Fosse Green Energy

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EN010154

9.21 Health and Wellbeing Summary Statement (Tracked)

VOLUME

9

Planning Act 2008 (as amended)

Regulation 8(1)(k)

Infrastructure Planning (Examination Procedure) Rules 2010

28 April 2026

Planning Act 2008

The Infrastructure Planning
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2010

Fosse Green Energy

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9.21 Health & Wellbeing Statement

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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 Fosse Green Energy Limited (The Applicant) and submitted to the Examining Authority (ExA) at Deadline 3 of the Examination Phase for Fosse Green Energy (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) that has been undertaken.

1.1.3 It follows a structure and contains a level of content used in other solar projects that have been through Examination.

1.2 Structure of this Document

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

a. **Section 1 – Introduction**: This Section sets out the purpose of the Health and Wellbeing Summary Statement and provides an overview of its structure. It includes a 'wayfinding' guide to indicate where health has been considered in the relevant application documents including the Environmental Statement (ES), management plans, and other documents.

   It also provides a background to the Applicant's approach to the consideration of health pathways, determinants, and populations through the scoping, pre-application, and the consultation phases of the application, in the context of guidance around the consideration of health in Environmental Impact Assessment (EIA).

   This demonstrates the Applicant's commitment to addressing wider potential determinants and health pathways that might affect individuals (or receptors), including variations in impact based on personal characteristics, and accords with relevant guidance from IEMA 'Effective Scoping of Human Health in Environmental Impact' (2022) and 'Determining Significance for Human Health in Environmental Impact Assessment' (2022).

b. **Section 2 – Health and Wellbeing Policy Context & Evidence Base**: This Section of the Summary provides an overview of the national and local policy, together with relevant strategy of relevance to health and wellbeing in the context of the Proposed Development.

   It then draws upon baseline information relating to the location, scale and sensitivity of populations to a range of health effects.

c. **Section 3 – Environmental Effects and Pathways:** Summarises the likely significant (assessed as 'moderate' or 'major') and not significant ('minor') effects relevant to health reported in the technical chapters of the ES, excluding any 'negligible' effects which, by their nature, are inherently immaterial on health. This section of the Summary also identifies how mitigation has been considered within the ES to avoid or reduce likely significant effects, where relevant.

d. **Section 4 – In-Combination and Cumulative Effects:** This Section of the Summary provides outlines the assessment of likely in-combination and cumulative effects reported within the ES and describes them in terms of their relevance to health, in accordance with the relevant aforementioned guidance from IEMA. Again, negligible effects are not considered, due to their immateriality on health.

e. **Section 5 – Commentary on Mental Health and Wellbeing**: This section of the Summary provides contextual information relating to the Applicant's consideration of mental health and wellbeing effects, determinants, pathways and receptors, as well as identifying the measures undertaken to address or mitigate the risk of such effects arising within the Proposed Development and DCO Application.

1.3 Wayfinding

1.3.1 Within the DCO Application, reference to potential environmental impacts on health and wellbeing is provided in Paragraph 5.1.11 of **ES Volume 6, Chapter 5: Environmental impact Assessment Methodology [APP-030],** and from paragraph 6.2.21 to 6.2.96 in the **Planning Statement [AS-098].**

1.3.2 The following application documents are drawn upon within this report:

a. ES Assessments:

i. Chapter 5: Environmental impact Assessment Methodology **[APP-030]**

ii. Chapter 6: Climate Change **[REP1-017]**

iii. Chapter 9: Water Environment **[REP1-021]**

iv. Chapter 10: Landscape and Visual Amenity **[AS-117]**

v. Chapter 11: Noise and Vibration **[APP-036]**

vi. Chapter 12: Socio-Economics and Land Use **[AS-016]**

vii. Chapter 13: Traffic and Transport **[APP-038]**

viii. Chapter 14: Other Environmental Topics **[APP-039]**

ix. Chapter 15: Cumulative Effects and Interactions **[APP-040]**

b. The following additional assessments:

i. Appendix 14-D: Glint and Glare Assessment (Parts 1-3) **[AS-092, AS-093, AS-094]**

ii. Appendix 14-E: Materials and Waste Assessment **[APP-174]**

iii. Appendix 14-F: Electromagnetic Fields Assessment **[APP-175]**

iv. Appendix 14-G: Unplanned Emissions Assessment **[APP-176]**

1.4 Management Plans, Mitigation and Control Documents

1.4.1 The management plans submitted with the DCO Application (listed below) have been directly influenced by the assessment of likely significant effects, and through the application of good practice to include measures designed to avoid, reduce, or monitor and manage environmental effects. This included consideration of the potential health implications of the Proposed Development on populations and sub-populations, which is drawn out in this Summary Statement.

1.4.2 The management plans also include proposals to ensure that information is provided to affected communities and users of the accessible natural environment, and include proposals for engagement and feedback to ensure that people are able to gain relevant information, review the approach to be taken by the Applicant, and to provide feedback that can be considered by the Applicant as the project proceeds. This is considered an important factor in reducing the potential for adverse mental health and wellbeing effects.

1.4.3 The relevant plans are:

a. Framework Public Rights of Way Management Plan **[REP2-019]**

b. Framework Employment, Skills and Supply Chain Plan **[APP-197]**

c. Framework Battery Safety Management Plan **[REP1-041]**

d. Framework Construction Traffic Management Plan **[REP2-023]**

e. Design Approach Document **[APP-186]**

f. Statutory Nuisance Statement **[APP-188]**

g. Framework Construction Environmental Management Plan **[REP2-013].** Mitigation plans on the following topics are outlined in this document:

i. Table 1: Climate Change

ii. Table 4: Water Environment

iii. Table 5: Landscape and Visual

iv. Table 6: Noise and Vibration

v. Table 7: Socio-Economics and Land Use

vi. Table 8: Traffic and Transport

vii. Table 9: Air Quality

viii. Table 10: Ground Conditions

ix. Table 11: Materials and Waste

x. Table 12: Glint and Glare

xi. Table 13: Major Accidents and Disasters

xii. Table 15: Electric and Electromagnetic Fields

h. Framework Operational Environmental Management Plan **[REP2-015].** Mitigation plans on the following topics are outlined in this document:
   i. Table 3: Climate Change
   ii. Table 6: Water Environment
   iii. Table 7: Landscape and Visual
   iv. Table 8: Noise and Vibration
   v. Table 9: Socio-Economics and Land Use
   vi. Table 10: Traffic and Transport
   vii. Table 11: Air Quality
   viii. Table 12: Ground Conditions
   ix. Table 13: Materials and Waste
   x. Table 14: Glint and Glare
   xi. Table 15: Major Accidents and Disasters
   xii. Table 17: Electric and Electromagnetic Fields

i. Framework Decommissioning Environmental Management Plan **[REP2-017].** Mitigation plans on the following topics are outlined in this document:
   i. Table 1: Climate Change
   ii. Table 4: Water Environment
   iii. Table 5: Landscape and Visual
   iv. Table 6: Noise and Vibration
   v. Table 7: Socio-Economics and Land Use
   vi. Table 8: Traffic and Transport
   vii. Table 9: Air Quality
   viii. Table 10: Ground Conditions
   ix. Table 11: Materials and Waste
   x. Table 12: Glint and Glare
   xi. Table 13: Major Accidents and Disasters

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 such as sensitivity to noise or vibration are largely inherent, however, environmental factors can be

[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

influenced through the design and management of development which can also have an influence on health outcomes.

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

1.5.3 These are recognised as 'wider determinants of health', which are defined by the WHO and used by guidance such as that published by the Institute of Environmental Management and Assessment (IEMA) (now Institute of Sustainability & Environmental Professionals (ISEP)) (Ref. 3). These wider determinants are listed in **Table 1-1**~~**Table 1-1**~~.

Table 1-1: Wider Determinants of Health

Categories	Wider Determinants of Health
Health Related Behaviours	Physical activity
	Risk taking behaviours
	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
	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 adaptation

Categories	Wider Determinants of Health
	Air quality
	Water quality and availability
	Land quality
	Nosie and vibration
	Radiation

1.5.4 To determine potential health impact of a proposed development, health pathways are identified. These pathways are the mechanisms through which a proposed development could have the potential to affect health.

1.5.5 This process of pathway identification has been informed by an extensive literature review. This included considering the Marmot Review into Health Inequalities (Ref. 4), 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. 5).

1.5.6 Exposure to a health pathway does not mean that all individuals will respond in the same way. Different individuals may react differently because of a complex mixture of their underlying levels of health, personal lifestyle factors, and personal preferences. It must therefore be recognised that the consideration of potential effects at a population level will capture the likely significant effects generally but not down to the individual level.

1.5.7 The assessment of li significant effects relating to health and well-being contained within the documents listed in sections 1.3 and 1.4 has been undertaken by reference to an approach which included the determinants and pathways identified in **Table 1-1**~~Table 1-1~~ of this Statement.

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 the likely significant effects on human health through individual topic chapters within **Appendix 1-A: EIA Scoping Report [APP-118]** of the ES**.** Specifically, within Table 17-1 of the Scoping Report, the following was set out:

"*It is considered that human health as a result of the Proposed Development will be covered through the assessment findings undertaken for other technical chapters of the EIA, namely Landscape and Visual, Noise and Vibration, Traffic and Transport, and Air Quality. A standalone assessment of human health is not proposed.*"

1.6.2 The rationale behind this was also set out as follows:

"*The technical chapters of the PEIR [Preliminary Environmental Information Report] and ES will consider potential effects of human health within their own assessments. There are not expected to be any significant human health effects beyond those identified for these assessments. A detailed assessment is therefore not proposed.*"

1.6.3 The Scoping Opinion (**Appendix 1-B: EIA Scoping Opinion [APP-119]** of the ES) received from the Planning Inspectorate (PINS), as well as input from North Kesteven District Council (NKDC), confirmed that this approach was acceptable. Within paragraph 3.8.5 of the Scoping Opinion, PINS noted that:

"*The Inspectorate is content that a standalone ES chapter of Human Health is not required and agrees that this aspect can be scoped out. The ES should ensure sufficient clarification and cross referencing is present. Consideration should be given to direct and indirect impacts on human health receptors. The assessment should be informed by relevant guidance such as the Institute of Environmental Management and Assessment (IEMA) 2022 guidance 'Determining Significance for Human Health in Environmental Impact Assessment' (Ref. 6).*"

1.6.4 NKDC also notes that the council:

"…*agree that effects to human health as a result of the proposed development can be scoped out as long as reference is made where applicable through the findings of other assessments undertaken as part of the EIA process.*"

1.6.5 In line with the methodology set out in **Chapter 5: EIA Methodology** of the ES **[APP-030]** (ref. paragraph 5.9.12), consideration is given to potential likely significant effects on human health receptors as relevant within each of the technical assessments. For example, this includes **Chapter 10: Landscape and Visual Amenity [AS-117], Chapter 11: Noise and Vibration [APP-036], Chapter 12 Socio Economics and Land Use [AS-016], Chapter 13: Traffic and Transport [APP-038],** and **Chapter 14: Other Environmental Topics [APP-039]** where air quality, electromagnetic forces, and glint and glare are addressed. **Appendix 14-G: Unplanned Emissions Assessment [APP-176]** of the ES also presents the risk assessment of an unplanned Battery Energy Storage System (BESS) on humans nearby. In all of these chapters the consideration of human health has been taken into account.

1.7 Consultation and Engagement

1.7.1 Following scoping, further consultation pre-application with statutory and local health bodies and healthcare providers was undertaken within the Section 42 statutory consultation, as set out within the **Consultation Report [APP-023]** and **Consultation Report Appendices [APP-024].**

1.7.2 The Applicant considers that the scope and methodology applied to the human health and wellbeing assessment have addressed the issues raised by consultees during pre-application, and that all comments received during the examination phase have been appropriately addressed within the application documents.

1.7.3 However, following the submission of the application, the Applicant reviewed Relevant Representations from Local Authorities, statutory and non-statutory bodies, organisations, and members of the public, and the Local Impact Reports from LCC and NKDC, and determined that, given matters raised, the preparation of this Summary document would be beneficial in illuminating the understanding of the assessment of likely significant health and well-being effects for all parties.

1.7.4 In light of the representations received, stakeholder positions, and the dispersed approach to health and wellbeing across multiple ES chapters, Management Plans, and other documents, the Applicant considers it valuable to produce this single comprehensive Summary that consolidates these elements and which explains the assessment that has been undertaken to the consideration of potential health pathways.

2. Health and Wellbeing Policy Context and Evidence base

2.1 National Policy

National Policy Statement for Energy (NPS EN-1)

2.1.1 The DCO Application is to be assessed against the overarching National Policy Statement for Energy (NPS EN-1) (2023) (Ref. 7) This highlights the matters that need to be considered in relation to impacts on health and wellbeing in relation to energy infrastructure projects.

2.1.2 It identifies that direct health impacts may potentially arise as a result of new energy infrastructure causing increased traffic, air or water pollution, dust/odour, hazardous waste, exposure to radiation, noise, or an increase in pests. It also recognises that such infrastructure can give rise to changes in the composition and size of the local population which could have indirect impacts on public services, transport and the use of open space with consequential effects that may be relevant to human health.

2.1.3 Paragraph 4.4.4 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*".

2.1.5 Since the submission of the DCO Application, an updated NPS EN-1 has entered into force (Ref. 8). Due to the transitional provisions this new NPS EN-

1 does not apply to the Proposed Development. In any event, it provides the same policy framework in relation to health as the 2023 NPS EN-1 which is applicable. There is no relevant change in the policy approach to health impacts between these two documents.

National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)

2.1.6 The DCO Application is also to be assessed against NPS EN-3 (2023) (Ref. 9~~Ref. 9~~). This sets out various requirements that a development is expected to meet in order to accord with NPS policy. These requirements encompass factors that influence health determinants and pathways, such as Public Rights of Way (PRoWs) and accessibility, design quality and visual amenity, as well as agricultural considerations.

2.1.7 Again, since the submission of the DCO Application, an updated NPS EN-3 has entered into force (Ref. 10). Due to the transitional provisions this new NPS EN-3 does not apply to the Proposed Development. In any event, there is no relevant change in the policy approach to health impacts between these two documents

National Policy Statement for Electricity Networks Infrastructure (NPS EN-5)

2.1.8 NPS EN-5 (2023) (Ref. 11) is also applicable to the DCO Application. This highlights the potential direct and indirect effect that electromagnetic forces (EMFs) can have on human health, and also upon aquatic and terrestrial organisms. To minimise the risk of harm to human health arising from such effects, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) created health protection guidelines. All new electricity infrastructure is expected to comply with these guidelines.

2.1.9 Again, since the submission of the DCO Application, an updated NPS EN-5 has entered into force (Ref. 12). Due to the transitional provisions, this new NPS EN-5 does not apply to the Proposed Development. In any event, there is no relevant change in the policy approach to health impacts between these two documents.

National Planning Policy Framework

2.1.10 The National Planning Policy Framework (NPPF) (Ref. 13) 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’. The NPPF is currently the subject of consultation on a new draft. The Applicant does not consider that the draft NPPF contains any material change in the national planning policy approach relevant to human health.

2.2 Local Planning Policy and Community Strategy

Lincolnshire County Council Corporate Plan

2.2.1 The Lincolnshire County Council Corporate Plan (Ref. 14) sets out Lincolnshire County Council's core aims include ensuring that local residents and communities aspire to achieve their full potential, enjoy a high quality of life, benefit from vibrant environments, and receive efficient, good-value services.

Lincolnshire Social, Emotional and Mental Health Strategy

2.2.2 The Lincolnshire Social, Emotional and Mental Health (SEMH) Strategy (Ref. 15~~Ref. 15~~) outlines Lincolnshire County Council's objectives and strategic approach for 2023-2026 to ensure that children and young people receive support within school environments to maintain good mental health and wellbeing. It also aims to foster a shared understanding of social, emotional, and mental health across all settings, promoting resilience and emotional wellbeing in everyday practice and support.

Central Lincolnshire Local Plan

2.2.3 The Central Lincolnshire Local Plan (Ref. 16) is a joint local plan for the districts of the City of Lincoln, North Kesteven, and West Lindsey. It aims to achieve a vision of Central Lincolnshire as a region of sustainable, positive growth that safeguards the environment, while generating renewable energy to heat and power homes, supporting the transition toward net zero.

2.2.4 The CLLP identifies that economic growth will assist in addressing the current problems that some areas of Central Lincolnshire have in relation to health inequalities and community deprivation.

2.2.5 Key objectives within the CLLP of direct relevance to the consideration of human health include:

a. To reduce health inequalities, promote healthy lifestyles and maximise health and wellbeing;

b. To protect, enhance and create and improve high quality green and blue spaces; and

c. Minimising the effects of climate change by developing the area's renewable and low carbon energy.

2.2.6 The policies within the CLLP that are relevant to human health include:

a. Policy S14 'Renewable Energy';

b. Policy S47 'Accessibility and Transport';

c. Policy S48 'Walking and Cycling Infrastructure';

d. Policy S50 'Community Facilities';

e. Policy S53 'Design and Amenity'; and

f. Policy S59 'Green and Blue Infrastructure Network'.

2.2.7 Policy S54 'Health and Wellbeing' is specifically relevant to health considerations and notes that applicants for planning applications are to demonstrate how any potential adverse health impacts will be mitigated or addressed. In addition, development proposals should actively promote, support, and enhance physical health and wellbeing, thereby helping to reduce health inequalities.

2.2.8 North Kesteven District Council has identified some local routes as 'Stepping Out Walks'. These routes, in so far as they are established to be lawfully accessible by members of the public together with other local PRoW, are recognised as forming part of a walking and active travel network that can support healthier lifestyles and improved physical and mental wellbeing. The Applicant is currently working with landowners, who do not accept that North Kesteven District Council has permission to implement the Stepping Out Walks in the Order Limits, to establish the ability for members of the public to lawfully walk these routes.

Lincolnshire Rights of Way Improvement Plan

2.2.9 The Lincolnshire Rights of Way Improvement Plan (Ref. 17) 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 because of this, any improvements to the PRoW network and the promotion of walking on that network would lead to more people participating in physical activity and potentially, an increase in local people adopting walking or cycling as their main modes of transport.

Lincolnshire Walking Strategy

2.2.10 The Lincolnshire Walking Strategy (Ref. 33) sets out a county-wide framework to promote walking for everyday journeys, leisure and recreation. The strategy recognises walking as a contributor to physical health, mental wellbeing, social connectivity and quality of life, particularly in rural areas where opportunities for incidental physical activity can be limited. It seeks to improve the safety, accessibility and attractiveness of walking routes, including Public Rights of Way, and supports development proposals that maintain or enhance opportunities for walking and access to the natural environment.

Lincolnshire Older People's Five Year Strategy 2023 – 2028

2.2.11 The Lincolnshire Older People's Five-Year Strategy (Ref. 18) sets out the county's ambitions of improving health and wellbeing for elderly residents of Lincolnshire.

Lincolnshire Visitor Economy: Strategy for promoting Lincolnshire to Visitors Update

2.2.12 In July 2025 Officers provided an update report to the Lincolnshire Visitor Economy: Strategy for promoting Lincolnshire to Visitors (Ref. 34). Whilst not

a policy document, the update report identifies nature tourism as a strength. That is described as “encompassing walking, cycling, birdwatching, nature reserves, seal watching, the wild coast, the Wolds AONB and other lovely countryside.”

North Kesteven Plan 2024-2027

2.2.13 The North Kesteven Plan (2024-2027) (Ref. 19) sets out commitments to improving community health, wellbeing, safety, and resilience, with a central focus on encouraging participation and engagement. This ambition includes promoting healthy lifestyles through access to leisure and cultural opportunities, while safeguarding existing jobs and supporting the creation of new employment.

North Kesteven Community Strategy

2.2.14 The North Kesteven Community Strategy 2030 (Ref. 20) identifies some key challenges facing North Kesteven’s community. These include, high obesity rates, an ageing population with related health and wellbeing issues, low physical activity levels, and rural challenges such as social isolation, digital exclusion, and fuel poverty. The strategy aims to reduce health inequalities.

North Kesteven Active Travel Strategy

2.2.15 The North Kesteven District Council Active Travel Strategy (Ref. 35) identifies active travel as encompassing walking, wheeling and cycling as both an alternative means of transport to the motor vehicle and something that can be enjoyed as a leisure activity with all the associated benefits to health and wellbeing, the environment and to the economy. Its objectives in relation to development proposals include ensuring new developments design in active travel opportunities and securing funding for active travel infrastructure. It identifies the health benefits of increasing active travel and seeks to encourage more residents to take it up.

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

2.2.16 The JSNA (Ref. 21) includes an overview of the current and projected health and care needs of residents of Lincolnshire.

2.2.17 Lincolnshire’s Joint Health and Wellbeing Strategy (Ref. 22) supports the Health and Wellbeing Board in promoting shared goals and priorities, while providing a clear strategic direction for improving health and wellbeing across Lincolnshire. Key priority areas identified in the strategy include healthy weight, mental health (including dementia), and physical activity.

2.3 Neighbourhood Plans

Hykeham Neighbourhood Plan (2016-2036)

2.3.1 Hykeham Neighbourhood Plan (Ref. 23) includes objectives of relevance to human health as follows:

a. Ensure neighbourhood growth provides accessible local services and facilities, including greenspaces, community hubs, schools, and health amenities to support people's physical, social, and cultural wellbeing;

b. Plan for a high-quality built environment with accessible services that promote health and social wellbeing, creating safe and healthy community spaces; and

c. Encourage development layouts that facilitate safe, direct walking and cycling routes both within Hykeham and to nearby destinations like Lincoln, public transport hubs, and the surrounding countryside.

Thorpe on the Hill Neighbourhood Plan

2.3.2 The Thorpe on the Hill Neighbourhood Plan dates from March 2018. For the purposes of paragraph 14 of the NPPF, it is important to note that it is more than five years old and does not contain allocations to meet its housing requirement. Its policies include exploring the possibility of linking, either by footpath or cycle path, a route through the countryside that reflects the Lincoln commuter route and promoting the existing Stepping Out Leaflet - Thorpe on the Hill and Tunman Wood, Way Marked trails and Whisby Nature Park walks which cover the majority of the walkable footpaths in the Parish.

2.4 Health Baseline and Context

2.4.1 It is important to note the baseline data presented within the Environmental Statement, which can be found in a number of places including :

a. Chapter 9: Water Environment **[REP1-021];**

b. Chapter 10: Landscape and Visual Amenity **[AS-117]**

c. Chapter 11: Noise and Vibration **[APP-036]**

d. Chapter 12: Socio-Economics and Land Use **[AS-016]**; and

e. Chapter 13: Traffic and Transport **[APP-038]**

2.4.2 In line with IEMA (now ISEP) Guidance (Ref. 3), this Health and Wellbeing Summary Statement focuses on the potential for the Proposed Development to give rise to likely significant residual adverse effects on human health at a population level but it does not (and indeed could not reasonably) undertake such an assessment at an individual level. However, the assessment does consider impacts at a sub-population level where it is reasonable to do so. Relevant sub-populations(s) are identified in the IEMA guidance as including those with vulnerability due to young/old age, income/employment, health status, social disadvantage, and access/geographic factors.

2.4.3 The baseline section of **Chapter 12: Socio-Economics and Land Use [AS-016]** of the ES considers the demographic and economic context of relevant study areas in-line with the above sub-population characteristics. This includes noting that North Kesteven has an older and ageing population when compared to a national level age profile.

2.4.4 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. The need for both carers and dementia care is identified as a key priority within the Joint Health and Wellbeing Strategy.

2.4.5 In addition to this baseline information, it is necessary to consider the sensitivity of populations to environmental, economic and social changes that may have the potential to influence health pathways.

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

2.4.7 **Table 2-1**~~**Table 2-1**~~ and **Table 2-2**~~**Table 2-2**~~ set out below provide a health summary. Most data within these tables is drawn from Department of Health and Social Care OHID Public Health Profiles (Ref. 24), supported by ONS and 2021 Census data (Ref. 25).

2.4.8 For the purposes of this baseline, the local authority area of North Kesteven has been identified as most relevant, given it includes the Order Lands.

Table 2-1: Health Profile Summary

Health Indicator		North Kesteven	Lincolnshire	East Midlands	England
Health Outcomes					
Life Expectancy at Birth (years) 1-year range (2023)	Male	81.0	78.2	78.9	79.3
	Female	82.5	82.3	82.7	83.2
Inequality in life expectancy at birth (years) 3-year range (2021-2023)	Male	5.6	8.8	10.1	10.5
	Female	3.7	6.6	7.9	8.3
Under 75 mortality rate from all causes, directly standardised rate per 100,000 (2024)		305.8	361	346.8	329.4
Under 75 mortality rate from cardiovascular disease, directly standardised rate per 100,000 (2024)		57.7	82.9	77.9	74.3
Under 75 mortality rate from cancer, directly standardised rate per 100,000 (2024)		123.1	132.5	125.1	117.9
Under 75 mortality rate from respiratory disease, directly standardised rate per 100,000 (Persons, 1 year range) (2024)		25.8	34.4	32.8	32.7
Suicide rate, directly standardised rate per 100,000 of population 2022-24		13.9	14.9	11.8	10.9
Depression: QOF prevalence (2024/25)		-	15.8%	14.7%	14.3%
Emergency hospital admissions for coronary heart disease, standardised admission ratio (2016/17 – 2020/21)		71.1	81.8	-	100

Health Indicator	North Kesteven	Lincolnshire	East Midlands	England
Emergency hospital admissions for heart attack (myocardial infarction), standardised admission ratio (2016/17 – 2020/21)	83.7	87.8	-	100
Intentional self-harm: emergency hospital admissions, standardised admission ratio (2016/17 – 2020/21)	64.0	80.2	-	100
Utilisation of outdoor space for exercise or health reasons (Mar 2015 - Feb 2016)	-	19.0%	18.5%	17.9%
Percentage of adults meeting the '5-a-day' fruit and vegetable consumption recommendations (%) (2023/24)	35.8%	30.7%	30.1%	31.3%
Risk Factors				
Overweight (including obesity) prevalence in adults, (using adjusted self-reported height and weight) (18+ yrs) (%) (2023/24)	65.8%	67.9%	67.1%	64.5%
Year 6 prevalence of overweight (including obesity), 3 years data combined (%) (2022/23 - 24/25)	33.5%	37.4%	36.2%	36.2%
Reception prevalence of overweight (including obesity), 3 years data combined (%) (2022/23 - 24/25)	23.6%	24.8%	22.2%	22.3%
Percentage of physically active adults (%) (2023/24)	59.3%	64.2%	66.7%	67.4%
Percentage of physically active children and young people (%) (2023/24)	54.6%	45.9%	45.7%	47.8%
Wider Determinants				

Health Indicator	North Kesteven	Lincolnshire	East Midlands	England
Fuel poverty (low income, low energy efficiency methodology) (%) (2023)	10.2%	12.1%	11.7%	11.4%
Winter mortality index (%) (Aug 2021 - Jul 2022)	16.7%	6.8%	6.5%	8.1%
Children in poverty: Income Deprivation Affecting Children Index (IDACI) (aged 0 to 15) (%) (2019)	10.1%	16.4%	-	17.1%
Older people in poverty: Income Deprivation Affecting Older People Index (IDAOPI) (aged 60 and over) (%) (2019)	9.8%	12.4%	-	14.2%
Children in absolute low income families (under 16s) (%) (2023/24)	13.7%	20.6%	20.7%	19.1%
16 to 17 year olds not in education, employment or training (NEET) or whose activity is not known (%) (2023/24)	-	8.8%	4.9%	5.4%
19 to 24 year olds not in education, employment or training (%) (2021)	-	-	13.5%	13.2%
Percentage of people in employment (%) (2024/25)	81%	74%	75%	76%
Average Attainment 8 score (2023/24)	45.6	43.6	44.7	45.9
Violent crime - violence offences per 1,000 population (2024/25)	16.9	29.0	29.7	31.4
Killed and seriously injured casualties on England's roads per 100,000 population (2024)	-	136.3	87.9	89.8
Air pollution: fine particulate matter (new method - concentrations of total PM2.5) (2023)	7.2	7.1	7.5	7.0

Health Indicator	North Kesteven	Lincolnshire	East Midlands	England
Air pollution: estimated fraction of mortality attributable to particulate air pollution (2023)	5.4%	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 the daytime (2021)	-	2.4%	3.0%	4.3%
The percentage of the population exposed to road, rail and air transport noise of 55 dB(A) or more during the night-time (2021)	-	6.2%	6.2%	8.4%
The rate of complaints about noise per 1,000 population (2023/24)	2.7	4.6	5.3	5.9
Percentage of adults walking for travel at least three days per week (%) (2022/23)	15%	15%	16%	19%
Percentage of adults cycling for travel at least three days per week (%) (2022/23)	-	-	1.8%	2.5%

Source: OHID (2026)

Table 2-2: Self-Reported Health Summary

Health Indicator	North Kesteven	Lincolnshire	East Midlands	England
Self-Reported General Health (Census 2021)				
'Very Good' and 'Good'	81.7%	79.3%	81.0%	82.2%
'Fair'	13.4%	14.9%	13.6%	12.7%
'Bad' and 'Very Bad'	4.8%	5.8%	5.4%	5.2%
Self-Reported Disability (Census 2021)				
Day-to-day activities limited a little	11.3%	11.8%	10.7%	10.0%
Day-to-day activities limited a lot	7.4%	8.4%	7.7%	7.3%

Source: Census 2021 (2022)

2.5 Health Outcomes

2.5.1 The life expectancies presented in Table 2-1~~Table 2-1~~ are collected from 2023 OHID Health Profiles (Ref. 24). Average life expectancy at birth for males in North Kesteven (81 years) is recorded to be greater than rates across Lincolnshire as a whole (78.2), the East Midlands (78.9), and England (79.3). When looking at females, North Kesteven was also recorded to have a marginally lower life expectancy (82.5) when compared to regional (82.7) and national averages (83.2), while Lincolnshire as a whole was recorded to have a marginally lower life expectancy (82.3).

2.5.2 The 2021 Census (Ref. 25) asked residents to self-assess their health. The results of this self-reported data suggest that North Kesteven residents have a reasonable self-perceived health, with North Kesteven recorded to have higher proportion of 'very good' and 'good' self-perceived health (81.7 %) compared to Lincolnshire as a whole (79.3%) and the East Midlands (81.0%), albeit slightly lower when compared to the position for England as a whole (82.2%).

2.5.3 Data from the 2021 Census (Ref. 25) relating to disability records that the proportion of residents that have their day-to-day activities limited as a result of a disability or long-term health problem is higher in both North Kesteven (18.7%) and Lincolnshire (20.2%) than in England (16.3%).

2.6 Risk Factors

2.6.1 Healthy weight is identified as a key priority area within the Lincolnshire Joint Health and Wellbeing Strategy (Ref. 22). Tackling unhealthy weight is identified as fundamental to assisting more people in Lincolnshire benefit from good long-term health. At present, excess weight in adults is higher within Lincolnshire when compared to the proportion of the population with excess weight within North Kesteven, East Midlands and England.

2.6.2 In 2023, the prevalence of excess weight within year 6 children was lower in North Kesteven (33.5%) when compared regional and national proportions (36.2%). Conversely, the proportion in Lincolnshire was recorded to be greater than these rates (37.4%), highlighting the obesity challenge that parts of the county are currently facing.

2.6.3 Data from the Department of Health and Social Care (Ref. 24) from 2023/2024 also suggests that that the proportion of adults participating in physical activity in North Kesteven (59.3%) and Lincolnshire (64.2%) are lower than the proportion at the national level (67.4%). North Kesteven is also recorded to have a higher proportion of children and young people participating in physical activity (54.6%) when compared to regional and national rates (45.7%), (47.8%).

2.6.4 As such, another overarching priority of the Lincolnshire Joint Health and Wellbeing Strategy (Ref. 22) 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.

2.7 Mental Health

2.7.1 Findings from the Adult Psychiatric Morbidity Survey (2014) published by NHS Digital (Ref. 26) show that mental health and physical health are 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 y likely to also suffer from mental health issues.

2.7.2 The survey found that 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. 26). In people with severe "*common mental disorders (CMD)*", 37% reported a chronic physical condition (Ref. 26).

2.7.3 Improving mental health has also been identified as a priority within the Lincolnshire Joint Health and Wellbeing Strategy (Ref. 22), with the strategy highlighting the fact that good mental health is fundamental to living a happy and healthy life.

2.7.4 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 (13.9 per 100,000 resident population) and Lincolnshire (14.9 per 100,000 resident population) are greater than rates at the regional and national levels (11.8 and 10.9 per 100,000, respectively).

2.7.5 According to survey data from the ONS relating to personal wellbeing (Ref. 27), respondents in Lincolnshire were recorded to have a mean anxiety score[2] of 2.67 out of 10, which is lower than, the score for England (3.23), indicating somewhat lower levels of anxiety being experienced by local residents than is the case nationally.

2.7.6 Data from OHID Health Profiles suggests that the standardised ratio of emergency hospital admissions for intentional self-harm is lower in North Kesteven (64.0) and Lincolnshire (80.2) when compared to the national average (100.0).

2.7.7 Conversely, the percentage of the population with a clinical diagnosis of depression is higher in Lincolnshire (15.8%) when compared to regional and national levels (14.7%), (14.3%), supporting the Lincolnshire Joint Health and Wellbeing Strategy priority of seeking to improve mental health.

2.8 Air Quality

2.8.1 North Kesteven's 2024 Air Quality Annual Status Report (Ref. 28) highlights the fact that poor air quality and air pollution can be a contributing factor towards cancer, heart disease, increases in hospital admissions, exacerbation

[2] To derive estimates of anxiety, respondents were asked "Overall, how anxious did you feel yesterday? Where 0 is 'not at all anxious' and 10 is 'completely anxious'".

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 life expectancy.

2.8.2 The Report highlights that the maximum nitrogen dioxide (NO_2) annual mean concentration recorded at a diffusion tube site was equal to 23.4 micrograms per cubic metre of air ($\mu g/m^3$), which was a reduction from the maximum concentration in the previous reporting year (27.0 $\mu g/m^3$). This can be compared to the annual mean annual objective set by government of 40 $\mu g/m^3$.

2.8.3 With NO_2 levels considerably below that annual mean objective limit and no reported exceedances of the annual mean objective in the last five years, no Air Quality Management Areas have been declared within North Kesteven.

2.8.4 In relation to particulate matter, the concentration of fine particulate matter less than 2.5 microns ($PM_{2.5}$) and the fraction of mortality calculated to be attributable to particulate air pollution are recorded to be higher in North Kesteven and Lincolnshire when compared to the national average.

2.8.5 Emergency hospital admissions for coronary heart disease and myocardial infarction (heart attack) are all significantly lower within North Kesteven (71.1 & 83.7 respectively) and Lincolnshire (81.8 & 87.8 respectively) when compared to national levels (both 100.0), noting that air quality is only one contributing factor to these admissions.

2.9 Noise and Vibration

2.9.1 Very high noise levels can have direct physical impacts on health (hearing loss or tinnitus). Lower levels (nuisance or annoyance levels) can have indirect health effects including through stress-related illness and disturbance to 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 significantly within and across populations and in association with the nature of the noise (e.g. aircraft noise compared to road traffic noise) (Ref. 29). As a result, it is challenging to predict the degree to which nuisance and annoyance from noise will affect people at an individual level.

2.9.2 When looking at environmental health factors, some 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 the proportion in the East Midlands (3.0%) and England (4.3%).

2.9.3 The rate of complaints per 1,000 population regarding environmental 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).

2.10 Other Wider Determinants

2.10.1 Data from the Department of Health and Social Care (Ref. 24) suggest that North Kesteven and Lincolnshire are subject to lower levels of poverty than compared to England as a whole. The rates of children in poverty and older

people in poverty are lower in these areas in comparison to that national picture.

2.10.2 The rate of children in absolute low-income families in North Kesteven (13.6%) was below that recorded at a national level (19.1%) though for Lincolnshire overall the rate (20.6%) is higher in comparison.

2.10.3 In contrast, the proportion of 16- to 17-year-olds not recorded to be in education, employment or training is greater within Lincolnshire (8.8%) when compared to rates at the regional (4.9%) and national (5.4%) 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.

2.10.4 While the rates of violent offences per 1,000 people was recorded to be lower in Lincolnshire (29.0) when compared to East Midlands (29.7) and England (31.4), the number of people reported killed or seriously injured on the roads was recorded to be considerably higher in Lincolnshire (136.3 per 100,000 population) when compared to regional and national rates (at 87.9 and 89.8 per 100,000 population, respectively).

2.11 Deprivation

2.11.1 The Government's Index of Multiple Deprivation (IMD) (2025) (Ref. 30) 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.

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

a. Income deprivation;
b. Employment deprivation;
c. Education, skills, and training deprivation;
d. Health deprivation and disability;
e. Crime;
f. Barriers to housing services; and
g. Living environment deprivation.

2.11.3 IMD (2025) data also suggest 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.

2.11.4 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.

2.11.5 The site does not fall within the top 30% most deprived neighbourhoods in England for the domain of health, and only one LSOA within communities adjacent to the Order Limits is within the 50% most deprived areas in England.

However, there are some localised pockets of health deprivation within Lincoln, in addition to Winthorpe and Skegness in the east of Lincolnshire, where some LSOAs fall amongst the top 10% most deprived for the health domain.

2.12 Sensitivity of Vulnerable Groups

2.12.1 Within a defined population, individuals will have varying levels of sensitivity to health outcomes due to factors such as age, socio-economic deprivation and pre-existing health conditions. Some groups may be particularly vulnerable to change and where this is the case they could experience differential or disproportionate effects when compared to the general population.

2.12.2 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 North Kesteven when compared to the national average.

2.12.3 There are location-specific sensitive receptors near 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 assessment undertaken in the ES in the chapters listed in 1.3.2, and their sensitivity has been taken into account in the assessment of the significance of likely effects within each relevant individual environmental topic.

2.13 Conclusion of Health Baseline

2.13.1 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 of medium sensitivity, but that it also contains some higher sensitivity receptors and sub-populations.

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

a. Children and young people;

b. Older people;

c. People with social disadvantage, e.g. low income, those experiencing discrimination;

d. 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);

e. People with existing poor health (physical and mental); and

f. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes near the Order Limits.

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

a. Promoting mental wellbeing and improving the level of care available for those suffering from mental health;

b. Tackling health inequality across the county;

c. Tackling obesity and related life choices; and

d. Working to prevent long-term health conditions.

3. Environmental Effects and Health Pathways

3.1 Overview

3.1.1 This section of this Summary document sets out the assessment of likely significant effects upon health and well-being reported within the ES during the construction/decommissioning and operational (including maintenance) phases. It has regard to health determinants, pathways and the characteristics of receptors, within the baseline context and the relevant policy context.

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

3.1.3 As stated in relevant IEMA Guidance (Ref. 3), the highest magnitude of effect on sensitive populations and sub-populations in relation to health and wellbeing are frequency of exposure and severity of exposure to impacts.

3.2 General Activity, Behaviours and Health and Safety

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.2.1 Changes in people's behaviour and changes in their day-to-day activities because of construction and operational activity rather than linked to specific environmental effects, can also have potential to be a contributor to mental and physical health and therefore form potential impact pathways.

3.2.2 The relevant health and wellbeing determinants (as listed in **Table 1-1**~~**Table 1-1**~~) are:

a. Risk taking behaviours;

b. Community safety and crime;

c. Community identity, culture, resilience and influence; and

d. Social participation, cohesion, interaction and support.

3.2.3 Whilst all of the population could experience impacts, the more vulnerable population groups (i.e. the sensitive receptors) relevant to this assessment are:

a. Older people;

b. People with existing poor health (physical and mental health); and

c. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the DCO Site.

3.3 Approach to Mitigation and Enhancement

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

3.3.2 Relevant mitigation measures during construction are primarily set out in the **Framework Construction Environmental Management Plan [REP2-013]** . These include:

a. Committing to a core construction working hour schedule of between 7am to 7pm from Mondays to Fridays, and 9am to 6pm on Saturdays (with exceptions related to HGVs and percussive pilings). No works will be take place on Sundays or Public Holidays.

b. Measures relating to community safety and security, with the Site set to be fenced off early on in the construction phase and storage of materials to be kept secure to prevent theft or vandalism. There will also be designated security staff.

c. 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.

d. Measures relating to the management of and response to emergencies. An Emergency 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 Environment Agency in relation to responding to flood warnings and events. This Plan will detail procedures for responding to incidents on site, as well as reporting guidance.

e. Information sharing and community engagement will be a key focus throughout the construction phase. To support this, a Community Liaison Group (CLG) has already been established and will be continued (as secured by Requirement 5, Schedule 2 of the **Draft DCO [REP2-005]**) to maintain communication between local residents and relevant organisations. To date this has been led by the Applicant Project Management team; post consent a dedicated Community Liaison Officer will be established to lead these interactions, acting as the main point of contact for queries and concerns, and ensuring effective dialogue with the community.

3.3.3 Similar measures would also be in place for the decommissioning phase and are set out in the **Framework Decommissioning Environmental Management Plan [REP2-017].**

3.3.4 For the operational phase, the **Framework Operational Environmental Management Plan [REP2-015]** commits to the following to minimise community disruption:

a. 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.

b. No continual lighting but manually operated and motion detection lighting to be utilised for safety purposes.

c. Security arrangements by a suitably qualified person, which will be reviewed at stages that align with the Security Risk rating and will further assess any changes to the security risk.

3.3.5 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:

a. Construction of the Proposed Development will be undertaken in accordance with the **Framework Construction Environmental Management Plan [REP2-013]** which includes measures to ensure the safety of staff, reduce risk-taking behaviours, and to reduce risk to the general public. The **Framework Construction Environmental Management Plan [REP2-013]** requires the Principal Contractor to prepare a Construction Method Statement (CMS).

b. The Project Director will ensure the team is equipped with adequate resources, including qualified personnel and appropriate training. Meanwhile, the Principal Contractor will be responsible for confirming that all site workers have received the necessary training. These measures aim to reduce the likelihood of accidents, injuries, and unsafe behaviours during on-site activities.

c. During operation, the proposed activities are generally lower risk and less intense, and therefore less likely to affect health than construction activities. Whilst these are often inherent individual characteristics which cannot be altered significantly by planning or development, these traits can still be positively impacted by good design and effective management practices.

3.4 Air Quality

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.4.1 Air quality plays a role in shaping the overall quality of the environment and can have implications for long-term health. Poor air quality is linked to adverse health outcomes, including chronic respiratory diseases, cardiovascular conditions, and asthma.

3.4.2 The relevant health and wellbeing determinant (as seen in **Table 1-1**~~**Table 1-1**~~) is air quality.

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

a. Children and young people;

b. Older people;

c. People with existing poor health (physical and mental health); and

d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the DCO Site.

Summary of Environmental Effects: Construction and Decommissioning Phase

3.4.4 **Section 14.2** of **Chapter 14: Other Environmental Topics [APP-039]** of the ES assesses the potential increase in risk of health effects due to release of dust and particulate matter emissions from the Proposed Development activities during the construction and decommissioning phases of the Proposed Development. No likely significant impacts were identified associated with the use of onsite equipment or offsite road traffic exhaust emissions.

3.4.5 The impact of dust on human health during the construction phase was assessed at sensitive human receptors (e.g. residential properties, schools and residential care homes) within 250m of the Proposed Development (all of which were identified to be residential properties).

3.4.6 Locations of interest for the air quality assessment are those which represent locations where people are likely to be present, as the assessment is most concerned with human health. For the purposes of the Dust Risk Assessment (DRA) (**Appendix 14-B [APP-169]** of the ES), potentially affected air quality sensitive receptors have been identified through a review of Ordnance Survey (OS) mapping and aerial photography. These include any location where people could reasonably be expected to be present over a time period that aligns with the averaging period for air quality objective values, where that location is not a workplace or the central reservation of a major road. National and local planning policies highlight residential properties, places of worship, education and health care facilities as examples of air quality sensitive receptors.

3.4.7 The assessment presented within **Section 14.2** of **Chapter 14: Other Environmental Topics [APP-039]** of the ES finds that in the absence of industry-standard mitigation, the risk of dust effects generated from activities associated with the construction and decommissioning of the Proposed Development are medium for human health. The risk levels are as follows:

a. not applicable for demolition;

b. low risk for earthworks and construction; and

c. medium risk for trackout activities.

3.4.8 **Section 14.2.5** of **Chapter 14: Other Environmental Topics [APP-039]** identifies that with the implementation of the good practice measures, as secured via the **Framework CEMP [REP2-013]** and **Framework DEMP [REP2-017]** submitted with the DCO Application, the likely impact of the construction phase on health and well-being would be negligible. No likely

significant effects upon health or well-being are expected to arise associated with the decommissioning phase.

3.4.9 Whilst there is a medium risk of effects on human health arising from dust generation without mitigation, these risks would be managed through the implementation of the good practice measures, as secured via the **Framework CEMP** [**REP2-013**] and **Framework DEMP** [**REP2-017**], as identified in **Section 14.2.5** of **Chapter 14: Other Environmental Topics [APP-039]** of the ES. Following these mitigation measures, there would be no likely significant air quality effects relevant to health and wellbeing on any receptors across the study area. Any impact on air quality as a determinant of health would therefore be very limited if at all experienced and of temporary duration. On this basis it is therefore concluded that there would be no likely significant effects on health and wellbeing arising from the Proposed Development in this regard during the construction or decommissioning phases.

Summary of Environmental Effects: Operation Phase

3.4.10 There will be no activities during operation expected to generate significant dust or air quality emissions, resulting in minimal impact health and wellbeing. As a result, no likely significant health or wellbeing effects associated with air quality have been identified.

3.4.11 Due to the nature of the Proposed Development, impacts upon air quality associated with repowering during the operational phase will have a lesser and shorter duration of impact than the construction phase. Since the construction phase will not give rise to a likely significant effect, it can be concluded that repowering will also not give rise to any likely significant effects upon health or well-being.

Approach to Mitigation / Enhancement

3.4.12 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, will be secured through the **Framework CEMP [REP2-013]**, the **Framework OEMP [REP2-015],** and the **Framework DEMP [REP2-017]** submitted with the DCO Application.

3.4.13 The **Framework Construction Traffic Management Plan (CTMP) [REP2-023]** 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 will minimise air quality impacts on other users (with these journeys occurring when there is less traffic on the road network, and therefore lower road traffic emissions and better air quality conditions that is less sensitive to additional trips).

3.5 Noise and Vibration

Relevant Health Pathways / Determinants & Populations / Sub-population

3.5.1 Noise can have an impact on population health, particularly in areas where people live or work close to significant noise sources. Prolonged exposure to high noise levels is linked to mental health conditions, stress-related illnesses, impaired memory and cognitive function, and sleep disturbances. However, what constitutes 'excessive' noise can vary and adverse impacts are not uniformly experienced across populations.

3.5.2 The relevant health and wellbeing determinant (as seen in **Table 1-1**~~Table 1-1~~) is noise and/or vibration.

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

a. Children and young people;

b. People with existing poor health (physical and mental health);

c. 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); and

d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the DCO Site.

Summary of Environmental Effects: Construction and Decommissioning Phase

3.5.4 **ES Volume 1, Chapter 11: Noise and Vibration [APP-036]** of the ES contains an assessment of likely significant effects on human receptors arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon noise and vibration.

3.5.5 Noise-sensitive receptors have been identified through a desktop study of aerial imagery and mapping and are presented in **Figure 11-1: Receptor and Noise Monitoring Positions [AS-061]** of the ES.

3.5.6 All reasonable steps to minimise the effects of noise on PRoW and Permissive Path users will be taken during the construction and decommissioning phases of the Proposed Development. These measures are set out in the **Framework CEMP [REP2-013]**, and **Framework DEMP [REP2-017]**, and submitted alongside the DCO Application.

3.5.7 With these measures in place, the experience of using PRoW or Permissive Paths is not anticipated to materially change as a result of noise or vibration associated with the Proposed Development, and there would as such be no adverse impacts on the human health and wellbeing of users.

3.5.8 For the purposes of assessing noise and vibration, three construction scenarios that represent high Noise Generating Activities (NGA) have been developed. These activities are most likely to generate likely significant effects and are as follows:

a. NGA1 – Construction of the BESS (covering both distributed and centralised layouts), Solar Stations, and ground mounted solar PV panel arrays;

b. NGA2 – Cable installation (general works) at the Cable Corridor and the Interconnecting Cable Corridor; and

c. NGA3 – Cable installation (Horizontal Directional Drilling (HDD) activities) at the Cable Corridor and the Interconnecting Cable Corridor.

3.5.9 For NGA1, there is potential for exceedances of the Significant Observed Adverse Effect Level (SOAEL) to occur at receptor R35 (Housham Grange, Newark Road), R26 (Grange Cottage, Bassingham Road) and R50 (19 Park Crescent) due to construction vibration. This is a likely significant effect prior to additional mitigation, due to piling activities within 60m of these dwellings. It is worth noting that the modelling undertaken is based on assuming that a large-scale commercial piling rig is used, rather than the mini-rammers that would more likely be used. Further, these works within 60m would be relatively short duration (a few days). Furthermore, R35 (Housham Grange) is currently derelict and therefore not inhabited and can be discounted from the health assessment.

3.5.10 Occupants of nearby receptors can be more tolerant of high noise events if they are regularly communicated with and kept informed of timings and duration of high noise generating events. The communication strategy, which will be secured through the DCO as part of the **Framework CEMP [REP2-013]** submitted alongside the DCO, will ensure that occupants of affected properties will be notified of the timings and duration of works. Consequently, the assessment of construction noise assessment at all receptors except R26, R35 and R50 identifies noise effect as not significant and is unlikely to influence health and wellbeing pathways for the general population.

3.5.11 There is a place of worship at receptor R8 (Saint Michael and All Angels Church) where construction noise levels of up to 65 dB $LA_{eq,T}$ are predicted. It is not anticipated that desirable internal noise levels would be exceeded; however, as construction noise predictions are on the threshold of significance. Consultation will be undertaken with the church to make sure that the timings of piling/ramming of Solar PV mounting structures avoid any periods when the church may be particularly sensitive to noise, as secured through the DCO as part of the **Framework CEMP [REP2-013]**.

3.5.12 For both NGA2 and NGA3 noise predictions at sensitive receptors indicate that the SOAEL will not be exceeded and no likely significant effects are identified.

3.5.13 For NGA1, three residential receptors are expected to experience significant effects in relation to vibration from driven piling. Given that this represents only three of 51 sensitive residential receptors assessed within the study area, the

piling works being temporary and transient (for a few weeks only in these locations), as well as that the significant effect is based on an unlikely scenario that larger piling rigs rather than smaller ramming machines are used, it is anticipated that any overall impact on human health and wellbeing through noise and vibration would be limited and temporary in nature. With NGA2 and NGA3 experiencing no likely significant effects in relation to noise and vibration, overall it is assessed that no likely significant effects on human health and wellbeing are anticipated to arise as a result of construction of the Proposed Development in this regard.

3.5.14 The decommissioning effects are predicted to be similar to, but likely shorter duration and slightly less intense than, construction, and therefore also not significant. A **Framework DEMP [REP2-017]** has been submitted alongside the DCO Application which includes the mitigation measures to control effects during this phase of the Proposed Development.

Summary of Environmental Effects: Operation Phase

3.5.15 Within **Chapter 11: Noise and Vibration [APP-036]** of the ES, operational noise impacts have been predicted using a computer noise model of the Proposed Development. The operational equipment such as the BESS and Onsite Substation have been modelled at full load and maximum sound power levels, during the night-time period (11pm to 7 am). This provides a reasonable worst-case scenario against which to base the assessment.

3.5.16 Operational noise does not result in any exceedances of the Significant Observed Adverse Effect Level (SOAEL), thereby indicating that human health and wellbeing would not be impacted through noise and vibration as a health determinant. As such, there would be no likely significant effect on health and wellbeing in relation to this.

Approach to Mitigation / Enhancement

3.5.17 The Applicant will adopt measures outlined within the **Framework CEMP [REP2-013]** and the **Framework DEMP [REP2-017]** which include good industry control measures for ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme.

3.5.18 The adoption of the **Framework OEMP [REP2-015]** 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 an important factor in shaping the experience of the environment and can influence long-term health outcomes. Poor visual amenity is often linked to elevated stress levels and a reduced overall quality of life.

3.6.2 The relevant health and wellbeing determinants (as seen in Table 1-1~~Table 1-1~~) are:

a. Physical activity;

b. Access to open space, nature leisure and play; and

c. Community identity, culture, resilience and influence.

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

a. Children and young people;

b. Older people;

c. People with existing poor health (physical and mental health); and

d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes near to the DCO Site.

Summary of Environmental Effects: Construction and Decommissioning Phase

3.6.4 **ES Volume 1, Chapter 10: Landscape and Visual Amenity [AS-117]** of the ES 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 potential impacts of the Proposed Development 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 Some significant landscape effects have been identified during construction, due to the change in activity away from arable farming, however the visual effects are considered to be more relevant to health and wellbeing in the local population.

3.6.6 Likely significant major adverse visual effects during the construction and decommissioning phases were reported for:

a. Residents of Church Farm, Low Barn, and Grange Cottage (in winter only)

b. Recreational users of PRoW TOTH/7/2, TOTH/21/1, TOTH/6/2, TOTH/6/3, Aubo/12/2, Aubo/8/1, TOTH/11/1, TOTH/12/3, TOTH/15/1, and Aubo/10/1.

3.6.7 Likely significant moderate adverse visual effects during the construction and decommissioning phases were reported for:

a. Residents of Thorpe on the Hill, Jubilee Farm, Scotland Farm, Housham Wood Farm, Eagle Barnsdale, Morton, High Walks Farm, Witham St. Hughs (east), River Farm (north), Tonge's Farm, Bassingham, Coleby, Boothby Graffoe, Malborough, and North Field Farm.

b. Recreational users of TOTH/6/1, TOTH/6A/1, TOTH/18/1, Viking Way (PRoW Cole/2/1 and BooG/2/2), Bass/1/1, NoDi/1/2, NoDi/4/1, ThuN/5/1, ThuN/2/1, Bass/22/1, Bass/21/2, and Bass/20/1

c. Users of Clay Lane and Bassingham Road (in winter only).

3.6.8 As outlined above, the landscape character and visual amenity assessments have highlighted some significant effects of relevance to health and wellbeing. These are in relation to open space and physical activity in the case of effects on PRoW users. Given the temporary nature of these effects, combined with these PRoWs remaining open and usable during construction and decommissioning, it is anticipated that the impact on health and wellbeing of these PRoW users would be limited and of temporary duration. The residential receptors that are expected to experience significant effects represent a relatively low number of residents within the population, during winter works only, and, similarly to PRoW users, any health and wellbeing impacts on these residential receptors would be temporary and of limited severity and extent. On this basis it is concluded overall that there would be no likely significant effects on health and wellbeing arising from the construction and decommissioning of the Proposed Development from changes to landscape or visual amenity.

3.6.9 In the case of residential receptors, impacts during construction and decommissioning will be temporary in nature. As a result of this, any health and wellbeing impacts resulting from visual amenity effects on residential receptors would be temporary and limited in nature, and therefore not significant.

3.6.10 As such, overall it is concluded that there would be no likely significant effects on health and wellbeing regarding landscape character and visual amenity during construction and decommissioning.

Summary of Environmental Effects: Operation Phase

3.6.11 Stakeholders and members of the community have raised through Relevant Representations that the change to the landscape character of the area because 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.

3.6.12 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.

3.6.13 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.

3.6.14 Likely significant major or moderate adverse visual effects for operation year 1 were recorded within the assessment on the following receptors:

a. Recreational users of PRoW TOTH/7/2, TOTH/21/1, TOTH/6/2, TOTH/6/3), Bass/1/1, NoDi/1/2, NoDi/4/1, ThuN/5/1, ThuN/2/1, TOTH/11/1, Aubo/8/1, TOTH/12/3, TOTH/6/1, TOTH/6A/1, Aubo/12/2, TOTH/15/1, Bass/22/1, Bass/21/2, Bass/20/1, and Aubo/10/1.

b. Residents of Housham Wood Farm, Church Farm and Low Barn, and Grange Cottage

c. Users of Clay Lane and Bassingham Road

3.6.15 Likely significant major or moderate adverse visual effects for operation year 15 were recorded within the assessment on the following receptors:

a. Recreational users of PRoW TOTH/7/2, TOTH/21/1, TOTH/6/2, TOTH/6/3, and Aubo/8/1 – winter and summer

b. Recreational users of TOTH/11/1, TOTH/12/3 and TOTH/15/1, Bass/22/1, Bass/21/2, Bass/20/1 – winter only

3.6.16 Once the Proposed Development is operational, the number of significantly affected character areas is reduced by half. The significant effects further reduce as the mitigation planting establishes, enhancing landscape pattern, and helping integrate the Proposed Development within the surrounding landscape. The visual receptors are also most impacted during the construction phase, and the number of significant effects halves in Year 1 of operation of the Proposed Development. Once the proposed planting is established, in many instances, the views of the Proposed Development will be filtered or screened. By Year 15 of operation, which is the assessment year for when planted vegetation will have established and matured, the effects at residential receptors will be not significant. Several recreational users of PRoW will still experience significant effects due to short distance views of the Proposed Development (which in some cases is of hedges rather than open views across arable farmland).

3.6.17 Based on the number of viewpoints, significant effects at Year 1 of operation are only expected for a relatively low proportion of the potentially affected population overall. As a result of this, any health and wellbeing impacts resulting from visual amenity effects on residential receptors would be temporary and limited in nature, and therefore not significant.

3.6.18 Regarding effects on PRoWs, whilst these would exist throughout the operational phase, these effects will impact only a limited proportion of the population given the extent of the PRoW network available for users, would not inhibit the ability for users to access these PRoWs, and in the majority of cases, would only be significant in winter (when leaves are not on trees/hedges), during which time these PRoWs are likely to be used less. As a result of this, any health and wellbeing impacts resulting from changes in access to open space and physical activity are considered to be limited and not significant.

3.6.19 The mitigation strategy does not assume that that screening will mitigate the impacts of the visual change in its entirety. In some locations, vegetation may filter or frame views rather than fully screen the development, and in others it may reduce openness along routes where expansive views are currently

experienced. The intent of mitigation is therefore to manage visual change rather than eliminate it, recognising that perceptions of landscape change and wellbeing responses will vary between individuals.

3.6.20 As such, while changes to landscape character and visual amenity during operation may be perceptible by some nearby residents and users of PRoWs, these effects will reduce over time as mitigation establishes and, in any event, are limited in nature, extent and duration and are not of a scale, frequency or magnitude that would give rise to likely significant adverse effects on health and wellbeing at a population level.

Approach to Mitigation / Enhancement

3.6.21 Mitigation methods include:

a. Careful siting in the landscape;
b. Conserving existing vegetation patterns;
c. Creating new green infrastructure;
d. Sensitive design in relation to form and materials; and
e. Sensitive design of lighting.

3.6.22 The design includes embedded screening measures to reduce visibility where possible, while additional mitigation measures are included in the following management plans:

a. Framework CEMP [REP2-013];
b. Framework OEMP [REP2-021].
c. Framework LEMP [REP2-015];
d. Framework SMP [REP1-037];
e. Framework DEMP [REP2-017].

3.6.23 The grassland and new planting that has been embedded into the Proposed Development to provide landscape and visual mitigation will undergo management and maintenance. A **Framework LEMP [REP2-021]** has been prepared and submitted with the DCO Application to demonstrate how successful establishment will be achieved.

3.6.24 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.

3.6.25 The Applicant considers that adverse visual effects have been mitigated as far as practicable in the landscape and visual assessment [AS-117] and the design response is proportionate and appropriate to the landscape context of the Proposed Development.

3.7 Traffic, Transport and Access

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.7.1 Health and wellbeing could be affected if changes to access, whether for drivers, pedestrians, cyclists, or horse riders (WCH), restrict movement between residential areas and community facilities, or discourage individuals from walking or cycling for recreation or other purposes.

3.7.2 The relevant health and wellbeing determinants (as seen in **Table 1-1**~~Table 1-1~~) are:

a. Physical activity;

b. Access to open space, nature leisure and play;

c. Transport modes, accessibility, active travel and connections;

d. Community safety and crime;

e. Social participation, cohesion, interaction and support; and

f. Access to health and social care services and other social infrastructure.

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

a. Children and young people;

b. Older people; and

c. People with existing poor health (physical and mental health).

Summary of Environmental Effects: Construction and Decommissioning Phase

3.7.4 **ES Volume 1, Chapter 13: Traffic and Transport [APP-038]** 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 Impacts on PRoW receptors during the construction and decommissioning of the Proposed Development have been considered in relation to the following:

a. Severance;

b. Pedestrian delay;

c. Pedestrian and cyclist amenity; and

d. Perception of fear and intimidation.

3.7.6 Details relating to PRoW management which will be subject to temporary or permanent diversions or will have construction/decommissioning route

crossing points are set out in the **Framework Public Rights of Way Management Plan [REP2-019]**. The majority of PRoW receptors will not require any diversions or closures and have therefore been classified as having Very Low magnitude.

3.7.7 Since the assessment has included consideration of users of the footpath/bridleway network, the use of these routes has been taken into account when considering health effects on recreational users and the continuity of walking opportunities through and around the Proposed Development.

3.7.8 PRoW that require temporary diversions/construction route crossing points or permanent diversions have been classed as having low or medium magnitude and low or very low sensitivity (apart from P11 which has medium sensitivity). The Severance impacts for PRoW receptors P11, P18, P23, P25 and P43 have been assessed as Minor and the Severance impact for all other PRoW receptors has been assessed as Negligible.

3.7.9 In addition, permissive paths proposed as part of the Proposed Development will be provided for the full operational stage, which is expected to be 60 years, therefore providing greater security of the delivery of these access routes than is normally the case for permission paths.

3.7.10 Based on the above, the traffic, transport and access assessments of relevance to health and wellbeing all conclude that there would be no likely significant effects on any receptors across the study area. Any impact on the relevant health and wellbeing determinants, and the quality of life of local residents, employees and visitors, would therefore be very limited if at all experienced and of temporary duration in such instances. On this basis it is therefore concluded that there would be no likely significant effects on health and wellbeing arising from the construction or decommissioning of the Proposed Development in this regard.

Summary of Environmental Effects: Operation Phase

3.7.11 During general operation and maintenance, the Proposed Development is expected to generate a low level of vehicle trips. As a reasonable worst-case scenario, the Proposed Development will be serviced by a nominal number of staff (up to four permanent staff per day), predominantly undertaking day-to-day maintenance tasks.

3.7.12 **Chapter 13: Traffic and Transport [APP-038]** of the ES states that operational effects of the Proposed Development on walkers, cyclists and horse riders would be negligible (not significant).

3.7.13 There would also be an increase in the use and connectivity of PRoW and permissive paths within the study area, which is beneficial (and not significant). This relates to 9.5km of additional permissive paths proposed to further enhance the local connectivity which will be delivered by the Proposed Development to the benefit of health and wellbeing.

3.7.14 As the relevant traffic, transport, and access assessments all conclude that there would be no likely significant effects during operation, any adverse

impact on the relevant health and wellbeing determinants would be limited if these occur at all. As such, it can be concluded that there would be no likely significant effects on health and wellbeing arising from the operation of the Proposed Development in this regard.

Approach to Mitigation / Enhancement

3.7.15 The Proposed Development will minimise impacts on human health and wellbeing in respect of potential disruption to access to active travel opportunities and access to recreation and open space through delay, amenity or fear/intimidation by following various mitigation measures including:

a. Implementation of a **Framework Construction Traffic Management Plan (CTMP) [REP2-023]** and **Framework CEMP [REP2-013]** which will detail and formalise the measures that will mitigate construction-related effects, as well as the **Framework DEMP [REP2-017]** that will detail and formalise the measures that will mitigate decommissioning-related effects;

b. Maintaining access to and along PRoW and the existing permissive paths or otherwise providing temporary or permanent PRoW and permissive path diversion routes where necessary to avoid any closures or potential conflicts with the Proposed Development where possible. The diversion routes will be agreed with the local authorities prior to construction, and a **Framework Public Rights of Way Management Plan [REP2-019]** has been prepared as part of the DCO Application and contains further measures for PRoW and permissive path management.

c. Controlling areas where the internal maintenance route crosses any existing PRoW or local access roads (such as providing gates), permitting only operational traffic to utilise these internal routes within the Principal Site. Operational traffic will give-way to other users (including pedestrians and road users) when utilising the crossing points. Visibility will be maximised between operational vehicles and other users, with warning signage provided if required.

3.8 Socio-economics

Relevant Health Pathways / Determinants & Populations / Sub-populations

3.8.1 Employment and income strongly influence health and wellbeing. Good-quality jobs support positive health outcomes, while poor working conditions, job insecurity, unemployment and low pay can lead to physical and psychological harm. Financial instability and pressures such as limited credit access or reduced bargaining power may also contribute to adverse mental health effects.

3.8.2 The relevant health and wellbeing determinants (as seen in **Table 1-1**~~Table 1-1~~) are:

a. Employment and income;

b. Education and training; and

c. Social participation, cohesion, interaction and support.

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

a. Children and young people;

b. Older people;

c. People with existing poor health (physical and mental health); and

d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes near to the DCO Site.

Summary of Environmental Effects: Construction and Decommissioning Phase

3.8.4 **Chapter 12: Socio-Economics and Land Use [AS-016]** of the ES has assessed the effects of the Proposed Development on construction and decommissioning employment, GVA and spending, and effects on the agricultural economy and agricultural land holdings.

3.8.5 The development will temporarily use agricultural land during construction, with most areas restored to their original Agricultural Land Classification (ALC) grade afterward. A Soil Management Plan will protect soil quality throughout the project. Overall, the temporary impact on Best and Most Versatile (BMV) land is considered minor and not significant.

3.8.6 Permanent land loss is minimal and not significant, totalling 4.6 hectares, including 1.5 hectares of BMV land, some of which will still be able to be used for agricultural purposes. This represents only 0.09% of East Midlands farmland (1.2 million hectares), making the regional impact negligible. Most land withdrawal is reversible with potential soil benefits from habitat enhancement. No agricultural jobs are expected to be lost throughout the construction or decommissioning phases.

3.8.7 The Proposed Development will support, on average, 394 total net jobs per annum during the construction period and a similar number during decommissioning. Of these, 177 jobs per annum will be expected to be taken-up by residents within a 60-minute drive of the Site and 217 by people residing outside this area. It is estimated that construction activity will also contribute approximately £27.4 million to the national economy, of which approximately £12.3 million would likely be within the 60-minute drive time area.

3.8.8 Based on the above, the socio-economics assessments of relevance to health and wellbeing all conclude that there would be no likely significant adverse effects on any receptors across the study area. Any influence on relevant health and wellbeing determinants, or on the quality of life of local residents, workers, or visitors to the local area, would be minimal, if experienced at all, and only temporary. Therefore, the Proposed Development is not anticipated to give rise to any likely significant health or wellbeing effects during the construction or decommissioning phases.

Summary of Environmental Effects: Operation Phase

3.8.9 It has been confirmed by all landowners that there is expected to be no job losses resulting from the removal of agricultural land. It is expected that when the rent revenues from the land start, then there will be additional jobs created on their farms offsite as landowners diversify their land further with the underlying financial stability of the rental income. The Proposed Development will also support a net five full-time equivalent (FTE) jobs, of which three will be taken up by residents within a 60-minute drive.

3.8.10 Given that there are expected to be more jobs supported on agricultural land, and a net positive gain in jobs supported by the Proposed Development during operation, it is anticipated that there would be a positive impact on mental health and wellbeing driven by socio-economic effects arising from the operation of the Proposed Development.

3.8.11 The Proposed Development will also introduce 9.5km of additional permissive paths within the DCO Site to further enhance the local connectivity by joining existing rights of way and introducing new connections between communities, as well as providing a 1.8ha community orchard adjacent to Witham St Hughs. The purpose of the community orchard is for use by residents and the community to enable open access to the area, enjoyment of the space and to allow residents and the community to pick fruit from the trees grown within this orchard. This additional recreational access is identified as a minor beneficial effect on health and wellbeing.

3.8.12 Similarly to the construction phase, the socio-economics assessments of relevance to health and wellbeing all conclude that there would be no likely significant effects during the operational phase and impacts on health and wellbeing would therefore be minimal. On this basis, no likely significant health and wellbeing effects are anticipated in relation to socio-economics during operation of the Proposed Development.

Approach to Mitigation / Enhancement

3.8.13 To help maximise the positive gain for the local economy from the beneficial effect arising from employment generation during the construction and operational phase, a **Framework Employment, Skills and Supply Chain Plan [APP-197]** supports the DCO Application.

3.8.14 The main objectives of **Framework Employment, Skills and Supply Chain Plan [APP-197**] are:

- To create opportunities for people to develop the skills needed to participate in the project and benefit from its long-term impact. This includes initiatives such as apprenticeships, vocational training, and early career support, delivered in partnership with local colleges and universities.
- To maximise local recruitment for jobs generated by the project. Including working closely with local authorities, and community organizations to ensure that employment opportunities are accessible to local people. Diversity and inclusion are key priorities, with contractors expected to

comply with equality standards. The Proposed Development aims to prioritise local hiring wherever possible to deliver social and economic benefits to the community.

- To enable local businesses to participate in the supply chain through networking events, supplier information days, and collaborating with Chambers of Commerce to publicize opportunities widely. An ethical procurement strategy reinforces this approach, promoting responsible practices through supplier training and contractual obligations. Additionally, the project seeks to foster innovation by supporting research organisations and encouraging collaboration within the supply chain.

3.8.15 Options for the delivery of these objectives are being explored and may involve the applicant, the main contractor, or a third-party organisation. Through this enhancement, existing workers and businesses could upskill or reskill, benefiting the Proposed Development while advancing their own career prospects and supporting strategic objectives to strengthen the green construction skills base, meeting future demand across the region's renewable energy sector.

3.9 Other Health Determinants and Pathways Considered within the Application

Glint and Glare

3.9.1 Glint and Glare effects have the potential to impact 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 are sometimes associated with permanent damage, retinal burns and after-images. Poor visual amenity can also be associated with increased stress and an overall diminished quality of life. As such, the relevant health and wellbeing determinant / pathway (**Table 1-1**~~Table 1-1~~) is: Community identity, culture, resilience and influence.

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

a. Children and young people;

b. Older people;

c. People with existing poor health (physical and mental health); and

d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the DCO Site.

3.9.3 **ES Volume 3, Appendix 14-D: Glint and Glare Assessment (Parts 1-5) [AS-092 – AS-096]** outlines the potential impacts of glint and glare that could cause nuisance to people living in nearby residential properties.

3.9.4 Analysis was conducted at 228 individual residential receptors, including 22 residential areas, 217 road receptors, 13 rail receptors and 79 bridleway receptors. Also, geometric analysis was conducted at 12 runway approach

paths, two circuit paths and one Air Traffic Control Tower (ATCT) at RAF Waddington, Peacocks Farm, South Hykeham Airfield, South Scarle Airfield and Blackmoor Farm.

3.9.5 The overall impacts for residential, road, rail, bridleway, and all other receptors were low or none. No likely significant impact was thus identified, and this means that the Proposed development will also not give rise to any likely significant health or wellbeing impacts associated with glint and glare.

3.9.6 Mitigation is proposed to mitigate impacts for Residential Receptors 97, 98, 101, 102, 148, 155, 157 – 160, 196 and 197, Road Receptors 13 - 16, 45, 78 - 80, 82 – 84, 98 – 104, 113, 144 - 148 and 177 - 182 and Bridleway Receptors 2 – 6, 8 – 11, 14 – 16, 27 –38, 54 – 62 and 65 – 71. This includes the hedges and trees along panel boundaries, field boundaries and bridleway boundaries as shown in the **Figure 7.15-1: Landscape Masterplan**, presented within the **Framework LEMP [REP2-021]** being managed to deliver a minimum height at least the same as the upper edge of the panels, which is currently proposed to be a maximum 3.5m.

3.9.7 In conclusion, as there are no anticipated significant glint and glare effects, impacts on human health or wellbeing through influence on mental health and anxiety are not likely to occur. On this basis it is therefore concluded that there would be no likely significant effects on health and wellbeing arising from the Proposed Development in this regard.

Electromagnetic Field Effects

3.9.8 As highlighted by the World Health Organization (WHO), electromagnetic 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 significant electromagnetic fields can include headaches, anxiety, nausea, depression, and in extreme cases, suicide. The relevant health and wellbeing determinant is the radiation effects associated with EMF.

3.9.9 Whilst all of the population could experience impacts in relation to this, the more sensitive vulnerable population groups (sensitive receptors) relevant to this assessment are:

a. Children and young people;
b. Older people;
c. People with existing poor health (physical and mental health); and
d. People with geographical factors e.g. retired, unemployed, disabled, shift workers who may spend more time at homes in close proximity to the DCO Site.

3.9.10 A standalone EMF study has been undertaken and is presented in **Appendix 14-F: Electromagnetic Field Assessment [APP-175]** of the ES. This sets out the proposed siting zone for the cabling and includes an assessment of EMF.

3.9.11 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.

~~3.9.11~~3.9.12 Extremely low frequency (ELF) EMF, typically within the frequency range of 3 to 30 Hz, are associated with electricity transmission and distribution infrastructure. In the UK, public exposure to total EMF is assessed with reference to the guidelines set by ICNIRP, with no specific thresholds specific to ELF EMF. Neither the UK Government or ICNIRP provide a safe threshold for ELF EMF against which to assess the Proposed Development. As noted in Chapter 14 of the ES, the electrical field generated by high voltage (HV) underground cables is absorbed by the cable sheath and surrounding soil, avoiding impacts from electrical fields. The magnetic field has been assessed against the health thresholds set by ICNIRP (the ICNIRP 'reference levels' for the public in the 2020 publication 'Guidelines for limiting exposure to electromagnetic fields' are 100 microteslas for magnetic fields and 5,000 volts per metre for electric fields), with the Environmental Statement concluding that this safety threshold is met directly on top of the cable circuit.

~~3.9.12~~3.9.13 The electricity export cable will be located at least 10m from permanent receptors due to the need for construction vehicles to manoeuvre both sides of the trench within the working width. This separation distance is sufficient distance to mitigate EMF from buried cabling.

~~3.9.13~~3.9.14 Some PRoWs and permissive paths do cross over the Cable Corridor and may also pass over the Interconnecting Cables and Cable Corridor where they are routed within the Principal Site. The presence of the public either directly above or adjacent to underground cables associated with the Proposed Development would be transient, with the individuals using the PRoW exposed to electro-magnetic fields from the cables for only very short periods of time. The level of exposure to users of PRoW would be lower than that associated with general household appliances and within the safety thresholds set by the UK Government.

~~3.9.14~~3.9.15 In these and all relevant respects, the design and location of the cable has been prepared in alignment with relevant guidance. This includes the ICNIRP (International Commission on the Non-Ionizing Radiation Protection) 'Guidelines for limiting exposure to EMF' (2020), National Grid's 'Undergrounding high voltage electricity transmission lines' (2015) and 'Power Lines: Demonstrating Compliance with EMF public exposure guidelines: A voluntary Code of Practice' (Department for Energy and Climate Change) (2012). The predicted EMF associated with the Proposed Development aligns with levels found by the UK Health and Security Agency to be acceptable and as not having an adverse impact on health or wellbeing on other solar projects in Lincolnshire, such as Gate Burton Energy Park and Tillbridge Solar. On this basis no likely significant effects on receptors including residential properties and PRoW users are predicted to occur.

3.9.16 As noted in Paragraph 3.3.2, the Applicant has already set up a Community Liaison Group (CLG), with initial meetings in April 2025 and March 2026. The CLG will continue to operate throughout construction of the Proposed Development, with a designated community liaison officer available during operation, providing a forum for ongoing engagement and information sharing with local communities.

~~3.9.15~~3.9.17 Through this engagement, the Applicant will provide proportionate, evidence-based information on EMF levels and compliance with relevant guidelines, helping to ensure that concerns are understood and appropriately addressed. This approach will assist in mitigating perceived risks associated with EMF, notwithstanding that assessed EMF levels are within established safety limits.

3.9.18 With regards to the potential for cumulative EMF effects to arise, compliance with the relevant safety thresholds is achieved directly above (and beneath) high-voltage cables. EMF intensity reduces rapidly with distance from the source and, as such, cumulative EMF effects are not anticipated beyond approximately 10m from the cable circuit; effects would be close to or imperceptible from background levels at this distance. There are no residential receptors located within this distance of the Cable Corridor, nor any other existing or proposed high voltage cables that would be within 10m of the Proposed Development export cable circuit, and therefore no potential for cumulative EMF effects. On this basis, cumulative EMF effects are not considered to be significant.

~~3.9.16~~3.9.19 In summary, EMF levels will be within safe limits as defined in the by UK exposure guidelines, and with the implementation of ongoing community engagement measures, including during operation, no likely significant effects will arise in relation to EMF that may influence human health and wellbeing or impact the quality of life of local residents, visitors and employees. As such, no likely significant effects on human health and wellbeing relating to EMF are expected.

Major Accidents and Disasters

~~3.9.17~~3.9.20 The relevant health and wellbeing determinants are (**Table 1-1**~~**Table 1-1**~~):

a. Community safety and crime;
b. Radiation;
c. Air quality;
d. Water quality or availability; and
e. Risk taking behaviours.

~~3.9.18~~3.9.21 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 **Chapter 14: Other Environmental Topics [APP-039]** of the ES.

~~3.9.19~~3.9.22 In relation to hazardous materials and chemical exposure, there is no routine use, storage, or discharge of hazardous chemicals as part of electricity generation, and harmful chemicals are not part of normal operation. As stated in the Proposed Development Parameters [**REP1-029**], solar PV cells will be PFAS (per-and poly fluoroalkyl substances[3]) free. ~~-~~In the unlikely event of a major fire, firefighting runoff could theoretically cause contamination, which would be controlled and managed to prevent significant harm. In the unlikely event of a fire onsite, any contained firewater that is captured onsite would be collected by tankers and removed by road to a suitable offsite disposal and treatment facility.

~~3.9.20~~3.9.23 No likely significant effects in relation to major accidents and disasters are anticipated during the construction, operation (including maintenance) and decommissioning phases. As such, any impact on the relevant health and wellbeing determinants listed above would therefore be very limited and therefore, no likely significant human health and wellbeing are expected in regard to major accidents and disasters.

Battery Failure / Plume Assessment / Fire

~~3.9.21~~3.9.24 The relevant health and wellbeing determinants (**Table 1-1**~~**Table 1-1**~~) are:

a. Community safety and crime; and

b. Air quality.

~~3.9.22~~3.9.25 **Appendix 14-G: Unplanned Emissions Assessment [APP-176]** of the ES considers the potential consequences of unplanned emissions to air from the use of battery technology within the Proposed Development.

~~3.9.23~~3.9.26 In the very unlikely event that an issue arises, harmful impacts are predicted to only occur within tens of metres from the specific BESS enclosure involved in any thermal runaway event. The Applicant has determined that any toxic gas emissions to sensitive receptors will be likely to be below Public Health England (PHE) guideline exposure limits.

~~3.9.24~~3.9.27 The **Framework BSMP [REP1-041]** 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 Fire and Rescue Service (LFRS) 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] PFAS are 'forever chemicals' that will negatively affect water quality, and can have health consequences if they enter drinking water.

~~3.9.25~~3.9.28 The **Framework BSMP [REP1-041]** also covers likely general emergency response incident protocols which could be adopted.

~~3.9.26~~3.9.29 The Applicant has specified in the **Framework BSMP [REP1-041]** 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~~3.9.30 Quantitative modelling was undertaken using a specialist dispersion model using reasonable worst-case assumptions relating to a fire scenario, with the results presented in **Appendix 14-G Unplanned Emissions Assessment [APP-176]** of the ES. The assessment identified that safe human health thresholds relating to the inhalation of fumes from a BESS fire would be met 200m from the BESS. There are no residential receptors within this distance from the BESS infrastructure proposed, whether a distributed or centralised BESS is brought forward.

~~3.9.28~~3.9.31 At the detailed design stage, further modelling can be done to consider the thermal risk from the fire. This can also include a plume assessment to confirm that the density of smoke or pollutant concentrations remain in keeping with fire and rescue service expectations.

~~3.9.29~~3.9.32 The Plume assessment completed at detailed design stage can be approved by LFRS, as appropriate. This will be secured by the **Framework CEMP [REP2-013]**.

~~3.9.30~~3.9.33 As outlined, any unplanned emissions or fumes produced by a fire arising from the Proposed Development would not significantly affect any sensitive receptors as measured against relevant guidelines. Nonetheless, in the event of unplanned emissions or fires, mitigation measures are in place in the **Framework BSMP [REP1-041]** that would ensure any effects would be minimised. It is therefore expected that any impact on health and wellbeing through changes in safety and air quality arising from unplanned emissions or fires would be limited. As such, no likely significant health and wellbeing effects are expected in this regard.

Land and Water Contamination

~~3.9.31~~3.9.34 Relevant health and wellbeing determinants are (**Table 1-1**~~**Table 1-1**~~):

a. Water quality or availability; and

b. Land quality.

~~3.9.32~~3.9.35 **Chapter 9: Water Environment [REP1-021]** of the ES identifies that construction and decommissioning activities (e.g. topsoil, stripping, stockpiling of material and establishment of construction compounds) may have the potential to result in silt-laden runoff, which could result in adverse environmental impacts.

~~3.9.33~~3.9.36 In addition to this, construction and decommissioning activities also present the risk of spillages and leaks of fuels and chemicals, which could negatively impact the water quality of local watercourse.

~~3.9.34~~3.9.37 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 of reducing the risk of chemical impacts is to ensure they are safely removed and disposed of responsibly. Should there be any unexpected contamination, this would be mitigated and managed in accordance with the **Framework CEMP [REP2-013]**, **Framework OEMP [REP2-021]**, and **Framework DEMP [REP2-017]**.

~~3.9.35~~3.9.38 Relevant mitigation measures are secured within the following documents which are submitted in support of the Development Consent Order Application:

a. Framework CEMP [**REP2-013**]

b. Framework Surface Water Drainage Strategy (Appendix 9-D of the ES [**REP1-025**])

~~3.9.36~~3.9.39 Measures outlined within these management plans suggest that all residual effects would not significant.

~~3.9.37~~3.9.40 In summary, the assessment in **Chapter 9: Water Environment [REP1-021]** of the ES concludes that there would be no likely significant adverse effects in relation to land and water contamination, thereby meaning impacts on water and land quality as determinants of health and wellbeing would be minimal if they occur at all. On this basis, no likely significant effects on human health and wellbeing as a result of land and water contamination from the Proposed Development are expected.

Effects on Property Value

~~3.9.38~~3.9.41 Some 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.

~~3.9.39~~3.9.42 Relevant health and wellbeing determinant(s) / pathway(s) (**Table 1-1**~~**Table 1-1**~~):

a. Housing, including design and affordability; and

b. Relocation.

~~3.9.40~~3.9.43 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.

~~3.9.41~~3.9.44 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 EIA for this Proposed Development.

~~3.9.42~~3.9.45 In consideration of available research into the impact of similar development on property prices, a study conducted by Maddison et al 2023

from the University of Birmingham[4] concluded that "properties located less than 750m south of an operational solar farm greater than 5MW capacity suffer a 5.4% reduction in relative prices". The research found that only in certain circumstances do solar farms incur disamenity impacts, which the paper concludes is due to "(1) proximity to the solar farm; (2) a view of the solar farm unobscured by undulations of the land, vegetation, or buildings; and (3) glare from the solar farm". There are several residential dwellings that are 750m south of solar PV proposed within the Proposed Development, however there are no glint and glare effects or unobscured views of the Proposed Development from these locations, which the research has identified as the cause for effects on house prices.

~~3.9.43~~3.9.46 **Chapter 10: Landscape and Visual Amenity [AS-117]** of the ES identifies no likely significant visual effects greater than minor adverse following establishment of the planting at any residential receptors. It acknowledges therefore there may be an impact on visual amenity at some residences, but this would not meet the criteria of unobscured views that the research concludes is needed to affect house prices. The Applicant therefore considers that any impacts on house prices, should this occur, would be more likely to occur during construction activity and not operation, and would therefore be temporary (given the transient nature of construction across the DCO Site). On this basis the Applicant is confident that local property prices will not be affected by the Proposed Development.

~~3.9.44~~3.9.47 The ES evidences how design principles to limit impacts on properties have been achieved as part of the design of the Proposed Development, including:

- While residents of some dwellings would experience significant adverse visual effects during year 1 of operation, in most cases 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. There are no unobscured views for residences within 750m south of solar PV, nor any glint and glare effects on these residences; and
- Following the implementation of appropriate mitigation, no likely significant adverse environmental effects are expected from the Proposed Development on air quality, traffic and transport and water resources.

~~3.9.45~~3.9.48 Taking into account the available research into effects of solar farms on house prices, coupled with the site conditions (existing hedges and trees) and Proposed Development design, the Applicant considers that the effect on health and wellbeing related to impacts on house prices is not significant.

[4] Maddison, Ogier, Beltran (2023), The Disamenity Impact of Solar Farms: A Hedonic Analysis

Climate Change and Adaptation

~~3.9.46~~3.9.49 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'.

~~3.9.47~~3.9.50 The relevant health and wellbeing determinant is (**Table 1-1**~~**Table 1-1**~~): Climate change and adaptation.

~~3.9.48~~3.9.51 **Chapter 6: Climate Change [REP1-017]** of the ES assesses 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. Indeed, regarding the overwhelming national need set out in EN-1 for the UK to transition to low carbon, sustainable forms of energy, it is possible that the Proposed Development would contribute to reduced anxiety amongst the general population concerned about climate change.

~~3.9.49~~3.9.52 Overall, no likely significant adverse effects are expected as a result of the Proposed Development in respect of climate change and adaptation, with any impacts on health and wellbeing related to this therefore expected to be minimal where experienced at all. Whilst it is possible there may be a net positive effect, it is unknown to what extent this would be realised. On this basis, overall no likely significant effects are anticipated to arise from the Proposed Development on health and wellbeing relating to climate change and adaption.

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

4.1 The Applicant's Approach

4.1.1 As set out in **Chapter 15 – Cumulative Effects and Interactions [APP-040]** of the ES, 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:

a. **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

b. **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. 32) 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 / ISEP Guide to Determining Significance for Human Health (November 2022) (Ref. 6) suggests that **in-combination** effects (also known as **intra-project** effects) should be considered, 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:

a. 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;

b. Whilst overlaps in health determinants occur, positive and negative health effects usually don't cancel each other out; and

c. 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 the Proposed Development, in-combination effects have been assessed in each of the relevant ES chapters (**Chapters 6 – 14**) in compliance with paragraph 5(2)(a) to (d) of the EIA Regulations 2017 (Ref. 32).

4.2.6 A review of the sensitive receptors (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 **Chapters 6 – 14** of the ES.

4.2.7 There is the potential for significant effect interactions on residential properties, business premises, and community facilities as a result of the combined impact of visual, transport and access, socio-economic and noise and vibration effects during construction and decommissioning. These effects would be temporary, with effect interactions slightly lower during the decommissioning phase than construction phase due to mature vegetation screening the Proposed Development.

4.2.8 The potential effect interaction is not expected to be greater than the significant visual and noise effects in isolation. Although some receptors with adverse effects from landscape and visual changes may also experience noise and vibration impacts, these impacts are temporary and transient, with the worst-case impacts assessed only experienced at a particular receptor for a few months, after which the construction phasing will move elsewhere in the DCO Site. Therefore, it is still expected that the impacts of these effects on health and wellbeing will still be limited in nature and will therefore not result in significant health and wellbeing effects during construction and decommissioning.

4.2.9 During operation, there is the potential for significant effect interactions as a result of the combined impact of noise and vibration and landscape and visual amenity on residential properties, business premises and community facilities. The duration of these effects is long-term but reversible following decommissioning of the Proposed Development, and the combined effect is not anticipated to be of a greater magnitude than the significant visual and noise and vibration effects in isolation. Overall, as the intra-combination effect is considered to be slight/minor and not significant it would therefore not likely result in any substantial impact on health and wellbeing. As such, there is unlikely to be significant health and wellbeing effects as a result of in-combination effects during operation.

4.3 Cumulative / Inter-project Effects

4.3.1 The IEMA / ISEP Guide to Determining Significance for Human Health (November 2022) (Ref. 6) 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. 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.

b. 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 the Proposed Development, an assessment of the inter-project cumulative effects with other existing development and/or approved developments, which includes Springwell Solar Farm, Leoda Solar Farm, Navenby BESS, and National Grid Navenby Substation is presented in **Chapter 15: Cumulative Effects and Interactions [APP-040]** of the ES. This assessment considers the potential combined impacts of the Proposed Development alongside other nearby projects.

4.3.7 Inter-Project effects are considered in **Chapter 15: Cumulative Effects and Interactions [APP-040]** of the ES and in each technical chapter (**Chapters 6 to 13** of the ES) and throughout **Chapter 14: Other Environmental Topics [APP-039]** of the ES.

4.3.8 The cumulative effects 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 the Proposed Development alongside other nearby projects and outlines in summary that no likely 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 **Chapter 15: Cumulative Effects and Interactions [APP-040]** of the ES.

Air Quality

4.3.11 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.

4.3.12 Following consideration of the Cumulative Schemes within the Zone of Influence (ZoI) for air quality associated with the Proposed Development, there is the potential for cumulative effects associated with the Proposed NGET Substation near Navenby, the cabling works associated with Springwell Solar and Leoda Solar, and from Brant BESS. Other Cumulative Schemes are too far away from the Proposed Development, or do not introduce new sources that generate dust likely beyond their application boundaries and are therefore not considered to have the potential for likely significant cumulative effects on air quality.

4.3.13 Given the effects on air quality associated with the Proposed Development is anticipated to be negligible following implementation of good industry practice control measures, as managed by the **Framework OEMP [REP2-021]** and **Framework CEMP [REP2-013]**, there is not anticipated to be the potential for cumulative effects to occur when considering the Proposed Development alongside these other schemes. The Proposed Development would not be adding any material impact to these effects.

4.3.14 As a result of this, it can be confirmed that any cumulative/inter-project effects related would not worsen air quality to a degree that would have any significant effects and given this there would be no likely significant cumulative effect on human health or wellbeing arising from the Proposed Development.

Noise and Vibration

4.3.15 The ZoI for noise and vibration is 500m from the DCO Site. No likely significant effects are predicted during the construction phase and operational (including maintenance) phase of the Proposed Development.

4.3.16 There is the potential for overlap of construction activities associated with the proposed NGET substation near Navenby and other schemes connecting to it, along with the construction of Brant BESS, but none of these other works are near to human health receptors that would then experience elevated effects due to this when considered along with the Proposed Development.

4.3.17 During operation, these other schemes are relatively distant from the noise generating infrastructure associated with the operational Proposed Development and therefore would not add to these effects.

4.3.18 Cumulative effects are less likely during decommissioning, since these schemes are likely to be decommissioned at different times. If they do overlap, the effects would be expected to be similar to construction effects, and

therefore not leading to any change from the residual effects already predicted from the Proposed Development.

4.3.19 The Applicant therefore considers that inter-project cumulative effects are not likely to be significant. It concludes that such cumulative effects are not likely to cause any significant effect on human health or wellbeing in respect of noise and vibration.

Landscape and Visual

4.3.20 The ZoI for landscape and visual amenity is 2km for effects on receptors around the DCO Site Boundary. The following significant Cumulative Effects are anticipated during construction for Landscape and Visual receptors where the magnitude of effect is higher than that of the Proposed Development in isolation:

a. **Major Adverse (significant)** landscape Cumulative Effects on the North Kesteven District landscape sub-area Witham and Brant Vales due to the noticeable increase in extent over which changes to the landscape character would be perceived during construction. Additionally, changes are anticipated to the visual amenity of users of the Viking Way (PRoW Cole/2/1 and BooG/2/2) as a result of the Proposed Development together with ID95 Application Reference: PL/0087/23, North Hykeham Relief Road, resulting in a Major adverse effect which is significant.

b. **Moderate Adverse (significant)** landscape Cumulative Effects on the North Kesteven landscape sub-area Limestone Heath due to the noticeable increase in extent over which changes to the landscape character would be perceived during construction as a result of the Proposed Development together with ID63 Application Reference: EN010149, Springwell Energy Farm and ID103 Application Reference: EN0110016, Leoda Solar Farm, resulting in a Moderate adverse effect which is significant.

4.3.21 These cumulative effects have been assessed as significant on landscape character and visual amenity, however they are also temporary, lasting for the duration of construction only, or where views are more local, for the duration that works are visible in that location. This may have an effect on wellbeing of people having sight of this, but it is not considered likely to affect health or wellbeing in a significant way given that it will be known to be temporary and for the period of construction works.

4.3.22 By Year 15 of operation, which is the assessment year in the landscape and visual assessment for when planting has fully matured (although in reality it is likely to have matured by around years 6 or 7), cumulative landscape and visual effects are expected to be reduced relative to construction, as mitigation planting associated with the Proposed Development and cumulative schemes becomes established. While cumulative visual change would still be present, it is not expected to be materially different in nature or extent from the residual effects identified for the Proposed Development alone. At a population level, these cumulative effects are therefore not expected to result in likely significant adverse effects on health and wellbeing.

4.3.23 In summary, despite significant inter-project cumulative effects being identified during construction, these would be temporary in nature and would affect a relatively small number of residents. During operation, while cumulative landscape and visual effects may be experienced by some individuals, including some using nearby recreational routes, these will not give rise to any likely significant effects on physical or mental health and well-being. .

Effects on Traffic, Transport and Access

4.3.24 The ZoI for Traffic and Transport is the study area which is illustrated in **Figure 13-1: Transport Study Area [AS-069]** of the ES**.** Traffic and transport effects are inherently cumulative as future traffic growth, calculated using TEMPro growth factors, considers 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.

4.3.25 The emergence of inter-project cumulative effects would depend on the 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.

4.3.26 Cumulative effects during the construction phase for screened in receptors, included in **Chapter 13: Traffic and Transport [APP-038]** of the ES, are considered to be Neutral and Not Significant.

4.3.27 Cumulative effects during the operational phase of the Proposed Development have been scoped out of requiring assessment, as the number of trips associated with the operational phase of the Proposed Development is expected to be minimal – and less than in construction during any repowering activities - and therefore, not expected to result in potential for cumulative effects.

4.3.28 Overall no likely significant cumulative adverse effects are expected because of the Proposed Development in respect of traffic and transport, with any adverse impacts on health and wellbeing related to this therefore expected to be minimal where experienced at all. On this basis, overall no likely significant cumulative effects are anticipated to arise from the Proposed Development on health and wellbeing relating to traffic and transport.

Socio-economic Effects

4.3.29 The ZoI for socio-economic effects is up to 2km from the DCO Site and considers the likelihood for significant cumulative socio-economic effects on ‘population’ or socio-economic receptors – namely people and the economy.

4.3.30 All the approved and submitted Cumulative Schemes listed above are anticipated to generate construction employment in the local economy and employment study area.

4.3.31 In the instance where there is an overlap in construction activities between the Proposed Development and Cumulative Schemes, the combined effect of the Cumulative Schemes will lead to additional employment in the Study Area. It is likely that while there may be an increase in construction employment, the incremental change will be minor therefore the overall cumulative effect on the Study Area from the generation of workers during construction is anticipated to remain as a temporary Minor Beneficial effect which is considered Not Significant.

4.3.32 The combined effect from the generation of GVA arising from the construction and decommissioning of the Cumulative Schemes and the Proposed Development is likely to remain a temporary Minor Beneficial (Not Significant) effect on the Study Area and national economy.

4.3.33 Potential effects on PRoW during construction and decommissioning have been assessed as negligible (not significant). Therefore, in line with the methodology presented in **Chapter 5: EIA Methodology**, Section 5.8 of the ES **[APP-030]**, effects to PRoW during construction are not considered within the cumulative assessment as the Proposed Development would not make a meaningful contribution to any cumulative effect which may occur from other developments in the area.

4.3.34 During the construction phase of the Proposed Development, effects on the amenity of residential properties, business premises and community facilities are assessed to be not significant.

4.3.35 Similarly, for the operational phase, it is considered that the cumulative effects are likely to remain minor beneficial or negligible (not significant).

4.3.36 Overall, no likely significant cumulative adverse effects are expected because of the Proposed Development in respect of socio-economics, with any adverse impacts on health and wellbeing related to this therefore expected to be minimal where experienced at all. On this basis, overall no likely significant cumulative effects are anticipated to arise from the Proposed Development on health and wellbeing relating to socio-economics.

Land and Water Contamination

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

4.3.38 The **Framework CEMP [REP2-013]** details the measures that would be undertaken during construction to mitigate the temporary effects on the water environment by the Proposed Development.

4.3.39 The existence of mitigation plans and assessments agreed with relevant authorities suggests that inter-project effects on water in relation to accidental

spill and/or slit runoff in the construction phase, and flood risk and water drainage in the construction, operational and decommissioning phases would not be significant.

4.3.40 No interaction of impacts on receptors associated with land would be expected between the Proposed Development and ongoing/approved developments within the short-list, as all potential impacts relating to land would be limited in lateral extent. As result, inter-project cumulative effects on health and wellbeing determinants would not be significant.

4.3.41 Overall, no likely significant cumulative adverse effects are expected as a result of the Proposed Development in respect of land contamination, with any adverse impacts on health and wellbeing related to this therefore expected to be minimal where experienced at all. On this basis, overall no likely significant cumulative effects are anticipated to arise from the Proposed Development on health and wellbeing relating to land contamination.

Electromagnetic Field Effects

4.3.42 Cumulative effects are theoretically possible from the proposed cabling in combination with other developments that are consented, under construction or operational. However, it is not anticipated that there will be any significant cumulative effects due to the rapid fall off of EMF from the source, the adequate distances between the developments, and the distances between these electrical components and places where people will be present. There is no evidence to prove that the reference limits would be exceeded through any such interactions. On this basis, overall no likely significant cumulative effects are anticipated to arise from the Proposed Development on health and wellbeing relating to EMF.

5. Commentary on Mental Health and Wellbeing

5.1 Considering Mental Health and Wellbeing

5.1.1 The IEMA / ISEP 'Guide to Effective Scoping of Human Health' highlights best practice for addressing mental health and wellbeing in EIA, defining wellbeing as a state where individuals can realise their potential, manage everyday stress, work productively, and contribute to their community. It emphasises that engagement improves both community understanding of the project and practitioners' awareness of local concerns. This engagement can also mitigate mental health impacts by supporting a sense of control, inclusion, and participation, and may be considered a form of primary mitigation. Additionally, noise can affect sleep quality and overall wellbeing, so professional judgement is required at the scoping stage to determine whether anticipated noise changes could significantly impact public health and should therefore be included in the assessment.

5.1.2 IEMA / ISEP's 'Determining Significance for Human Health in Environmental Impact Assessment' suggests there is also strong evidence that there is a causal link 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 relating to mental health and wellbeing including:

a. Effects on the surrounding landscape, visual amenity, and noise disturbance
b. The implications of property value in relation to stress for residents wishing to sell and worries associated with the consequences of decreased property value;
c. Implications related to electromagnetic fields and radiation; and
d. PRoW diversions and the impacts these diversions will have on the community's freedom to walk in the local countryside and accessibility.

5.1.4 To address the above points raised, the Applicant has in this **Health and Wellbeing Summary Statement** and in the documents referred to in it:

a. Outlined the approach taken for the assessment and mitigation of effects on the surrounding landscape, visual amenity, and noise disturbance with health pathways (see **Section 3**);
b. Presented a description of the approach to BESS safety, major accidents and disasters, and health concerns associated with EMF and radiation to give reassurance and alleviate anxiety;
c. Referred to property value considerations in the DCO Application (along with the planning system's role in this – see **Section 3**);

d. Summarised the approach to the assessment of in-combination / intra-project effects on users of PRoW (see **Section 4**); and

e. Outlined the measures that specifically enhance mental health and wellbeing, including the creation of new permissive paths and community access areas (see **Section 3** and **Section 5**).

5.2 Mental Health and Information, Communication, Engagement and Consultation

5.2.1 IEMA / ISEP Guidance 'Determining Significance For Human Health In Environmental Impact Assessment' (Ref. 6) highlights that people's perceptions of a project can impact their psychological and physiological responses to the change a project will deliver. These perceptions can change over time and are shaped, in part, by trust in both the developer and regulators. Persistent concerns may increase sensitivity, particularly in relation to mental health. In line with this, the extent to which stakeholders have been consulted and engaged with relating to project development and design evolution should be established. This is set out in the **Consultation Report [APP-023].**

Early Engagement and Non-Statutory Consultation

5.2.2 Early engagement began well before statutory consultation, initially in the form of one-to-one meetings and updates with landowners and persons with an interest in land.

5.2.3 A non-statutory public consultation followed, including meetings with local authorities, parish councils, statutory consultees, and elected representatives, alongside the launch of a project website and initial communications with local communities. This provided an opportunity for communities to learn about the Proposed Development at an early stage. Overall, during this stage, 12,970 postcards were issued to relevant private and business addresses, and five public events were attended by a total of 419 people. The Applicant also developed and contacted a list of Seldom Heard groups and organisations operating outside the area of the Proposed Development.

5.2.4 Feedback during this stage highlighted concerns about the scale and location of the development, its visual and landscape impact, environmental issues such as biodiversity and flooding, and requests for community benefits. This informed design refinements, including removing panels from sensitive areas, reducing the size of the BESS, and improving landscaping and connectivity.

Statutory Consultation

5.2.5 The statutory consultation ran for 42 days, longer than the legal minimum required under the Planning Act 2008. This stage aimed to gather formal feedback on the refined proposals before submitting the DCO Application. The applicant engaged with local authorities, MPs, parish councils, statutory bodies, landowners, and community groups.

5.2.6 A comprehensive program of engagement was delivered, including in-person events and webinars, supported by detailed consultation materials such as the Statement of Community Consultation (SoCC) and the Preliminary Environmental Information (PEI) Report. These resources outlined the updated design, environmental assessments, and potential impacts, enabling stakeholders to provide informed responses.

5.2.7 Feedback during this phase included issues raised related such as landscape and visual impact, noise and safety concerns related to the BESS, traffic and construction impacts, and environmental considerations such as flooding. Suggestions for community benefits were also raised. In response, the applicant made further design changes, including reducing the BESS compound size, enhancing screening and buffers, and adjusting permissive paths to improve connectivity.

Community Liaison Group

5.2.8 As noted in Paragraph 3.3.3, the Applicant has already set up a Community Liaison Group (CLG) to facilitate information sharing and community engagement during the pre-application, examination, and post consent stages. The first meeting was organised prior to submission of the DCO Application, with a follow up meeting in early March 2026 during Examination stage. The CLG will be continued during the post consent detailed design and construction phases, as secured by Requirement 5, Schedule 2 of the **Draft DCO [REP2-005]** to maintain communication between local residents and relevant organisations. To date this has been led by the Applicant Project Management team, with a dedicated Community Liaison Officer to be established post consent to lead these interactions, acting as the main point of contact for queries and concerns, and ensuring effective dialogue with the community

Access to the Natural Environment, Social Mobility and Recreation

5.2.9 As detailed, there is a well-researched causal relationship between physical activity and physical and mental health and wellbeing. Positive health benefits are also driven through the following health determinants and pathways:

a. Physical activity;

b. Access to open space, nature, leisure, and play;

c. Transport modes, accessibility, active travel, and connections;

d. Community identity, culture, resilience, and influence; and

e. Social participation, cohesion, interaction, and support.

5.2.10 The **Framework Public Rights of Way Management Plan [REP2-019]** ensures that public access to PRoWs have been suitably considered and will continue to operate effectively throughout the construction, operation and decommissioning of the Proposed Development. This supports continuous accessibility to recreational paths and exposure to the natural environment.

5.2.11 The **Framework Landscape and Ecological Management Plan [REP2-021]** allows for successful establishment and future management of biodiversity, habitat creation, and landscaping works associated with the Proposed Development. As part of this, the Applicant has committed to deliver a minimum of 30% biodiversity net gain in habitat units, 50% biodiversity net gain in hedgerow units and 10% biodiversity net gain in watercourse units. Further information on BNG and potential BNG for the Proposed Development is presented in the **Biodiversity Net Gain Report [APP-194].**

5.2.12 The committal to deliver further biodiversity gains in various landscapes will support enhancement to the natural environment, promoting the area as attractive for recreational use and access.

5.3 Conclusions Regarding Mental Health and Wellbeing

5.3.1 This Summary Statement has demonstrated that the assessment of health and wellbeing in the ES and additional consideration in this Statement have not identified any likely significant effects on health and wellbeing.

5.3.2 The Applicant's view based on the above, and in the context of concerns about the assessment of effects on mental health and wellbeing raised by the host councils, is that:

- Pre-application engagement including statutory and non-statutory consultation, as well as bilateral and community discussions outlined in the Consultation Report, allowed information to be shared and stakeholder feedback to inform the design and assessment process;
- Key environmental assessments relating to the potential for effects on mental health have been undertaken 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 to promote and enhance physical and mental wellbeing. This includes the permissive path network and community orchard.

5.3.3 Although mental health and wellbeing are individual and influenced by factors beyond the Applicant's control, steps have been taken to provide clear information, engage, and consult with stakeholders, assess and mitigate significant environmental effects where practicable, and secure enhancement measures to help address potential impacts.

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