



Humber Low Carbon Pipelines

Preliminary Environmental Information Report
Volume II Chapter 14 Human Health and Wellbeing
October 2022

nationalgrid

Contents

14.	Human Health and Wellbeing	3
14.1	Introduction	3
14.2	Legislation, policy and guidance	3
	Legislation	4
	Policy	4
	Guidance	9
14.3	EIA Scoping Opinion and engagement	10
	Response to the EIA Scoping Opinion	10
	Engagement undertaken to date	14
14.4	Assessment methodology and significance criteria	18
	Study Area	18
	Baseline data collection	18
	Impact assessment methodology	19
	Significance criteria	20
	Assumptions and limitations	20
14.5	Baseline conditions	21
	Existing baseline	21
	Future baseline	24
14.6	Design development, impact avoidance and embedded mitigation	25
14.7	Preliminary assessment of potential impacts	26
	Construction	26
	Operation	30
	Decommissioning	32
14.8	Mitigation and enhancement measures	34
14.9	Summary of the preliminary assessment of potential significant effects	35
14.10	Next steps	39
	Engagement	39
	Surveys	39
	Assessment	39
14.11	References	40
		44

14. Human Health and Wellbeing

14.1 Introduction

- 14.1.1 This Chapter reports the results of the preliminary assessment of the potential impacts and effects of the Project on Human Health and Wellbeing and describes:
- Relevant, legislation, policy and guidance;
 - Engagement undertaken to date;
 - The proposed assessment methodology and associated significance criteria;
 - Preliminary baseline conditions;
 - Potential impacts of construction, operation, and decommissioning;
 - Potential design, mitigation, and enhancement measures;
 - Summary of the preliminary assessment of potential significant effects; and
 - Next steps.
- 14.1.2 This assessment considers the simultaneous construction of a dual pipeline system (one for carbon dioxide and one for hydrogen), as well as the associated Above Ground Installations (AGIs). The majority of the carbon dioxide pipeline would be up to 600 mm (24") nominal diameter and the hydrogen pipeline will be up to 900 mm (36") nominal diameter. This is referred to as the Base Case in this Preliminary Environmental Information Report (PEIR). Also under consideration is the possibility of deploying a larger carbon dioxide pipeline, with a diameter up to 750 mm (30") (with the hydrogen pipeline remaining the same diameter as within the Base Case). This is referred to in this PEIR as Sensitivity 1. Further details regarding the Base Case and Sensitivity 1, as well as the diameter and capacity of the pipelines are provided in Sections 2.3 and 2.4 of Chapter 2: Project Description (Volume II). This chapter assesses the impacts and effects associated with the Base Case. It is anticipated that the types of potential impacts for the Base Case and Sensitivity 1 would be the same, although the magnitude of impacts may differ. A full assessment of Sensitivity 1 will be undertaken and recorded within the Environmental Statement (ES) if the larger carbon dioxide pipeline diameter is taken forward into the Development Consent Order (DCO) application.
- 14.1.3 This Chapter (and its associated appendices) is intended to be read as part of the wider PEIR.

14.2 Legislation, policy and guidance

- 14.2.1 A summary of the international, national, and local legislation, planning policy and guidance relevant to the Human Health and Wellbeing assessment for the Project is set out below.

Legislation

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 14.1)

- 14.2.2 The regulations specify that ‘population and human health’ be considered in the assessment.

The Equality Act 2010 (Ref 14.2)

- 14.2.3 This Act provides a legal framework to protect the rights of individuals and advance equality of opportunity for all, including the opportunity to lead healthy lives. Health inequalities arise through socio-economic factors and geography but also specific characteristics such as those protected by the Equality Act.

The Countryside and Rights of Way Act 2000 (Ref 14.3)

- 14.2.4 This Act makes provision for public access to the countryside, among other things, which has a bearing on wellbeing in relation to recreation, exercise and access to open space.

Policy

The Overarching National Policy Statement (NPS) for Energy (EN-1) (Adopted) (Ref 14.4 and Draft Overarching NPS for Energy (EN-1) (Ref 14.5))

- 14.2.5 EN-1 and Draft EN-1 state that energy production infrastructure may have impacts on the health and wellbeing of the population which should be considered in any assessment, including:
- Direct impacts on health from traffic, air or water pollution, dust, odour, hazardous waste and substances, noise, exposure to radiation and increases in pests; and
 - Indirect impacts on health and wellbeing through effects on the size and composition of the local population.

National Planning Policy Framework (2021) (Ref 14.6)

- 14.2.6 This provides a framework for how, in relation to health and wellbeing, the planning system should support communities’ health, social and cultural wellbeing. Planning policies and decisions should aim to achieve healthy, inclusive and safe places that promote social interaction, are safe and accessible, and enable and support healthy lifestyles.

North Lincolnshire Core Strategy (June 2011) (Ref 14.7)

- 14.2.7 The North Lincolnshire Core Strategy is the spatial expression of the vision of North Lincolnshire as “*a place where we all... lead healthy lifestyles and make use of a wide range of quality leisure and cultural facilities...*”. Section 3 sets out the ambitions, including confident and caring communities with a shared priority of reducing inequalities in health and raising the quality of life so that everyone is enabled to lead healthy and fulfilling lives, one shared priority being to develop opportunities for active leisure and recreation. Another important priority for North Lincolnshire is maintaining and providing quality open spaces, play and sports facilities, better access to the

countryside and improved health facilities. Policies that will have an impact on health and wellbeing are:

- CS2 – All future development in North Lincolnshire will be required to contribute towards the creation of healthy communities with access to essential health facilities;
- CS6 – Historic environment will be protected to preserve its contribution to the area's scene and the quality of life for local people;
- CS16 – North Lincolnshire's landscape, greenspace and waterscape will be protected and enhanced for recreational opportunities to promote a range of environmental, social and health benefits;
- CS17 – The conservation of North Lincolnshire's wildlife and biodiversity will facilitate the development of sustainable neighbourhoods and green tourism, which is important for mental health;
- CS18 – Development that utilises natural resources sustainably and improves the quality of the air, land and water for a healthy environment will be promoted;
- CS22 – Community health facilities and services will be protected and improved as these are essential to the quality of life of local residents;
- CS23 – Sport, recreation and open space are facilities to be sustained and improved to maintain their contribution to the quality of life and wellbeing of local people; and
- CS25 – The continuation and improvement of North Lincolnshire's network of safe walking and cycling routes will contribute to a sustainable transport and communications network.

Planning for Health and Wellbeing Supplementary Planning Document (SPD) (July 2016) (Ref 14.8)

14.2.8 This document highlights the importance of accessibility and quality design in creating healthy communities and tackling the area's health inequalities and sets out the following policies for new developments which highlight the fundamental links between planning and health:

- 1 – The street layout, and the layout of housing and open spaces should be consciously planned and designed to achieve sociable places, with flexibility for different events and services to promote social interaction;
- 2 – Environmentally sustainable places will give due consideration to clean industries, sources of renewable energy, biodiversity enhancement, accessible Natural Greenspace Standards (ANGSt) and efficiently managed water resources, including the use of Sustainable Drainage Systems (SuDS);
- 3 – Well designed places should allow direct and safe movements, so that safe environments can be created to improve the quality of life and community cohesion;
- 4 – Accessibility to and views over green spaces should be enhanced in accordance with the ANGSt; and
- 5 – Health and planning, along with community engagement, should be integrated at the early stage of all development proposals to create inclusive places.

North Lincolnshire New Local Plan: Publication Draft Addendum (May 2022) (Ref 14.9)

- 14.2.9 This sets out the following policies, which cover different aspects of health and wellbeing:
- SS3 – The development principles highlight the health impacts and the needs of existing and future users to create healthy communities and places;
 - DQE11 – Development proposals should ensure that existing and new green infrastructure is integrated into scheme design from the outset, to maximise the delivery of ecosystem services and support healthy and active lifestyles;
 - CSC1 – By applying the ten principles of active design, neighbourhoods and centres should be connected, safe, accessible and attractive with a priority on the achievement of positive mental and physical health outcomes across all age groups;
 - CSC2 – Where appropriate, developers should consult with health care commissioners at an early stage to understand the need for new or enhanced health care infrastructure and improve local access to primary and mental health care facilities;
 - CSC3 – Open space, sports and recreation facilities should be multifunctional, fit for purpose and support health and outdoor recreation;
 - T1 – To reduce congestion, improve environmental quality and encourage more active and healthy lifestyles, measures that promote more sustainable transport choices would be supported; and
 - DM3 – Air, light and noise pollution, along with land contamination and hazardous installations and pipelines that present significant risks to human health and/or the environment, should be thoroughly assessed and mitigated.

Selby District Core Strategy Local Plan (October 2013) (Ref 14.10)

- 14.2.10 The Selby District Core Strategy includes Healthier Communities as one of the Selby District Council's Corporate Strategic Themes and wherever possible Core Strategy policies aim to encourage good health and wellbeing as well as improved access to health care and other facilities. The environment policies aim to create a green and healthy environment, and facilitate sustainable access modes, including walking and cycling, whilst the spatial strategy as a whole aims to reduce the need to travel and minimise pollution.

Selby District Local Plan: Publication Version Consultation (2022) (Ref 14.11)

- 14.2.11 This document sets out policies to deliver objectives relating to heritage and place making, the natural environment, open spaces and recreation, and transport and infrastructure:
- SG1 – Sustainable development will be achieved by ensuring that sufficient number and range of homes, well-designed and safe built environment, accessible services and open spaces are provided to support communities' health, social and cultural wellbeing of current and future residents;
 - SG5 – The preferred approach is to protect and enhance the intrinsic character and beauty of the countryside recognising the important role it plays in the local economy, for the health and wellbeing of local residents and as a biodiversity resource;

- SG9 – All new development should be of high-quality design which responds positively to the special character of the area, and reflect the National Design Guide and Principles for Building a Healthy Life or their successors;
- SG10 – All new development proposals should support appropriate measures to mitigate and adapt to climate change to protect health and wellbeing and meet national and local targets on net zero carbon emissions;
- IC1 – This approach seeks to ensure that new development is supported by appropriate improvements to existing or new infrastructure in a timely manner, which includes the provision of health and social care;
- NE1 – Local green spaces should be protected to preserve its social and cultural role, which are valuable community assets that support health and wellbeing;
- NE2 – Selby District's green and blue infrastructure assets identified through the Selby District Green and Blue Infrastructure Audit and Strategy should be protected and extended where possible;
- NE5 – Waterways and their environments will be protected, including riverbanks and water frontages which provide a wide range of important functions in the District to support active access for recreation, health and wellbeing;
- NE6 – Proposed works to trees under Tree Preservation Orders or within a Conservation Area must not be detrimental to public realm, the character of the designated area, and the sustainability of the tree; and
- NE7 – Waterways and their environments will Developments will only be permitted if the impact on air quality is acceptable, and that mechanisms are in place to mitigate adverse impacts and prevent further exposure to poor air quality to protect human health.

Central Lincolnshire Local Plan 2012-2036 (April 2017) (Ref 14.12)

- 14.2.12 The Local Plan promotes growth in homes and jobs that are closely linked with new infrastructure such as schools, roads, health facilities and open space provision, through which health inequalities, community deprivation, infrastructure deficit and low skills will be addressed. Policies have the objective to reduce health inequalities, promote healthy lifestyles and maximise health and wellbeing:
- LP9 – Development proposals are expected to promote, support and enhance physical and mental health and wellbeing, and thus reduce health inequalities by seeking developer contributions towards new or enhanced health facilities with good accessibility and enhance the role of local food production spaces;
 - LP12 – The overarching framework is set out to deliver infrastructure that supports growth by working closely with partners, such as healthcare providers on health facilities;
 - LP15 – To encourage healthy lifestyles, the redevelopment of existing facilities to extend or diversity the level of service provided, and new development will be supported if it fulfils the policy's requirements on accessibility and quality design;
 - LP20 – Green infrastructure as a strategic network of multifunctional green and blue spaces can deliver a range of health and quality of life benefits for local communities, or 'ecosystem benefits', which should be maximised in new green infrastructure proposals; and

- LP24 – The creation of new open space, sports and recreation facilities should be multifunctional, fit for purpose and support health and outdoor recreation.

Central Lincolnshire Local Plan Review (March 2022) (Ref 14.13)

14.2.13 This document highlights the updates in the Central Lincolnshire Local Plan submitted for Examination in 2022. The Local Planning Authority's strategic priority on health and wellbeing is the provision of safe and healthy environments, to reduce health inequalities and help everyone live healthy lifestyles:

- Policy S45 (formerly Policy LP12) – Planning obligations on strategic infrastructure requirements are likely to require contributions to primary healthcare provision where there is a demonstrated shortfall in capacity;
- Policy S48 – Development proposals should facilitate active travel by incorporating walking and cycling infrastructure suitable for the scheme from the design stage;
- Policy S50 – Sport and leisure facilities delivering physical activity opportunities should be supported to help address key health issues, such as obesity and heart related disease;
- Policy S54 on Health and Wellbeing remains the same as the adopted Local Plan; and
- Policy S59 – Development proposals should ensure that existing and new green and blue infrastructure is considered and integrated into the scheme design from the outset, to encourage healthy and active lifestyles.

East Riding Local Plan Strategy Document (April 2016) (Ref 14.14)

14.2.14 The spatial strategy of the area is to enable residents to achieve a high quality of life, with access to high quality jobs, homes and key services, including community and health services, affordable housing, shopping, education, recreation and cultural facilities, and protect and enhance the East Riding's valued environmental assets:

- EC4 – To increase overall accessibility, minimise congestion, improve safety, reduce greenhouse gas emissions, encourage healthy lifestyles and reduce social exclusion, new development will be supported where it is accessible by sustainable modes of transport and addresses its likely transport impact;
- ENV1 – Development will be supported where it achieves a high quality of design that optimises the potential of the site and contributes to a sense of place. This will be accomplished by, among other things, having regard to healthy lifestyles for users in different stages of their life;
- ENV6 – Environmental hazards such as flood risk, coastal change, contaminated land, unstable land, hazardous installations, water pollution, and pollution generated by light, noise, dust, smell, vibration, fumes, smoke, soot, ash or grit are monitored under relevant statutory controls and procedures;
- C1 – Proposals for new and/or improved infrastructure and facilities will be supported where they enhance the quality and range of services and facilities. Where necessary, the phasing of new development will be linked to the delivery of new or improved infrastructure and facilities; and

- C2 – Community services and facilities should be protected. The loss of land and buildings used for health, such as General Practices (GPs) and other health facilities will be minimised.

East Riding Draft Local Plan: Publication Document (May 2021) (Ref 14.15)

- 14.2.15 The updated vision is for East Riding to be characterised by economically prosperous, vibrant and distinctive urban and rural communities in which residents and visitors can enjoy a high quality of life, healthy lifestyles, businesses can thrive and the natural environment flourish by 2039.

Guidance

Government White Paper: Healthy Lives, Healthy People (2010) (Ref 14.16)

- 14.2.16 The white paper sets out the government's long-term vision for the future of public health in England. It aims to create a 'wellness' service and strengthen national and local leadership on health.

Planning Practice Guidance (PPG) – The Role of Health and Wellbeing in Planning (2014) (Ref 14.17)

- 14.2.17 The guidance sets out how local planning authorities should ensure that health and wellbeing are considered in planning decision making and how others can work effectively with local planning authorities to promote healthy communities and support appropriate health infrastructure.

Planning Practice Guidance (PPG) – Open space, sports and recreation facilities, public rights of way and local green space (2014) (Ref 14.18)

- 14.2.18 The guidance sets out how local planning authorities should ensure that existing open space, sports and recreation facilities are considered in planning decision making and the information they should hold about the location of public rights of way in the areas they cover.

The Institute of Environmental Management and Assessment (IEMA) Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (June 2017) (Ref 14.19)

- 14.2.19 This is a primer document intended to offer brief guidance and recommendations for those concerned with population and human health in Environmental Impact Assessment (EIA).

Putting Health into Place National Health Service (NHS) England (2018) (Ref 14.20)

- 14.2.20 The document supports partners in housebuilding, local government, healthcare and local communities to demonstrate how to create new places that offer people improved choices and chances for a healthier life.

A Green Future: Our 25 Year Plan to Improve the Environment (2019) (Ref 14.21)

- 14.2.21 The plan sets out the government's goals for improving the environment over the next 25 years. Chapter 3 deals specifically with connecting people with the environment to improve health and wellbeing.

NHS London Healthy Urban Development Unit (HUDU), Planning for Health: Rapid Health Impact Assessment Tool (fourth edition October 2019) (Ref 14.22)

- 14.2.22 This is a toolkit designed to assess the likely health impacts of development plans and proposals, including planning applications.

Public Health England (PHE) Health Impact Assessment in spatial planning (October 2020) (Ref 14.23)

- 14.2.23 This document is a guide for local authority public health and planning teams, supporting the use of Health Impact Assessment (HIA) in the spatial planning process. HIA is a tool to identify and optimise the health and wellbeing impacts of planning.

PHE Advice on the content of Environmental Statements accompanying an application under the NSIP Regime (2021) (Ref 14.24)

- 14.2.24 This document helps applicants understand the issues that PHE expect to see addressed by applicants preparing an ES for Nationally Significant Infrastructure Projects (NSIPs).

The Mental Wellbeing Impact Assessment (MWIA Collaborative (England)) toolkit (May 2021) (Ref 14.25)

- 14.2.25 This toolkit provides an evidence-based framework for improving wellbeing through commissioning processes, project and service design and delivery, community engagement and impact assessment. It enables assessment, improvement and measurement of impacts for policies, programmes, services or projects.

14.3 EIA Scoping Opinion and engagement

- 14.3.1 A summary of the EIA Scoping Opinion from the Planning Inspectorate (PINS) and responses to this EIA Scoping Opinion are outlined below. Furthermore, all relevant engagement undertaken to date is outlined in this section.

Response to the EIA Scoping Opinion

- 14.3.2 An EIA Scoping Opinion (Appendix 1.2: EIA Scoping Opinion (Volume III)) was received by the Applicant from PINS on 20 May 2022. Table 14.1 Table 14.1 lists the comments that PINS and consultation bodies made in relation to Human Health and Wellbeing and shows how the Applicant is responding to these.

Table 14.1: Summary of EIA Scoping Opinion in relation to Health and Wellbeing

Section reference	Applicant's proposed matter	Inspectorate's / consultation bodies comments	Response
3.10.1	Dwellings and community infrastructure - operational phase	<p><i>The Applicant proposes to scope out this matter on the basis that the Proposed Development is a static, predominantly underground, piece of infrastructure that will have a negligible effect on people living close by and/ or users of nearby community infrastructure. In addition, the AGI locations identified are mainly in agricultural areas and not typically in close proximity to dwellings and community infrastructure.</i></p> <p><i>The Inspectorate considers that, on this basis, the potential for significant effects is unlikely and therefore agrees that this matter can be scoped out of further assessment.</i></p>	Agreement noted. This matter is not assessed further within the PEIR or ES.
3.10.2 Appendix 2, page 195	Scope of assessment – private water supplies	<i>The Inspectorate advises that potential human health impacts, hazards and public health receptors surrounding private drinking water supplies during the construction phase, including the potential for contamination or disruption, should be scoped into further assessment work and reported upon within the human health chapter of the ES, where significant effects are likely.</i>	The approach to the assessment of impacts on private water supplies is set out in Chapter 9: Geology and Hydrogeology (Volume II). The potential for likely significant effects on Human Health and Wellbeing resulting from related environmental change, such as this, will be summarised in the Health and Wellbeing ES chapter.
3.10.3 Appendix 2, pages 195-197	Scope of assessment – effects on mental health	<i>...the Inspectorate advises that given the scale and nature of the Proposed Development, effects on mental health, including the potential for local public concern through understanding of risk/ risk perception for local communities and for the wider public</i>	The assessment methodology has been updated to include the consideration of potential mental health effects of the Project, specifically in relation to the perception and understanding of risk posed by the

Section reference	Applicant's proposed matter	Inspectorate's / consultation bodies comments	Response
		<i>should be assessed and reported upon within the ES, where significant effects are likely.</i>	transportation of hydrogen, informed by the MWIA toolkit.
3.10.4 Appendix 2, page 197	Scope of assessment – vulnerable populations/ sensitive receptors	<i>The Inspectorate advises that, whilst an initial approach to the identification of sensitive receptors has been provided, through the health baseline, the impacts on health and wellbeing and health inequalities of the scheme may have particular impact on vulnerable or sensitive populations, including those that fall within the list of protected characteristics. These receptors should therefore be included in the scope of assessment.</i>	The baseline for Health and Wellbeing will cover receptor populations within the Study Area and will specifically include data relating to vulnerable groups and inequalities. This data will be drawn from sources such as the Index of Multiple Deprivation 2019, local authority Joint Strategic Needs Assessments (JSNAs) and the Office for Health Improvement and Disparities (OHID). The baseline will also include population data relating to the protected characteristics set out in the Equality Act 2010 sourced from the Office of National Statistics (ONS).
3.10.5 Appendix 2, page 197	Scope of assessment – physical activity and active travel/ access to open space	<i>The Scoping Report identifies potential significant effects due to the temporary loss or change in formal Public Rights of Way (PRoW) and the existing road network. The Applicant should complete a Walking, Cycling and Horse Riding Assessment [WCHAR], including information on the usage of each PRoW, bridleway, cycle route or the presence of non-motorised users on the highway.</i> <i>The assessment of affected routes should include the extent of vulnerable populations usage, sensitive locations and the presence or absence of walking and cycling infrastructure. Local consultation with the community is advised. In addition, the ES should include details of the PRoW</i>	The assessment of Human Health and Wellbeing will include a qualitative assessment of potential impacts on PRoW in relation to active travel, access to green/blue/open space and other assets, associated with wellbeing and sense of place, and recreation during construction. Chapter 13: Socio-economics, tourism and recreation (Volume II) sets out the assessment of potential disruption of access to existing community infrastructure during construction and decommissioning. Impacts during operation have been scoped out of the assessment.

Section reference	Applicant's proposed matter	Inspectorate's / consultation bodies comments	Response
		<i>management plan, including specific mitigation and enhancements proposed during the construction and operational phase of the scheme.</i>	<p>Chapter 15: Traffic and Transport (Volume II) sets out the assessment of potential impacts on PRow and its users from construction traffic. Impacts during operation have been scoped out of the assessment.</p> <p>The potential for likely significant effects on Human Health and Wellbeing resulting from related environmental changes such as these will be summarised in the Health and Wellbeing ES chapter.</p>
Specific Feedback from UK Health Security Agency (HAS) Appendix 2, page 194	Human health and wellbeing	<p><i>We believe the summation of relevant issues into a specific section of the report provides a focus which ensures that public health is given adequate consideration. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted.</i></p> <p><i>UKHSA and OHID's predecessor organisation Public Health England produced an advice document: 'Advice on the content of Environmental Statements accompanying an application under the NSIP Regime', setting out aspects to be addressed within the Environmental Statement. This advice document and its recommendations are still valid and should be considered when preparing an ES.</i></p>	<p>Cross references to the assessments considering environmental change are included within this PEIR chapter.</p> <p>The potential for likely significant effects on Human Health and Wellbeing resulting from related environmental change, as set out in Chapter 6: Air Quality (Volume II), Chapter 9: Geology and Hydrogeology (Volume II), Chapter 11: Landscape and Visual (Volume II), Chapter 12: Noise and Vibration (Volume II), Chapter 15: Traffic and Transport (Volume II), will be summarised in the Health and Wellbeing ES chapter.</p> <p>The guidance relevant to the assessment has been updated to include the PHE advice document. This PEIR sets out how the assessment will comply with the requirements of relevant guidance.</p>

Engagement undertaken to date

14.3.3 Table 14.2 provides a summary of the engagement undertaken to inform the assessment to date.

Table 14.2: Summary of engagement undertaken

Consultee	Date and method of engagement	Summary of issues raised	Response
Selby District Council	02 March 2022 (letter via email)	<p>Method note shared with Selby District Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment.</p> <p>A question was raised regarding relevant assessment methodologies for noise and air quality, and the Study Area, relating to construction impacts.</p>	<p>Further information on assessment methodologies and mitigation was provided in the Scoping Report. This includes cross referring to methodologies for assessing environmental change in noise, air quality and traffic and transport.</p> <p>The Study Area has been updated to cover both direct and indirect impacts from construction and will cross refer to Study Areas and assessment of environmental change relating to noise, air quality and traffic and transport.</p>
North Yorkshire County Council	02 March 2022 (letter via email)	<p>Method note shared with North Yorkshire County Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment.</p> <p>No comments were received.</p>	No response required.
North Lincolnshire Council	02 March 2022 (letter via email)	<p>Method note shared with North Lincolnshire Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment.</p> <p>Response received 21 March 2022. The Council agreed with the proposed methodology.</p>	Assessment to proceed as agreed, in line with the EIA Scoping Opinion (Appendix 1.2: EIA Scoping Opinion (Volume III)).

Consultee	Date and method of engagement	Summary of issues raised	Response
Lincolnshire County Council	02 March 2022 (letter via email)	Method note shared with Lincolnshire County Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment. No comments were received.	Assessment to proceed as agreed, in line with the EIA Scoping Opinion (Appendix 1.2: EIA Scoping Opinion (Volume III)).
East Riding of Yorkshire Council	02 March 2022 (letter via email)	Method note shared with East Riding of Yorkshire Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment. Council confirmed on 05 March 2022 they accept the proposed methodology and scope of the assessment.	No response required.
West Lindsey District Council	02 March 2022 (letter via email)	Method note shared with West Lindsey District Council officers – this outlined the proposed methodology for Human Health and Wellbeing assessment. No comments received to date.	No response required.
UK Health Security Agency	05 August 2022 (Teams meeting)	Meeting to explore further the comments provided by the UK Health and Security Agency (UKHSA) on the EIA Scoping Report. It was requested to add consideration of Addition of Chief Medical Officer's annual report 2021: health in coastal communities (Ref 14.36) to the baseline.	The Health and Wellbeing baseline now takes account of this report.
		It was agreed that the assessment of the impacts of the Project on mental health, in relation to the perception and understanding of	The assessment methodology has been updated to include the consideration of potential mental health effects of the

Consultee	Date and method of engagement	Summary of issues raised	Response
		<p>risk posed by the transportation of hydrogen, would be guided by the MWIA toolkit.</p> <p>UKHSA requested that there be evidence of consideration of stakeholder engagement responses particularly in relation to the understanding and perception of risk.</p>	<p>Project, specifically in relation to the perception and understanding of risk posed by the transportation of hydrogen, informed by the MWIA toolkit.</p> <p>The Human Health and Wellbeing assessment will be further developed and refined based on any relevant responses to the Statutory Consultation.</p>
		<p>It was pointed out that vulnerable populations are more sensitive than other receptors, meaning impacts and mitigation may be different than for those for other receptors.</p>	<p>The assessment has identified potentially vulnerable populations and will consider their unique characteristics when determining sensitivity, assessing the impacts on and proposing mitigation for these receptors.</p>
		<p>UKHSA requested that the assessment of impacts on PRow shows an understanding of frequency of use and the users, and that aerial mapping can be used, and local authority PRow/access officers can be contacted to provide this information.</p> <p>It was agreed that the WCHAR assessment methodology would not be required.</p>	<p>The assessment of impacts on PRow will take a qualitative approach, informed by the Socio-economics, tourism and recreation and traffic and transport assessments to understand the level of use and nature of users of PRow in the Study Area, and therefore the mitigation that may be required.</p>

14.4 Assessment methodology and significance criteria

Study Area

- 14.4.1 The spatial scope of the assessment initially includes the local authority spatial areas that the Project passes through (i.e., Selby District Council, North Lincolnshire Council, West Lindsey District Council and East Riding of Yorkshire Council). As the assessment progresses, a more localised Study Area may be defined, for example relating to specific wards or populations experiencing potential impacts.
- 14.4.2 The use of Study Areas is intended to capture direct and indirect Human Health and Wellbeing effects that may occur as a result of the Project. Baseline information would be considered as appropriate at each spatial level.

Baseline data collection

Desk study

- 14.4.3 Baseline conditions of the Project were established during a desk study using the following sources:
- Human Health and Wellbeing:
 - A range of datasets from the ONS, for example population data from the Census (2011 and 2021) (Ref 14.26) and local authority statistics on personal wellbeing (Ref 14.27);
 - Local health data published by the OHID that provides a wider picture of the health of local residents using a series of health indicators including socio-economic background, lifestyle choices and health outcomes (Ref 14.28);
 - Data from the Department for Communities and Local Government (DCLG), for example Indices of Deprivation (2019) (Ref 14.29);
 - Selby
 - North Yorkshire Joint Strategic Needs Assessment (JSNA) 2021 (Ref 14.30);
 - North Yorkshire Joint Strategic Needs Assessment (JSNA) 2021: Selby District Summary Profile (Ref 14.31);
 - North Lincolnshire and West Lindsey District Councils
 - Joint Health and Wellbeing Strategy for Lincolnshire (2018) (Ref 14.32);
 - North Lincolnshire Council Joint Health and Wellbeing Strategy 2021-2026 (when published) (Ref 14.33);
 - North Lincolnshire Joint Health and Wellbeing Strategy: Strategic Priority Actions (2016) (Ref 14.34); and
 - East Riding of Yorkshire
 - East Riding Health and Wellbeing Strategy 2019-2022 (Ref 14.35).

- Chief Medical Officer's annual report 2021: health in coastal communities (Ref 14.36).
- Community and health infrastructure: Information would be sourced from local authority evidence base studies such as infrastructure delivery plans and studies, and aerial mapping, as well as the sources of information in Chapter 6: Air Quality (Volume II), Chapter 12: Noise and Vibration (Volume II), Chapter 13: Socio-economics, tourism and recreation (Volume II) and Chapter 15: Traffic and Transport (Volume II).

Site visits and surveys

14.4.4 No Human Health and Wellbeing surveys have been or will be undertaken.

Impact assessment methodology

- 14.4.5 There are no specific published methodologies or requirements regarding the assessment of health impacts as part of EIA. The assessment therefore seeks to identify and assess relevant changes that may arise from the Project using the available guidance for related topic areas, the wider determinants of health and mental health.
- 14.4.6 The potential for likely significant effects on Human Health and Wellbeing resulting from related environmental change, as set out in Chapter 6: Air Quality (Volume II), Chapter 9: Geology and Hydrogeology (Volume II), Chapter 11: Landscape and Visual (Volume II), Chapter 12: Noise and Vibration (Volume II), Chapter 15: Traffic and Transport (Volume II), would be summarised in the Health and Wellbeing ES chapter.
- 14.4.7 The assessment would use the HUDU Rapid Health Impact Assessment Tool (Ref 14.22) to assess the qualitative impact of the Project on relevant health determinants. The health determinants proposed to be scoped in for the assessment include:
- Access to social infrastructure (for example, community and healthcare services);
 - Access to open space;
 - Health related environmental change (for example, air quality, noise, visual amenity and contaminated land health related impacts);
 - Access to work and training; and
 - Accessibility and active travel.
- 14.4.8 For each determinant, a qualitative assessment would be undertaken as follows:
- How the health determinant might change and whether this would be beneficial or adverse;
 - Duration of change – temporary or permanent;
 - Exposure (including identification of vulnerable populations); and
 - Intensity (magnitude or severity of the change in the health determinant).
- 14.4.9 In addition, a qualitative assessment, informed by the MWIA guidance (Ref 14.25), would consider the potential mental health effects of the Project, specifically in relation to the perception and understanding of risk posed by the transportation of hydrogen.
- 14.4.10 Consideration would be given to the likely significant effects of the Project with committed schemes identified from a review of planning applications. Potential

cumulative effects of relevance to human health include committed schemes which generate additional population, or which may cause health related environmental change.

Significance criteria

- 14.4.11 Unlike other environmental topics such as noise or air quality, the sensitivity of population and health receptors to the Project is not determined by reference to designations or an objective standard. Instead, it is the nature of the activity that the human receptor is undertaking that is most influential in determining sensitivity. In addition, certain populations experiencing impacts as a result of changes to the health determinants are described as more or less sensitive based on their characteristics, which is then used to inform a judgement on significance.
- 14.4.12 Impact magnitude would be assessed by consideration of the following factors for each predicted impact:
- The magnitude of the predicted impact;
 - The geographic extent of the impact;
 - The duration and reversibility of the impact; and
 - The capacity of the population or area to absorb or adjust to the impact.
- 14.4.13 The terms used to define the nature of effect are as follows:
- Adverse: detrimental or negative impacts to a health and wellbeing resource or receptor;
 - Negligible: imperceptible impacts to a health and wellbeing resource or receptor; and
 - Beneficial: advantageous or positive impact to a health and wellbeing resource or receptor.
- 14.4.14 Where beneficial or adverse effects have been identified, these have been assessed against the following scales:
- Minor: slight, very short or highly localised impact;
 - Moderate: limited impact (by extent, duration or magnitude) which may be considered significant; and
 - Major: considerable impact (by extent, duration or magnitude) of more than local significance (for example a sizeable change in relation to the baseline or affecting a wide geographic area).

Assumptions and limitations

- 14.4.15 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- There is currently no information available from the contractor as to how PROW would be dealt with during construction and decommissioning of the Project. The assessment would assume that no PROW would be permanently or temporarily closed without permanent or temporary diversion being in place and that this would be agreed with the relevant local authority(ies); and

- The long-term impact of the COVID-19 pandemic on health, infrastructure, systems and policy is still unclear. There is emerging evidence of the impact of COVID-19 on life expectancy, risk factors and determinants of health, which would have a long-term impact on the health of the population, but it is not yet certain how this would affect current and future baselines for Health and Wellbeing. The assessment would take account of available information at the time of writing.

14.5 Baseline conditions

Existing baseline

Population

- 14.5.1 Appendix 14.1 (Volume III) summarises the population by age group health indicators for the Study Area. Selby and West Lindsey have the smallest populations in the Study Area. The population of East Riding is substantially higher.
- 14.5.2 The Study Area has a higher proportion of population aged 65 years and over than England as a whole, with this age group making up approximately a quarter of the population in East Riding and West Lindsey. There is a corresponding smaller percentage of population in the 16 to 24 years age group across the Study Area. This is typical of a population with long life expectancy and low birth rate. It could also be evidence of a lack of affordable housing options or opportunities for younger people in the area, causing them to move to other areas at the same time as older people move into the area to retire.
- 14.5.3 Further information on population can be found in Chapter 13: Socio-economics, tourism and recreation (Volume II).

Ethnicity

- 14.5.4 Appendix 14.1 (Volume III) summarises the ethnicity health indicators for the Study Area. The Study Area is generally less ethnically diverse than England as a whole, with North Lincolnshire showing the greatest diversity within the Study Area.

Deprivation, Housing and Employment

- 14.5.5 Appendix 14.1 (Volume III) summarises the health indicators relating to deprivation, housing and employment for the Study Area. Generally, the Study Area shows lower levels of deprivation and better living conditions than England as a whole, with the exception of North Lincolnshire in terms of income deprivation, child poverty and unemployment. There is also greater long-term unemployment and fuel poverty in West Lindsey than England as a whole.
- 14.5.6 Further information on deprivation can be found in Chapter 13: Socio-economics, tourism and recreation (Volume II).

Local Health

- 14.5.7 There is a mixed picture in health indicators across the Study Area as well as in comparison to the national context (Ref 14.28). This indicates local differences in health within the Study Area, with some areas experiencing better health, or greater levels of deprivation than others.

- 14.5.8 For example, there is a greater percentage of the population with a limiting long-term illness or disability in East Riding, North Lincolnshire and West Lindsey than England as a whole. This includes people who are limited a lot because of their illness. There is a greater percentage of overweight reception age children in Selby, North Lincolnshire and West Lindsey than England as a whole, but by Year 6 the proportion is either better or not different when comparing the Study Area with England as a whole. There is a higher proportion of deliveries to young mothers in North Lincolnshire than in England, but general fertility rates and low birth rates are either better or not different when comparing the Study Area with England as a whole. Life expectancy for males and females at birth is either better or not different when comparing the Study Area to England as a whole, with the exception of North Lincolnshire where life expectancy for males at birth is worse.
- 14.5.9 In addition to variation in health indicators across the Study Area, there is variation between wards within local authorities, indicating inequalities within and across districts. For example, within Selby there is a wide variation in the years spent in good health for both males (eight years) and females (10 years) (Ref 14.31). Within the East Riding of Yorkshire, residents live in towns which range from wealthy with good access to services and opportunities, to those living in relative poverty in remote areas. Some areas, such as Bridlington, Goole and Withernsea, are characterised by low incomes, high unemployment, poor health, higher levels of crime and anti-social behaviour and low educational achievement (Ref 14.35).
- 14.5.10 Health and wellbeing in North Lincolnshire is good in general, but significant variations in health levels exist especially for neighbourhoods in Scunthorpe with high levels of deprivation. NHS North Lincolnshire identified rising levels of obesity in the area and statistically it was one of the worst areas in the country (Ref 14.7). Health priorities in the area include: reducing obesity, diabetes, and heart and circulatory disease; reducing health inequalities; promoting mental health and wellbeing; improving the health of an ageing population; and reducing traffic-related injuries (Ref 14.8). Challenges to achieving these priorities include reducing levels of deprivation, providing access to green open space and offering opportunities for employment and services (Ref 14.9).
- 14.5.11 Central Lincolnshire (West Lindsey) faces a range of challenges, notably the need to improve social and economic conditions, including health, housing, jobs and the range and quality of facilities (Ref 14.12).

Mental health

- 14.5.12 Local health indicators suggest that personal wellbeing in the Study Area is either better or not different to England as a whole (Ref 14.28). That being said, pressures on mental health are noted from both the health and socio-economics, tourism and recreation baseline information, such as:
- Lack of qualifications;
 - Unmet housing demand for older people, disabled people and families;
 - Areas of deprivation, child or fuel poverty and unemployment;
 - Childhood obesity; and
 - Living with limiting long-term illness or disability.
- 14.5.13 In addition, the health inequalities identified within wards and across the Study Area likely indicate associated inequalities in mental health.

Infrastructure and access

- 14.5.14 The baseline in Chapter 13: Socio-economics, tourism and recreation (Volume II) identified a range of community infrastructure, including health and recreation facilities, that are likely to contribute to health and wellbeing within the Project Boundary including: Drax Cricket Club, Drax, Selby; West Butterwick Branch Surgery, North Lincolnshire; Burstwick Country Golf Club, East Riding of Yorkshire; and Hull Paintball Centre, East Riding of Yorkshire.
- 14.5.15 The baseline in Chapter 13: Socio-economics, tourism and recreation (Volume II) also identified 77 PRow that cross the Project Boundary, including long distance walking routes that are likely to be more frequently used by walkers. Given the rural and sparsely populated nature of the area, the majority of these PRow routes crossing the Project Boundary are relatively isolated local paths crossing fields and are unlikely to be frequently used. However, some may be important for local active travel journeys, access to green/blue/open space and ecological/landscape/heritage assets for wellbeing and sense of place, and recreation.

Environmental change

- 14.5.16 The baseline in Chapter 6: Air Quality (Volume II) has identified three Air Quality Management Areas (AQMA) in the Study Area: Scunthorpe AQMA (North Lincolnshire), Low Santon AQMA (North Lincolnshire) and AQMA No.1 (Selby). Further information on the baseline for air quality can be found in Chapter 16: Air Quality (Volume II).
- 14.5.17 Information on the baseline for noise and vibration can be found in Chapter 12: Noise and Vibration (Volume II). Information on the baseline for traffic and transport can be found in Chapter 15: Traffic and Transport (Volume II).

Vulnerable groups

- 14.5.18 Table 14.3 summarises some of the health sensitivities in relation to vulnerable groups in the Study Area. This is not an exhaustive or exclusive list but indicates the potential sensitivities in human health and wellbeing experienced by vulnerable groups in local populations.

Table 14.3: Vulnerable groups and health sensitivities

Group	Selby	East Riding	North Lincolnshire	West Lindsey
Age	Ageing population Childhood obesity	Ageing population, with approx. 25% 65 years and over	Ageing population, with approx. 25% 65 years and over Child poverty Childhood obesity	Ageing population Child poverty Childhood obesity
Ethnic diversity	-	-	Greater diversity locally, although still lower than England as a whole	-

Group	Selby	East Riding	North Lincolnshire	West Lindsey
Economic	-	-	Low-income deprivation Unemployment	Long term unemployment Fuel poverty
Disability	-	Greater proportion of the population living with a limiting illness or disability	Greater proportion of the population living with a limiting illness or disability	Greater proportion of the population living with a limiting illness or disability
Sex/gender	-	-	Greater proportion of young mothers Lower life expectancy for males at birth	-

14.5.19 In addition, coastal communities are known to experience some of the worst health and wellbeing outcomes in England (Ref 14.36) and may therefore be more sensitive to changes.

Future baseline

- 14.5.20 The ONS produces long term (25 year) subnational population projections, which are an indication of future trends in population by age and sex (Ref 14.37). The projections are trend based, meaning they are based on observed data from the previous five years, and show what the population would be if recent trends continue. The latest projections were published in March 2020 and were based on 2018 data. They project the number of persons up to mid-2043.
- 14.5.21 Table 14.4 shows an increasingly ageing population in the Study Area, with the proportion of population aged 65 years and over predicted to increase from 20-26% today to 26-34% by 2043. Population size is predicted to increase across the Study Area and England as whole.

Table 14.4: Population projections for 2043

Indicators	Selby	East Riding	North Lincolnshire	West Lindsey	England
Population aged under 5 years (%)	5	4	5	5	5
Population aged 5 to 15 years (%)	11	9	10	10	11

Indicators	Selby	East Riding	North Lincolnshire	West Lindsey	England
Population aged 16 to 24 years (%)	9	8	9	9	11
Population aged 25 to 64 years (%)	49	44	48	46	49
Population aged 65 years and over (%)	26	34	28	32	24
Total Population	104,931	360,082	178,336	102,940	61,744,098

14.5.22 Local planning policy across the Study Area aims to improve the sustainability of transport (walking, wheeling¹ and cycling) and make significant progress in net gains for biodiversity whilst reducing carbon emissions over a similar period (Refs 14.11 and 14.13). Improvements in employment opportunities, housing, and ties to existing natural and heritage assets are also envisaged for the area. This is alongside national policy aspirations to tackle inequalities and regional disparities.

14.5.23 Despite this, there is emerging evidence of the impact of COVID-19 on life expectancy, risk factors and determinants of health, which would have a long-term impact on the health of the population. Healthy life expectancy at birth had started to decrease or level off in most regions before the pandemic. This represents an increasing number of years lived in poor health, resulting in a reduced ability to work, a reduced sense of wellbeing and an increased need to access services. There has also been a widening of inequalities between the most and least deprived areas. This suggests that the direct and indirect impacts of the pandemic on human health and wellbeing would result in greater health need and widening health inequalities going forward (Ref 14.38).

14.6 Design development, impact avoidance and embedded mitigation

14.6.1 Embedded mitigation for Human Health and Wellbeing would include the following measures:

- The design would avoid direct impacts to buildings and sites providing healthcare, social and residential care, community space and services, and education (primary, secondary and higher education);
- Where possible, the design would avoid or seek to reduce land take of natural and open space used for play, wellbeing, recreation and a sense of place, including, but not limited to, play areas, sports courts and pitches, playing fields, parks and

¹ The use of wheeled mobility aids, for example a wheelchair or mobility scooter user, that use pavement space at a similar speed to walking. This does not include e-scooters or cycles.

recreation grounds. Where loss occurs, the space would be re-provided, ensuring access, function and maintenance are retained or bettered;

- The design would avoid direct impacts to local and strategic walking and cycling infrastructure, including cycle parking, shower and toilet facilities and cycle lanes. Where walking and cycling routes or infrastructure are affected during construction, access would be maintained, for example via suitable diversions or use of other appropriate measures, as part of a PRow Management Plan. Existing access would be re-introduced, either by reinstatement or permanent diversion, in a timely fashion after construction in the immediate area is complete;
- Where walking and cycling routes or infrastructure are affected during decommissioning work, access would be maintained, for example via suitable diversions, as part of a PRow Management Plan. Existing access would be re-introduced in a timely fashion after construction in the immediate area is complete;
- Appropriate instruction to be given to ensure contractors act considerately in relation to local residents;
- Appropriate fencing, signage and safety precautions; and
- Measures associated with the design of construction compounds. Where practical, construction compounds would be located to avoid or minimise environmental and community impacts, provide the best access for personnel and deliveries in relation to major structures and worksites, and meet other construction requirements for the Project.

14.6.2 These measures would be secured through the Register of Commitments and included in the Construction Environmental Management Plan (CEMP) and Decommissioning Environmental Management Plan (DEMP). An outline CEMP would be provided with the DCO application.

14.6.3 Communications from the Applicant would promote timely and accurate information about the Project for stakeholders such as local residents, so as to inform the perception and understanding of risk posed by the transportation of hydrogen and carbon dioxide. This includes information about the construction, operation and decommissioning of the Project, as well as how to make contact.

14.6.4 Where PRow or cycle routes may be disrupted by construction of the Project, temporary diversions or use of other appropriate measures would be put in place together with appropriate signage as necessary. Where routes are permanently affected, diversions would be provided.

14.7 Preliminary assessment of potential impacts

14.7.1 This Section details the preliminary assessment of potential impacts for the Project during construction, operation and decommissioning phases.

Construction

14.7.2 The potential impacts for Human Health and Wellbeing associated with the construction phase are provided in Table 14.5.

Table 14.5: Construction phase –preliminary assessment of potential impacts

Resource/receptor	Sensitivity of resource/receptor	Description of potential impact/change
Access to social infrastructure (for example, community and healthcare services)	N/A ²	<p>Loss of existing social infrastructure.</p> <p>Disruption to access from temporary PRow closures/diversions or construction traffic.</p> <p>Disruption to access from permanent PRow closures/diversions.</p>
Access to open space	N/A	<p>Loss of open and natural space.</p> <p>Disruption to access from temporary PRow closures/diversions or construction traffic.</p> <p>Disruption to access from permanent PRow closures/diversions.</p>
Health related environmental change (for example, air quality, noise, visual amenity and contaminated land health related impacts)	N/A	<p>Air quality impacts arising from construction dust and construction traffic.</p> <p>Chemical spillages and leaks from plant and machinery, and from chemicals and other contaminants stored on site causing pollution of ground or groundwater.</p> <p>Requirement for dewatering, which may reduce flow to groundwater supported sites, abstractions and surface water bodies and change soil hydrology locally.</p>

² Unlike other environmental topics such as noise, the sensitivity of population and health receptors to the Project is not determined by reference to designations or an objective standard. Instead, it is the nature of the activity that the human receptor is undertaking that is most influential in determining sensitivity. In addition, certain populations experiencing impacts as a result of changes to the health determinants are described as more or less sensitive based on their characteristics, which is then used to inform a judgement on significance.

Resource/receptor	Sensitivity of resource/receptor	Description of potential impact/change
		<p>Disturbance of potentially contaminated soils, sediments and waters.</p> <p>Importation of contaminated aggregates.</p> <p>Requirement to remove spoil from tunnelling operations (including tunnel shafts).</p> <p>Importation of backfill material for tunnel shafts and along pipelines.</p> <p>High noise levels generated by the construction phase activities resulting in potential disturbance or interference with activities or sleep.</p> <p>Vibration generated by certain construction activities resulting in potential disturbance or interference with activities.</p> <p>Landscape character: loss of vegetation and disruption to PRow and access tracks.</p> <p>Visual amenity: loss of vegetation and construction activities.</p> <p>Pedestrians, cyclists, horse-riders; reduced ability to cross the road, changed journey times and distances, loss of amenity, potential issues due to increased traffic flows and change in composition, reduction in road safety.</p> <p>Bus and car journeys: changed journey times and distances, reduction in road safety.</p>

Resource/receptor	Sensitivity of resource/receptor	Description of potential impact/change
Access to work and training	N/A	<p>Disruption to access to places of employment and training, as well as childcare facilities, from temporary PRow closures/diversions or construction traffic.</p> <p>Disruption to access from permanent PRow closures/diversions.</p>
Accessibility and active travel	N/A	<p>Loss of local and strategic cycle and walking infrastructure.</p> <p>Disruption to journeys from temporary PRow closures/diversions or construction traffic.</p> <p>Disruption to access from permanent PRow closures/diversions.</p>
Mental health	N/A	<p>Impacts on mental well-being arising from changes in wider determinants of health and impacts on resilience and community assets arising from loss of health and wellbeing infrastructure.</p>

Operation

- 14.7.3 The potential impacts for Human Health and Wellbeing associated with the operational phase are provided in Table 14.6.

Table 14.6: Operational phase –preliminary assessment of potential impacts

Resource/receptor	Sensitivity of resource/receptor	Description of potential impact/change
Health related environmental change (for example, air quality, noise, visual amenity and contaminated land health related impacts)	N/A	<p>Requirement for dewatering, reducing flow to groundwater abstractions and surface water bodies, and changes to soil hydrology.</p> <p>Landscape character: introduction of infrastructure, disruption of PRowS and access tracks.</p> <p>Visual amenity: introduction of infrastructure.</p>
Mental health	N/A	<p>Impacts on mental well-being arising from changes in wider determinants of health and impacts on resilience and community assets arising from loss of health and wellbeing infrastructure.</p>

Decommissioning

- 14.7.4 The potential impacts for Human Health and Wellbeing associated with the decommissioning phase are provided in Table 14.7.

Table 14.7: Decommissioning phase –preliminary assessment of potential impacts

Resource/receptor	Sensitivity of resource/receptor	Description of potential impact/change
Access to social infrastructure (for example, community and healthcare services)	N/A	Disruption to access from temporary ProW closures/diversions or works traffic.
Access to open space	N/A	Disruption to access from temporary ProW closures/diversions or works traffic.
Health related environmental change (for example, air quality, noise, visual amenity and contaminated land health related impacts)	N/A	Potential changes for geology and hydrogeology same as for construction. High noise levels generated by the decommissioning phase activities resulting in potential disturbance or interference with activities.
Access to work and training	N/A	Disruption to access from temporary ProW closures/diversions or works traffic.
Accessibility and active travel	N/A	Disruption to journeys from temporary ProW closures/diversions or works traffic.
Mental health	N/A	Impacts on mental well-being arising from changes in wider determinants of health and impacts on resilience and community assets arising from loss of health and wellbeing infrastructure.

14.8 Mitigation and enhancement measures

- 14.8.1 This Section sets out the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the potential impacts as assessed in Section 14.7.
- 14.8.2 No additional mitigation to that specified in Chapter 6: Air Quality (Volume II), Chapter 9: Geology and Hydrogeology (Volume II), Chapter 11: Landscape and Visual (Volume II), Chapter 12: Noise and Vibration (Volume II), Chapter 15: Traffic and Transport (Volume II) has been identified at the PEIR stage.

14.9 Summary of the preliminary assessment of potential significant effects

14.9.1 Table 14.8 below summarises the preliminary assessment of potential significant effects associated with the Project.

Table 14.8: Summary of the preliminary assessment of potential significant effects

Resource/receptor	Stage	Sensitivity of resource/receptor	Description of potential impact/change	Mitigation	Potential significant effects
Access to social infrastructure (for example, community and healthcare services)	Construction Decommissioning	N/A	Loss of existing social infrastructure. Disruption to access from temporary PRow closures/diversions or construction traffic.	Avoid direct impacts to social infrastructure. PRow Management Plan.	Not significant
Access to open space	Construction Decommissioning	N/A	Loss of open and natural space. Disruption to access from temporary PRow closures/diversions or construction traffic.	Avoid direct impacts to open space. PRow Management Plan.	Not significant
Health related environmental change (for example, air quality, noise, visual amenity and contaminated land)	Construction Operation Decommissioning	N/A	Air quality: construction dust and construction traffic. Geology and hydrology: Requirement for dewatering, which	Mitigation specified in Chapter 6: Air Quality (Volume II), Chapter 9: Geology and Hydrogeology (Volume II),	Air quality: Will be determined at ES stage. Geology and hydrogeology; Noise and

Resource/receptor	Stage	Sensitivity of resource/receptor	Description of potential impact/change	Mitigation	Potential significant effects
health related impacts)			<p>may reduce flow to groundwater supported sites, abstractions and surface water bodies and change soil hydrology locally.</p> <p>Noise generated by construction and decommissioning activities resulting in potential disturbance or interference with activities or sleep.</p> <p>Vibration generated by construction activities resulting in potential disturbance or interference with activities.</p>	Chapter 11: Landscape and Visual (Volume II), Chapter 12: Noise and Vibration (Volume II), Chapter 15: Traffic and Transport (Volume II).	vibration: Not significant.
Access to work and training	Construction Decommissioning	N/A	Disruption to access places of employment and training, as well as childcare facilities, from temporary PRow closures/diversions	PRow Management Plan.	Not significant

Resource/receptor	Stage	Sensitivity of resource/receptor	Description of potential impact/change	Mitigation	Potential significant effects
			or construction traffic.		
Accessibility and active travel	Construction Decommissioning	N/A	Loss of local and strategic cycle and walking infrastructure. Disruption to journeys from temporary PRow closures/diversions or construction traffic.	Avoid direct impacts to cycle and walking infrastructure. PRow Management Plan.	Not significant
Mental health	Construction Operation Decommissioning	N/A	Impacts on mental well-being arising from changes in wider determinants of health and impacts on resilience and community assets arising from loss of health and wellbeing infrastructure.	Avoid direct impacts to health and wellbeing infrastructure. Mitigation specified in Chapter 6: Air Quality (Volume II), Chapter 9: Geology and Hydrogeology (Volume II), Chapter 11: Landscape and Visual (Volume II), Chapter 12: Noise and	Not significant

Resource/receptor	Stage	Sensitivity of resource/receptor	Description of potential impact/change	Mitigation	Potential significant effects
				Vibration (Volume II), Chapter 15: Traffic and Transport (Volume II). Communications Strategy	

14.10 Next steps

Engagement

- 14.10.1 The Human Health and Wellbeing assessment will be further developed and refined based on any relevant responses to the Statutory Consultation.
- 14.10.2 Additional PRow information will be sought from local authority PRow/access officers to inform the assessment.

Surveys

- 14.10.3 No surveys are required for the assessment of Health and Wellbeing.

Assessment

- 14.10.4 Continuing assessment of the potential impacts on Human Health and Wellbeing receptors during the construction, operation and decommissioning phases of the Project will be undertaken in accordance with the methodologies outlined in Section 14.4 above.
- 14.10.5 Any gaps in information identified at this PEIR stage will be considered and addressed along with specific mitigation measures as part of the assessments for production of the ES.
- 14.10.6 In the ES the detailed assessment will further consider:
- Access to social infrastructure (for example, community and healthcare services);
 - Access to open space;
 - Health related environmental change (for example, air quality, noise, visual amenity and contaminated land health related impacts);
 - Access to work and training;
 - Accessibility and active travel; and
 - Mental health.

14.11 References

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