the predicted cumulative construction, early decommissioning and decommissioning phases Light Duty Vehicles and Heavy Duty Vehicles generation slightly exceeds the Environmental Protection UK and Institute of Air Quality Management (IAQM) 2017 guidance screening criteria on certain roads but does not exceed the Design Manual for Roads and Bridges LA 105 Air Quality screening criteria.

4.3.15. Despite these slight exceedances and based on the review of baseline conditions, the annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at the Site are well below the Air Quality Standards. Furthermore, there is a minimal number (10-30) of high sensitive receptors located close to the affected roads. The traffic effects during construction and decommissioning would be limited to a relatively short period at each phase of the Proposed Development along with the developments on the short list and will be along traffic routes employed by haulage/construction vehicles and workers.

4.3.16. It should also be noted that the Proposed Development and the developments on the short list are not predicted to cause an increase of more than 500 Annual Average Daily Traffic of Light Duty Vehicles or 100 Annual Average Daily Traffic of Heavy Duty Vehicles on any other roads.

4.3.17. Therefore, with appropriate mitigation measures in place as secured in the **oCEMP [EN010149/APP/7.7.2]**, the **oCTMP [EN010149/APP/7.8.2]** and the appended Travel Plan, the **oOEMP [EN010149/APP/7.10.2]** and the **oDEMP [EN010149/APP/7.13.2]**, the construction and decommissioning phases inter-project cumulative effect on air quality as a determinant of human health is considered to be not significant.

4.3.18. During the operational phase, the Proposed Development and all of the relevant short-listed cumulative developments are not expected to generate traffic exceeding the Environmental Protection UK-IAQM 2017

guidance and Design Manual for Roads and Bridges LA 105 Air Quality screening criteria. A site-specific **Operational Environmental Management Plan** will minimise road traffic exhaust emissions to air. Therefore, the operational inter-project cumulative effect on air quality as a determinant of human health is considered to be not significant.

Noise and Vibration

4.3.19. The Zone of Influence (ZoI) for noise and vibration is 300m from the Order Limits, determined by guidance set out in BS 5228-1: 2009+A1: 2014, BS 5228-2: 2009+A1: 2014 and DMRB 'LA 111 – Noise and Vibration which inherently consider thresholds for effects on human health. As such, the potential for cumulative effects on receptors is spatially limited.

4.3.20. The assessment in **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]**summarises that regarding the cumulative effect of the Proposed Development and National Grid Navenby Substation (See **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** Table 16.4), no inter-project cumulative effects during the construction and operational (including maintenance) phases are anticipated, with potential operational effects from the National Grid Navenby Substation at the closest receptor to the Proposed Development, The Bungalow generally around 10 dB below the predicted noise levels from the Proposed Development and is therefore not considered to significantly increase noise levels at the receptor.

4.3.21. Potential construction phase inter-project cumulative effects are anticipated to be subject to their own site-specific mitigation measures to reduce potential inter-project cumulative effects which are not significant for the closest receptor.

4.3.22. Regarding the cumulative effect of the Proposed Development and other existing development and/or approved developments (see **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** paragraphs 16.7.31 to 16.7.33), the Navenby Heath BESS is considered to be the nearest with fixed plant infrastructure considered to be located at sufficient distance from the Proposed Development to not cause possible cumulative impact – all other developments further from this point are considered to have a negligible effect.

4.3.23. No likely significant effects are predicted during the operational (including maintenance) phase of the Proposed Development, and hence the Applicant considers that inter-project cumulative effects are not significant.

Landscape and Visual Effects

4.3.24. The ZoI for landscape and visual effects is set at 10km from the Order Limits for the Proposed Development, in order to capture the likely

interaction between views of multiple projects by receptors that include people in residential properties or using the public highway (including PRoW).

4.3.25. The assessment at **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** summarises that regarding the cumulative effect of the Proposed Development and National Grid Navenby Substation (See **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** from paragraph 16.6.11 to 16.6.45).

4.3.26. The assessment concludes, overall that:

- The only locations where there would be views of both developments at the same time would be from a length of the A15 and potentially from short sections of the PRoW network between Heath Lane in the north and Gorse Hill Lane in the south (incorporating PRoWs Wlgr/3/1, Wlgr/3/2, Wlgr/2/3 and Wlgr/2/4).
- There are no residential properties which would have clear views of both the Proposed Development and the National Grid Navenby Substation. No property which would experience a major or moderate effect on visual amenity as a result of the Proposed Development on a solus basis would experience any greater than a negligible additional visual effect as a result of the National Grid Navenby Substation proposal.
- It is therefore assessed that there would be no significant simultaneous or in combination cumulative visual effects (experienced at a static location in the landscape) between the Proposed Development and the National Grid Navenby Substation.

4.3.27. The inter-project cumulative effects assessment for Landscape and Visual is provided in Table 16.11 of **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]**, which considers the cumulative effect of the Proposed Development with 38 others, and concludes that there would be no significant adverse cumulative effects.

4.3.28. A ‘worst case’ combination effect assessment of the cumulative landscape and visual effects of the Proposed Development, National Grid Navenby Substation and Navenby Heath BESS in combination is summarised at paragraph 16.7.54 of **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]**.

4.3.29. No significant inter-project cumulative effects have been identified and therefore it is considered that there is no additional mitigation is required above what is described in **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1.2]** and is secured within the DCO.

Traffic, Transport and Access

4.3.30. Traffic and transport effects are inherently cumulative as future traffic growth, calculated using TEMPro growth factors, takes into account potential operational traffic associated with developments in the area. It is however recognised that TEMPro growth factors, while useful to account for housing and employment growth, may not reflect construction traffic associated with nearby schemes, or construction and operational traffic associated with Nationally Significant Infrastructure Projects.

4.3.31. The emergence of inter-project cumulative effects would depend on the likely routes used by cumulative development traffic (HGV and worker cars), and whether they overlap with routes used by the Proposed Development in the construction phase. Interaction and potential impacts on PRoW in respect to severance is considered for traffic and transport, though no effects are anticipated.

4.3.32. The ZoI for traffic and access effects is the extent of the local road network including: B1202, B1188, B1191, A15 and Gorse Hill Lane as well as any identified sensitive receptors – including those driven by health and wellbeing sensitivities e.g. hospitals, schools, residential areas with provision for walking and cycling.

4.3.33. In terms of the potential relevant effect of traffic and access effects on health pathways, the cumulative assessment considers potential effects on severance, pedestrian delay and Walking, Cycling and Horse rider (WCH) user amenity, fear and intimidation, accidents and road safety from traffic associated with the construction and operational phases.

4.3.34. The assessment at **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** summarises that regarding the cumulative effect of the Proposed Development and National Grid Navenby Substation (See **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** Table 16.4], for relevant human health pathways, there is no likely significant effect on severance, pedestrian delay, user amenity for WCH, fear and intimidation, or accidents and road safety.

4.3.35. Regarding the cumulative effect of the Proposed Development and other existing development and/or approved developments (see **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** paragraphs 16.7.37 to 16.7.46, there is potential for temporary construction related effects on all road users and sensitive locations (e.g., hospitals, schools, residential areas with provision for walking and cycling). However, it is assumed that:

- Developments would be subject to mitigation plans agreed with the relevant local authorities, and that adverse impacts on other road users and sensitive locations could be mitigated where realistic expectation is

such that where mitigation is required, it is provided with regard to standard good practice and its effectiveness of such measures is well known;

- The impact from the cumulative change in traffic on the A15 in construction is likely to be small based on the anticipated vehicle number estimates available for these proposed developments for assessment; and
- Due to the limited spatial cross-over and minimal construction traffic vehicle numbers overlapping the Proposed Development construction traffic routes identified and assessed within the ES assessments, the inter-project cumulative effects is unlikely to rise as a result of the interaction between the Proposed Development and other existing development and/or approved developments and therefore considered to be not significant.

4.3.36. Provided there is adequate mitigation for the National Grid Navenby Substation development (and other developments considered in the scope of the cumulative assessment), as is good practice and standard for schemes of this nature, then inter-project cumulative effect on traffic and access as a determinant of human health is considered to be not significant.

4.3.37. The Proposed Development would include the following management plans relevant to health pathways for traffic and access effects to be avoided, reduced or managed:

- **oCEMP [EN010149/APP/7.7.2];**
- **oCTMP [EN010149/APP/7.8.2]**;
- **Outline Operational Environmental Management Plan** [APP-0143]; and
- **Outline Travel Plan (which forms part of the oCTMP [EN010149/APP/7.8.2]**).

Socio-economic Effects

4.3.38. Section 16.9 of **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** considers the likelihood for significant cumulative socio-economic effects on ‘population’ or socio-economic receptors – namely people and the economy (in terms of potential positive effects relating to construction economic activity, and adverse effects relating to agricultural employment capacity).

4.3.39. As set out in Table 16.12 of **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]**, there are several solar projects likely to be constructed and operated within Lincolnshire and surrounding areas

that are either currently in planning or under development, which are likely to lead to a reduction in the indicative employment capacity of agricultural land.

4.3.40. In objective terms, the cumulative schemes would hypothetically reduce employment capacity in agriculture by around 16,800ha, with an indicative employment capacity of 267 FTE jobs (approximately 3% of the agricultural economy in Lincolnshire).

4.3.41. There are mitigating factors to this cumulative effect which relate to health pathways, and mean that this estimated reduction is a 'worst case' assessment:

- Any cumulative assessment of the potential impact on the agricultural economy is hypothetical and does not consider individual landowner agreements could safeguard the employment supported by landholdings by moving the employment and or productivity to a nearby site;
- Agricultural activity could be on-going during construction or operational phases (for example in the form of agrivoltaics);
- Any project developing on agricultural land would be subject to a consideration of statutory compensation relating to the operation of resident agricultural operations.
- Uplift in other sectors (construction and energy – see below) will occur, which is a normal activity within any economy. Employment in these sectors will be supported by individual project commitments for promoting local skills and employment as required by NPS EN-1.

4.3.42. The cumulative developments are likely to bring economic benefits in the form of employment, local spending, GVA and wages in the construction and energy sectors. Employment is estimated at:

- Construction employment - If delivered over 10 years, supporting an average of 1,572 FTE jobs per year across the construction labour market area. This represents nearly £100m in GVA per year and £4.4m in spending in the area per year; and
- Around 236 operational FTEs (permanent) in roles related to operation and maintenance of the solar projects; representing a contribution to GVA of around £36m per year and spending of £600,000 per year during the operational phases.

4.3.43. The Applicant has committed to an **oESSCP [EN010149/APP/7.20]** [APP-0153] which is secured as a Requirement of the **Draft DCO [EN010149/APP/3.1.2]**, and includes cumulative co-ordination as a key tenet. It includes a commitment to contribute to a Regional evidence base to support the planning and delivery of education and skills curricula and

training capable of delivering the workforce and skills needed across the Region, at the right time, to support the business competitiveness of all energy and construction projects.

4.3.44. It is further anticipated that each individual NSIP would also produce similar strategies to enhance and promote local employment, skills and supply chain opportunities and as set out above the Applicant is keen to collaborate with developers, sectors and public and voluntary and community stakeholders in this regard.

Land and Water Contamination

4.3.45. The Zone of Influence (ZoI) for land, soil and groundwater effects is 1km from the Order Limits, determined with regard to identifying land, soil and groundwater related receptors that could be impacted by the construction, operation (including maintenance) and/or decommissioning of the Proposed Development.

4.3.46. The assessment at **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** summarises that regarding the cumulative effect of the Proposed Development and National Grid Navenby Substation (See **ES Volume 1, Chapter 16 – Cumulative Effects [EN010149/APP/6.1.2]** Table 16.4), the potential for risks to land contamination or effects on groundwater quality which may influence health pathways is not anticipated to be significant, assuming similar management plans are required to prevent contamination.

4.3.47. There are three further existing and/or approved developments within 1km of the Order Limits considered to contribute to the potential for temporary construction related accidental spills to have a combined effect on groundwater. However, it is similarly assumed that all three developments will be subject to the respective mitigation plans agreed with the relevant authorities, and that adverse effects on groundwater receptors would be mitigated and not be significant

5. Commentary on Mental Health and Wellbeing

5.1. Considering Mental Health and Wellbeing

5.1.1. The IEMA "Guide to Effective Scoping of Human Health" makes specific reference to good practice in considering mental health and wellbeing in developing EIA (which is defined as the "*state in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*"), noting that:

- **Engagement** can help to improve community understanding of the project and practitioner understanding of the community. Engagement can also actively alleviate particular impacts upon mental health, by providing a sense of control, inclusion and participation. Such engagement activities could be considered primary mitigation.
- **Noise** affects sleep disturbance and quality of life, which influences mental health. Professional judgement is needed at scoping to decide whether the expected level of noise change is potentially significant for public health, and therefore should be scoped in.

5.1.2. Additionally, in the IEMA Guidance "Determining Significance For Human Health In Environmental Impact Assessment" it is noted that there is a strong evidence base in the scientific literature for a **causal relationship between physical activity and good physical and mental health.**

5.1.3. Through submissions via Scoping Opinion and subsequent Relevant Representations, some organisations and members of the public have raised concerns around mental health and wellbeing including predominantly:

- Environmental change – e.g. perceptions of visual/open countryside being industrialised; Footpaths, accessibility and active recreation, and noise;
- The implications of property value in relation to stress for residents wishing to sell and worries associated with the consequences of decreased property value;
- the need for a review of the health implications related to magnetic fields and radiation; and
- PRoW diversions and the impacts these diversions will have on the community's freedom to walk in the local countryside.

5.1.4. In order to address the above points raised, the Applicant has in this **Health and Wellbeing Summary Statement**:

- Summarised the approach to assessment and mitigation of environmental effects with health pathways (see **Section 3**);
- Provided a clear description of the approach to BESS safety, major accidents and disasters, and health implications relating to EMF and radiation in order to provide comfort and reduce anxiety;
- Made reference to the consideration of property value within the DCO application (and the role of the planning system in this – see **Section 3**);
- Set out the approach to assessment of in-combination / intra-project effects on users of PRoW (see **Section 4**); and
- Set out the measures that specifically provide enhancements to mental health and wellbeing – including the provision of new PRoW and a community growing space (see **Section 3** and **Section 5**).

5.2. Mental Health and Information, Communication, Engagement and Consultation

5.2.1. IEMA Guidance "Determining Significance For Human Health In Environmental Impact Assessment" [**Ref. 7**] highlights that people's perceptions of the project can greatly impact their psychological and physiological responses to changes. These perceptions may shift over time and are influenced by trust in the developer and regulators. Strong and persistent concerns can heighten sensitivity, particularly regarding mental health.

5.2.2. Consequently, it is important to consider if there are individuals with strong opinions or significant uncertainty about the project who may feel at risk to their health and well-being, and thus be affected by both actual changes and the potential for change.

5.2.3. As such, in the context of mental health and wellbeing, it is important to confirm the extent to which stakeholders and communities have been included in – and will continue to be important part of – engagement, project development and design evolution.

5.2.4. The **Consultation Report [EN010149/APP/5.1]** [APP-019] sets out how the pre-application consultation was undertaken in the development of the Proposed Development and highlights the main stages of consultation which are set out below.

Phase 1: Early plans and proposals (Winter-Spring 2023)

5.2.5. This was a non-statutory consultation on early plans and proposals for the Proposed Development.

5.2.6. This phase was intended to gain early feedback on the design of the Proposed Development, with approaches including sending leaflets to local homes and businesses, writing to stakeholders and elected representatives on the Proposed Development, issuing press releases to local and energy industry publications and publishing a website.

5.2.7. Consultees included people from the inner zone (people living, working or studying closest to the proposals and likely to have a direct interest in the Proposed Development as shown in Figure 2-1 of the Consultation Report) and outer zone (people living, working or studying within the administrative boundaries of North Kesteven District Council), in addition to various neighbouring local authorities. Statutory bodies and community groups.

Phase 2: Updated plans and proposals (Winter-Spring 2024)

5.2.8. This phase was a statutory consultation on updated proposals for the Proposed Development, carried out in accordance with a Statement of Community Consultation ("SoCC") and relevant legislative requirements.

5.2.9. This phase was open to anyone with an interest in the Proposed Development who had feedback, with activity being most intensive within the inner zone.

5.2.10. The Applicant also consulted a wide range of non-prescribed consultees, including neighbouring parish councils, community and hard-to-reach groups, education providers, business representative groups, health organisations and local interest organisations (including ecology, heritage and walking groups).

5.2.11. Within this phase, feedback was sought on the preferred location of each of the Proposed Development's elements and proposed environmental enhancements.

5.2.12. Approaches during this phase included 11,385 letters to local homes, six public events within locations surrounding the Proposed Development, written engagement with stakeholders and the provision of various communication channels to enable people to share feedback.

5.2.13. There was also a period of targeted consultation that took place within Summer 2024, that outlined proposed changes to the Order Limits to accommodate necessary highway and footpath improvements.

5.2.14. The **Equality Impact Assessment [EN010149/APP/7.18]** [APP-0151] also makes reference to the consultation process, stating that the Applicant was committed to ensuring that everyone had the opportunity to understand the Proposed Development through open and transparent engagement, clearly presented and easily digestible material, the

provision of sufficient opportunities for interested parties and delivering consultation that meets legal requirements.

5.2.15. Inclusivity was key within the consultation process, with a particular focus on under-represented people such as people without internet access, seasonal workers, younger people and socially isolated people. This was achieved by:

- writing to local authorities and organisations that represent individuals/groups that may be difficult to get in contact with;
- choosing accessible venues (by wheelchair and with accessible parking facilities), publishing material online and newspapers;
- varying the time at which public events are held to cater to different time commitments;
- providing materials in alternative formats on request;
- contacting community and voluntary organisations; and
- providing a variety of communication channels.

Access to the Natural Environment, Social Mobility and Recreation

5.2.16. As noted above, there is a strong evidence base in the scientific literature for a causal relationship between physical activity and good physical and mental health.

5.2.17. Guidance referred to earlier in this Statement also notes the positive mental health benefits related to the following health determinants and pathways (see **Table 1**):

- Physical activity;
- Access to open space, nature leisure and play;
- Transport modes, accessibility, active travel and connections;
- Community identity, culture, resilience and influence; and
- Social participation, cohesion, interaction and support.

5.2.18. The **oLEMP [EN10149/APP/7.9.2]** secures important enhancement measures relevant to positive health pathways, including the provision of new PRoW and increased accessibility, opportunities for recreation in the natural environment, and environmental improvements.

5.2.19. The Proposed Development will include a variety of biodiversity benefits including: new habitat for invertebrates, reptiles, amphibians, small mammals and birds; vegetated cover for foraging and dispersal, to maintain bat flight lines across the landscape, and provide a winter seed source for birds set out within the **oLEMP [EN10149/APP/7.9.2]**.

5.2.20. The **oLEMP [EN10149/APP/7.9.2]** commits to delivering a minimum Biodiversity Net Gain of 10%. This has been assessed through the **ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]** [APP-095].

5.2.21. As such, the Applicant has sought to secure enhancements to community connectivity, accessibility, the natural environment and recreation within the Application.

5.2.22. The **oLEMP [EN10149/APP/7.9.2]** secures a new community growing area that will be provided to the north of Scopwick. The community growing area would be located adjacent to existing community facilities along Vicarage Lane (including Scopwick Cemetery, park and play area) and is adjacent to the Spires and Steeples Trail and Stepping Out Scopwick Loop.

5.2.23. The community growing area would be secured via the **oLEMP [EN10149/APP/7.9.2]** and allows for permissive access 364 days a year to an area of up to 2ha for community use during the operation of the Proposed Development.

5.2.24. The detailed design of the space would be developed post-DCO consent in conjunction with the Community Liaison Group

5.3. Conclusions Regarding Mental Health and Wellbeing

5.3.1. The Applicant's view based on the above – and in the context of concerns about the assessment of effects on mental health and wellbeing by LCC – is that:

- Engagement has been undertaken via the pre-application statutory, non-statutory consultation and bilateral and community engagement processes set out within the Appendices to the Consultation Report that have provided adequate provision of information and consideration of community and stakeholder feedback in the approach to design and assessment development;
- Key environmental assessments relating to the potential for effects on mental health have been undertaken (for example relating to noise and air quality), and effects mitigated to their fullest extent such that residual effects are not significant where practically possible;
- Enhancements have been provided to the long-term accessibility of the area in order to promote and enhance physical and mental wellbeing.

5.3.2. While mental health and wellbeing is individual, subjective and experienced through a range of external factors beyond the Applicant's control, the Applicant considers that the approach taken to provide information and engage and consult, clearly and transparently assess and

mitigate significant environmental effects (where practicable) and secure enhancement measures demonstrates that appropriate measures have been taken to address potential effects on mental health and wellbeing.

6. References

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6.1.18. **Ref. 18:** North Kesteven District Council (2023). Our Community Strategy. Available online: https://www.n-kesteven.gov.uk/sites/default/files/2023-02/our_community_strategy.pdf

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Application Document Ref: EN010149/APP/8.10
Planning Inspectorate Scheme Ref: EN010149