

Viking CCS pipeline

Preliminary Environmental Information Report Volume II

Main PEIR

Applicant: Chrysoar Production (U.K.) Limited,
a Harbour Energy Company

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Chapter 16

Socio-economics



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16 Socio-economics

16.1 Introduction

16.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) addresses the likely significant effects of the Viking CCS Pipeline (hereafter referred to as 'the Project') on socio-economics, during construction, operation and decommissioning. This will include considering potential impacts on the following:

- Employment (including training and apprenticeship opportunities) and effects on local community;
- Users of recreational routes and Public Rights of Way (PRoW);
- Community severance; and
- Private assets (including residential properties, development land, local businesses, community facilities, open space and visitor attractions relevant for tourism).

16.1.2 The preliminary assessment is based on information obtained to date. It should be read in conjunction with the Project description provided in *Chapter 3: The Viking CCS Pipeline* and with respect to relevant parts of the following chapters:

- *Chapter 7: Landscape and Visual;*
- *Chapter 12: Traffic and Transport;*
- *Chapter 13: Noise and Vibration;* and
- *Chapter 14: Air Quality.*

16.1.3 This chapter describes:

- the legislation, policy and technical guidance that has informed the assessment (*Section 16.2*);
- the scoping exercise and how comments from the Planning Inspectorate and consultees relating to socio-economics have been addressed (*Section 16.3*);
- the methods used for the assessment (*Section 16.4*);
- the baseline environment and Study Area (*Section 16.5*);
- mitigation measures relevant to socio-economics (*Section 16.6*);
- the preliminary assessment of socio-economic effects (*Section 16.7*);
- an outline of further work to be undertaken for the Environmental Statement (ES) (*Section 16.8*).

16.2 Legislation, Policy and Guidance

National Policy

National Policy Statement for Energy (EN-1) (2011)

16.2.1 The National Policy Statement for Energy (EN-1) (Ref 16-2) was published by the former Department of Energy and Climate Change (later part of the Department for Business, Energy and Industrial Strategy) in July 2011. This document sets out the government's

overarching policy on energy infrastructure and provides guidance in the planning application for proposed projects.

16.2.2 Part 5 details generic impacts associated with the development. Section 5.10 entitled ‘Land use including open space, green infrastructure & Green Belt’ and Section 5.12 entitled ‘Socio-economics’ are of particular relevance to this chapter:

Draft Overarching National Policy Statement for Energy (EN-1) (2021)

16.2.3 The Draft Overarching National Policy Statement for Energy (EN-1) (Ref 16-4) was published in September 2021 by the Department for Business, Energy and Industrial Strategy, and updates the existing Statement. In addition to the socio-economic impacts of energy infrastructure development outlined in the existing Statement, the Draft Statement outlines additional socio-economic impacts to be considered in Paragraph 5.13.3.

National Planning Policy Framework (NPPF) (2021)

16.2.4 The National Planning Policy Framework (NPPF) (Ref 16-1) was most recently updated in July 2021 and sets out the Government’s planning policies in a single document. It places emphasis on its overarching economic, social and environmental objectives and presumption in favour of sustainable development.

16.2.5 **Table 16-1** details the sections of National Planning Policy of relevance to socio-economics.

Table 16-1: National Planning Policy of relevance to Socio-economic

Policy Reference	Policy Context
National Policy Statement	
Overarching National Policy Statement for Energy (EN-1) (Ref 16-2)	
Part 4, Paragraph 4.1.3	States that the consideration of any proposed development should <i>“take into account its potential benefits including its contribution to meeting the need for...job creation”</i> .
Part 4, Paragraph 4.1.4	Continues that <i>“environmental, social and economic benefits and adverse impacts”</i> be taken into account.
Part 4, Paragraph 4.2.1	Requires that proposals are accompanied by an Environmental Statement that makes reference to <i>“effects on human beings...material assets and cultural heritage”</i> ; and
Part 4, Paragraph 4.2.2	Suggests the <i>“applicant sets out information on the likely significant social and economic effects of the development’ including ‘matters such as employment...community cohesion and well-being”</i> .
Part 5 Paragraph 5.10.1	States that <i>“an energy infrastructure project will have direct effects on the existing use of the proposed site and may have indirect effects on the use, or planned use, of land in the vicinity for other types of development. Given the likely locations of energy infrastructure projects there may be particular effects on open space including green infrastructure”</i> . In this context, open space is defined as any space with public value and green infrastructure is defined as a network of multi-functional green spaces that service ecological processes and are <i>“integral to the health and quality of life of sustainable communities”</i> ;

Policy Reference	Policy Context
National Policy Statement	
Part 5 Paragraph 5.10.2	States that <i>“The Government’s policy is to ensure there is adequate provision of high quality open space (including green infrastructure) and sports and recreation facilities to meet the needs of local communities. Open spaces, sports and recreational facilities all help to underpin people’s quality of life and have a vital role to play in promoting healthy living. Green infrastructure in particular will also play an increasingly important role in mitigating or adapting to the impacts of climate change.”</i> This paragraph stresses that the provision of open space and green infrastructure is a means to achieve these outcomes.
Part 5 Paragraph 5.10.16	Makes reference to coastal recreation sites and features in that applicants have <i>“taken advantage of opportunities to maintain and enhance access to the coast”</i> .
Part 5 Paragraph 5.10.20	Requires that the connectivity of, and access to, green infrastructure is maintained.
Part 5 Paragraph 5.10.24	Outlines that <i>“rights of way, National Trails and other rights of access to land are important recreational facilities for example for walkers, cyclists and horse riders”</i> and that appropriate mitigation efforts address any adverse impact on their use.
Part 5 Paragraph 5.12.3	Requires the consideration of: <i>“the creation of jobs and training opportunities”;</i> <i>“effects on tourism”;</i> and <i>“effects on social cohesion”</i> .
Part 5 Paragraph 5.12.4	Requires the description of, <i>“the existing socio-economic conditions in the areas surrounding the proposed development and should also refer to how the development’s socio-economic impacts correlate with local planning policies.”</i>
Draft Overarching National Policy Statement for Energy (EN-1) (Ref 16-4)	
Paragraph 5.13.3	<i>“Applicants may wish to provide information on the sustainability of jobs created, including where they will help to develop the skills needed for the UK’s transition to Net Zero; The contribution to the development of low-carbon industries at the local and regional level as well as nationally; Improvements to local infrastructure, including the provision of educational and visitor facilities; and Any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains.”</i>
National Planning Policy Framework (NPPF) (Ref 16-1)	

Policy Reference	Policy Context
National Policy Statement	
Section 8 'Promoting healthy and safe communities'	Makes specific reference to the enablement of <i>“healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops...”</i> . This section also goes on to emphasise the provision of <i>“social, recreational and cultural facilities the community needs”</i> .
Paragraph 98	Describes that <i>‘access to a network of high quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities’</i> . Moreover, Paragraph 100 states that <i>“...decisions should protect and enhance public rights of way”</i> .

Local Policy

North East Lincolnshire Local Plan 2013 to 2032 (2018)

16.2.6 The North East Lincolnshire Local Plan (Ref 16-5) was adopted in March 2018 and sets out the Council’s vision and strategy for development up to 2032. It details 49 policies, of which the following are of specific relevance to this chapter on socio-economics:

- ‘Policy 11 Skills and training’ states that *development proposals that relate directly to the development of local skills, and training opportunities, focusing on existing facilities and town centre locations* would be supported; and
- ‘Policy 40 Developing a green infrastructure network’ states that development proposals which result in the loss or reduction in quality of existing PRowS will not be permitted unless, *“acceptable equivalent alternative provision is made. Where diversions are proposed, these should be convenient and attractive to users and not increase disturbance on protected wildlife sites.”*

North East Lincolnshire Natural Assets Plan (2021)

16.2.7 The North East Lincolnshire Natural Assets Plan (Ref 16-8) was published in 2021 and sets out the Council’s eight areas of focus to make improvements to the natural environment of North East Lincolnshire. Those of specific relevance to this chapter on socio-economics are:

- Managing our open spaces;
- Protecting health and wellbeing; and
- Education, involvement, and enjoyment.

North Lincolnshire Core Strategy Local Plan (2011)

16.2.8 The North Lincolnshire Core Strategy Local Plan (Ref 16-9) was adopted in June 2011 and sets out the long term spatial planning framework for the development of North Lincolnshire up to 2026. It details 27 strategic policies, of which the following are of specific relevance to this chapter on socio-economics:

- ‘CS2 Delivering more sustainable development’ states that all future development proposals will be required to contribute towards achieving sustainable development; and
- ‘CS18 Sustainable resource use and climate change’ states that the Council will actively promote development that utilises natural resources as efficiently and sustainability as

possible. This includes, “*supporting renewable sources of energy in appropriate locations, where possible,*” and, “*supporting new technology and development for carbon capture and the best available clean and efficient energy technology.*”

North Lincolnshire Draft Local Plan 2020 to 2038 (2021)

16.2.9 North Lincolnshire Council is currently preparing a new single Local Plan (Ref 16-10) that will replace the current Local Plan and Core Strategy once formally adopted. The following policies in the draft Local Plan are of specific relevance to this chapter on socio-economics:

- ‘*SS1 Presumption in favour of sustainable development;*’ and
- ‘*DQ8 Renewable energy proposals.*’

East Lindsey District Council Core Strategy Local Plan (2018)

16.2.10 The East Lindsey District Council Core Strategy Local Plan (Ref 16-11) was adopted in July 2018 and sets out the Council’s vision and strategic policies for growth and development up to 2031. It details 29 strategic policies, of which the following are of specific relevance to this chapter on socio-economics:

- ‘*SP2 Sustainable Development*’ directly echoes the approach of the NPPF;
- ‘*SP25 Green Infrastructure*’ states that the Council will safeguard and deliver a network of accessible green infrastructure; and
- ‘*SP27 Renewable and low carbon energy*’ states that large-scale renewable and low carbon energy development will be supported where the individual or cumulative impact, when weighed against the benefits, is considered acceptable. However, development within or affecting the setting of the Lincolnshire Wolds AONB will only be permitted in exceptional circumstances.

Central Lincolnshire Local Plan (2017)

16.2.11 West Lindsey Council’s Local Plan (adopted 2006) (Ref 16-12) was replaced by the Central Lincolnshire Joint Strategic Planning Committee’s (CLJSPC) Central Lincolnshire Local Plan (Ref 16-12) when it was adopted in April 2017. It details 57 strategic policies, of which the following are of specific relevance to this chapter on socio-economics:

- ‘*LP1 A presumption in favour of sustainable development*’ directly echoes the approach of the NPPF;
- ‘*LP19 Renewable energy proposals*’ states that proposals for renewable energy will be assessed on their merits, with the impacts on a range of factors considered against the benefits of the scheme. Factors of specific relevance for this chapter include the surrounding landscape and townscape; and residential and visual amenity; and
- ‘*LP20 Green infrastructure network*’ states that the Central Lincolnshire Authorities will aim to maintain and improve their green infrastructure networks by enhancing, creating and managing multifunctional green space. As such, development proposals must protect the linear features of green infrastructure networks that provide connectivity between green spaces, including PRowS, bridleways, cycleways and waterways.

Guidance

National Planning Practice Guidance (NPPG) (2019)

16.2.12 The National Planning Practice Guidance (NPPG) (Ref 16-4) is an online resource which supplements the NPPF and is updated regularly. The NPPG provides guidance on planning and the economy and to consider the existing and potential future needs of the population

in terms of economic development, jobs and employment opportunities. Last updated in 2019, the contents of the NPPG are not materially relevant to the assessment of socio-economic effects.

16.3 Scoping Opinion and Consultation

- 16.3.1 A scoping exercise was undertaken in early 2022 to establish the content of the socio-economic assessment and the approach and methods to be followed.
- 16.3.2 The Scoping Report records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Project on socio-economics.
- 16.3.3 Following receipt of the Scoping Opinion (see *PEIR Volume IV – Appendix 5.2*), the following additional requirements have been identified by the Planning Inspectorate which have been provided in **Table 16-2** with a response.
- 16.3.4 A range of stakeholders have been engaged as part of the scoping exercise to obtain their views on the Project and the assessment of the socio-economic chapter's scope. The results of this consultation are presented within **Table 16-2**, along with an explanation of how these views and comments have been taken into account within the EIA, both as part of this PEIR and, going forward, as part of the DCO application.

Table 16-2: Summary of EIA Scoping Opinion in relation to Socio-economics

Section Reference to Scoping Opinion	Applicant's proposed matter	Planning Inspectorate / prescribed consultee comments	How addressed in this PEIR
<p>Planning Inspectorate Paragraphs 15.5.11 and 15.5.12 Table 15-2</p>	<p>Socio-economic effects on employment, economic growth and training during operation</p>	<p>The Scoping Report states that the potential for the creation of training opportunities is considered to be limited based on the scale of the operational employment generated as a result of the Proposed Development. Therefore, all effects on employment, economic growth and training during operation of the Proposed Development have been scoped out of the ES. The Inspectorate is content for these matters to be scoped out of the ES as the operation of the Proposed Development is unlikely to result in significant effects on employment, economic growth and training.</p>	<p>No further comments.</p>
<p>Planning Inspectorate Paragraph 15.5.13 Table 15-2</p>	<p>Socio-economic effects on recreational routes and Public Rights of Way (PRoWs) during operation</p>	<p>The Scoping Report states that operation of the pipeline and associated above ground infrastructure would not lead to any potential impacts in terms of PRoWs, National Cycle Network (NCN) or other recreational routes. The Inspectorate is content with this approach. However, the ES should include an assessment of the potential operational effects as a result of permanently redirecting any recreational routes of PRoWs during the construction phase of the Proposed Development, where significant effects could occur.</p>	<p>No recreational routes or PRoWs will be permanently redirected during the construction phase of the Project. Any temporary diversions will be reinstated to their original route on completion of construction works.</p>
<p>Planning Inspectorate Paragraph 15.5.14 and 15.5.16 Table 15-2</p>	<p>Socio-economic effects on 'community severance' and 'development land' during operation</p>	<p>The Scoping Report states that impacts to community severance and development land during construction of the Proposed Development would not be anticipated to extend into the operational phase. Therefore, effects on community severance and development land have been scoped out of the ES. The Inspectorate is content for these matters to be scoped out of the ES as the operation of the Proposed Development is unlikely to result in significant effects on community severance and development land.</p>	<p>No further comments.</p>

Section Reference to Scoping Opinion	Applicant's proposed matter	Planning Inspectorate / prescribed consultee comments	How addressed in this PEIR
Planning Inspectorate Paragraph 15.5.15 Table 15-2	Effects on private assets during operation of the pipeline	The Applicant intends to scope out effects on private assets during operation of the pipeline as it would be buried and would have no effect on private assets. The Inspectorate is content for this matter to be scoped out of the ES as the operation of the pipeline is unlikely to result in significant effects on private assets.	No further comments.
Planning Inspectorate Table 15-2	Decommissioning effects	<p>The effects of decommissioning of the Proposed Development have not been considered for recreational routes and PRowS, community severance, private assets or development land.</p> <p>It is noted that the specific decommissioning methodology is not known at this stage. However, in the absence of more detailed information relating to the decommissioning phase of the Proposed Development, the Inspectorate is not in a position to agree to scope these matters from the assessment. Therefore, the ES should include an assessment of decommissioning effects on socio-economic elements or provide information to identify or demonstrate the absence of any likely significant effects.</p>	Socio-economic effects on employment, economic growth and training, recreational routes and PRowS, community severance, and private assets during decommissioning phase will be included within the socio-economics chapter. Decommissioning effects on development land have been scoped out as it is not possible to identify development land during the decommissioning phase.
East Lindsey District Council	Tourism	The EIA should address impacts to Tourism including on seasonal traffic.	Impacts to Tourism to be included within the socio-economics chapter. Impacts on seasonal traffic to be covered within Traffic and Transport Chapter.
East Lindsey District Council	Schools	In Section 15 Socio-Economics several schools in East Lindsey are listed, please note Tennyson High School in Mablethorpe has closed and has been demolished although there is a private school adjacent (Springwell Alternative Academy). Also there are primary schools in Fulstow, North Thoresby, Grimoldby, North Cockerington and Theddlethorpe.	This has been noted. The schools which fall within the community facilities Study Area of 1km from the Draft Order Limits have been identified and presented in Section 16.5. It should be noted that

Section Reference to Scoping Opinion	Applicant's proposed matter	Planning Inspectorate / prescribed consultee comments	How addressed in this PEIR
			Springwell Alternative Academy falls outside of the Study Area.
Lincolnshire County Council	PRoW	<p>From an economic growth perspective, the range of the topics in the scoping document appears reasonable, and we will be able to comment in further detail as the project progresses.</p> <p>It is considered that Public Rights of Way and Access are adequately covered at this stage and that necessary temporary diversions will be treated sympathetically during construction. Await further detail of which routes will be affected but in the meantime are, on request, able to provide location details of both recorded rights of way and applications for additional routes within the selected corridor area as necessary. Detailed analysis of affected routes will follow once known.</p>	No further comments.
Natural England	Connecting People with Nature	The ES should consider potential impacts on access land, common land, public rights of way and, where appropriate, the England Coast Path and coastal access routes and coastal margin in the vicinity of the development, in line with NPPF paragraph 100. It should assess the scope to mitigate for any adverse impacts. Rights of Way Improvement Plans (ROWIP) can be used to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.	Potential impacts to be noted within the socio-economics chapter where applicable.
Natural England		The application is within the Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge (in progress).	To be noted within the socio-economics chapter.
Natural England		Measures to help people to better access the countryside for quiet enjoyment and opportunities to connect with nature should be considered. Such measures could include	Discussed in <i>Chapter 3: The Viking CCS Pipeline</i>

Section Reference to Scoping Opinion	Applicant's proposed matter	Planning Inspectorate / prescribed consultee comments	How addressed in this PEIR
		reinstating existing footpaths or the creation of new footpaths, cycleways, and bridleways. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure.	
Natural England		Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.	To be noted within the socio-economics chapter where applicable.
Natural England		The ES should include details of the decommissioning and after use of the site and how it will be restored.	Socio-economic effects during decommissioning phase to be included within the socio-economics chapter. Details of the decommissioning strategy are provided in Section 3.15 of <i>Chapter 3: The Viking CCS Pipeline</i> .

Consultation

16.3.5 No consultation specific to socio-economics has been undertaken to date. No consultation is currently planned as part of the preparation of the Socio-economics chapter of the ES. However, engagement will be undertaken with stakeholders to supplement the desk-based analysis if any consultation responses to the PEIR indicate that such engagement would be useful and necessary.

16.4 Assessment Method

16.4.1 The preliminary assessment provides information to inform stakeholders and decision makers of the likely direction and duration of change in terms of socio-economic effects and gives an indication of whether these effects are likely to be significant when a full assessment is performed in the ES. The preliminary assessment also gives a confidence level in the prediction of likely significant socio-economic effects.

16.4.2 Within the ES, a full assessment of potential impacts will be undertaken to determine the effect of the Project on the baseline socio-economic conditions. There is currently no industry-recognised guidance or methodology for undertaking assessments of socio-economic effects. The assessment follows best practice methodology from other assessments undertaken on comparable energy infrastructure schemes. The methodology will entail:

- Assessment of the likely scale, permanence and significance of effects associated with socio-economics; and
- An assessment of the potential cumulative impacts with other projects within the surrounding area.

16.4.3 The preliminary and full assessment of potential socio-economic impacts will use policy thresholds and expert judgment to assess the scale and nature of the impacts of the Project against baseline conditions.

16.4.4 The preliminary assessment aims to be objective and quantifies effects as far as possible. However, some effects can only be evaluated on a qualitative basis. Effects are defined as follows:

- *Beneficial classifications of effect*: indicate an advantageous or beneficial effect on an area, which may be minor, moderate, or major in effect;
- *Negligible classifications of effect*: indicate imperceptible effects on an area;
- *Adverse classifications of effect*: indicate a disadvantageous or adverse effect on an area, which may be minor, moderate or major in effect; and
- *No effect classifications*: indicate that there are no effects on an area.

16.4.5 Duration of impact is also considered, with more weight given to reversible long-term or permanent changes than to temporary ones. Temporary impacts are considered to be those associated with the construction works. Long-term reversible impacts are generally those associated with the completed and operational development. For the purposes of this assessment, short term impacts are considered to be of three months or less, medium term impacts of three months to two years and long-term impacts for two or more years.

16.4.6 For socio-economics, there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that 'significance' reflects the relationship between the scale of effect (magnitude) and the sensitivity (or value) of the affected resource or receptor. As such the significance criteria of socio-economic effects

has been assessed based on expert judgment and professional experience of the author, and relies on the following considerations:

- *Sensitivity of resources/receptors*: specific values in terms of sensitivity are not attributed to socio-economic resources / receptors due to their diverse nature and scale; however, the assessment takes account of the qualitative (rather than quantitative) ‘sensitivity’ of each receptor and, in particular, their ability to respond to change based on recent rates of change and turnover (if appropriate);
- *Magnitude of impact*: this entails consideration of the size of the effect on people or business in the context of the area in which effects will be experienced; and
- *Scope for adjustment*: the socio-economic assessment is concerned in part with economies. These adjust themselves continually to changes in supply and demand, and the scope for the changes brought about by the Project to be accommodated by market adjustment will therefore be a criterion in assessing significance.

16.4.7 Criteria for receptor sensitivity have been set out below (although specific sensitivity values are not attributed to socioeconomic receptors as explained above), which have been grouped as follows: economic impacts; recreational routes and PRowS impacts; private assets and community facilities impacts; and development land impacts.

16.4.8 Criteria for impact magnitude have not been set out as the preliminary assessment does not present the magnitude of impact of potential effects.

Economic Impacts

16.4.9 The following criteria have been set to assess the effects on socio-economics receptors in relation to employment and GVA which have been grouped together as economic impacts.

16.4.10 **Table 16-3** identifies the sensitivity criteria that have been used to inform the assessment on socio-economic receptors relating to employment and GVA.

Table 16-3: Economic Impact Sensitivity Criteria

Sensitivity	Description
High	Businesses, workers or residents who have little or no capacity to experience the impact without incurring an economic loss or have capacity to experience an economic gain.
Medium	Businesses, workers or residents that have a moderate or average capacity to experience the impact without incurring a change on their economic well-being.
Low	Businesses, workers or residents that generally have adequate capacity to experience impacts without incurring a change on their economic well-being.
Very Low	Businesses, workers or residents that are unlikely to experience impacts on their economic well-being.

Recreational Routes and PRowS

16.4.11 The following criteria have been set to assess the effects on users of recreational routes and PRowS focusing on the impact of severance of existing routes and the resulting changes in journey lengths and times and local travel patterns.

16.4.12 **Table 16-4** identifies the sensitivity criteria that have been used to inform the assessment of recreational routes and PRowS.

Table 16-4: Recreational Routes and PRowS Impact Sensitivity Criteria

Sensitivity	Description
High	Recreational Route or PRow is of high importance (for example, it has a national designation or is very well used) with limited potential to substitute with other route options to access with the wider network or community infrastructure.
Medium	Recreational Route or PRow is of medium importance with moderate potential to substitute with other route options to access with the wider network or community infrastructure. Or recreational Route or PRow is of high importance with alternative routes available. Or recreational Route or PRow is of low importance with limited potential to substitute with other route options to access with the wider network or community infrastructure.
Low	Recreational Route or PRow is of low importance with alternative routes available. Or recreational Route or PRow is of very low importance with moderate potential to substitute with other route options to access with the wider network or community infrastructure.
Very Low	Recreational Route or PRow is of very low importance with alternative routes available.

Private Assets, Community Facilities and Development Land

16.4.13 The following criteria have been set to assess the effects on private assets, community facilities and development land. Private assets comprise residential properties, business premises, some community facilities, visitor attractions, and open space.

16.4.14 **Table 16-5** identifies the sensitivity criteria that have been used to inform the assessment of effects relating to private assets, community facilities and development land.

Table 16-5: Private Assets, Community Facilities and Development Land Impact Sensitivity Criteria

Sensitivity	Description
High	Amenity or land use is of high importance and rarity (for example, a hospital, a business supporting substantial employment or a development site with capacity for a substantial number of homes) with limited potential for substitution or access to alternatives.
Medium	Amenity or land use is of medium importance and rarity with moderate potential for substitution or access to alternatives.
Low	Amenity or land use is of low importance and rarity with alternatives available.
Very Low	Amenity or land use is of very low importance and rarity with alternatives available.

16.5 Baseline Environment and Study Area

Study Area

16.5.1 The Study Area varies depending on the effect or type of resource being assessed, as discussed further below. The Study Area considered for each effect or type of resource is presented in **Table 16-6** and shown in **Figure 16-1**.

Table 16-6: Study Areas Considered for Socio-economic Receptors and Impacts

Receptor and Impact	Study Area
Employment, Economic Growth and Training	
Employment	The Study Area for employment, economic growth, and training is defined as the local authority areas of North Lincolnshire, North East Lincolnshire, East Lindsey, and West Lindsey for the preliminary assessment. The relevant regions of Yorkshire and Humber, and the East Midlands and the national level of England and Wales will also be considered.
Economic Growth (GVA)	
Training	
Recreational Routes and PRowS	
Recreational Routes and PRowS	The assessment of effects on users of recreational routes and PRowS considers all such resources likely to be affected by alterations in distribution and flows. The types of resources considered include PRowS themselves, National Cycle Network (NCN) routes and long-distance walking routes located within the Draft Order Limits.

Receptor and Impact	Study Area
Community Severance (schools, healthcare facilities, libraries)	
Community Severance	The Study Area is defined as a 1km buffer either side of the Draft Order Limits in order to include communities that may potentially be directly and indirectly affected by the Project through severance effects. These will include communities directly connected by the recreational routes and PRow. Community facilities in larger towns and cities beyond the Study Area are also considered as access to these facilities for residents of communities in the Study Area may be impacted by the Project.
Private Assets (residential properties, local businesses, community centres, visitor attractions, open space)	
Land Take	The Study Area is defined as the Draft Order Limits (i.e the land parcels required to accommodate the Project during both construction and operation).
Amenity Value	The Study Area is defined as a 1km buffer either side of the Draft Order Limits and has been informed by the Study Areas used in the relevant chapters, <i>Chapter 7: Landscape and Visual</i> , <i>Chapter 13: Noise and Vibration</i> , and <i>Chapter 14: Air Quality</i> .
Community Severance	The Study Area is defined as a 1km buffer either side of the Draft Order Limits in order to include communities that may potentially be directly and indirectly affected by the Project through severance effects. These will include communities directly connected by the recreational routes and PRow. Community facilities in larger towns and cities beyond the Study Area are also considered as access to these facilities for residents of communities in the Study Area may be impacted by the Project.
Development Land	
Development Land	The Study Area is defined as a 1km buffer either side of the Draft Order Limits in order to include development land that may potentially be impacted by temporary or permanent land take and potential severance or disruption to access.

16.5.2 The commercial agreement for land, including productive land, between the proponent and landowners is beyond the scope of this preliminary assessment and the Environmental Statement (ES).

Baseline Conditions

- 16.5.3 This Section establishes a high-level summary of key socio-economic indicators in the Study Area as well as the provision and condition of facilities and routes serving local communities for the defined Study Area (see above). Information gathered and presented has been identified through a desktop study.
- 16.5.4 The following baseline conditions will be considered according to smaller sections of the Project:
- Recreational Routes and PRowWs;
 - Community Severance;
 - Private Assets; and
 - Development Land.
- 16.5.5 The high-level summary of key socio-economic indicators has been based on the following sources and will be built upon as part of the ES:
- Office of National Statistics (ONS), (2011); Census (Ref 16-15);
 - Office of National Statistics (ONS), (2021); Mid-Year Population Estimates (Ref 16-6);
 - ONS, (2021): Claimant count by sex and age (January 2021) (Ref 16-17);
 - ONS, (2021), Annual Population Survey (January 2021 to December 2021) (Ref 16-18);
 - ONS, (2020), Business Register and Employment Survey (2020) (Ref 16-19); and
 - Ministry of Housing, Community and Local Government (MHCLG), (2020), English Indices of Deprivation (2019) (Ref 16-20).

Current Baseline

Population

- 16.5.6 The Project is located in the Yorkshire and the Humber region, which has an estimated population of 5,526,350, and the East Midlands region, which has an estimated population of 4,865,600 (Ref 16-16).
- 16.5.7 The Study Area surrounding the Project comprises a mix of agricultural land and urban developments. Killingholme, a village located in North Lincolnshire, and Immingham, a town located in North East Lincolnshire, can be found to the west and south respectively of the Pipeline Offtake Facility. These settlements are located approximately 17 km south of Hull and 12 km north west of Grimsby. Theddlethorpe, a village located in East Lindsey, and Mablethorpe, a town located in East Lindsey, can be found to the north and south respectively of the Reception Facility for the Onshore and Offshore pipeline tie-in and outlet. These settlements are located approximately 30km south of Grimsby.
- 16.5.8 The Project is located within the local authorities of North Lincolnshire Council, North East Lincolnshire Council, East Lindsey and West Lindsey District Council. Part of the pipeline also passes through the Lincolnshire County Council jurisdiction.
- 16.5.9 In 2020, North Lincolnshire was estimated to have a population of 172,700. The percentage of North Lincolnshire's population aged between 16-64 (60.0%) is slightly lower than that of the Yorkshire and the Humber region (62.1%) and England and Wales (62.4%) (Ref 16-16).
- 16.5.10 In 2020, North East Lincolnshire was estimated to have a population of 159,400. The percentage of North East Lincolnshire's population aged between 16-64 (59.7%) is slightly

lower than that of the Yorkshire and the Humber region (62.1%) and England and Wales (62.4%) (Ref 16-16).

16.5.11 In 2020, East Lindsey was estimated to have a population of 142,000. The percentage of East Lindsey's population aged between 16-64 (54.4%) is lower than the East Midlands region (61.8%) and England and Wales (62.4%) (Ref 16-16).

16.5.12 In 2020, West Lindsey was estimated to have a population of 96,200. The percentage of West Lindsey's population aged between 16-64 (57.7%) is slightly lower than that of the East Midlands region (61.8%) and England and Wales (62.4%) (Ref 16-16).

16.5.13 Historic population trends given by the ONS show that in the period between 2011 and 2020 the population in North Lincolnshire has grown by 3.2% while the population of North East Lincolnshire has declined by 0.2%, compared to growth of 4.6% in the Yorkshire and the Humber region and 6.7% across England and Wales. Over the same period, the population in East Lindsey and West Lindsey has grown by 4.1% and 7.8% respectively, compared to growth of 7.3% in the East Midlands region and 6.7% across England and Wales (Ref 16-15 and Ref 16-16).

Employment

16.5.14 In 2021, the unemployment rate in North Lincolnshire (1.9%), North East Lincolnshire (3.1%), and West Lindsey (4.9%¹) was similar to or lower than the average recorded rates for Yorkshire and the Humber (4.5%), the East Midlands (4.5%), and England and Wales (4.6%) (0). However, the unemployment rates in 2021 East Lindsey (9.2%) was higher than the regional and national averages (Ref 16-18).

16.5.15 In 2021, the economic activity rate in North Lincolnshire (73.7%), North East Lincolnshire (74.7%), East Lindsey (63.1%), and West Lindsey (73.6%) was lower than the average recorded rates for Yorkshire and the Humber (77.4%), the East Midlands (77.6%), and England and Wales (78.7%) (Ref 16-18).

16.5.16 More recently, the claimant count (as a proportion of residents aged 16-64 years) recorded in June 2022 in North Lincolnshire was 3.5%, lower than the average for Yorkshire and the Humber (4.1%) and England and Wales (3.8%), whereas the rate recorded in North East Lincolnshire was 4.2%, slightly higher than the average for the region and England and Wales (0). The claimant count recorded in East Lindsey (3.1%) and West Lindsey (3.1%) was lower than the average for the East Midlands (3.3%) and England and Wales (3.8%) (Ref 16-17).

Qualifications and Occupational Profile

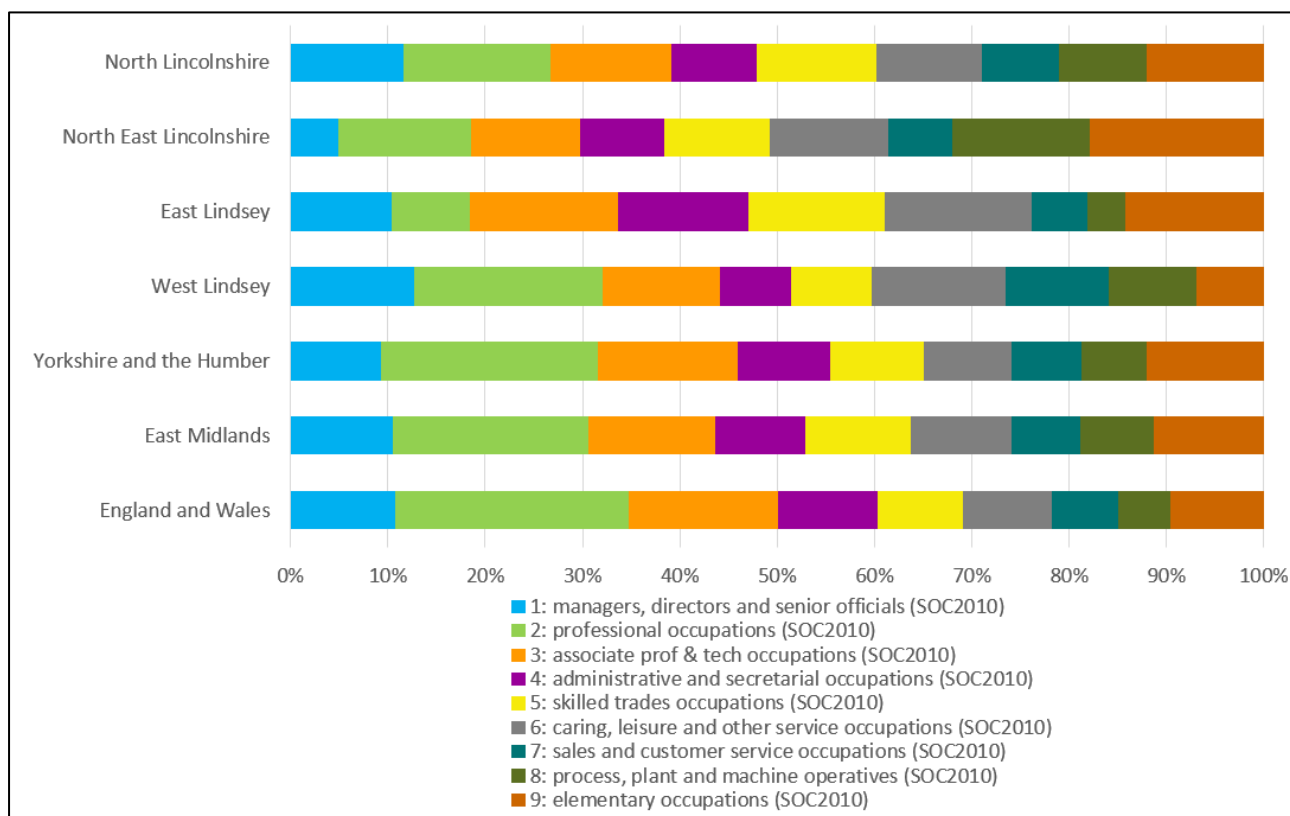
16.5.17 In 2021, the proportion of the population that held an NVQ Level 4+ in North Lincolnshire (31.3%), North East Lincolnshire (23.6%), East Lindsey (24.4%), and West Lindsey (33.6%) was significantly lower than the average rates for Yorkshire and The Humber (38.0%), the East Midlands (35.6%), and England and Wales (43.1%) (Ref 16-18).

16.5.18 The proportion of the population with no formal qualifications in North Lincolnshire (9.2%) and West Lindsey (9.3%) is higher than the average rate for Yorkshire and The Humber (7.8%), the East Midlands (7.5%) and England and Wales (6.4%) (0). The proportion of the population with no formal qualifications in North East Lincolnshire (12.1%) and East Lindsey (18.5%) is significantly higher than both the regional and national averages (Ref 16-18).

16.5.19 **Figure 16-2** shows the proportion of occupations in each of the designated categories for each of the identified local authorities and regions.

¹ The unemployment rate for West Lindsey is for 2020 as 2021 data is unavailable due to a small sample size.

Figure 16-2: Occupational Profile



Source: ONS, (2021), Annual Population Survey (January 2021 to December 2021) (0)

16.5.20 The most significant occupation category in North Lincolnshire (15.0%) and West Lindsey (19.3%) is ‘Professional Occupations’, as is the case in Yorkshire and the Humber (22.3%), the East Midlands (20.1%), and England and Wales (23.9%). The most significant occupation category is ‘Elementary Occupations’ (17.8%) in North East Lincolnshire, and ‘Associate Professional and Technical Occupations’ (15.2%) in East Lindsey (Ref 16-18).

16.5.21 The occupation category that employs the fewest people in East Lindsey is ‘Process, Plant and Machine Operatives’ (3.9%), as is the case in Yorkshire and the Humber (6.7%), and England and Wales (5.4%). The occupation category that employ the fewest people in North Lincolnshire is ‘Sales and Customer Service Occupations’ (7.9%), as is the case in the East Midlands (7.1%). The occupation category that employs the fewest people is ‘Managers, Directors and Senior Officials’ (4.9%) in North East Lincolnshire, and ‘Elementary Occupations’ (6.9%) in West Lindsey (Ref 16-18).

16.5.22 **Table 16-7** shows the proportion of employment in each broad industrial group, derived from the number of jobs at businesses in the relevant geographies according to the Business Register and Employment Survey in 2020 (Ref 16-19).

Table 16-7: Jobs by Broad Industrial Group

Broad Industrial Group	North Lincolnshire	North East Lincolnshire	East Lindsey	West Lindsey	Yorkshire and the Humber	East Midlands	England and Wales
Agriculture, Forestry & Fishing	1.2%	0.2%	4.7%	5.6%	0.6%	1.1%	0.7%
Mining, Quarrying & Utilities	1.7%	1.4%	1.4%	1.5%	1.3%	1.4%	1.2%

Broad Industrial Group	North Lincolnshire	North East Lincolnshire	East Lindsey	West Lindsey	Yorkshire and the Humber	East Midlands	England and Wales
Manufacturing	24.7%	16.7%	9.3%	13.0%	11.4%	12.3%	7.7%
Construction	8.2%	4.5%	4.1%	7.4%	5.2%	4.5%	4.7%
Motor Trades	2.7%	3.0%	1.9%	1.9%	2.0%	2.1%	1.8%
Wholesale	2.7%	3.0%	4.1%	4.6%	4.0%	5.1%	3.9%
Retail	8.2%	9.1%	11.6%	13.0%	8.8%	9.1%	9.3%
Transport and Storage	8.2%	7.6%	2.9%	3.7%	5.3%	7.1%	5.2%
Accommodation and Food Services	4.8%	6.1%	18.6%	5.6%	6.3%	6.3%	7.1%
Information and Communication	0.7%	0.7%	1.2%	1.9%	2.7%	3.1%	4.6%
Financial and Insurance	0.6%	0.9%	0.5%	0.5%	2.9%	1.7%	3.5%
Property	1.0%	1.2%	1.6%	2.6%	1.5%	1.8%	1.8%
Professional, Scientific and Technical	3.4%	4.5%	3.5%	5.6%	6.8%	7.2%	9.0%
Business Administration and Support Services	6.8%	7.6%	5.2%	4.6%	9.6%	7.1%	8.9%
Public Administration and Defence	3.4%	2.3%	2.9%	4.6%	4.6%	3.9%	4.2%
Education	6.8%	9.1%	9.3%	9.3%	9.6%	9.2%	9.0%
Health	12.3%	18.2%	11.6%	11.1%	13.7%	13.3%	13.2%
Arts, Entertainment, Recreation and Other Services	2.7%	3.4%	7.0%	3.7%	3.9%	3.7%	4.2%

Source: ONS, (2022), Business Register and Employment Survey (2020) (0)

16.5.23 **Table 16-7** shows that 'Manufacturing' is the most significant industrial group, in terms of the number of jobs it accounts for, in North Lincolnshire (24.7%), and the joint most significant in West Lindsey with 'Retail' (13.0%). 'Manufacturing' also accounts for a significant proportion of jobs in North East Lincolnshire (16.7%). In comparison, 'Manufacturing' accounts for a lower proportion of jobs in Yorkshire and the Humber (11.4%), the East Midlands (12.3%), and England and Wales (7.7%) (Ref 16-19).

16.5.24 In East Lindsey, the most significant industrial group is 'Accommodation and Food Services' (18.6%). In North East Lincolnshire, the most significant industrial group is 'Health' (18.2%), as is the case in Yorkshire and the Humber (13.7%), the East Midlands (13.3%), and England and Wales (13.2%) (Ref 16-19).

16.5.25 Employment in ‘Construction’ accounts for 8.4% of jobs in North Lincolnshire, 4.5% of jobs in North East Lincolnshire, 4.1% of jobs in East Lindsey, and 7.4% of jobs in West Lindsey. In comparison, ‘Construction’ accounts for 5.2% of jobs in Yorkshire and the Humber, 4.5% of jobs in the East Midlands, and 4.7% of jobs in England and Wales (0). Within the four local authority areas passed through by the Project, there are approximately 36,500 jobs in the construction sector (Ref 16-19).

Deprivation

16.5.26 The Department for Levelling Up, Housing & Communities (previously the Ministry of Housing, Communities and Local Government) publishes data at the Lower Layer Super Output Area (LSOA) level ranking relative deprivation across England² (Ref 16-20). In 2019, North East Lincolnshire and East Lindsey ranked as the 29th and 39th (out of the 316 local authorities in England) most deprived local authorities (where 1st is the most deprived) respectively. In the same year, North Lincolnshire and West Lindsey ranked as the 115th and 136th most deprived local authorities respectively, showing they are relatively less deprived.

16.5.27 **Table 16-8** shows the proportion of LSOAs in the local authority classified by percentile of relative deprivation, where the top percentile represents the most deprived in England.

16.5.28 As shown in **Table 16-8**, in Yorkshire and the Humber and the East Midlands 19% and 8% of LSOAs respectively are amongst the 10% most deprived in England. In North Lincolnshire (11%) and West Lindsey (8%), the proportion of LSOAs in the 10% most deprived in England is similar to each local authorities’ respective regional proportion. In North East Lincolnshire (30%) and East Lindsey (16%), the proportion of LSOAs in the 10% most deprived in England is higher than each local authorities’ respective regional proportion.

16.5.29 The majority of LSOAs in North Lincolnshire (51%), North East Lincolnshire (63%), East Lindsey (75%), and Yorkshire and the Humber (56%) are in the top 50% most deprived in England, whereas 46% of LSOAs in West Lindsey and 47% of LSOAs the East Midlands are in the top 50% most deprived in England.

Table 16-8: Deprivation

IMD Percentile	Percentage of LSOAs in each percentile						Relative deprivation
	North Lincolnshire	North East Lincolnshire	East Lindsey	West Lindsey	Yorkshire and the Humber	East Midlands	
Top 10%	11%	30%	16%	8%	19%	8%	Most deprived
10 to 20%	9%	8%	20%	10%	11%	10%	↑
20 to 30%	8%	12%	16%	6%	10%	10%	
30 to 40%	9%	8%	17%	10%	8%	9%	
40 to 50%	14%	6%	6%	14%	8%	9%	

² The extent of deprivation is measured by the 2019 English Indices of Deprivation. It provides a set of relative measures of deprivation for Lower Super Output Areas (LSOAs) across England. These statistics provide a measure of ‘relative deprivation’, not affluence. As such, it is important to recognise that not every person in a highly deprived area will themselves be deprived and likewise, that there will be some deprived people living in the least deprived areas.

IMD Percentile	Percentage of LSOAs in each percentile						Relative deprivation
	North Lincolnshire	North East Lincolnshire	East Lindsey	West Lindsey	Yorkshire and the Humber	East Midlands	
50 to 60%	11%	5%	6%	14%	9%	10%	↓
60 to 70%	15%	12%	10%	12%	10%	10%	
70 to 80%	11%	7%	4%	8%	9%	12%	
80 to 90%	10%	10%	5%	15%	8%	12%	
Bottom 10%	3%	3%	0%	6%	8%	11%	

Source: MHCLG (2020), English Indices of Deprivation (2019) (Ref 16-20)

Section 1 – Immingham to A180

Overview

16.5.30 Section 1 describes the portion of the Project between the Pipeline Offtake Facility near South Killingholme and the town of Immingham. This portion is within North Lincolnshire and North East Lincolnshire. Section 1 consists primarily of agricultural land and is traversed by public footpaths, local access roads and two major roads. Within this section, receptors are described as they are found within the Study Area following a transect from the Pipeline Offtake Facility southwards.

Recreational Routes and PRowS

16.5.31 The PRowS which intersect the Project are identified on **Figure 3-20** in *Chapter 3: The Viking CCS Pipeline*. Two PRowS, serving South Killingholme, Immingham and Habrough, traverse Section 1 and there are also a number of other PRowS outside of, but close to, the Draft Order Limits.

16.5.32 The Draft Order Limits are also within the proposed Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge.

Community Severance

16.5.33 **Table 16-9** shows the community facilities and social infrastructure within the Study Area (i.e. within 1km of the Draft Order Limits) in Section 1. **Table 16-10** shows the community facilities considered in the wider area where access to these facilities for residents of communities in the Study Area may be impacted by the Project. There are no community facilities within the Draft Order Limits in Section 1.

Table 16-9: Community Facilities within the Study Area (Section 1)

Settlement	Type	Details
Immingham	Primary Schools	Coomb Briggs Primary School

Table 16-10: Community Facilities in the Wider Area (Section 1)

Settlement	Type	Details
South Killingholme	Primary Schools	Killingholme Primary School
	GP Surgeries	The Killingholme Surgery
Immingham	Primary Schools	Allerton Primary School Eastfield Primary Academy The Canon Peter Hall Church of England Primary School
	Secondary Schools	Oasis Academy
	GP Surgeries	Pilgrim Primary Care Centre
	Libraries	Immingham Library

Private Assets

Residential Properties

16.5.34 There are no residential properties within Draft Order Limits in Section 1, however, there are a number of rural properties and farmhouses, with associated agricultural buildings, in the Study Area. The residential properties closest to the Draft Order Limits are on Immingham Road (B1210), near the junction with Mill Lane, approximately 50m from the Draft Order Limits. The large residential settlement of Immingham is approximately 1km south east of the Draft Order Limits.

Business Premises

16.5.35 There are a number of industrial buildings within the Study Area in Section 1, adjacent to the Pipeline Offtake Facility, which it is assumed are occupied or utilised by local businesses. There are also a number of business premises serving agricultural, commercial and tourism purposes in close proximity to the Study Area.

Community Facilities

16.5.36 In addition to the community facilities listed in **Table 16-9**, Bert Boyden Community Centre is located in Immingham, approximately 2km south east of the Draft Order Limits.

Visitor Attractions

16.5.37 There are no visitor attractions within the Draft Order Limits in Section 1. Immingham skate park is located approximately 0.5km south of the Draft Order Limits. There are also a number of business premises serving tourism purposes in the Study Area.

Open Space

16.5.38 Within the Study Area in Section 1 is a former golf course and an area of woodland however at this stage it is not clear whether these open spaces are publicly accessible. As such, potential impacts on these receptors will be assessed to ensure a worst-case assessment is undertaken. Other open spaces in the Study Area in Section 1 are located within Immingham.

Development Land

16.5.39 North of the Offtake Site at Killingholme and the existing Immingham Port is a local plan allocation (SS10) for a 900ha strategic employment site. As the pipeline travels south, there are a number of residential site allocations east of the Draft Order Limits in Immingham, these are HOU002, HOU006, and HOU233.

Section 2 – A180 to A46

Overview

16.5.40 Section 2 describes the portion of the Project between the town of Immingham and the village of Laceby. This portion is within North East Lincolnshire and West Lindsey. Section 2 consists primarily of agricultural land and is traversed by public footpaths, local access roads and three major roads. Within this section, receptors are described as they are found within the Study Area following a transect from the town of Immingham southwards.

Recreational Routes and PRowS

16.5.41 The PRowS which intersect the Project are identified on **Figure 3-20** in *Chapter 3: The Viking CCS Pipeline*. Five PRowS, serving Harbrough, Stallingborough, Keelby, Laceby, and Irby upon Humber, traverse Section 2. There are also a number of other PRowS outside of, but close to, the Draft Order Limits in Section 2.

16.5.42 The Draft Order Limits are also within the proposed Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge.

Community Severance

16.5.43 There are no community facilities and social infrastructure within the Study Area (i.e. within 1km of the Draft Order Limits) in Section 2. **Table 16-11** shows the community facilities considered in the wider area where access to these facilities for residents of communities in the Study Area may be impacted by the Project. There are no community facilities within the Draft Order Limits in Section 2.

Table 16-11: Community Facilities in the Wider Area (Section 2)

Settlement	Type	Details
Laceby	Primary Schools	<ul style="list-style-type: none"> Stanford Junior and Infants School
Grimsby	Primary Schools	<ul style="list-style-type: none"> Littlecoates Primary School Macaulay Academy Ormiston South Parade Academy Strand Community School St Mary’s First and Middle School Weelsby Primary School Great Coates Primary School Wybers Wood Primary School Willows Primary School Laceby Acres Academy Western Primary School Grange Primary School Cambridge Park Academy Nunsthorpe Community School

Settlement	Type	Details
		<ul style="list-style-type: none"> • Woodlands Primary School • St James' School • St Martin's Preparatory School • Scartho Infant School • Lisle Marsden C Of E Primary Academy • Welholme Academy • Edward Heneage Primary School • Old Clee Primary Academy • Queen Mary Avenue Infant and Nursery School • William Barcroft Junior School • St Joseph's Roman Catholic Primary Voluntary Academy
	Secondary Schools	<ul style="list-style-type: none"> • John Whitgift Academy • Franklin College • The East Coast School of Art and Design • Ormiston Marine Academy • Grimsby Institute of Further and Higher Education • The Orchard School • St James School • Sevenhills Academy • Oasis Academy Wintringham • Linkage College • Havelock Academy
	Hospital	<ul style="list-style-type: none"> • Diana, Princess of Wales Hospital • St Hugh's Hospital
	GP Surgeries	<ul style="list-style-type: none"> • Stirling Medical Centre • Quayside Medical Centre • Weelsby View Health Centre • Birkwood Surgery • Cromwell Primary Care Centre • Church View Health Centre • Freshney Green Primary Care Centre • Little Coates Road Medical Surgery
	Libraries	<ul style="list-style-type: none"> • Grimsby Central Library

Private Assets

Residential Properties

16.5.44 There are no residential properties within the Draft Order Limits in Section 2, however, there are a number of rural properties and farmhouses, with associated agricultural buildings, in the Study Area. The residential properties closest to the Draft Order Limits are on Keelby Road, Stallingborough, approximately 50m from the Draft Order Limits. The villages of Aylesbury (0.5km east), and Laceby (1km east) are also located within the Study Area.

Business Premises

16.5.45 There are no business premises within the Draft Order Limits in Section 2. However, there are a number of business premises serving agricultural, commercial and tourism purposes in the Study Area.

Community Facilities

16.5.46 In addition to the community facilities listed in **Table 16-11**, West Marsh Community Centre, City Church Community Hall, Little Coates Community Centre, Scartho Village Community Centre, and St Hugh's Centre are located in Grimsby, approximately 4km east of the Draft Order Limits. There are no community centres in the nearby villages of Laceby or Aylesbury.

Visitor Attractions

16.5.47 There are no significant visitor attractions within the Study Area in Section 2. However, there are a number of business premises serving tourism purposes in the Study Area, in close proximity to the Draft Order Limits.

Open Space

16.5.48 Riby Park is located in the Study Area in Section 2, whilst other open spaces in the Study Area in Section 2 are located within Grimsby and Laceby. There are no open spaces within the Draft Order Limits in Section 2.

Development Land

16.5.49 There are two residential local plan site allocations in Laceby, these are HOU068A and HOU075A.

16.5.50 There is also a solar farm development planned approximately 250m east of the Draft Order Limits north of Aylesby (planning application reference DM/0899/21/FUL).

16.5.51 There are Mineral Safeguarding Areas in the Study Area along Section 2.

Section 3 – A46 to Pear Tree Lane

Overview

16.5.52 Section 3 describes the portion of the Project between the village of Laceby and the village of Ludborough. This portion is within North East Lincolnshire and East Lindsey. Section 3 consists primarily of agricultural land and is traversed by public footpaths, local access roads and two major roads. Within this section, receptors are described as they are found within the Study Area following a transect from the village of Laceby south-eastwards.

Recreational Routes and PRowS

16.5.53 The PRowS which intersect the Project are identified on **Figure 3-20** in *Chapter 3: The Viking CCS Pipeline*. Seven PRowS and NCN route 110, serving Irby upon Humber, Barnoldby le Beck, Brigsley, Ashby cum Fenby, and North Thoresby, traverse Section 3. There are also a number of other PRowS outside of, but close to, the Draft Order Limits in Section 3.

16.5.54 The Draft Order Limits are also within the proposed Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge.

Community Severance

16.5.55 There are no primary schools, secondary schools, GP surgeries, hospitals, or libraries in the villages within the Draft Order Limits or the Study Area in Section 3.

Private Assets

Residential Properties

16.5.56 There are no residential properties within the Draft Order Limits in Section 3, however, there are a number of rural properties and farmhouses, with associated agricultural buildings, in the Study Area. The residential properties closest to the Draft Order Limits are at Moorhouse Farm, Ashby cum Fenby, approximately 50m from the Draft Order Limits. The villages of Irby upon Humber (0.5km west), Barnoldby le Beck (0.5km north east), Brigsley (0.5km north east), Ashby cum Fenby (0.5km east), and Ludborough (1km west) are also located in the Study Area.

Business Premises

16.5.57 There are no business premises within the Draft Order Limits in Section 3. However, there are a number of business premises serving agricultural, commercial and tourism purposes in the Study Area.

Community Facilities

16.5.58 There are no additional community facilities within the Study Area.

Visitor Attractions

16.5.59 There are no visitor attractions within the Draft Order Limits in Section 3. Beelsby Model Flying Club is located approximately 1km west of the Draft Order Limits and Lincolnshire Wolds Railway (Ludborough) is located approximately 0.5km east of the Draft Order Limits. There are a number of other business premises serving tourism purposes in the Study Area.

Open Space

16.5.60 There are no open spaces within the Draft Order Limits in Section 3. All open spaces in the Study Area in Section 3 are located within the villages of Irby upon Humber, Barnoldby le Beck, Brigsley, Ashby cum Fenby, and Ludborough.

Development Land

16.5.61 North Thoresby contains a number of residential local plan site allocations, these are NTH307, NTH308, and NTH313.

16.5.62 There is also a solar farm development planned approximately 650m east of the Draft Order Limits, at Manor Farm in Laceby (planning application reference DM/0174/15/FUL).

16.5.63 There are Mineral Safeguarding Areas in the Study Area along Section 3.

Section 4 – Pear Tree Lane to B1200

Overview

16.5.64 Section 4 describes the portion of the Project between the village of Ludborough and the village of Grimoldby. This portion is wholly within East Lindsey. Section 4 consists primarily of agricultural land and is traversed by public footpaths and local access roads. Within this section receptors are described as they are found within the Study Area following a transect from the village of Ludborough south-eastwards.

Recreational Routes and PRowS

16.5.65 The PRowS which intersect the Project are identified on **Figure 3-20** in *Chapter 3: The Viking CCS Pipeline*. Five PRowS, serving Covenham St Bartholomew, Covenham St Mary, Little Grimsby, Alvingham, North Cockerington, and Louth, traverse Section 4. There are also a number of other PRowS outside of, but close to, the Draft Order Limits in Section 4.

16.5.66 The Draft Order Limits are also within the proposed Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge.

Community Severance

16.5.67 **Table 16-12** shows the community facilities and social infrastructure within the Study Area (i.e. within 1km of the Draft Order Limits) in Section 4. Community facilities in Louth are also noted in **Table 16-13**, as residents of communities in the Study Area may utilise these facilities and access may be impacted by the Project. There are no community facilities within the Draft Order Limits in Section 4.

Table 16-12: Community Facilities within the Study Area (Section 4)

Settlement	Type	Details
Alvingham	Primary Schools	<ul style="list-style-type: none"> Puddleducks Pre-school
North Cockerington	Primary Schools	<ul style="list-style-type: none"> North Cockerington Church of England Primary School

Table 16-13: Community Facilities in the Wider Area (Section 4)

Settlement	Type	Details
Louth	Primary Schools	<ul style="list-style-type: none"> Greenwich House Independent School Louth Kidgate Primary School St Michael's Church of England School Lacey Gardens Junior School Louth Eastfield Infants' and Nursery School St Bernard's School
	Secondary Schools	<ul style="list-style-type: none"> Louth Academy St Bernard's School
	Hospital	<ul style="list-style-type: none"> County Hospital Louth
	GP Surgeries	<ul style="list-style-type: none"> James Street Surgery Newmarket Medical Practice
	Libraries	<ul style="list-style-type: none"> Louth Library

Private Assets

Residential Properties

16.5.68 There are no residential properties within the Draft Order Limits in Section 4, however, there are a number of rural properties and agricultural buildings in the Study Area. The residential properties closest to the Draft Order Limits are in North Cockerington, near the junction between Louth Road and School Lane, approximately 25m from the Draft Order Limits. The villages of Alvingham (0.5km north east) and South Cockerington (0.5km south) are also located in the Study Area. The larger town of Louth is approximately 3km south west of the Draft Order Limits.

Business Premises

16.5.69 There are no business premises within the Draft Order Limits in Section 4. However, there are a number of business premises serving agricultural, commercial and tourism purposes in the Study Area.

Community Facilities

16.5.70 In addition to the community facilities listed in **Table 16-12**, Welbeck Way Community Centre is located in Louth, approximately 3km south west of the Draft Order Limits.

Visitor Attractions

16.5.71 There are no visitor attractions within the Draft Order Limits in Section 4. Rushmoor Farm Park is located approximately 0.5km south of the Draft Order Limits in Section 4. There are also a number of business premises serving tourism purposes in the Study Area.

Open Space

16.5.72 All open spaces in the Study Area in Section 4 are located within settlements, including Louth. There are no open spaces within the Draft Order Limits in Section 4.

Development Land

16.5.73 There is a solar development planned approximately 150m east of the Draft Order Limits at Little Beck Farm in Yarburgh (planning application reference N/218/00928/14).

Section 5 – B1200 to reception facility at Theddlethorpe

Overview

16.5.74 Section 5 describes the portion of the Project between the village of Grimoldby and the Reception Facility for the Onshore and Offshore pipeline tie-in and outlet, at Theddlethorpe. This portion is wholly within East Lindsey. Section 5 consists primarily of agricultural land and is traversed by public footpaths and local access roads. Within this section receptors are described as they are found within the Study Area following a transect from the village of Grimoldby eastwards.

Recreational Routes and PRowS

16.5.75 The PRowS which intersect the Project are identified on **Figure 3-20** in *Chapter 3: The Viking CCS Pipeline*. Three PRowS, serving Gayton le Marsh, Theddlethorpe All Saints, Theddlethorpe St Helen, and Mablethorpe, traverse Section 5. There are also a number of other PRowS outside of, but close to, the Draft Order Limits in Section 5.

16.5.76 The Draft Order Limits are also within the proposed Protected Landscape Impact Risk Zone of the English Coastal Path – Mablethorpe to Humber Bridge.

Community Severance

16.5.77 **Table 16-14** shows the community facilities and social infrastructure within the Study Area (i.e. within 1km of the Draft Order Limits) in Section 5.

16.5.78 **Table 16-15** shows the community facilities considered in the wider area where access to these facilities for residents of communities in the Study Area may be impacted by the Project. There are no community facilities within the Draft Order Limits in Section 5.

Table 16-14: Community Facilities within the Study Area (Section 5)

Settlement	Type	Details
Theddlethorpe All Saints	Primary Schools	<ul style="list-style-type: none"> Theddlethorpe Academy

Table 16-15: Community Facilities in the Wider Area (Section 5)

Settlement	Type	Details
Mablethorpe	Primary Schools	<ul style="list-style-type: none"> Mablethorpe Primary Academy
	Secondary Schools	<ul style="list-style-type: none"> The Mablethorpe Tennyson High School
	GP Surgeries	<ul style="list-style-type: none"> The Marisco Medical Practice
	Libraries	<ul style="list-style-type: none"> Mablethorpe Library

Private Assets

Residential Properties

16.5.79 There is one residential property and one agricultural building within the Draft Order Limits in Section 5, as well as a number of rural properties and agricultural buildings in the Study Area. The villages of Theddlethorpe All Saints (0.5km north) and Theddlethorpe St Helen (1km north) are located within the Study Area. The town of Mablethorpe is also within the Study Area, adjacent to the south of the Draft Order Limits at the Reception Facility at Theddlethorpe.

Business Premises

16.5.80 There are no business premises within the Draft Order Limits in Section 5. However, there are a number of business premises serving agricultural, commercial and tourism purposes in the Study Area.

16.5.81 The town of Mablethorpe includes a variety of businesses such as supermarkets, retail, hot-food takeaways, public houses and accommodation facilities. In addition, within Mablethorpe, premises include vehicle repair shops and a pharmaceutical company.

16.5.82 DMJ Drainage, Golden Sands Holiday Park and Swallow Park caravan site are located in close proximity to the Reception Facility for the Onshore and Offshore pipeline tie-in and outlet, at Theddlethorpe.

Community Facilities

16.5.83 In addition to the community facilities listed in **Table 16-14**, Theddlethorpe Village Hall is located within the Study Area. Also, Linkage Community Support Centre and Community Hall Mablethorpe are located in Mablethorpe, both approximately 2.5km south of the Draft Order Limits.

Visitor Attractions

16.5.84 There are no visitor attractions within the Draft Order Limits in Section 5. Gayton Engine Pumping Station is located approximately 0.5km north of the Draft Order Limits. There are also a number of businesses serving tourism purposes in the Study Area.

Open Space

16.5.85 All open spaces in the Study Area in Section 5 are located within settlements, including Mablethorpe. There are no open spaces within the Draft Limits in Section 5.

Development Land

16.5.86 There is an onshore wind farm development planned in close proximity to the Draft Order Limits in Section 5 (planning application reference N/063/01534/15).

Planned Surveys

16.5.87 No surveys are proposed as part of the socio-economic assessment, with the study being desk-based. Should a subsequent survey need arise, details will be included within the ES. It is important to note however, that information gathered during the non-statutory and statutory consultation events will be used as appropriate to help inform the scope of the assessment.

16.6 Mitigation

Embedded Mitigation

16.6.1 EIA is an iterative process which informs the development of a project's design. Where the outputs of the preliminary assessment identify likely significant effects changes to the design can be made or mitigation measures can be built-in to the proposal to reduce these effects.

16.6.2 This type of mitigation is defined as embedded mitigation, as mitigation measures which have been identified and adopted as part of the evolution of the Project's design ("embedded" into the Project's design).

16.6.3 The design of the Project will be further developed to reflect the findings of ongoing environmental studies, comments raised during this statutory consultation and ongoing engagement with stakeholders. As the design develops, the embedded mitigation measures will also be refined as part of an iterative process.

Additional Mitigation

16.6.4 A Preliminary Draft Construction Environmental Management Plan (CEMP) has been prepared as part of this PEIR and can be found in *PEIR Volume IV - Appendix 3.1*. This sets out the preliminary additional and enhancement mitigation measures identified in this preliminary assessment of significant effects. This section summarises the types of mitigation measures that will be considered to mitigate against the effects on socio-economic receptors where required. These measures should be adopted during the construction phase and will be refined and be developed as part of the construction assessment for the ES:

- *L1: All possible measures will be taken to avoid land take which adversely effects socio-economic receptors;*
- *L2: Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan; and*
- *L3: Harbour Energy would seek to develop links with education and employment establishments in the locality (for example, schools, colleges, local authorities, employment agencies, business groups) to investigate how the project could contribute directly or indirectly to maximising the economic and educational benefits of the Project for local people.*

16.6.5 A Public Right of Way Management Plan would be put in place. As stated in *Chapter 3: The Viking CCS Pipeline*, PRow's would only be temporarily diverted or closed to allow for construction works to be carried out safely. Where a PRow requires to be temporary diverted or closed, an alternative or new route will be identified.

16.6.6 The preliminary assessment is undertaken with the assumption that the embedded and additional mitigation measures are in place.

16.7 Preliminary Assessment of Effects

16.7.1 This section identifies the potential likely significant effects of the Project on socio-economic receptors.

Construction

16.7.2 This section considers potential likely significant effects during construction of the Project. It should be noted that impacts associated with the installation of the pipeline would be temporary in nature as it would be buried, with above ground infrastructure only located at either end of the pipeline and at block valve stations.

Table 16-16: Preliminary Socio-economics Assessment of the Construction Phase

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
Employment, Economic Growth and Training					
Employment	The creation of temporary employment opportunities, both directly at work sites and indirectly in the supply chain, during the construction phase of the Project.	Medium term	As in the Preliminary Draft CEMP (Appendix 3-1) Mitigation Register: <i>L3: Harbour Energy would seek to develop links with education and employment establishments in the locality (for example, schools, colleges, local authorities, employment agencies, business groups) to investigate how the project could contribute directly or indirectly to maximising the economic and educational benefits of the Project for local people.</i>	The construction period is expected to last 12 months. Therefore, the likely effects will be of a medium-term temporary nature. It is estimated that the Scheme will require an average of 127 gross full-time employment (FTE) construction jobs on-site per month during this construction period. The peak number of staff across the Scheme is forecast to occur in months four, five, six, and seven, with 250 staff per month. A full assessment of employment, economic growth, and training, accounting for leakage, displacement, and multiplier effects, will be presented in the ES however, the effect of the Project has the potential to be beneficial but Not Significant .	High – A full assessment of construction workers required has not been undertaken. However, this is likely to be a beneficial effect due to the nature of activities but not significant due to the scale of activities.
Economic Growth (GVA)	The gross value added (GVA) to businesses in the Study Area during the construction phase of the Project.				
Training	The creation of training and apprenticeships, including opportunities to upskill local residents during construction within the Study Area.				
Recreational Routes and PRowS					
Recreational Routes and PRowS	Potential likely significant impacts during construction of the Project would include	Medium term	As in the Preliminary Draft CEMP (Appendix 3-1) Mitigation Register:	PRowS would only be temporarily diverted or closed to allow for construction works to be	Low – A full assessment of the effects

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
	temporary land take and temporary disruption to PRow, walking and cycling routes resulting in severance or increased journey times to access community facilities.		<p><i>L2: Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</i></p> <p>A Public Right of Way Management Plan would be put in place.</p>	<p>carried out safely. Where a PRow requires to be temporary diverted or closed, an alternative or new route will be identified. Based on available information at this stage, the potential effect of the Project on recreational routes and PRows during the construction phase has the potential to be adverse but Not Significant.</p>	<p>of the Project on users of these recreational routes and PRows has not been undertaken.</p>
Community Severance					
Community Severance	The construction of the Project has the potential to cause likely significant effects on accessibility (both directly and indirectly) or result in severance for communities and people when accessing community facilities and social infrastructure.	Medium term	<p>As in the Preliminary Draft CEMP (Appendix 3-1) Mitigation Register:</p> <p><i>L2: Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</i></p> <p>A Public Right of Way Management Plan would be put in place.</p>	<p><i>Chapter 12: Traffic and Transport.</i> sets out a preliminary assessment of construction and employee traffic, and identifies potential significant adverse effects on one receptor, with all other effects not significant. PRows would only be temporarily diverted or closed to allow for construction works to be carried out safely; where a PRow requires to be temporary diverted or closed, an alternative or new route will be identified. On this basis, the effect of the Project on community severance during</p>	<p>Low – Based on the preliminary assessment presented in <i>Chapter 12: Traffic and Transport.</i></p>

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
				construction has the potential to be adverse but Not Significant .	
Private Assets					
Land Take	<p>Identified potential likely significant effects on residential properties, business premises, community facilities, visitor attractions and open space during construction include:</p> <ul style="list-style-type: none"> temporary loss of open space, such as at Immingham; temporary land take during installation of underground pipeline, shutdown valves and the use of a temporary construction compounds; potential for noise and vibration, air quality and visual effects arising from construction activities associated with the construction of the 	Medium term	<p>As in the Preliminary Draft CEMP (Appendix 3-1) Mitigation Register: <i>L3: Harbour Energy will take all possible measures to avoid land take which adversely effects socio-economic receptors; and inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</i></p>	Private assets in Section 1 and Section 5 fall within the Draft Order Limits. Based on information currently available, the effect of the Project on private assets due to land take during construction has the potential to be adverse but Not Significant .	Moderate – Any private assets that fall within the Draft Order Limits have been identified but it is not yet clear how these private assets will be impacted.
Amenity Value			<p>Mitigation measures outlined in <i>Chapter 7: Landscape and Visual Amenity, Chapter 13: Noise and Vibration</i> and <i>Chapter 14: Air Quality</i> will minimise potential for noise and vibration, air quality and visual effects arising from construction activities associated with the construction of the Project to impact on the</p>	<p>A full assessment of amenity impacts, arising from noise and vibration; air quality; and landscape and visual impacts has not been undertaken on which to base a conclusion. However, the effect of the Project on private assets due to amenity impacts during construction has the potential to be adverse and Significant.</p>	Low – Based on the preliminary assessments presented in <i>Chapter 7: Landscape and Visual Amenity, Chapter 13: Noise and Vibration</i> and <i>Chapter</i>

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
	Project to impact on the amenity of residential properties, business premises, community facilities, visitor attractions and open space;		amenity of residential properties, business premises, community facilities, visitor attractions and open space.		<i>14: Air Quality.</i>
Community Severance	<ul style="list-style-type: none"> • potential temporary disruption of access to residences during and after construction; and • potential temporary disruption of access to visitor attractions or open space leading to impact on residents' physical activity and health. 		<p>As in the Preliminary Draft CEMP (Appendix 3-1) Mitigation Register: <i>L2: Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</i></p> <p>A Public Right of Way Management Plan would be put in place.</p>	<p><i>Chapter 12: Traffic and Transport</i> sets out a preliminary assessment of construction and employee traffic, and identifies potential significant adverse effects on one receptor, with all other effects not significant. PRoWs would only be temporarily diverted or closed to allow for construction works to be carried out safely; where a PRoW requires to be temporarily diverted or closed, an alternative or new route will be identified.. On this basis, the effect of the Project on community severance of private assets during construction has the potential to be adverse but Not Significant.</p>	Low - Based on the preliminary assessment presented in <i>Chapter 12: Traffic and Transport</i> .
Development Land					
Development Land	Potential likely significant effects on development land at housing and employment	<u>Medium term</u>	Harbour Energy will inform local businesses / residents of proposed	Whilst there are areas of development land in close proximity to the Draft Order	Moderate – Any development

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
	<p>site allocations during construction are identified as severance or disruption to access during construction.</p>		<p>works as set out in the stakeholder engagement plan.</p>	<p>Limits, no areas of development land would be affected by temporary or permanent land take associated with the Project. Some developments may experience temporary access restrictions, but No Significant effects are anticipated.</p>	<p>land within the Study Area has been identified but its not possible to say for certain there will be no impacts.</p>

Employment, Economic Growth and Training

16.7.3 Construction phase employment and spend have the potential to cause likely significant effects on the population and businesses within the Study Area. These would include:

- temporary employment opportunities, both directly at work sites and indirectly in the supply chain, during the construction phase of the Project;
- gross value added (GVA) to businesses in the Study Area during the construction phase of the Project; and
- creation of training and apprenticeships, including opportunities to upskill local residents during construction within the Study Area.

16.7.4 No preliminary assessment of construction workers required during the construction phase has been undertaken. However, the effect of the Project on employment, economic growth and training during construction is likely to be **temporary beneficial** and **significant**.

Recreational Routes and PRowS

16.7.5 Potential likely significant impacts during construction of the Project would include temporary land take and temporary disruption to PRow, walking and cycling routes resulting in severance or increased journey times to access community facilities. The permanent closure of PRowS, NCN or other recreational routes is deemed avoidable; therefore, no permanent significant impacts on PRowS, NCN or other recreational routes are likely.

16.7.6 Disruption to PRowS, NCN or other recreational routes during construction would be avoided as far as possible. Suitable diversions would be agreed with North Lincolnshire Council, North East Lincolnshire Council, East Lindsey District Council, West Lindsey District Council, and Lincolnshire County Council and implemented where temporary closures are required.

16.7.7 The Project would have a potential direct impact on the following recreational routes and PRowS, shown in **Table 16-17**.

Table 16-17: Recreational Routes and PRowS Directly Impacted by the Project

Section	Route	Impact
Section 1 – Pipeline Offtake Facility to Immingham	PRow 94 (footpath)	PRowS would only be closed or temporarily diverted in agreement with the relevant local authority when construction work is being completed in the vicinity. Where a PRow needs to be temporarily diverted or closed, an alternative or new route will be identified. Initial details of PRow closures and diversions can be found in <i>Chapter 3: The Viking CCS Pipeline</i> .
	PRow 92 (footpath)	
Section 2 – Immingham to Laceby	PRow 86 (footpath)	
	PRow 85 (footpath)	
	PRow 106 (footpath)	
	PRow 115 (bridleway)	
Section 3 – Laceby to Ludborough	PRow 114 (footpath)	
	PRow 16 (bridleway)	
	PRow 122 (footpath)	
	NCN Route 110	
	PRow 138 (footpath)	
	PRow 147 (footpath)	
	PRow 149 (footpath)	

Section	Route	Impact
	PRoW 41 (bridleway)	
	PRoW 113 (bridleway)	
Section 4 – Ludborough to Grimoldby	PRoW 83 (bridleway)	
	PRoW 77 (bridleway)	
	PRoW 343 (footpath)	
	PRoW 67 (bridleway)	
	PRoW 68 (footpath)	
Section 5 – Grimoldby to Landfall	PRoW 193 (footpath)	
	PRoW 250 (footpath)	
	PRoW 249 (footpath)	

16.7.8 A full assessment of the effects of the Project on users of these recreational routes and PRoWs will be undertaken and reported in the ES. The effect of the Project on recreational routes and PRoWs during the construction phase is preliminarily assessed to be **temporary adverse** but **not significant**.

Community Severance

16.7.9 The construction of the Project has the potential to cause likely significant effects on accessibility (both directly and indirectly) or result in severance for communities and people when accessing community facilities and social infrastructure.

16.7.10 Direct severance effects, as a result of potential road and PRoW closures, may impact:

- Residents of Habrough accessing community facilities in Immingham;
- Residents of Irby upon Humber accessing community facilities in Laceby and Grimsby;
- Residents of Ashby cum Fenby;
- Residents of Ludborough accessing community facilities in North Thoresby;
- Residents of Alvingham and North Cockerington accessing community facilities in Louth; and
- Residents of Theddlethorpe All Saints and Theddlethorpe St Helen accessing community facilities in Mablethorpe.

16.7.11 However, the majority of road closures are deemed avoidable for the Project with only a small number of road closures likely to be required during construction. Any PRoW closures would be temporary with appropriate diversions provided.

16.7.12 Indirect severance effects, resulting from construction traffic, may impact residents from all communities within the Study Area (i.e. within 1km of the Draft Order Limits) with respect to accessing community facilities. *Chapter 12: Traffic and Transport* sets out a preliminary assessment of construction and employee traffic, and identifies potential significant adverse effects on one receptor, with all other effects not significant.

16.7.13 Based on information currently available, the effect of the Project on community severance during construction has potential to be **temporary adverse** but **not significant**.

Private Assets

- 16.7.14 Identified potential likely significant effects on residential properties, business premises, community facilities, visitor attractions and open space during construction include:
- temporary loss of open space, such as at Immingham;
 - temporary land take during installation of underground pipeline, shutdown valves and the use of a temporary construction compound;
 - potential for noise and vibration, air quality and visual effects arising from construction activities associated with the construction of the Project to impact on the amenity of residential properties, business premises, community facilities, visitor attractions and open space;
 - potential temporary disruption of access to residences during and after construction; and
 - potential temporary disruption of access to visitor attractions or open space leading to impact on residents' physical activity and health.
- 16.7.15 The Project has the potential to impact on land required temporarily and/or permanently that is used for residential properties, business premises, community facilities, visitor attractions and open space. Land required temporarily is due to construction works and will be returned to the landowner and permanent land take is relation to above ground installations (AGIs) along the Project.
- 16.7.16 During construction of the Project, there is the potential for a change in amenity value of residential properties, business premises, community facilities, visitor attractions and open space, due to noise and vibration and air quality impacts resulting from the construction of the Project and the associated construction traffic.
- 16.7.17 During construction, there is also the potential for journey times and access, to residential properties, business premises, community facilities, visitor attractions and open space, to be temporarily affected by an increase in the number of HGVs or employee vehicles on the road and temporary traffic management at certain locations. There is also the potential for direct severance impacts, on residential properties, business premises, community facilities, visitor attractions and open space, due to temporary road closures and diversions during the construction of the Project.
- 16.7.18 **Section 1 – Pipeline Offtake Facility to Immingham** describes the portion of the Project between the Pipeline Offtake Facility near Killingholme and the town of Immingham. Section 1 consists primarily of agricultural land, mostly avoiding private properties and open spaces. However, a number of existing industrial buildings and an area of woodland, which may be publicly accessible, fall within the Draft Order Limits. There is potential for likely significant effects on these assets to arise from temporary land take during construction and/or permanent land take as a result of AGIs.
- 16.7.19 Residential properties, business premises, community facilities, visitor attractions and open space in South Killingholme, Immingham and Harbrough, as identified in **Section 16.5**, may be impacted by potential likely significant effects on amenity value arising from noise and vibration; air quality; and landscape and visual impacts.
- 16.7.20 Residential properties, business premises, community facilities, visitor attractions and open space in South Killingholme, Immingham and Harbrough, as identified in **Section 16.5**, may also be impacted by potential likely significant effects on accessibility arising from construction traffic and temporary road closures and diversions.

- 16.7.21 **Section 2 – Immingham to Laceby** describes the portion of the Project between the town of Immingham and the village of Laceby. Section 2 consists primarily of agricultural land, avoiding private properties and open spaces. There are no private assets within the Draft Order Limits in Section 2.
- 16.7.22 Residential properties, business premises, community facilities, and open space in Aylesbury and Laceby, as identified in **Section 16.5**, may be impacted by potential likely significant effects on amenity value arising from noise and vibration; air quality; and landscape and visual impacts.
- 16.7.23 Residential properties, business premises, community facilities, and open space in Aylesbury and Laceby, as identified in **Section 16.5**, may also be impacted by potential likely significant effects on accessibility arising from construction traffic and temporary road closures and diversions.
- 16.7.24 **Section 3 – Laceby to Ludborough** describes the portion of the Project between the village of Laceby and the village of Ludborough. Section 3 consists primarily of agricultural land, mostly avoiding private properties and open spaces.
- 16.7.25 Residential properties, business premises, community facilities, visitor attractions and open space in Irby upon Humber, Barnoldby le Beck, Briglsey, Ashby cum Fenby, and Ludborough, as identified in **Section 16.5**, may be impacted by potential likely significant effects on amenity value arising from noise and vibration; air quality; and landscape and visual effects. Lincolnshire Wolds AONB may be impacted by potential likely significant effects on amenity value.
- 16.7.26 Residential properties, business premises, community facilities, visitor attractions and open space in Irby upon Humber, Barnoldby le Beck, Briglsey, Ashby cum Fenby, and Ludborough, as identified in **Section 16.5**, may be impacted by potential likely significant effects on accessibility arising from construction traffic and temporary road closures and diversions.
- 16.7.27 **Section 4 – Ludborough to Grimoldby** describes the portion of the Project between the village of Ludborough and the village of Grimoldby. Section 4 consists primarily of agricultural land, avoiding private properties and open spaces. There are no private assets within the Draft Order Limits in Section 4.
- 16.7.28 Residential properties, business premises, community facilities, visitor attractions and open space in Alvingham, North Cockerington and South Cockerington, as identified in **Section 16.5**, may be impacted by potential likely significant effects on amenity value arising from noise and vibration; air quality; and construction traffic.
- 16.7.29 Residential properties, business premises, community facilities, visitor attractions and open space in Alvingham, North Cockerington and South Cockerington, as identified in **Section 16.5**, may be impacted by potential likely significant effects on accessibility arising from construction traffic and temporary road closures and diversions.
- 16.7.30 **Section 5 – Grimoldby to Landfall** describes the portion of the Project between the village of Grimoldby and the Reception Facility for the Onshore and Offshore pipeline tie-in and outlet, at Theddlethorpe. Section 5 consists primarily of agricultural land, mostly avoiding private properties and open spaces. However, there is one residential property and one farmhouse, with associated agricultural buildings, within the Draft Order Limits. There is potential for likely significant effects on these assets to arise from temporary land take during construction and/or permanent land take as a result of AGIs.
- 16.7.31 Residential properties, business premises, community facilities, visitor attractions and open space in Theddlethorpe All Saints, Theddlethorpe St Helen and Mablethorpe, as identified

in **Section 16.5**, may be impacted by potential likely significant effects on amenity value arising from noise and vibration; air quality; and landscape and visual impacts.

16.7.32 Residential properties, business premises, community facilities, visitor attractions and open space in Theddlethorpe All Saints, Theddlethorpe St Helen and Mablethorpe, as identified in **Section 16.5**, may be impacted by potential likely significant effects on accessibility arising from construction traffic and temporary road closures and diversions.

16.7.33 Private assets in Section 1 and Section 5 fall within the Draft Order Limits. The effect of the Project on private assets due to land take during construction has the potential to be **temporary adverse and significant**.

16.7.34 No preliminary assessment of amenity impacts, arising from noise and vibration; air quality; and landscape and visual effects, has been undertaken on which to base a conclusion. However, the effect of the Project on private assets due to amenity impacts during construction has the potential to be **temporary adverse and significant**.

16.7.35 *Chapter 12: Traffic and Transport* sets out a preliminary assessment of construction and employee traffic, and identifies potential significant adverse effects on one receptor, with all other effects not significant. PRoWs would only be temporarily diverted or closed to allow for construction works to be carried out safely; where a PRoW requires to be temporary diverted or closed, an alternative or new route will be identified. On the basis of information currently available, the effect of the Project on community severance of private assets during construction has the potential to be **temporary adverse but not significant**.

Development Land

16.7.36 Potential likely significant effects on development land at housing and employment site allocations during construction are identified as severance or disruption to access during construction.

16.7.37 In Section 1, north of the Offtake Site at Killingholme and the existing Immingham Port, is a local plan allocation (SS10) for 900ha of strategic employment site. There are also a number of solar farm developments planned in close proximity to the Project. These are in Section 2, adjacent to the Draft Order Limits north of Aylesby; in Section 3, 250m east of the Draft Order Limits at Manor Farm in Laceby; and in Section 4, 260m east of the Draft Order Limits at Little Beck Farm in Yarburgh. Additionally, there is an onshore wind farm development planned in close proximity to the Draft Order Limits in Section 5.

16.7.38 There are also a number of residential site allocations in close proximity to the Draft Order Limits along the length of the Project. These are presented in **Table 16-18**.

Table 16-18: Residential Site Allocations

Section	Location	Allocation	Description
Section 1 – Immingham Facility to A180	Immingham	HOU002	146 residential units. Under construction (DM/1175/17/FUL).
		HOU006	605 residential units. Planning permission granted (DM/0728/18/OUT).
		HOU233	7 residential units. Planning permission granted (DM/0167/17/OUT, DM/0113/21/REM).
	Laceby	HOU068A	100 residential units.

Section	Location	Allocation	Description
Section 2 – A180 to A46			Under Construction (DM/0335/14/OUT, DM/0422/16/REM).
		HOU075A	152 residential units. Planning permission granted (DM/1133/17/OUT).
Section 3 – A46 to Pear Tree Lane	North Thoresby	NTH307	10 residential units.
		NTH308	130-206 residential units. Awaiting decision (N/133/01413/21).
		NTH313	25 residential units. Planning permission granted (N/133/1980/14).
Section 4 – Pear Tree Lane to B1200	N/A	No residential site allocations	
Section 5 – B1200 to reception facility at Theddlethorpe			

16.7.39 Whilst all the above areas of development land are in close proximity to the Draft Order Limits, no areas of development land would be affected by temporary or permanent land take associated with the Project. Some developments may experience temporary access restrictions, but no likely significant effects are anticipated for development land and therefore the impact of the Project on development land during construction is likely to result in **no significant effects**. A full assessment will be undertaken and reported in the ES, taking into account any new or amended planning applications or allocations identified after the publication of the PEIR.

Decommissioning

16.7.40 This section considers potential likely significant effects during decommissioning of the Project. It should be noted that the decommissioning programme would be developed nearer the time, however the basic principles that would be followed are described in *Chapter 3: The Viking CCS Pipeline*. It is assumed that the pipeline would be left in-situ, and that Block Valves Stations and facilities at Immingham and Theddlethorpe would be removed.

Table 16-19: Preliminary Socio-economics Assessment of the Decommissioning Phase

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
Employment, Economic Growth and Training					
Employment	The creation of temporary employment opportunities, both directly at work sites and indirectly in the supply chain, during the decommissioning phase of the Project.	Medium term	Harbour Energy would seek to develop links with education and employment establishments in the locality (for example, schools, colleges, local authorities, employment agencies, business groups) to investigate how the project could contribute directly or indirectly to maximising the economic and educational benefits of the Project for local people.	As the decommissioning programme for the Project is not known at this stage, a full assessment of likely significant effects on employment, economic growth and training during the decommissioning phase has not been undertaken. However, the creation of jobs and generation of GVA is likely to be similar to the construction phase and, therefore, the effect of the Project on employment, economic growth and training during decommissioning has the potential to be beneficial but not significant .	Medium – The preliminary assessment of likely significant effects on employment, economic growth and training during the decommissioning phase has been based on the preliminary assessment of likely significant effects on employment, economic growth and training during the construction phase
Economic Growth	The gross value added (GVA) to businesses in the Study Area during the decommissioning phase of the Project.				
Training	The creation of training and apprenticeships, including opportunities to upskill local residents during decommissioning within the Study Area.				
Recreational Routes and PRowS					
Recreational Routes and PRowS	Potential likely significant impacts during decommissioning of the Project would include	Medium term	Harbour Energy will inform local businesses / residents of proposed works as set out in the	As the decommissioning programme for the Project is not known at this stage, a full assessment of likely significant	Low – A full assessment of the effects of the Project on users

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
	temporary land take and temporary disruption to PRow, walking and cycling routes resulting in severance or increased journey times to access community facilities.		stakeholder engagement plan.	effects on recreational routes and PRow has not been undertaken. However, the effect of the Project on recreational routes and PRow during the decommissioning phase is likely to be of lower magnitude than the effect during the construction phase and, therefore, has the potential to be adverse but not significant .	of these recreational routes and PRow has not been undertaken.
Community Severance					
Community Severance	The decommissioning of the Project has the potential to cause likely significant effects on accessibility (both directly and indirectly) or result in severance for communities and people when accessing community facilities and social infrastructure.	Medium Term	Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.	As the decommissioning programme for the Project is not known at this stage, a full assessment of likely significant effects on community severance has not been undertaken. However, the effect of the Project on community severance during decommissioning is likely to be of lower magnitude than the effect during the construction phase and, therefore, has the potential to be adverse but not significant .	Low – Based on the preliminary assessment presented in <i>Chapter 12: Traffic and Transport</i> .
Private Assets					

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
Land Take	<p>Identified potential likely significant effects on residential properties, business premises, community facilities, visitor attractions and open space during decommissioning include:</p> <ul style="list-style-type: none"> temporary loss of open space, such as at Immingham; temporary land take during decommissioning of underground pipeline, shutdown valves and the use of a temporary construction compound; 	Medium term	<p>Harbour Energy will take all possible measures to avoid land take which adversely effects socio-economic receptors; and inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</p>	<p>As the decommissioning programme for the Project is not known at this stage, it is not possible to identify all the private assets which could be impacted by land take during the decommissioning of the Project. However, private assets in Section 1 and Section 5 fall within the Draft Order Limits. Therefore, the effect of the Project on private assets due to land take during decommissioning has the potential to be adverse but not significant.</p>	<p>Low – Any private assets that fall within the Draft Order Limits have been identified but it is not yet clear how these private assets will be impacted.</p>
Amenity Value	<ul style="list-style-type: none"> potential for noise and vibration, air quality and visual effects arising from construction activities associated with the decommissioning of the Project to impact 		<p>Mitigation measures outlined in <i>Chapter 7: Landscape and Visual Amenity</i>, <i>Chapter 13: Noise and Vibration</i> and <i>Chapter 14: Air Quality</i> will minimise potential for noise and vibration, air quality and visual effects arising from construction activities associated with the construction of the Project to impact on the amenity of residential</p>	<p>As the decommissioning programme for the Project is not known at this stage, a full assessment of amenity impacts, arising from noise and vibration; air quality; traffic effects, has not been undertaken on which to base a conclusion. However, the effect of the Project on private assets due to amenity impacts during decommissioning is likely to be of lower magnitude than the effect during the construction</p>	<p>Low – Based on the preliminary assessments presented in <i>Chapter 7: Landscape and Visual Amenity</i>, <i>Chapter 13: Noise and Vibration</i> and <i>Chapter 14: Air Quality</i>.</p>

Receptor	Potential Impact	Duration	Mitigation/Enhancement	Likely significance of effect	Confidence in Prediction
	<p>on the amenity of residential properties, business premises, community facilities, visitor attractions and open space;</p>		<p>properties, business premises, community facilities, visitor attractions and open space.</p>	<p>phase and, therefore, has the potential to be adverse but not significant.</p>	
<p>Community Severance</p>	<ul style="list-style-type: none"> • potential temporary disruption of access to residences during and after decommissioning; and • potential temporary disruption of access to visitor attractions or open space leading to impact on residents' physical activity and health. 		<p>Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan.</p>	<p>As the decommissioning programme for the Project is not known at this stage, a full assessment of traffic impacts has not been undertaken to determine whether there will be a significant effect on community severance for private assets. Furthermore, at this stage, it is not possible to identify all the road closures and diversions that may be required during the decommissioning of the Project. However, the effect of the Project on community severance of private assets during decommissioning is likely to be of lower magnitude than the effect during the construction phase and, therefore, has the potential to be adverse but not significant.</p>	<p>Low - Based on the preliminary assessment presented in <i>Chapter 12: Traffic and Transport</i>.</p>

16.8 Summary and Next Steps

16.8.1 The information provided in this PEIR is preliminary; the final assessment of likely significant effects will be reported in the ES. This section describes the further work to be undertaken to support the health and wellbeing assessment presented in the ES.

Baseline

16.8.2 It is possible that updated versions of some of the datasets used in the PEIR will be published after Statutory Consultation. These will be reviewed to identify whether they provide a reliable update to the datasets used in each case, and actioned with an update where confirmed.

Assessment

16.8.3 No additional consultation is currently planned as part of the preparation of the Socio-economics chapter of the ES. However, engagement will be undertaken with stakeholders to supplement the desk-based analysis if any consultation responses to the PEIR indicate that such engagement would be useful and necessary.

16.8.4 The assessment will be updated at ES stage cross-referencing the findings from the relevant chapters on visual impacts (*Chapter 7: Landscape and Visual*), traffic (*Chapter 12: Traffic and Transport*), noise and vibration (*Chapter 13: Noise and Vibration*) air quality (*Chapter 14: Air Quality*).

Additional Mitigation and Enhancement Measures

16.8.5 To date, the following additional mitigation measures have been identified relating to socio-economics in the Preliminary Draft CEMP (*Volume IV Appendix 3.1*):

- *L1: Harbour Energy will take all possible measures to avoid land take which adversely effects socio-economic receptors;*
- *L2: Harbour Energy will inform local businesses / residents of proposed works as set out in the stakeholder engagement plan; and*
- *L3: Harbour Energy would seek to develop links with education and employment establishments in the locality (for example, schools, colleges, local authorities, employment agencies, business groups) to investigate how the project could contribute directly or indirectly to maximising the economic and educational benefits of the Project for local people.*

16.8.6 A Public Right of Way Management Plan would be put in place. As stated in *Chapter 3: Viking CCS Pipeline*, PRowS would only be temporarily diverted or closed to allow for construction works to be carried out safely. Where a PRow requires to be temporary diverted or closed, an alternative or new route will be identified.

16.8.7 If, following Statutory Consultation feedback, stakeholder engagement, further design refinement and detailed assessment, it is identified that further additional measures are required, these will be detailed as part of the ES.

16.9 References

- Ref 16-1** Ministry of Housing, Communities and Local Government (MHCLG), (2021); National Planning Policy Framework (NPPF).
- Ref 16-2** Department for Energy and Climate Change, (2011); Overarching National Policy Statement for Energy (EN-1).
- Ref 16-3** Department for Energy and Climate Change, (2011); National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).
- Ref 16-4** Department for Business, Energy and Industrial Strategy, (2021); Draft Overarching National Policy Statement for Energy (EN-1).
- Ref 16-5** Department for Business, Energy and Industrial Strategy, (2021); Draft National Policy Statement for Renewable Energy Infrastructure (EN-3).
- Ref 16-6** Department for Energy and Climate Change, (2021); Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).
- Ref 16-7** North East Lincolnshire Council, (2018); North East Lincolnshire Local Plan 2013 to 2032.
- Ref 16-8** North East Lincolnshire Council, (2021); Natural Assets Plan.
- Ref 16-9** North Lincolnshire Council, (2011); North Lincolnshire Core Strategy Local Plan.
- Ref 16-10** North Lincolnshire Council, (2021); North Lincolnshire Draft Local Plan 2020 to 2038.
- Ref 16-11** East Lindsey District Council, (2018); East Lindsey Core Strategy Local Plan.
- Ref 16-12** West Lindsey District Council, (2006); West Lindsey Local Plan.
- Ref 16-13** Central Lincolnshire Joint Strategic Planning Committee, (2017); Central Lincolnshire Local Plan.
- Ref 16-14** Ministry of Housing, Communities and Local Government (MHCLG), (2019); Planning Practice Guidance.
- Ref 16-15** ONS, (2011), Census
- Ref 16-16** ONS, (2021), Mid-Year Population Estimates (2020).
- Ref 16-17** ONS, (2022); Claimant count by sex and age (June 2022).
- Ref 16-18** ONS, (2021), Annual Population Survey (January 2021 to December 2021).
- Ref 16-19** ONS, (2020), Business Register and Employment Survey (2020).
- Ref 16-20** MHCLG, (2020), English Indices of Deprivation (2019).