

15. People and Communities

15.1 Introduction

15.1.1

This chapter presents the preliminary assessment of the likely significant effects of the Project with respect to People and Communities, covering the social, economic and health aspects of individuals, communities and wider society that may be affected. The preliminary assessment is based on information obtained to date. It should be read in conjunction with the project description provided in **Chapter 2: The Project** and with respect to relevant parts of the following chapters:

- **Chapter 5: Biodiversity;**
- **Chapter 7: Water Environment;**
- **Chapter 9: Air Quality;**
- **Chapter 10: Noise and Vibration;**
- **Chapter 11: Traffic and Transport;**
- **Chapter 14: Land Use; and**
- **Chapter 16: Major Accidents and Disasters.**

15.1.2

This chapter describes:

- the legislation, policy and technical guidance that has informed the assessment (**Section 15.2**);
- consultation and engagement that has been undertaken to date and how comments from consultees relating to People and Communities have been addressed (**Section 15.3**);
- a description of the study area **Section 15.4**
- the methods used for baseline data gathering (**Section 15.5**);
- the current and future baseline (**Section 15.6**);
- embedded environmental measures relevant to People and Communities (**Section 15.7**);
- the scope of the assessment for People and Communities (**Section 15.8**);
- the methodology applied for the assessment (**Section 15.9**);
- the preliminary assessment of People and Communities effects (**Section 15.10**);
- a summary of the preliminary significance conclusions (**Section 15.11**); and
- an outline of further work to be undertaken for the Environmental Statement (ES) (**Section 15.12**).

Limitations and assumptions

- 15.1.3 The information provided in this Preliminary Environmental Information Report (PEIR) is preliminary, the final assessment of likely significant effects will be reported in the ES. The PEIR has been produced to fulfil the Applicant's consultation duties and enable consultees to develop an informed view of the likely significant effects of the Project.
- 15.1.4 The assessment in this chapter reflects the approach to construction that will be adopted across the Project. Detailed information relating to Project features such as individual crossings and the construction schedule in individual geographic areas which affect People and Communities will be included in the ES.
- 15.1.5 The nature and magnitude of the potential effects will depend on the features of specific locations regarding engineering proposals and local community needs, particularly in regard to the construction of crossings. The final engineering design is expected to be compatible with and incorporate a range of methods for mitigating potential effects on People and Communities. The primary methods are the use of 'trenchless' crossings which do not interrupt existing use of transport and other networks because pipelines are installed by drilling underneath them.
- 15.1.6 Residual impacts for effects which arise due to specific features of locations are generally anticipated not to be significant, because trenchless methods will be adopted specifically to avoid effects, and are assessed as such pending further review in the ES of detailed engineering designs and plans. Effects include those related to:
- Access requirements to specific areas of land, transport networks, services and amenities (such as agricultural land, public services and rights of way, recreational and health facilities) which are affected by construction of crossings;
 - Temporary disruption affecting specific communities, in cases where trenchless crossings are not possible, such as due to spatial constraints; and
 - Health impacts which affect specific communities and arise from temporary and locationally specific features including noise and potential delay from construction work.

15.2 Relevant legislation, planning policy and technical guidance

- 15.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to People and Communities. Further information on policies relevant to the Project is provided in **Chapter 4: Legislation and policy overview**.

Legislation

- 15.2.2 There are no specific guidelines or requirements for socio-economic/People and Communities assessments set out in any statutory or advisory guidance regarding the preparation of Environmental Impact Assessments (EIA). However, such

assessments have an established practice of including a description of the direct socio-economic consequences of the effects on the environment as experienced by People and Communities locally and, where appropriate, more widely. The method adopted is therefore one of determining the existing and future circumstances for these communities (the baseline) followed by the assessment of relevant topics and effects on individual receptors. The approach uses desk-based analysis, drawing on statistical information and professional judgment/opinion as well as relevant government and other guidance.

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Planning Policy

15.2.4 A summary of the relevant national and local planning policy is given in **Table 15.1**.

Table 15.1 Planning policy relevant to the People and Communities assessment

Policy	Policy context
National planning policy	
Overarching National Policy Statement for Energy (EN-1)¹	Under paragraph 4.1.3, in considering any proposed development the Secretary of State should take into account potential benefits of development proposals including “contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits”. In this context, the Secretary of State should take into account environment, social and economic benefits and adverse impacts at national, regional and local levels (paragraph 4.1.4).

¹ Department of Energy and Climate Change, (2011). Overarching National Policy Statement for Energy (EN-1) (online). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf (Accessed July 2022)

Policy	Policy context
	EN-1 states that the assessment should consider all relevant socio-economic impacts, including job creation and training, provision of additional local services, effects on tourism, effects of the influx of construction workers and cumulative effects (paragraphs 5.12.1 – 5.12.3). Socio-economic impacts may be linked to other impacts, for example the visual impact of a development is considered but may also have an impact on tourism and local businesses (paragraph 5.12.5). EN-1 notes that 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. The ES should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or effects of preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan
Draft Overarching National Policy² Statement for Energy (EN-1(Draft))	EN-1(Draft) reiterates the requirements of EN-1 with regards to socio-economic considerations but covers the additional points below. EN-1(Draft) includes a new section explicitly addressing Greenhouse Gas Emissions noting that “significant levels of energy infrastructure development are vital to ensure the decarbonisation of the UK economy” (paragraph 5.3.1).

² Department of Business, Energy & Industrial Strategy, (2021). Draft Overarching National Policy Statement for Energy (EN-1) (online). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf (Accessed July 2022)

Policy	Policy context
	The section addressing Socio-Economic Impacts (5.13 in EN-1 (Draft) corresponding to 5.12 in EN-1) includes specific reference to the contribution to the development of low-carbon industries at the local and regional level as well as nationally (paragraph 5.13.3). It also mentions that the “Secretary of State may wish to include a requirement that specifies the approval by the local authority of an employment and skills plan” (paragraph 5.13.9).
The Ten Point Plan, November 2020³	The Government's Ten Point Plan for a Green Industrial Revolution provides the vision for the UK to become a global leader in green technologies as well as delivering significant numbers of new jobs.
National Planning Policy Framework (Ministry of Housing, Communities & Local Government), July 2021⁴	In chapter 8, addressing healthy and safe communities, Paragraph 97 notes that planning policies and decisions should promote public safety and that the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes steps to reduce vulnerability, increase resilience and ensure public safety and security. Paragraph 98 notes that access to high quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities and can deliver wider benefits for nature and support efforts to address climate change. The same chapter notes that developments should protect and enhance public rights of way and access including taking opportunities to provide better facilities for users

³ HM Government (2020). The Ten Point Plan for a Green Industrial Revolution. Building back better, supporting green jobs, and accelerating our path to net zero. (online) Available at: <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution> (Accessed June 2022).

⁴ Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. (online) Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed June 2022).

Policy	Policy context
	Paragraph 150 identifies engineering operations as a form of development not inappropriate in the Green Belt, provided they preserve its openness and do not conflict with the purposes of including land within it which include as amenity space for People and Communities.
UK Hydrogen Strategy, August 2021⁵	Chapter 3, which is concerned with economic benefits for the UK, notes that the UK is well positioned to grow and develop supply chains across the full low carbon hydrogen value chain which will be vital to underpinning our vision of growth in the hydrogen economy. Chapter 3 also notes that a hydrogen economy is a key component of the opportunity offered by the net zero target to transform the UK's industrial regions, attract investment, and create secure, good quality green jobs across the UK. It will require existing and important new skills to be available in the right place at the right time. The Strategy refers to initiatives by developers and industry to support skills development, many in emerging hydrogen and CCUS clusters, providing opportunities for a new UK skills base in industrial regions across the UK.
Local planning policy	
Cheshire East Local Plan⁶	Sustainable Development in Cheshire East (SD1) - The policy sets out requirements for development and specifies the need to provide appropriate infrastructure to meet the energy needs of the local community as well as using appropriate technologies to reduce carbon emissions and create a low carbon economy.
Cheshire West and Chester Local Plan⁷	Sustainable Development (Strat 1) - The policy highlights that development should make the best use of opportunities for renewable energy use and generation.

⁵ Department for Business, Energy & Industrial Strategy (2021). UK Hydrogen Strategy. (online) Available at: <https://www.gov.uk/government/publications/uk-hydrogen-strategy> (Accessed June 2022).

⁶ Cheshire East Local Plan, 2010-2030, Adopted July 2017, Cheshire East Council.

⁷ Cheshire West and Chester Local Plan, Adopted January 2015, Cheshire West and Chester Council.

Policy	Policy context
	Infrastructure (Strat 11) - The policy aims for infrastructure improvements to meet the wider sustainability objectives of the borough, including new infrastructure schemes intended to mitigate and adapt to climate change. High Quality Design and Sustainable Construction (ENV6) - The aim of the policy is for development to incorporate energy efficiency measures and provide for renewable energy generation either on site or through carbon offsetting measures. Impact on residential Amenity (DM4) - All proposals for new development will be expected to safeguard the quality of life for residents within the development and those living nearby. Development will only be supported where it does not result in a significant adverse impact upon the residential amenity of the occupiers of existing properties.
Halton Local Plan⁸	Infrastructure Provision (CS(R)7) - New infrastructure will be supported where required to help deliver national priorities or locally identified requirements and where contributions to agreed objectives outweighs the potential for adverse impacts Sustainable Development and Climate Change (CS(R)19) - The policy indicates support for proposals for decentralised renewable and low carbon energy schemes provided they avoid harm to the local environment. Managing Pollution and Risk (CS(R)23) - The policy specifies that the maximum level of acceptable individual risk from a development does not exceed 10 chances per million and that the population exposed to risk is not increased. Also aims to ensure that any proposals for new or expanded hazardous installations are carefully considered in terms of environmental, social, economic factors and manage flood risk. Renewable and Low Carbon Energy (GR5) - The policy requires that all major renewable and low carbon energy proposals are accompanied by an Energy Statement which includes

⁸ Halton Local Plan, 2014-2037, Adopted March 2022, Halton Borough Council

Policy	Policy context
	environmental effects of the development. It also highlights support for incorporation of renewable and low carbon energy into developments, for decentralised energy networks, and for other opportunities for renewable and low carbon energy within Energy Priority Zones.
St Helens Borough Local Plan⁹	Renewable and Low Carbon Energy Development (LPC13) - The policy indicates support for proposals for decentralised renewable and low carbon energy schemes provided they avoid harm to the local environment.
Trafford Local Plan¹⁰	Climate Change (L5) - The policy recognises the role that commercial and community low carbon, renewable and decentralised energy generation and distribution facilities can play in reducing CO2 emissions and providing viable energy supply options.
Warrington Local Plan¹¹	Renewable and Low Carbon Energy Development (ENV7) - The policy states that proposals for low carbon or renewable energy will be permitted provided that they satisfy the requirements of other relevant Plan policies and would not result in unacceptable harm to the local environment. Renewable and Low Carbon Energy Development (ENV7) -The policy is for the Council to consider favourably initiatives which are community-led or provide direct benefits through community involvement.

Technical guidance

15.2.5 A summary of the technical guidance for People and Communities is given in **Table 15.2**.

⁹ St Helens Borough Local Plan up to 2037, July 2022, St Helens Borough Council

¹⁰ Trafford Local Plan: Core Strategy Development Plan Document, Adopted January 2012, Trafford Council

¹¹ Local Plan (Proposed Submission Version), published September 2021, Warrington Borough Council

Table 15.2 Technical guidance relevant to the People and Communities assessment

Technical guidance document	Context
The Green Book (and supplementary guidance) ¹²	The advice in The Green Book provides a broad framework for how policies, programmes and projects in the UK should be appraised and evaluated to inform decision making. Published by UK Government's HM Treasury, it covers assessment guidelines for economic and social effects and advice on the scoping of costs and benefits, the selection of time periods for and the use of discount rates. It contains and references further supplementary guidance on specific socio-economic effects, such as health, crime and air quality.
The Additionality Guide ¹³	Provides more specific guidance on how to assess impact of a policy intervention (or a private sector investment) on the local, regional and national economy. Additionality is the <i>"extent to which something happens as a result of an intervention that would have not occurred in the absence of intervention."</i>
The DCLG Appraisal Guide ¹⁴	This is a guidance document provided by the Ministry of Levelling Up, Housing and Local Government (previously Department of Communities and Local Government (DCLG) and Department of Housing, Communities and Local Government (DHCLG)) directed at Government economists in their assessment of economic appraisal of development proposals, including housing and other commercial development. Whilst not aimed at socio-economic assessment in EIA which does not involve cost benefit analysis calculations or

¹² HM Treasury (2018). The Green Book Central Government Guidance on Appraisal and Evaluation. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf (Accessed December 2021).

¹³ Homes & Communities Agency (2014). Additionality Guide Fourth Edition. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf (Accessed December 2021).

¹⁴ Department of Communities and Local Government (2016). The DCLG Appraisal Guide. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/576427/161129_Appraisal_Guidance.pdf (Accessed December 2021).

Technical guidance document	Context
	assessing value for money, it contains relevant technical guidance for socio-economic impact assessment and links to data sources.
Guidance produced by Public Health England: Health and Environmental Impact Assessment: A Briefing for Public Health Teams in England ¹⁵ (2017)	This guidance is targeted towards national and regional public authorities in the assessment of future policies and plans, although it does still contain useful guidance that can be applied to a development project.
Glasson, J, Socio-economic impacts 1: economic impacts ¹⁶ (2009)	This general reference for Environmental Impact Assessment is an established source of socio-economic guidance for practitioners.
International Association for Impact Assessment: Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects ¹⁷	The guidance provides a thorough source of detailed methodologies for conducting activities supporting social assessment particularly those for identifying and representing community issues and assessing methods of resolution.

¹⁵ Public Health England (2017). Health and Environmental Impact Assessment: A Briefing for Public Health Teams in England. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629207/Health_and_environmental_impact_assessment.pdf (Accessed December 2021).

¹⁶ Glasson, J (2009). Methods of Environmental and Social Impact Assessment 4th Edition pp.475-514: Socio-economic impacts 1: Overview and economic impacts. Routledge; Oxfordshire, UK.

¹⁷ International Association for Impact Assessment (2015). Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects. (Online) Available at: https://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf (Accessed December 2021).

Technical guidance document	Context
The World Health Organization Health Impact Assessment guidance, tools and methods ¹⁸	The guidance, tools and methods are recognised as the leading international authority on the completion of human health impact assessments. The guidance covers a number of topic areas that are linked to health impacts from projects, including transport, housing, water and sanitation.
Public Health England Advice on the content of Environmental Statements accompanying an application under the Nationally Significant Infrastructure Planning Regime ¹⁹	This guidance provides an overview of the considerations regarding health highlighting the need for a specific focus on population and health which also covers wider determinants such as socio-economic outcomes. Employment is noted as generally good for physical and mental health and well-being while business activity, regeneration, tourism, leisure, social cohesion, social networks and community engagement are aspects identified as potentially relevant.
International Union for the Conservation of Nature: Social Impact Assessment in Environmental & Social Management System ²⁰	The guidance provides a succinct summary of the key elements in assessment as well as supplementary guidance focusing on the context and use of natural resources.

¹⁸ World Health Organisation (2021). Health impact assessment (HIA) tools and methods. (Online) Available at: <https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/hia-tools-and-methods> (Accessed December 2021).

¹⁹ Public Health England (2021). Advice on the content of Environmental Statements accompanying an application under the Nationally Significant Infrastructure Planning Regime.

²⁰ International Union for the Conservation of Nature (2016). Environmental & Social Management System: Social Impact Assessment (SIA). (Online) Available at: https://www.iucn.org/sites/dev/files/iucn_esms_sia_guidance_note.pdf (December 2021).

Technical guidance document	Context
Design Manual for Roads and Bridges, Population and Human Health (LA112), Highways England ²¹	The methodology specified in this guidance is generally applicable to a range of aspects of linear infrastructure including pipeline networks.

²¹ Highways England (2020). LA 112 Population and human health. Revision 1. (Online) Available at: <https://www.standardsforhighways.co.uk/prod/attachments/1e13d6ac-755e-4d60-9735-f976bf64580a?inline=true> (Accessed December 2021).

15.3 Consultation and Engagement

Overview

- 15.3.1 The assessment has been informed by consultation responses and ongoing statutory and technical engagement. An overview of the approach to consultation is provided in **Section 3.4 of Chapter 3: Approach to Preparing the PEIR**.

Scoping Opinion

- 15.3.2 A Scoping Opinion was adopted by the Secretary of State, administered by the Planning Inspectorate, on 08 March 2022. A summary of the relevant responses received in the Scoping Opinion in relation to People and Communities and confirmation of how these have been addressed within the assessment to date is presented in **Table 15.3**.
- 15.3.3 The information provided in the PEIR is preliminary and not all of the Scoping Opinion comments have been addressed at this stage, however all comments will be addressed within the ES.

Table 15.3 Summary of EIA Scoping Opinion responses for People and Communities

Consultee	Consideration	How addressed in this PEIR
Cheshire West and Chester	The ES should cover existing employment sites and employment allocations and quality of life and residential and visual amenity for residents.	A preliminary assessment of effects on employment markets, the economy, and landowners and developers is included in this chapter. A full assessment will be provided in the ES following final design freeze. Potential residential and visual amenity effects are considered in Chapter 8: Landscape and Visual .
	Residents in Ince and Elton, where planning conditions already exist to limit the impact of HGV movements, may be particularly sensitive to any further increases.	The local effects on individual locations will be covered in the ES following final design freeze and confirmation of proposed access/haul routes. Potential traffic-related environmental effects are considered in Chapter 11: Traffic and Transport .
	Reduced land available and restrictions on future use may affect the delivery of strategic development requirements for housing and employment or the provision of waste facilities, open space facilities and minerals supply. The project should not result in unreasonable restrictions for existing businesses following the 'agent of change' principle stated in NPPF paragraph 187.	A preliminary assessment of effects on landowners and developers is included in this chapter. Effects are expected to potentially occur in only few locations as the majority of the route within Cheshire West and Chester is within green belt designated land. A full assessment will be provided in the ES following final design freeze.
Pickmere Parish Council	There may be impacts on existing business enterprises in the parish, including farm holdings, in the construction and operation phases.	A preliminary assessment of effects on employment markets, the economy and landowners and developers is included in this chapter. A detailed assessment will be provided in the ES following final design freeze.

Consultee	Consideration	How addressed in this PEIR
UKHSA and OHID	Health issues can be given adequate consideration in a specific section of the ES which makes proportionate reference to physical and mental health and justifies any impacts which are scoped out. It should use levels of detail that reflect National Policy Statements and address relevant guidance and standards including established advice from Public Health England.	A preliminary assessment of effects on the general public, including health concerns, is provided in this chapter. The safety of the Project is also discussed in Chapter 16: Major Accidents and Disasters . Public health will be addressed in more detail in the ES following final design freeze.
	The possible health impacts of Electric and Magnetic Fields (EMF) are not considered.	EMFs arise in specific circumstances and are not expected to arise from infrastructure related to the Project. Such effects are therefore not considered further.
	Vulnerable or disadvantaged populations are not comprehensively identified and should be reviewed based on relevant data including their protected characteristics, guidance from IAIA, and Indices of Multiple Deprivation.	This chapter has gathered baseline information on the local population from multiple sources, including vulnerable or disadvantaged populations; see Section 15.6 .
	A qualitative estimation of community anxiety and stress is beneficial for impact assessment of an NSIP in order to measure the public's understanding of risk from industrial development on community psychosocial wellbeing and inform mitigation measures. The estimation may draw on results of surveys, public consultation and community engagement exercises as well as refer to the specialist opinion in local authority public health teams. Relevant data includes baseline mental health	This chapter has gathered baseline information on the local population from multiple sources, see Section 15.6 . The Project will collate existing expert knowledge and sources of information together with responses received to consultation and engagement activities in order to assess impacts related to community anxiety and stress and develop appropriate mitigation measures which take account of aspects arising at individual locations.

Consultee	Consideration	How addressed in this PEIR
	indicators and quality of life indicators which are established as having links to mental health and wellbeing.	
Warrington Borough Council	Job creation would be welcomed and the Warrington Employment Development Team Manager can be contacted to maximise benefits for local people.	The Project will benefit from access to jobseekers and will include plans to work with Warrington Borough Council and other local agencies.
	There is concern over adverse impacts on residential dwellings and vehicular congestion.	These issues will be addressed in the assessment of the socio-economic impacts arising at individual locations.
Planning Inspectorate (PINS)	The Inspectorate is content to scope out tourism from further assessment as the area is not a primary tourist destination and magnitudes are likely to be small compared to existing recreational and amenity use.	Tourism effects are scoped out.
	The impacts on commercial fishing should be assessed if construction works are required within or near to the Mersey Estuary.	No construction works are proposed within the Mersey Estuary itself. Crossing of the River Mersey (in two locations) will be undertaken via trenchless techniques such as horizontal directional drilling or micro-tunnelling beneath the river. Any impacts on commercial fisheries arising from the Project will be assessed in the ES.
	The Inspectorate is content to scope out employment effects during operation as workforce requirements, whether working locally or remotely are small compared to relevant markets.	Employment effects during operation are scoped out.

Consultee	Consideration	How addressed in this PEIR
	The Inspectorate is content to scope out effects on individual economic sectors which do not directly supply the materials, equipment and services required by the Project as these are represented by wider economic effects.	Effects on individual economic sectors which do not directly supply the materials, equipment and services required by the Project are scoped out.
	The Inspectorate is content to scope out the single identified transboundary effect of increased demand for skilled labour from Ireland as the size of the local labour market is likely to dwarf such effects.	Transboundary effects are scoped out.
	The Inspectorate is content to scope out effects on social cohesion due to the nature and scale of the expected workforce.	Effects on social cohesion are scoped out.
	The Inspectorate is content that the approach to mental health concerns arising from the use of hydrogen gas in the pipeline network is based on work the Project will undertake with health professionals as required on a case-by-case basis supplemented by targeted and general communications and mitigation programmes noting that safety is an overriding priority for the Project, the use of hydrogen is highly regulated, and public concern more generally is scoped-in.	Mental health concerns arising from the use of hydrogen gas in the pipeline network will be addressed directly by work with health professionals on a case-by-case basis supplemented by wider project actions.

Technical engagement

- 15.3.4 Technical engagement with consultees in relation to People and Communities has not been undertaken and will be undertaken as required to address detailed aspects of engineering plans and schedules as necessary.

Planned future engagement

- 15.3.5 Technical engagement will be undertaken with the six local authorities in order to refine and agree the assessment of detailed impacts and proposed mitigation in the ES and to enable coordination in meeting community and business concerns and interests.

15.4 Study Area

Spatial scope

- 15.4.1 The Project requires construction and operational activities along corridors (as described in **Chapter 2**) within a clearly defined project boundary (for the purposes of this PEIR this is termed the 'Preliminary Order Limits') leading to direct and indirect socio-economic and health effects on people and communities inside and outside the Preliminary Order Limits.
- 15.4.2 The area of influence for a type of effect generated from the Project (including sub-contracted activities) includes geographic areas where likely significant effects of bio-physical or social changes (such as air quality, or distances to accessible labour markets) may occur (Area of Influence). These include areas within the Preliminary Order Limits and to other geographic areas relevant to project implementation, such as areas supporting temporary ancillary uses, nearby areas with infrastructure serving the Project, commuting areas for the workforce and areas affected by transport of materials and equipment.
- 15.4.3 The characteristics of a type of effect determine the Area of Influence depending on:
- the times and locations of effects;
 - the structure of indirect (knock-on) effects, which may extend further; and
 - the structure of effects cumulative with those caused by other developments.
- 15.4.4 A practical approach reflecting the similarity of some types of impact allows the use of four typical Areas of Influences:
- the Preliminary Order Limits for the Project;
 - a buffer 500m outside the Preliminary Order Limits;
 - a wider extent covering effects which are local but sub-national, such as within the North West; and
 - National extent.

- 15.4.5 As the location of activities advances along a corridor during construction, the Area of Influence for some effects changes. Assessment within an Area of Influence will also reflect the geographic basis on which Project and baseline information is available.
- 15.4.6 A mismatch between Area of Influence and areas for which information is available is a source of uncertainty which will be assessed in circumstances where it may affect determination of significant effects and any such uncertainties will be made clear in the ES.
- 15.4.7 Where statistical information is required to be represented on another spatial basis, such as for reporting for defined areas, scaling methods will be used based on weightings such as by geographic area, by population density, and by travel times.
- 15.4.8 The 500m buffer reflects the guidance for linear transport infrastructure (LA112)²¹ which provides a useful default reference in Great Britain. Roads are common linear developments with a range of precedents and use of associated guidance is likely to provide a conservative assessment as a pipeline would be expected to be less disruptive. LA112 indicates the generic types of effects to be assessed and provides indicative thresholds with a 500m buffer as a recommendation for an initial default.
- 15.4.9 The wider and national scales of spatial extent are appropriate for effects which involve more dispersed people and communities. These include labour markets and supply chains at regional level as well as national decarbonisation objectives and international trade.

Temporal scope

- 15.4.10 Socio-economic and health effects largely occur contemporaneous with the Project construction and operation phases and are not expected to demonstrate time-lags or anticipation (such as a prior increase required in supply chain capacity or delayed health effects). As Project construction proceeds in stages along the proposed corridors, there will be effects of a similar type but on different groups of people and communities. The staged approach leads to significant mitigation of potential effects as individual localities are not all affected at the same time.
- 15.4.11 The temporal scope used for assessing the construction phase is based on the overall Project construction schedule and the individual stages of construction activity.
- 15.4.12 During the operational phase, all socio-economic and health effects are related to the operation of the overall network and occur at the same time. The temporal scope of the assessment covers the overall expected period of operation and accounts for changes to the baseline.
- 15.4.13 During the decommissioning phase, socio-economic and health effects are expected to be similar to those for construction.

15.5 Data gathering methodology

Desk study

- 15.5.1 Data sources are Project data provided by the Applicant and data available from publicly available sources. The Office for National Statistics has been the primary source of baseline information. Other sources are referenced where applicable.

Survey work

- 15.5.2 No People and Communities survey work is required as relevant sources of evidence are available and no surveys have been conducted.

Data limitations

- 15.5.3 The nature and magnitude of the potential effects will depend on the detailed features of specific locations, engineering designs and local community needs. In general, detailed and comprehensive data is not available for all locations and assessment of impacts occurring at individual locations is not included in this chapter.
- 15.5.4 The final engineering design at individual locations is expected to be compatible with and incorporate a range of methods for mitigating potential effects on People and Communities, primarily through use of appropriate trenchless crossing methods selected specifically to avoid significant effects. Data on proposed engineering methods for implementing crossings is considered suitable for general assessment and the ES will address aspects at individual locations following final design freeze.

15.6 Overall baseline

Current baseline

Demography

- 15.6.1 The population across the six local councils was almost 1.5m people in 2020, amounting to 2.7% of the population of England. The largest of the six was Cheshire East (25.9%), with Cheshire West and Chester only slightly smaller (23.1%) The other four councils made up the remaining half of the population with Halton the smallest (8.8%) having approximately 130,000 residents. See **Table 15.4**.

Table 15.4 Population of six local councils in 2020 (total)

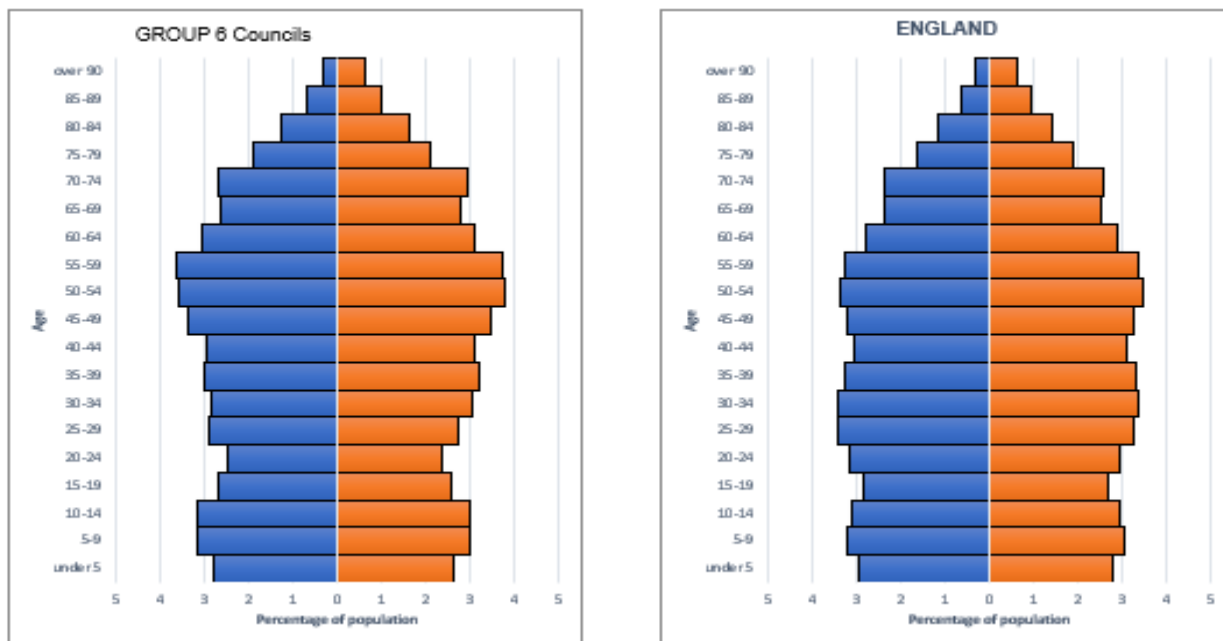
Council	Population	Share
Cheshire West and Chester	343,823	23.1%
Cheshire East	386,667	25.9%
Halton	129,759	8.8%
Warrington	209,397	14.1%
Trafford	237,579	15.8%
St. Helens	181,095	12.3%
Total	1,488,320	100.0%

Source: ONS: Population estimates for UK, England and Wales, Scotland and Northern Ireland²²

15.6.2 The age distribution of the population in the six local councils differs from that in England in showing a slightly older population on average. In the six local councils 59% of the population are under 50 compared with 62% in England. See **Graphic 15.1** for further details.

²² Office for National Statistics (2021). Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2020. (Online) Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2020> (Accessed December 2021).

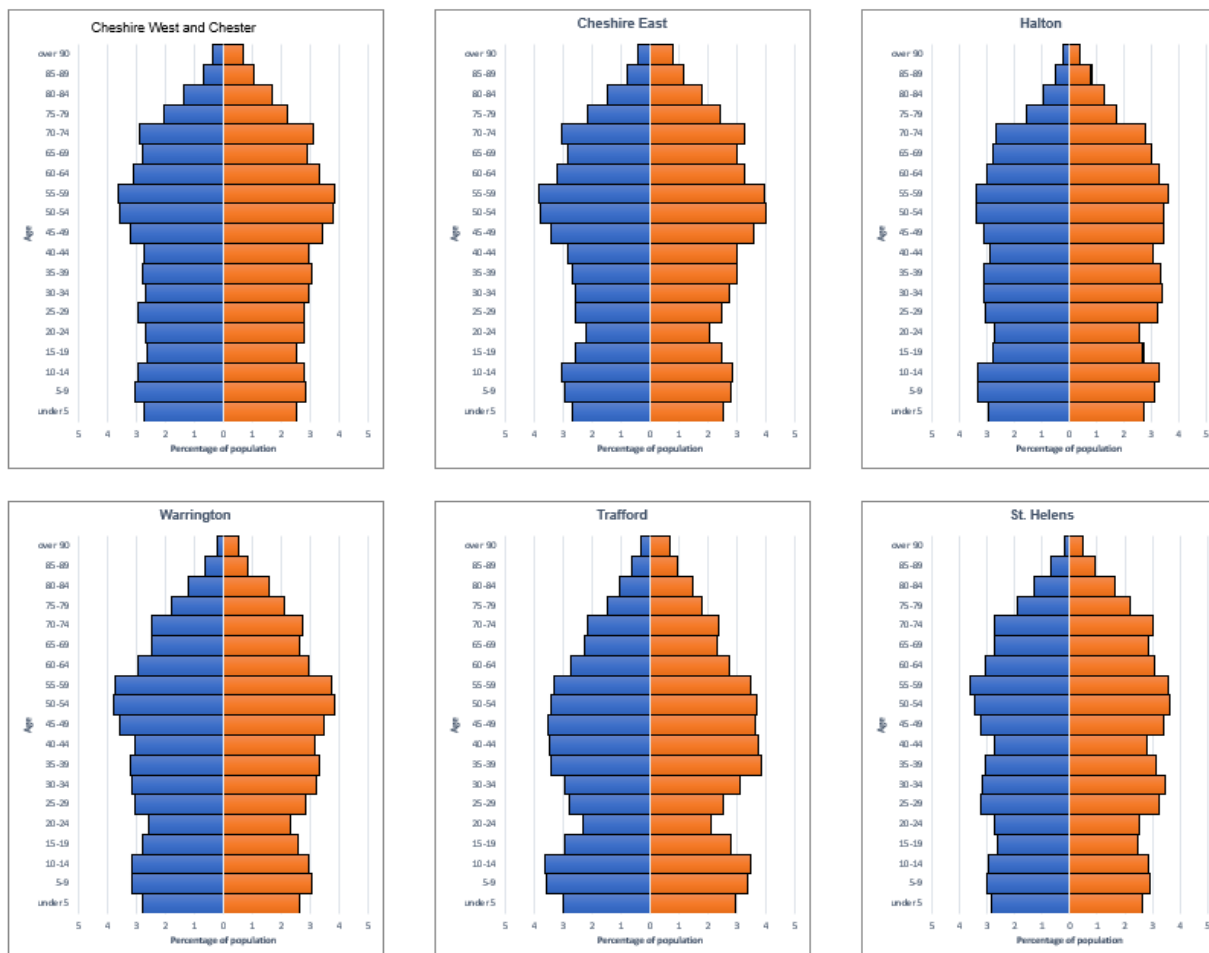
Graphic 15.1 Population distribution in six local councils (total) and England in 2020 - % of total population



Source: ONS: Population estimates for UK, England and Wales, Scotland and Northern Ireland²²

15.6.3 The age distribution for the six local councils individually shows more marked differences. The majority of the older population are in the two Cheshire councils where the population under 50 is 57.1% and 55.0% in the west and east respectively. In Trafford the proportion under 50 (63.2%) exceeds the value for England and the next highest proportion is in Halton (61.3%) with Warrington at 59.9% and St Helens at 59.0% (See **Graphic 15.2**).

Graphic 15.2 Population distribution in individual six local councils - % of total population



Source: ONS: Population estimates for UK, England and Wales, Scotland and Northern Ireland²²

Employment

15.6.4 The population of working age is lowest in the two Cheshire councils, as expected from the population data. However, in none of the Councils does the proportion of 16-64 year olds reach that the English average, though the values are in general close to the levels in England and also close to those for the North West²³. Warrington and Halton show the highest proportion of 16-64 year olds amongst the six local councils (See **Table 15.5**).

²³ North West England (ONS code E12000002) is one of nine official regions of England and consists of the administrative counties of Cheshire, Cumbria, Greater Manchester, Lancashire and Merseyside.

Table 15.5 Population of working age (16-64) in 2020 - % of total population

	Cheshire (W)	Cheshire I	Halton	Warrington	Trafford	St. Helens	North West	England
All	60.2	59	61.4	62	61.2	61.1	62.1	62.3
Male	60.2	59.3	61.3	62.9	61.6	61.7	62.6	63
Female	60.2	58.6	61.5	61.2	60.8	60.5	61.5	61.6

Notes: *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively.

Source— ONS - Population estimates - local authority based by five-year age band²².

15.6.5

Despite the smaller working age population in Cheshire West and Chester, the area shows the highest percentage (83.6%) who are economically active, above the national level (78.8%) and with the lowest across the six local councils being in Halton (75.3%) (See **Table 15.6**). The proportion of people in employment across the six local councils is equally spread with three councils above the national average and three below. The proportion in the North West (73.1%) as a whole is slightly lower than for England (74.7%). Cheshire West and Chester (81.1%) and Warrington (78.3%) show the highest values and Halton (72.5%) and St Helens (72.1%) the lowest. For the self-employed Halton is unique in showing a much lower proportion (3.6%) compared to the other six local councils (lowest is 7.0%) and compared to the national average of 9.6%. Unemployment is below both the national average and the average for the North West and the lowest is in Cheshire West and Chester (3.4%).

Table 15.6 Employment status for working age population (16-64) (2020-2021) (%)

	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	North West	England
Economically Active	83.6	76.3	75.3	81.2	81.2	75.9	77	78.8
In Employment	81.1	72.5	72.5	78.3	76.2	72.1	73.1	74.7
Employees	71	62.6	68.7	70	65.5	65.1	64.6	64.9
Self Employed	9.4	9.7	3.6	8.3	10.4	7	8.3	9.6
Unemployed *	3.4	4.1	4.4	3.8	4.4	4.2	4.9	5.1

Notes: * values are proportion of those economically active and over 16; *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively.

Source: ONS - annual population survey²⁴

²⁴ Office for National Statistics, Social Survey Division. (2021). Annual Population Survey, January - December, 2020 (data collection). 4th Edition. (Online) Available at: <https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=8789> (Accessed December 2021).

15.6.6

As a whole the balance of occupations in the North West is close to the national average with the difference between them in any of the nine occupational categories varying by less than 1.5% (See **Table 15.7**). Differences at the level of individual councils are nuanced. Managerial and professional grades (categories 1,2 and 3) are together highest in Trafford (61.5%), while in Cheshire West and Chester, Cheshire East and Warrington are they make up close to 50% of the total, in St Helens 45.1% and in Halton 38.8%. There is a slight bias towards skilled trades and technical workers (categories 5 and 8) in Halton, Cheshire West and Chester and St Helens. Elementary occupations are highest in Halton, Cheshire East and St Helens, all above 11% compared to the national average of 9%. The mixed overall picture includes Cheshire East with the highest proportion of Managers amongst the six councils (16.4% compared to the national level of 11.2%) and Trafford with the highest proportion of Professional Occupations (32.6% compared to the national level of 23.4%) while Warrington is very close to the average for the North West with the differences exceeding 2% in only two occupational categories.

Table 15.7 Employment by occupation (2020-2021) (%)

Occupation	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	North West	England
1 Managers, Directors And Senior Officials	13.8	16.4	8.7	10.6	13.5	10.5	10.2	11.2
2 Professional Occupations	25.1	21.5	18.2	22.7	32.6	21.4	22.2	23.4
3 Associate Professional & Technical	12	12.4	11.9	16.7	15.4	13.2	14.7	15.6
4 Administrative & Secretarial	9.9	12.3	13.8	10.5	8.7	8.8	10.6	10.3
5 Skilled Trades Occupations	10.3	7.5	8.4	6	4	11.2	8.8	8.9
6 Caring, Leisure And Other Service Occupations	8.1	7.4	9.2	9.2	6.3	8.4	8.7	8.9
7 Sales And Customer Service Occupations	7.7	7	9.5	7.3	9.5	7.3	8	7
8 Process Plant & Machine Operatives	6.8	4.2	8.1	6.3	*	7.2	6.3	5.5
9 Elementary Occupations	6.1	11.3	11.7	10.6	8.2	11.4	10.2	9
Total	99.8	100	99.5	99.9	98.2	99.4	99.7	99.8

Notes: * Sample size too small for reliable estimate; *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively; Totals are quoted as provided in the source and reflect the underlying statistical approaches applied by –NS.

Source: ONS - annual population survey²⁴

Education

15.6.7

The general picture is of a population with educational qualifications close to or above the national average at a level of NVQ1 and above, but a reduction compared to the national average at higher levels (see **Table 15.8**). At a level of NVQ2 and above, all councils have a proportion of the population that exceed the national average proportion except Halton. At NVQ3 level, three councils (west and east Cheshire and Trafford) exceed the national average proportion and at NVQ4, just Cheshire West and Trafford exceed the national average; Trafford significantly. In three councils (Cheshire East, Trafford and Warrington) the proportion of the population with no qualifications is lower than the national average.

Table 15.8 Educational qualifications (2020) (% of resident population aged 16-64)

Qualification	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	North West	England
NVQ4 And Above	45.4	41.2	31.1	42	51.3	36.1	38.6	42.8
NVQ3 And Above	65.9	65.4	50.9	58.9	66.5	56.8	57.9	61.2
NVQ2 And Above	82.7	84.6	73.4	79.5	82.6	78.6	76.6	78
NVQ1 And Above	91.8	93.2	86.1	89.6	91.6	87.8	87.2	87.9
Other Qualifications	*	*	5.3	5.7	4.1	4.5	5.1	5.9
No Qualifications	6.5	4.5	8.6	4.7	4.3	7.7	7.6	6.2

Note: * Sample size too small for reliable estimate

Source: ONS - annual population survey²⁴

Earnings

15.6.8 Levels of pay in the North West are consistently about 10% lower than in England for jobs paid annually, weekly or hourly (see **Table 15.9**). The same table indicates that the earnings structure is otherwise very similar in the North West, in England and in the UK. Jobs paid annually show the widest difference between male and female salaries, being 118% and 83% respectively of the average in the North West. The discrepancy reduces slightly (117% and 83%) for jobs paid weekly and is more even for jobs paid hourly (106% and 93%).

Table 15.9 Employee Earnings in the UK 2019

	North West	England	UK	North West	England	UK
Annual pay - Gross [£/year]	<i>As % of England</i>					
All	28,605	32,054	31,447	89%	100%	98%
Male	33,759	38,676	37,817	87%	100%	98%
Female	23,608	25,278	25,066	93%	–00%	99%
Hourly pay - Gross [£/hour]	<i>As % of England</i>					
All	16.64	18.24	17.97	91%	100%	99%
Male	17.64	19.62	19.26	90%	100%	98%
Female	15.44	16.51	16.39	94%	–00%	99%
Weekly pay - Gross [£/week]	<i>As % of England</i>					
All	551	606	596	91%	100%	98%
Male	644	717	704	90%	100%	98%
Female	460	492	488	93%	1–0%	99%

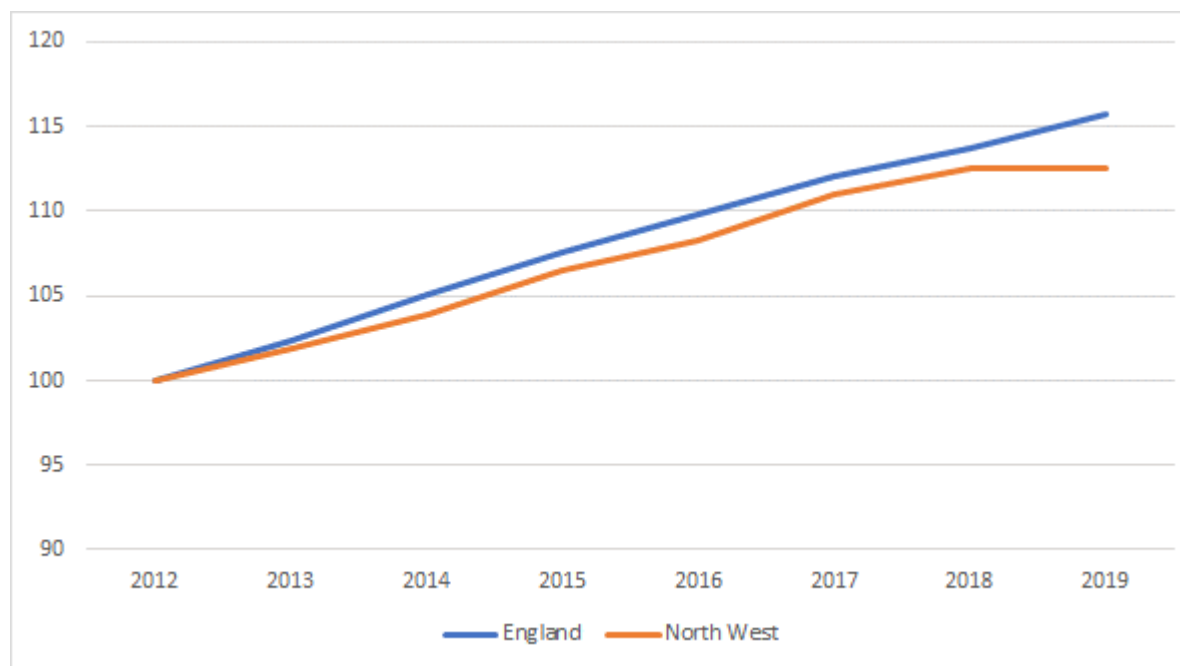
Source: ONS - Earnings and hours worked, place of work and residence by local authority: ASHE Tables 7 and 8²⁵

²⁵ Office for National Statistics (2021). Earnings and hours worked, place of work and residence by local authority: ASHE Tables 7 and 8. (Online) Available at: <https://www.ons.gov.uk/datasets/ashe-tables-7-and-8> (Accessed December 2021).

Economy & Business

15.6.9 The economies in the North West and England have grown at a broadly similar rate but in the period 2013-2019 they are slightly lower on average in the North West (1.7%) than in England (2.1%) (see **Graphic 15.3**). Within this period, there is appreciable variation in the annual growth rate with a peak of 2.5% in the North West and 2.7% in England. The lowest growth rate in England is 1.5%, but in 2019 was slightly negative in the North West (-0.03%). Over the total period, the growth is 3% greater in England.

Graphic 15.3 GDP in England and the North West indexed to 2013



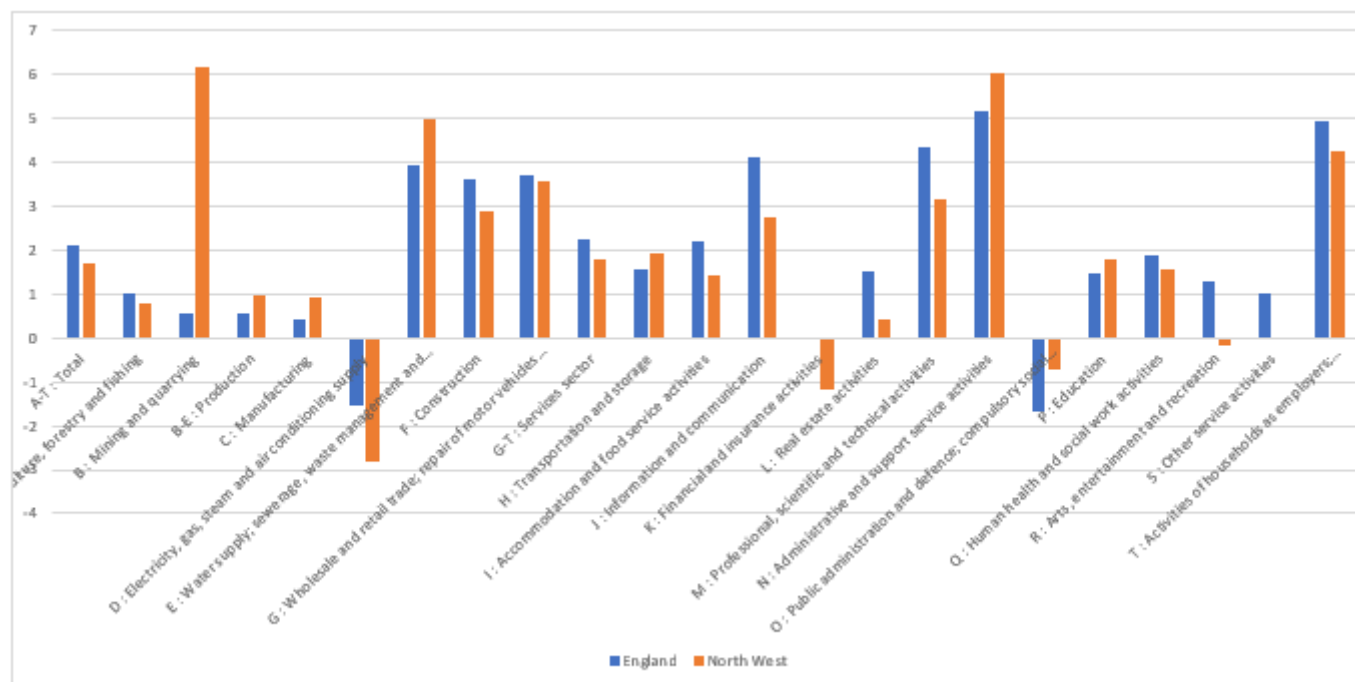
Source: ONS - Annual GDP for England, Wales and the English regions²⁶

²⁶ Office for National Statistics (2021). Annual GDP for England, Wales and the English regions. (Online) Available at: <https://www.ons.gov.uk/datasets/regional-gdp-by-year/editions/time-series/versions/4> (Accessed December 2021).

15.6.10

The differences in growth rate between the North West and England are only appreciable for some industry sectors (See **Graphic 15.4**). The North West sees higher growth in: production and manufacturing (Sectors B-E), particularly mining and quarrying (Sector B); water and waste supply (E); and administration (N). The sectors with noticeably lower growth are: accommodation and food services (I); information and communication (J); finance and insurance (K); real estate (L); and arts, entertainment and recreation (R). In the sector concerned with energy services (D), the North West has seen appreciably lower growth than England.

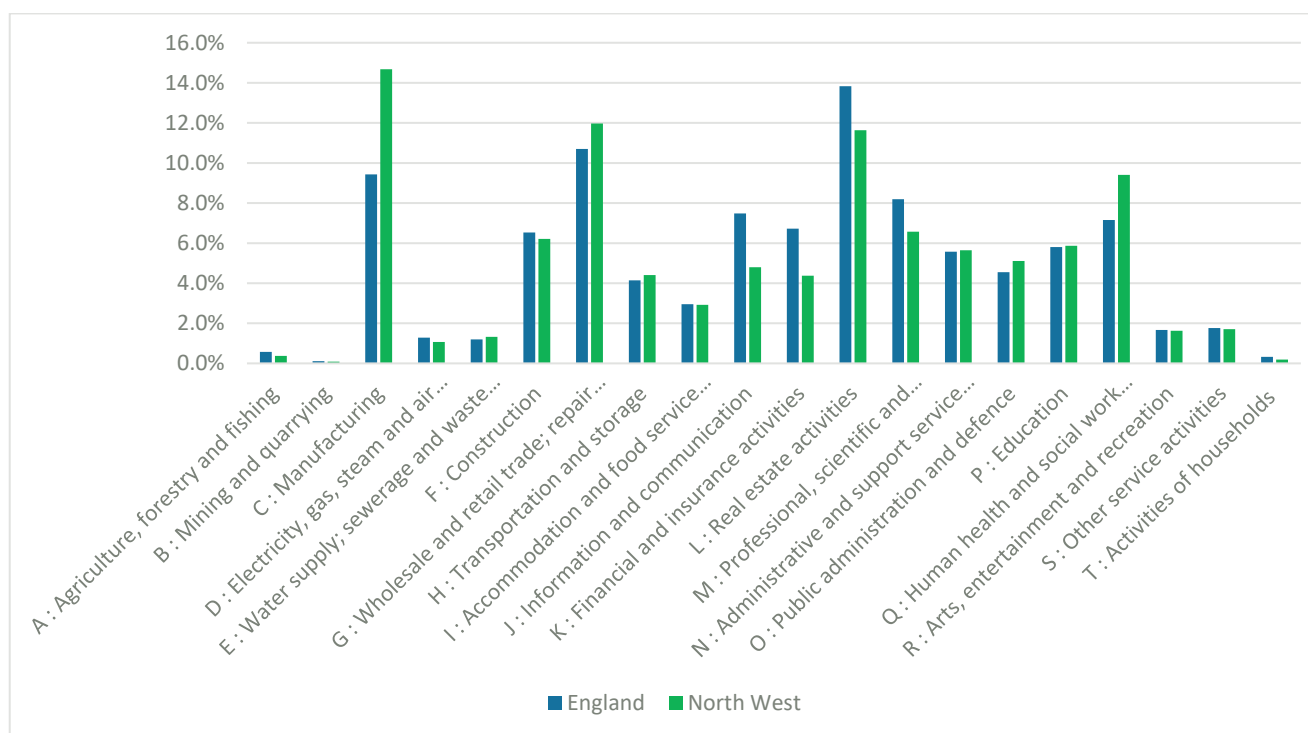
Graphic 15.4 Average annual growth by economic sector in the North West and England (2013-2019)



Note: Industrial sectors are classified by Standard Industrial Classification.
Source: ONS - Annual GDP for England, Wales and the English regions²⁶

15.6.11 The North West accounts for some 11% of the Gross Value Added (GVA) in England and the structure of the economy as shown by the relative size of economic sectors is broadly similar in both (See **Graphic 15.5**). The North West has an appreciably greater share of manufacturing (Sector C), 14.7% compared to 9.4% for England, and also exceeds the level in England in trade (G) and the health sector (Q) (although by a smaller margin). Sectors where the North West has noticeably lower GVA than in England are Information and communication (J), finance and insurance (K) and real estate (L).

Graphic 15.5 Gross Value Added by economic sector in the North West and England as a proportion of totals (2019)

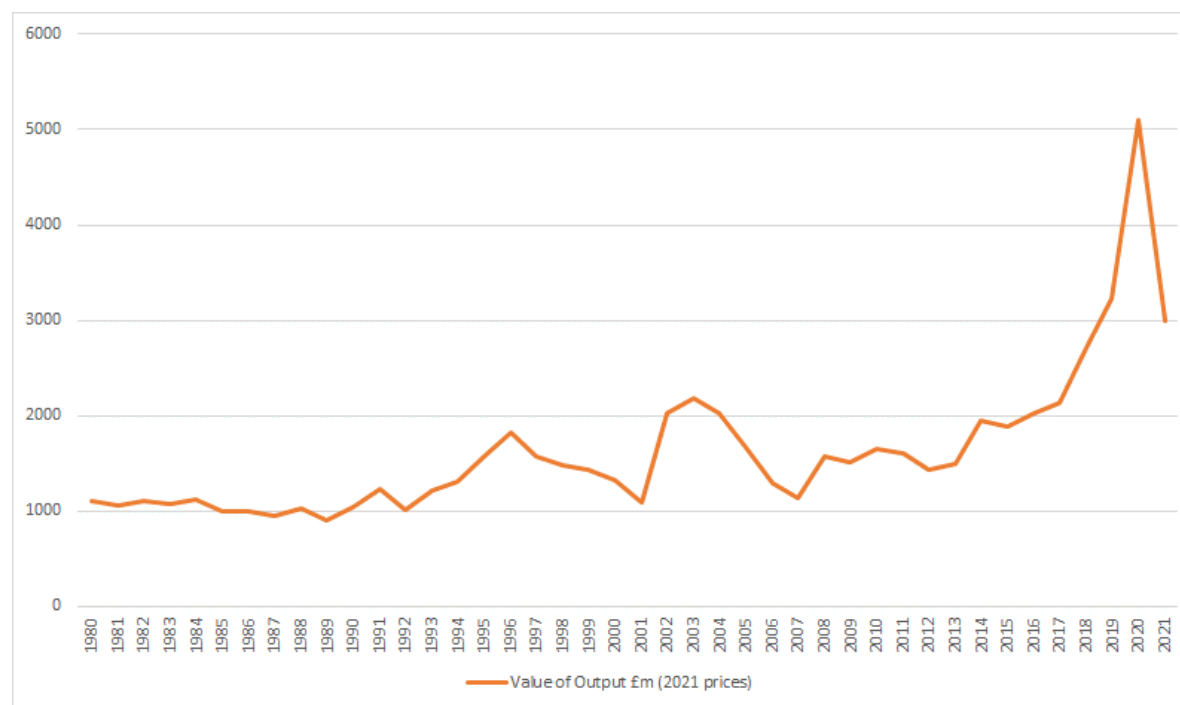


Source: ONS - Regional gross value added (balanced) by industry²⁷

²⁷ Office for National Statistics (2021). Regional gross value added (balanced) by industry: all ITL regions. (Online) Available at: <https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalandrealregionalgrossvalueaddedbalancedbyindustry> (Accessed December 2021).

15.6.12 The level of activity in the construction sector is shown by the level of output as recorded by ONS and Barbour ABI, a commercial provider of construction sector information (See **Graphic 15.6**). The statistics were reviewed by ONS in 2021, a year which shows an apparent outlier in the data (the extreme peak in 2020), but are now resumed and show a general trend of rising levels of output over recent years (excluding 2020) indicating increasing demand in the sector.

Graphic 15.6 Output in the construction industry: sub-national and sub-sector reference tables



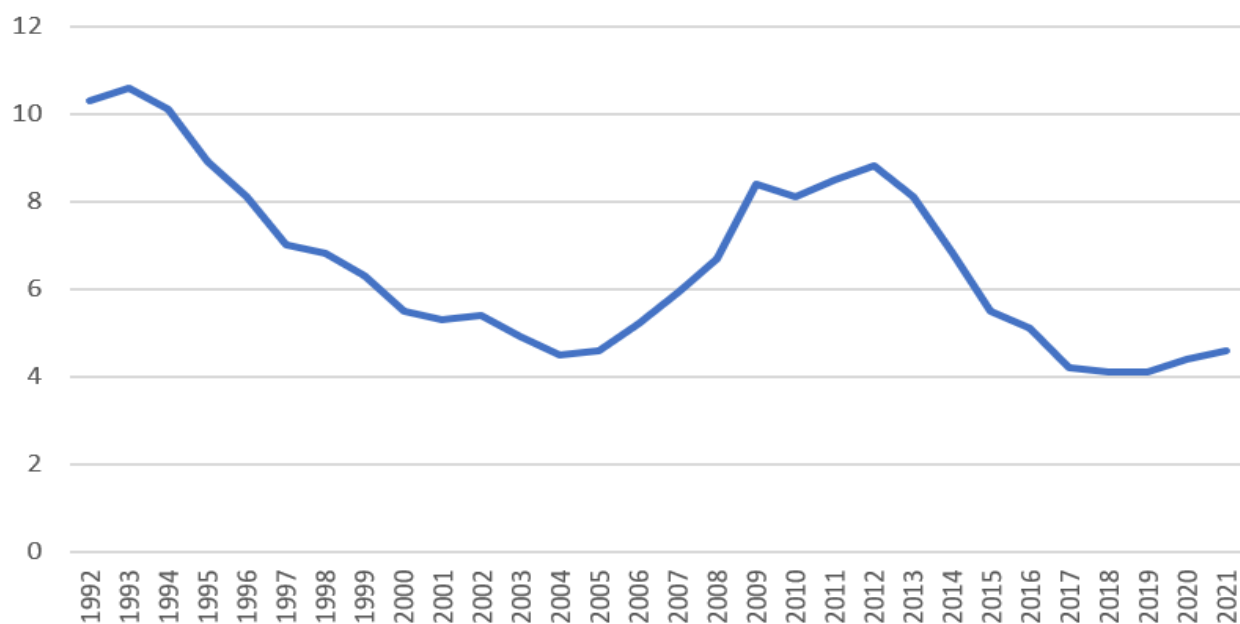
Source: ONS and Barbour ABI, Output in the construction industry: sub-national and sub-sector reference tables, Quarter 1 (Jan to Mar) 2022

Note: These are considered adequate in the context of the requirement to show broad trends in this PEIR, but ONS note that “*these estimates do not carry National Statistics status*” and so may not be suitable for other purposes.

Unemployment

15.6.13 The most recent data for unemployment in the North West shows the current rate of 4.6% only just above the rate of 4.1% in 2018 and 2019 which was the lowest rate achieved over the last 29 years (see **Graphic 15.7**). Over the same period the average rate was 6.6% and the peak was 10.6%.

Graphic 15.7 Unemployment rate - North West (1992-2021)



Source: ONS Table: LFS: ILO unemployment rate: North West (GOR): All: %: SA, Release date:14-06-2022

Tourism

15.6.14 Levels of tourism over time are relatively stable at national and regional level. In Great Britain in 2015 and in 2019 there were 124.4 million and 122.8 million visitor trips respectively with a variation of 2.6% or less from the annual average in the intervening

years²⁸. In the same two years there were 99.0 million and 99.1 million in England and 13.5 million and 14.1 million in the North West. Detailed results are available for the six councils in 2015 (See **Table 15.10**). Regarding tourism, it is notable that in five of the six local authority areas the proportion of visitor trips which are holiday trips is appreciably lower than in comparative areas. The proportion is 49% in Chester West and Cheshire, compared to 44% in England, 41% in Cheshire and 42% in Merseyside. In the other six, the proportions are 36% or below and is as low as 5% in Trafford. This indicates that visitor trips are undertaken for business reasons or for visiting friends and relatives, rather than tourism.

Table 15.10 Visitor trips in the six councils (%)

	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	Merseyside	Cheshire	England
Annual visitor trips (thousand)	890	452	109	82	73	204	2,010	1,629	99,028
Proportion of trips which are holiday trips (%)	49%	36%	22%	20%	5%	27%	42%	41%	44%

Notes: *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively

Source: North West England and Domestic Tourism, 3 year averages (2013-2015), Visit England

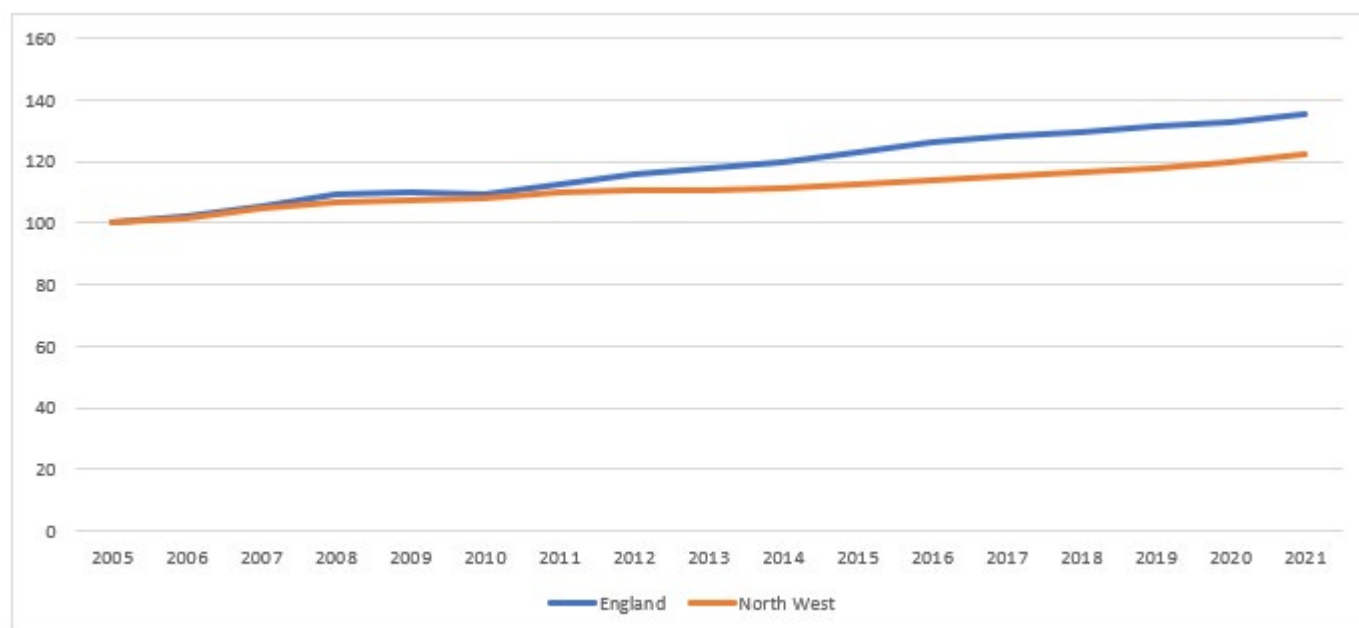
²⁸ GB Tourism Survey (domestic overnight tourism) 2019 Annual Report, Visit Britain [available at <https://www.visitbritain.org/great-britain-tourism-survey-latest-monthly-overnight-data>]

Housing Market

15.6.15

The level of economic activity as reflected in private housing rental prices over the period from 2005 shows a level of change, which broadly reflects the recent trend in GDP (as shown in **Graphic 15.3**). The overall increase in rental prices in the North West over the period is approximately two thirds the increase in England (See **Graphic 15.8**).

Graphic 15.8 Private housing rental prices in England and the North West indexed to 2005



Note: ONS refer to the dataset as “An experimental price index tracking the prices paid for renting property from private landlords in the United Kingdom”

Source: ONS - Index of Private Housing Rental Prices²⁹

Life Expectancy

15.6.16

Life expectancy provides a measure of general health. **Table 15.11** shows life expectancy in the six local councils as a percentage of the value for England. For the group as a whole, life expectancy is lower than in England and reduces more for older age groups. For males, life expectancy in Cheshire West and Chester, Cheshire East, and Trafford is greater than in England for all age groups, but is lower in Halton, Warrington and St Helens. There is a similar pattern for females, although in Cheshire West and Chester it falls below the average for England in age groups over 40.

²⁹ Office for National Statistics (2021). Index of Private Housing Rental Prices, UK Statistical bulletins. (Online) Available at: <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/indexofprivatehousingrentalprices/previousReleases> (Accessed December 2021).

Table 15.11 Life Expectancy for six local councils by age group

Age Group (years)	% of Life Expectancy in England								Life Expectancy (years)
	Cheshire West and Chester	Cheshire East	Halton	Warrington	Trafford	St. Helens	All six local councils	England	
Male									
0-19	100%	101%	97%	99%	101%	97%	98%	100%	73.88
20-39	100%	102%	95%	99%	101%	96%	97%	100%	50.85
40-59	101%	102%	95%	98%	101%	95%	97%	100%	32.56
60-79	102%	103%	93%	95%	101%	94%	96%	100%	17.59
80+	104%	103%	89%	90%	105%	89%	96%	100%	7.83
Female									
0-19	100%	101%	98%	99%	101%	97%	98%	100%	77.47
20-39	100%	101%	97%	99%	101%	96%	98%	100%	54.07
40-59	99%	101%	96%	98%	101%	95%	97%	100%	35.42
60-79	99%	101%	95%	96%	102%	93%	96%	100%	19.30
80+	98%	100%	95%	92%	103%	91%	96%	100%	8.72

Notes: *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively; Aggregation to age bands based on weighting by size of population.

Source: ONS - Life Expectancy by Local Authority (data to 2019)³⁰

Mental Health

15.6.17 Mental health indicators for the six councils, the North West and England are presented in **Table 15.12**. In four out of six councils, indicators show outcomes which are better than the levels for both the North West and England. In contrast, in Halton and St Helens, indicators show outcomes which are worse than both, with the North West also having worse outcomes than in England.

Table 15.12 Mental health indicators for six local councils, the North West and England

Indicator	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	North West	England
Male								
Estimated prevalence of common mental disorders: % of population aged 16 & over	15.3%	14.0%	19.3%	15.9%	15.4%	18.4%	18.0%	16.9%
Estimated prevalence of common mental disorders: % of population aged 65 & over	9.4%	8.7%	12.1%	9.6%	9.4%	11.3%	10.9%	10.2%
New cases of psychosis: estimated incidence rate	16.9%	16.4%	19.8%	18.0%	21.0%	18.2%	22.2%	24.2%

³⁰ Office for National Statistics (2020). Life Expectancy by Local Authority. (Online) Available at: <https://www.ons.gov.uk/datasets/life-expectancy-by-local-authority/editions/time-series/versions/1> (Accessed December 2021).

Indicator

	Cheshire (W)	Cheshire (E)	Halton	Warrington	Trafford	St. Helens	North West	England
per 100,000 population aged 16-64								
ESA claimants for mental and behavioural disorders: rate per 1,000 working age population	24.0%	20.4%	32.0%	22.3%	23.1%	46.8%	36.7%	27.3%

Notes: *Cheshire West and Chester* and *Cheshire East* are titled Cheshire (W) and Cheshire (E) respectively

Source: Office for Health Improvement and Disparities, Fingertips Public health data,
Mental Health and Wellbeing JSNA

Future baseline

- 15.6.18 The current baseline conditions and trends are expected to continue and to provide a relevant description of the predicted future baseline prevailing during the construction period of the Project.
- 15.6.19 New developments, including those related to individual parts of the overall HyNet North West programme, will take place within a context likely to be described using similar current and predicted baseline information.
- 15.6.20 The future baseline during the operational phase is considered appropriately represented by current conditions. Impacts are likely to arise from interaction between the project and long-established features of the area including existing patterns of use, rights of ways, locations of community facilities and services and the needs of affected sectors (such as access for agriculture). The future baseline will also depend on cumulative effects from known developments.

15.7 Embedded environmental measures

- 15.7.1 As part of the Project design process, a number of embedded environmental measures are proposed to reduce the potential for impacts on Peoples and Communities. **Table 15.13** outlines how these embedded measures will influence the People and Communities assessment.

Table 15.13 Summary of embedded environmental measures

Embedded measures	Compliance mechanism
The Applicant will prepare a skills and employment strategy to be included in the application. This strategy will set out how the Applicant will maximise use of, and upskill, the local workforce and will draw upon wider employment strategies to be prepared by the wider HyNet programme and Cadent.	DCO requirement
All development would be subject to standard best practice mitigation measures employed to avoid and minimise potential effects on local businesses and recreational facilities and more widely on tourism and recreation facilities.	Code of Construction Practice DCO requirement
A public-facing website and participation within local forums to provide information, community support and engagement in order to respond to general public interest and address concerns.	Regular maintenance of website. Records of activities provided on request.

15.8 Scope of the assessment

Potential receptors

15.8.1 The principal People and Communities receptors that have been identified as being potentially subject to effects are summarised in **Table 15.14**.

Table 15.14 People and Communities receptors subject to potential effects

Receptor	Reason for consideration
Individuals and communities with the need to travel within the area of the Project	There may be inconvenience from construction activities particularly at some times of year
Employment markets	Project labour requirements will create demand in markets which will influence local, regional or national supply
Potential workers, including those in the local workforce	Workers will have opportunities to earn incomes from providing labour
Materials, equipment and services markets	Project requirements will create demand in markets which will influence local, regional or national supply
Potential suppliers, including local business	Businesses may increase sales by supplying the project directly or indirectly, such as through services provided to workers
Users and producers of hydrogen	The Project enables opportunities for hydrogen users and producers
Landowners and developers; local authorities with statutory responsibility for planning.	The Project will require land for certain infrastructure elements and its existence will influence future land planning and may affect developers' perspectives of hope value.
The economy	Project expenditure will increase economic activity through its direct and indirect impacts
Commercial markets for hydrogen infrastructure development nationally and internationally	The Project will lead to increased capability from knowledge and expertise in development/ operation of large scale hydrogen networks which can enable new sales in future markets
General public	The Project may lead to concerns or changes in the behaviour of the general public with possible indirect effects

Likely significant effects

15.8.2 The effects on People and Communities receptors, which have the potential to be significant and have been taken forward for assessment are summarised in **Table 15.15**.

Table 15.15 People and Communities receptors scoped in for further assessment

Receptor	Likely significant effects
Individuals and communities with travel needs within the area of the Project	Reduced availability of public/private services and facilities from increased project-related activity during construction affecting the transport network and from additional temporary routes and longer travel times
Individuals and communities with needs to access particular land and amenities	Temporary disruption in access to particular locations during construction and minor changes during operation.
Employment markets	Project requirements for labour during construction raises demand above current levels of supply
Potential workers	Increased labour demand provides opportunities for local people seeking employment
Materials, equipment and services markets	Project requirements for materials equipment and service raises demand above current levels of supply
Potential suppliers, including local business	Increased demand for materials, equipment and services provides opportunities for suppliers
Users and producers of hydrogen	The Project provides a network for decarbonised energy production and use
Landowners and developers; local authorities with statutory responsibility for planning	Future development and land use may be influenced by the location of Project infrastructure.
The economy	Economic activity will be increased by project expenditure.

Receptor	Likely significant effects
Commercial markets for hydrogen infrastructure development nationally and internationally	Increased capability from knowledge of development and operation of large-scale hydrogen networks which may contribute to new sales in future markets
General public	The Project may lead to concerns or changes in the behaviour of the general public with possible indirect effects

Elements scoped out of further assessment

15.8.3 The receptors/effects detailed in **Table 15.16** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant.

Table 15.16 Summary of effects scoped out of the People and Communities assessment

Receptors/potential effects	Justification
Employment effects during operation	Workforce requirements, whether working locally or remotely, are small compared to relevant markets, as agreed by PINS in the Scoping Opinion.
Tourism	The area is not a primary tourist destination and magnitudes are likely to be small compared to existing recreational and amenity use, as agreed by PINS in the Scoping Opinion.
Effects on individual economic sectors which do not directly supply the materials, equipment and services required by the Project	These are represented by wider economic effects, as agreed by PINS in the Scoping Opinion.
Effects on social cohesion	The nature and scale of the expected workforce is not likely to affect social cohesion, as agreed by PINS in the Scoping Opinion.
Mental health concerns arising from the use of hydrogen gas in the pipeline network	The approach to mental health is based on work the Project will undertake with health professionals as required on a case-by-case basis supplemented by targeted and general communications and mitigation programmes noting

Receptors/potential effects	Justification
	that safety is an overriding priority for the Project, the use of hydrogen is highly regulated, and public concern more generally is scoped-in, as agreed by PINS in the Scoping Opinion.

15.9 Methodology for PEIR assessment

Introduction

- 15.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 3: Approach to preparing the PEIR**. However, whilst this has informed the approach that has been used in this People and Communities assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this People and Communities assessment.

Assessment of effects and determining significance

- 15.9.2 The socio-economic and health assessment of impacts affecting People and Communities is the systematic analysis of the effects of the Project on society resulting from changes to the circumstances in the environment on affected populations. The assessment has the objective of structuring both the analysis and the underlying information for decision-making within an overall aim of identifying the consequences from all types of effects on all participants in society. Both beneficial and adverse effects are assessed together with measures providing associated embedded or additional enhancement or mitigation, including those described in **Section 15.7: Embedded Environmental Measures**.
- 15.9.3 The basis of good practice in socio-economic assessment is commonly understood to be the implementation of a structured approach to answering the types of questions that arise from an overarching and general concern with people and communities in society. Questions are potentially wide-ranging and include those that individuals from any background might themselves raise due to direct effects on themselves or on people of concern to them.
- 15.9.4 Examples of the types of questions that an assessment aims to answer are:
- Will the Project result in material changes to the local, regional, or national demography, economy, economic sectors, employment opportunities or community characteristics, amenities and facilities?
 - Will a small number of people be affected in a significant way (changes to freedom of movement, employment prospects, amenity) or will significant numbers of people be affected?
 - Will people be affected over a long timescale?

- Will there be involuntary displacement of people and businesses?
- Will the Project result in a change similar to or larger than that experienced in the area over a similar time period in the past?
- Does the nature of effects caused by the Project or characteristics of people affected mean they would be particularly vulnerable or particularly advantaged?
- Ultimately, should the issue have a bearing on the decision whether to grant approval of the Project or not?

15.9.5 Impacts are defined in terms of their consequences on “receptors”. The objective in assessment is to consider potential effects on all affected receptors, and to establish those likely to be significant.

15.9.6 The simplest specification of socio-economic receptors is ‘people’, but more specific characterisations may also be used such as groups or organisations they belong to (for example, ‘workforce’ or according to religious belief). An individual may appear under more than one receptor heading (for example, as a member of the workforce and as a local resident).

Identification of effects

15.9.7 The identification of possible effects follows the principles underpinning EIA, particularly the principle of scoping. The impacts result from the activities related to the Project are identified and described according to knowledge of how activities related to it will occur. Such knowledge is continuously evolving as the design and understanding of the Project advances. Socio-economic effects may also arise from specific changes to the environment and be assessed using evidence provided in support of assessment of other EIA topics.

15.9.8 The likely significant effects are presented in **Table 15.14** and comprise those that are currently understood to require assessment. The list is based on information currently available regarding the Project, review of previous impact assessments for similar developments and consideration of the range of potential socio-economic and health impacts that may occur.

Assessment of Significance

15.9.9 The assessment of the significance of the effects is the primary concern and main output of the analysis. Significance will be assessed including embedded environmental measures. Where the potential for a significant environmental effect remains, ‘additional measures’ will be considered to avoid, reduce or compensate this effect. The assessment will report on the anticipated effects of the Project following the implementation of all mitigation to determine the ‘residual effects’.

15.9.10 Criteria for significance will be developed alongside the estimates of effects to meet the requirements for assessment of the specific types of effects according to the characteristics of receptors, as well as meeting good practice for criteria (such as being easy-to-use). Outcomes for assessments of significance will use the categories defined in the generic project-wide approach of ‘Major’, ‘Moderate’, ‘Minor’ or ‘Negligible’. Effects can be either beneficial or adverse.

- 15.9.11 The significance of effects will be assessed through the evaluation of the combination of the magnitude of effects and sensitivity of receptors using the matrix defined in the generic project-wide approach. Determination of magnitudes of change and of receptor sensitivity will similarly use the generic categories of 'High', 'medium', 'low', and 'very low'.

Magnitude of change

- 15.9.12 The magnitude of change is a summary term used to describe the features of an effect which can be represented as varying over a range. Straightforward effects may be represented with quantitative indicators, such as employment relative to a national average, but other effects may need a semi-quantitative or qualitative approach to account for variation. A range with four levels to represent the magnitudes of effects (high, medium, low and very low) is used and covers features such as:
- a more general concept of scale or extent (for example, number of groups and/or people, households or businesses affected; spatial area affected);
 - the duration and frequency of effects and whether they are permanent or time-limited (short, medium, long);
 - the direction of change and its reversibility; and
 - the probability of occurrence.
- 15.9.13 The assessment of the magnitude of change is based on a comparison with baseline conditions which show outcomes without the Project, and with comparators from similar developments or modelled scenarios.

Receptor sensitivity

- 15.9.14 The sensitivity of a receptor is a summary term that describes the ability of the receptor to withstand or absorb change within the period of time the impact is expected to occur and without a fundamental change to its character or attributes. Sensitivity to socio-economic and health effects has no single interpretation and can be seen as capturing the concept of a value that is potentially threatened or enhanced. A range with four levels of sensitivity (high, medium, low and very low) is used to describe receptors.
- 15.9.15 Sensitivity of receptors may depend on their current and future characteristics as well as the nature of the impact, reflecting aspects such as:
- capacity and availability of community resources;
 - previous experience of socio-economic change;
 - vulnerability from pre-existing social circumstances or health conditions;
 - cultural values, including public interest, perceptions towards a risk or potential change, and acceptability;
 - environmental vulnerability of habitats important to the socio-economic and health context (such as open space and public parks); and

- the direction, duration and reversibility of the specific impacts.

Determination of significance

15.9.16 The evaluation of significance will be based on a set of customised criteria which:

- are widely agreed, such as legal and physical thresholds including health and environmental standards;
- can be consistently and rationally applied and documented;
- meet public concerns (particularly over health and safety);
- reflect procedure and guidance; and
- reflect precedent experience.

15.9.17 Quantitative thresholds for criteria related to specific effects are referenced if relevant and available, supplemented by professional judgement that aims to reflect whether the general population would judge the impact to be of concern or not. In this context the significance criteria defined in LA 112²¹ will be used to guide considerations of the magnitude of effects, sensitivity of receptors and significance particularly at individual locations. Consideration covers whether:

- there is complete severance between communities and their land/assets, with little/no accessibility provision;
- alternatives are only available outside the local planning authority area;
- the level of use is very frequent (daily); and
- the land and assets are used by the majority ($\geq 50\%$) of the community.

15.9.18 For wider effects, a limited number of precedent studies include quantitative criteria with generic, non-project specific, benchmarks for demography, employment, economic effects, accommodation pressure social conditions and services, such as for Hinkley Point C³¹. These sources will be supplemented by criteria from other relevant assessments, where available.

15.9.19 While specific reference to available criteria is sometimes possible, an effect may be considered significant if, in the professional judgement of the expert undertaking the assessment, it would meet at least one of the following more general criteria:

- it leads to an exceedance of a defined standard or guideline used in determining what is considered an acceptable change in environmental conditions regarding socio-economic or health outcomes;

³¹ EDF Energy (2021). Hinkley Point C Environmental Appraisal Volume 2, Pre-application consultation - Stage 2, Chapter 8 Socio-economics. (Online) Available at: <https://www.edfenergy.com/sites/default/files/V2%20C08%20SOCIO%20ECONOMICS.pdf> (Accessed December 2021).

- it is likely that the Examining Authority would reasonably consider applying a DCO requirement or obligation within a legal agreement to the consent to require specific mitigation to reduce or overcome the effect; or
- it threatens or enhances the socio-economic conditions, health or quality of life by leading to beneficial or negative socio-economic, health or quality of life effects that are quantifiable and/or noticeable to the affected population (and that where data is available, is statistically significant).

15.9.20 The assessment of significance is based on a combination of the receptor sensitivity and the magnitude of change (See **Table 15.17**) and the final summary of significance is presented in a table showing each effect and identifying whether it is beneficial or adverse together with the accompanying rationale.

Table 15.17 Significance evaluation matrix

		Magnitude of change			
		High	Medium	Low	Very low
Sensitivity High or value		Major (significant)	Major (significant)	Moderate (potentially significant)	Minor (not significant)
	Medium	Major (significant)	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)
	Low	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)	Negligible (not significant)
	Very low	Minor (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)

Consideration of magnitudes of effects and receptor sensitivity for sub-topics

15.9.21 Specific consideration is relevant to sub-topics when considering socio-economic aspects arising at individual locations.

Construction phase

15.9.22 *Use of land for construction sites, exclusion zones, laydown areas, and access routes for construction works:* The consideration of land use and accessibility at individual locations can be assessed with reference to the guidance in LA112²¹, which identifies the following elements: “*Private property and housing; Community Land and Assets; Development Land and Businesses; Agricultural Land holdings; and Walkers, Cyclists and Horse-Riders*”.

15.9.23 The effects of the Project on access are influenced by the types of land and the associated users. These include commuters, people using public and private services and amenities (including health and community services and amenities).

Walkers, Cyclists and Horse-Riders are receptors with particular requirements that relate in particular to Public Rights of Way (PRoW).

- 15.9.24 Locations include those where the magnitude of effects is greater and/or receptor sensitivity is higher (such as hospitals and public parks). The effects related to individual locations are considered first for land inside the 500m buffer, including land parcels in single ownership that have a part that lies within the 500m buffer. Where effects of the Project are anticipated to extend beyond the 500m buffer, the area used for assessment will also be extended taking into account the magnitude of the effects and sensitivity of the affected users.
- 15.9.25 *Transport movements of materials and workforce to construction sites:* The effects from transport movements are covered in **Chapter 11: Traffic and Transport** in terms of the effects of changes in access and level of transport infrastructure use on routes and travel times for transport users. The effects at individual locations on travel times for affected users may result in impacts on different groups of people and communities (receptors) and their socio-economic and health characteristics (sensitivity).
- 15.9.26 *Air, water quality and noise effects from construction works and transport movements:* The air/water quality and noise effects from construction works and transport movements at individual locations are assessed in the relevant corresponding chapters including potential dispersion of effects via air or water pathways. The effects at individual locations for affected receptors may result in impacts on different groups of people and communities (receptors) and their socio-economic and health characteristics (sensitivity).
- 15.9.27 *Employment of project workforce:* The Project requirement for directly-employed labour is assessed in comparison to the local and wider regional employment markets. The potential impact is judged in terms of the magnitude of the workforce requirement compared to the capacity (sensitivity) of the relevant market (receptor).
- 15.9.28 *Investment expenditure:* The investment expenditure by the Project would add to overall economic activity through direct, indirect and induced effects on employment and on the level of gross value added (GVA). The effects will be assessed based on the levels of expenditure anticipated for the major categories of purchase and the levels of directly and indirectly employed labour. The additional demand from the Project will be assumed in general not to lead to changes in market prices.
- 15.9.29 *Purchase of specialist materials, equipment and services:* The Project would require appreciable quantities of materials, equipment and services. Where supply chains are limited in capacity locally or in wider markets, demand from the Project has the potential to be unmet and/or affect overall market supply to other purchasers. The assessment will be based on comparison of the levels of demand for major purchases, market size and the significance judged according to the characteristics (sensitivity) of the relevant market, in particular its size and ability to increase production.

Operational phase

- 15.9.30 *Users and producers of hydrogen:* The Project would attract businesses seeking a hydrogen connection. Individual locations may have the potential for more favourable connections due to easier access to the pipeline infrastructure and have been considered in route choices.
- 15.9.31 *Commercial markets for hydrogen infrastructure development nationally and internationally:* The Project would provide a newly skilled workforce with experience relevant to future hydrogen infrastructure development but does not establish a supplying organisation to international markets. The sensitivity is indicated by the potential market size while the magnitude of effect reflects the capability gained from the Project.
- 15.9.32 *Perceptions of hydrogen safety:* Public concern over hydrogen is potentially affected by a known legacy of hazards related to its combustion and abandonment of its use for lighter-than-air travel. The risks have been assessed in **Chapter 16: Major Accidents and Disasters**. The level and nature of public concern is assessed using the literature sources available which cover general responses to use of hydrogen and effects arising from the gas industry.

15.10 Preliminary assessment of People and Communities effects

Construction phase

Individuals and communities with travel and access needs within the area of the Project

- 15.10.1 A large number of individuals and communities within the Study Area are likely to be sensitive to effects from disruption due to the Project. For many people, these effects are likely to be inconsequential as a result of the choice of engineering design and embedded environmental measures. In a limited number of instances a level of temporary disruption and inconvenience may be experienced. Project-related activities at locations such as crossings with major commuter flows or near sensitive populations will be assessed in the ES. Potential effects include those on the health and well-being of vulnerable communities, as well as on economic outcomes.

Employment markets

- 15.10.2 Recent analysis by the University of Chester (UC), of the HyNet North West programme, includes estimates for impacts on the economy, as measured in terms of GVA, and impacts on employment, in terms of job numbers. The analysis is based on supporting work by BEIS and industry participants and provides aggregate and more detailed information for six project components of the overall programme; three for hydrogen (production, distribution and storage) and three for carbon dioxide (capture, transportation and storage)³².

³² HyNet UK North West, Socio-Economic Impact Assessment, July 2021, University of Chester and Mace

- 15.10.3 The Project covers infrastructure defined in the analysis as for "Hydrogen distribution Phase #2". (The analysis also defines Phase 3 of hydrogen distribution which does not form part of the Project).
- 15.10.4 The assessment of the impacts of the Project uses the results in the UC analysis reported for "Hydrogen distribution Phase #2" which is consistent with project information for the size of the workforce (See **Chapter 2**).
- 15.10.5 The total number of jobs (direct and indirect) for "Hydrogen distribution Phase #2" provides a measure of the overall aggregate increase in employment arising from the Project. It is estimated as 3,962 person-years ('jobs')³³ out of a total of 55,688 for the HyNet North West programme, approximately 7% of the total.
- 15.10.6 The UC analysis also indicates that all the economic and jobs benefits of the Project are retained in the UK, while other components of the HyNet North West programme make greater use of international markets. Furthermore, a significant proportion of the project benefits are retained in the North West. For the three main project costs – FEED, construction (including detailed design) and equipment – 80%, 90% and 40% respectively is expected to be retained in the North West, accounting for 15%, 45% and 50% of the total project costs, and together to more than two thirds of the total project value, a proportion as high or higher than for all other five project components. In total, the analysis suggests 3,130 jobs of the Project would be in the North West.
- 15.10.7 The impact on employment markets depends on the magnitude and timing of labour requirements. The UC analysis identifies a peak period for the capital expenditure and jobs for the HyNet North West programme from 2025 to 2026. In order to represent a worst case, all jobs required for the Project are also assumed to take place in the same period (2025-2026)³⁴, although actual impacts will be lower due to the amount of jobs (still forming part of Phase 2) which take place before and after this period, in the years up to 2024 and from 2027 onwards. Under this worst case assumption for coincident timing, 1,565 of the 3,130 jobs occur in each of the two peak years. All the hydrogen distribution Phase 3 jobs are assumed to occur after all the Phase 2 jobs.
- 15.10.8 The 1,565 jobs at peak year in the North West comprise 235 jobs related to FEED, 978³⁵ to construction, and 356 to equipment, based on the proportions of project value and an adjustment for relative earnings of 26% above those in construction for activities related to FEED and 9% for activities related to equipment³⁶.
- 15.10.9 In the North West, the UC analysis identifies a maximum, for the HyNet North West programme, of 7,400 jobs at the peak, with 4,770 of these in the construction sector and 1,000 in the manufacturing sector.

33 Full Time Equivalent (FTE) jobs. The number of employees depends on the level of part time working and is assumed negligible in these estimates.

³⁴ Consistent with the Project period identified in Chapter 2.

³⁵ Project Information in Chapter 2 provides a consistent estimate for a construction workforce of between 200 and 1,000 personnel at any one time.

³⁶ Earnings based on ONS datasets EARN03 Average Weekly Earnings - Not Seasonally Adjusted Average Weekly Earnings, for 2021 in sectors: 'Manufacturing - Engineering and Allied Industries', 'Construction' and Professional, Scientific & Technical Activities

- 15.10.10 Compared to the levels for the HyNet North West programme, the Project makes up 21% of the overall jobs (1,565 out of 7,400), 21% of the construction jobs (978 out of 4,770) and 36% of the manufacturing jobs (356 out of 1,000). For both the Project and the HyNet North West programme, 54% of these jobs are direct employment while 46% are in the supply chain (indirect).
- 15.10.11 The employment markets are represented by the statistics on sectoral employment in the North West and in the six councils.
- 15.10.12 **Table 15.18** shows the number of employee jobs, in total, and for selected sectors³⁷. The baseline size of the current employment market for the North West and for the six councils is shown on the left. Considering total employment across all sectors combined, the labour market for the six councils makes up 20% of the total labour market for the North West (765,200 divided by 3,861,000). It is 16% for the construction sector and 26% for professional and technical grades.
- 15.10.13 The additional jobs created in the peak year for the Project are shown on the right. The impact of the Project would be appreciable in that employment in the construction sector within the six councils would need to increase by 3.01% to meet the additional demand. The 3.01% represents an increase of 1,000 jobs over the existing number of 32,500 construction sector jobs in the six councils. The same increase would amount to 0.49% of the larger North West market where there are 198,000 construction sector jobs.
- 15.10.14 The proportionate impacts of other aspects of the employment requirements of the Project are smaller. The total Project employment of 1,565 jobs across all sectors would amount to 0.20% of the current 765,000 jobs in the six councils which is equivalent to 0.04% of the 3.8m jobs in all sectors in the North West. In the manufacturing sector, employment by the Project is predicted to be 356 jobs which is 0.56% of the 64,000 jobs in the six councils and 0.11% of the 337,000 jobs in the North West.
- 15.10.15 For comparison, **Table 15.19** shows the impact of the wider HyNet North West programme. Employment requirements in construction are an additional 14.68% above baseline levels for the six councils (equivalent to 2.41% of the baseline levels in the whole North West). In manufacturing they are an additional 1.56% for the six councils which is equivalent to 0.30% for the North West.

³⁷ The baseline (above) includes information for other sectors if required.

Table 15.18 Employment Effect at Peak: Project

Economic Sector	Baseline – Current Employment Market		Peak Employment - Project		
	Six councils	NW	Number	as % in Six councils	as % in NW
Total (all sectors)	765,200	3,861,000	1,565	0.20%	0.04%
<i>of which..</i>					
C: Manufacturing	64,000	337,000	356	0.56%	0.11%
F: Construction	32,500	198,000	978	3.01%	0.49%
M: Professional, Scientific And Technical Activities	98,500	377,000	231	0.23%	0.06%

Source: Wood plc, using ONS (NOMIS) and University of Chester analysis

* HyNet North West programme

Table 15.19 Employment Effect at Peak: HyNet North West programme UK

Economic Sector	Baseline – Current Employment Market		Peak Employment- HyNet North West programme UK		
	Six councils	NW	Number	as % of Six councils	as % in NW
Total (all sectors)	765,200	3,861,000	7,400	0.97%	0.19%
<i>of which..</i>					
C: Manufacturing	64,000	337,000	1,000	1.56%	0.30%
F: Construction	32,500	198,000	4,770	14.68%	2.41%
M: Professional, Scientific And Technical Activities	98,500	377,000	n/a	n/a	n/a

Source: Wood plc, using ONS (NOMIS) and University of Chester analysis

* HyNet North West programme

- 15.10.16 The appreciable benefits for employers and employees from working locally produce a strong incentive for the Project to draw on labour markets within the six councils rather than the wider North West region.
- 15.10.17 The UC analysis is based on the expected job retention within the North West and notes that the labour market is 'tight' with an estimate of a requirement at peak for an additional 4,500 workers in the construction sector and an additional 1,000 in the regional manufacturing sector to meet demand from the HyNet North West programme. Evidence of trends in levels of baseline construction activity and unemployment in the region (see **Section 15.6**) confirms that labour supply is a potential issue.
- 15.10.18 A measure used as a criterion for significance in the development of Hinkley Point C nuclear power station³⁸ is that a change in overall employment of more than 2% would be considered major, as would a change of more than 10% within a particular economic sector. The underlying point of reference is annual changes in local employment markets in the local baseline.
- 15.10.19 The values estimated within the construction sector exceed 14% for the HyNet North West programme when compared with the labour market for the six councils, while the Project itself causes a change of over 3%. Labour demand from the Project in the construction sector at peak (978) is estimated at over 20% of the additional jobs requirement estimated for the HyNet North West programme (4,500) which considered together with information on trends in unemployment, indicates potentially significant effects on employment markets.

Potential Workers

- 15.10.20 In current and forecast market conditions, workers are expected to have a range of employment options. The Project would benefit from access to jobseekers and expects to work with local agencies and other employers to make project employment available to local people. The level of direct and indirect employment required in the area of the Project would provide an appreciable increase in the level of local opportunity, as indicated by the magnitude of effects estimated for employment markets above.

Materials, equipment and services markets

- 15.10.21 Expenditure by the Project would support economic activity and jobs in the supply chain. The UC analysis presents estimates of expenditure on FEED, construction and equipment. Equipment purchased by the Project is predicted to constitute approximately 40% of the overall capital expenditure for the Project. The majority of this would be expected to be spent in specialist markets in the North West.

³⁸ EDF Energy (2021). Hinkley Point C Environmental Appraisal Volume 2, Pre-application consultation - Stage 2, Chapter 8 Socio-economics. (Online) Available at: <https://www.edfenergy.com/sites/default/files/V2%20C08%20SOCIO%20ECONOMICS.pdf> (Accessed December 2021).

Potential suppliers, including local business

- 15.10.22 The Project has specialist and general requirements from a supply chain that is well-established in the North West. The Project would generate appreciable opportunities for individual suppliers and contribute to wider market activity, while market capacity is expected to be adequate to meet requirements. The Project would work to enable the benefits of local supply to be achieved, including provision of early market information and engagement. Individual local suppliers have an opportunity to gain large orders due to project volumes but market capacity also allows a sequence of smaller orders. The assessment of supply chain impacts will be confirmed in the ES after final design freeze.

Landowners and developers; local authorities with statutory responsibility for planning

- 15.10.23 The majority of the Project is planned to be implemented on green belt land which would remain as green belt (as the majority of the infrastructure, apart from HAGIs will be below ground) and would not be expected to have another use under local authority or private developer plans. As such the impact on statutory planning authorities and developers is limited to sections outside the green belt where there may be localised impacts. The effects on individual locations outside the green belt will be addressed in the ES following final design freeze.

The economy

- 15.10.24 Investment expenditure by the Project would lead to an increase in economic activity which can be observed and characterised using a metric of gross value added (GVA). As a proportionate change compared to current levels, many GVA effects closely reflect the proportionate effects on jobs. The UC analysis has developed GVA estimates for the Project (covering just Phase 2 distribution) alongside the jobs estimates. For the UK, the GVA during construction is estimated to be £195m, which is 5% of the total capital costs of the HyNet North West programme. In the North West, the GVA from the Project is estimated to be £143m which is divided equally as £71m of direct effect and £71m of indirect effect, which is not excessive and would amount to some 1.2% of the current GVA in the construction sector in the North West or 0.08% of the GVA in all sectors of the North West economy³⁹.

Commercial markets for hydrogen infrastructure development nationally and internationally

- 15.10.25 The international market for hydrogen infrastructure is growing rapidly. By 2030, the International Energy Agency⁴⁰ expects that total hydrogen demand from industry will expand by 44% with low-carbon hydrogen becoming increasingly important. A shortfall in capacity is predicted with planned projects expected to be sufficient to meet only approximately 18% of this demand and rapid action required in the next ten years to meet projected Net Zero Emissions by 2050.

³⁹ Source: ONS - Regional gross value added (balanced) by industry for 2019 (Table 1c, current prices) North West

⁴⁰ International Energy Agency (2021). Hydrogen Tracking report(online) Available at: <https://www.iea.org/reports/hydrogen> (Accessed August 2022)

- 15.10.26 The experience of the Project would contribute towards future technical capability through development of a workforce with relevant experience in supply but does not establish a major new supplying organisation. As such, it would provide core knowledge and capability but would not establish a route to market or a supply chain, which can serve international markets.

General public

- 15.10.27 In an international survey of public attitudes⁴¹, UK research^{42,43} is quoted as noting that the level of knowledge about energy derived from hydrogen is low but, regardless of education and socio-economic background, people are eager to learn more (assumed to be reflective of their concerns with fossil fuels) while they are indifferent to the concept of hydrogen energy. Generally, opinions towards hydrogen were favourable noting that price and safety should not be compromised. While a very low proportion of surveyed cases, older members of society were more concerned over hydrogen production, and women were a group that was more accepting of hydrogen energy subject to safety and cost.
- 15.10.28 Attitudes to the Project may also reflect public desire for increased decarbonisation with potential concern over limits to network capacity and access for additional hydrogen producers and users. In the Office for National Statistics' (ONS) Opinions and Lifestyle Survey (OPN) for October 2021 three-quarters (75%) of adults in Great Britain said they were worried about the impact of climate change⁴⁴.
- 15.10.29 The concerns of the general public regarding hydrogen safety in the near locality will be identified and addressed through targeted communications and appropriate mitigation programmes. For the wider public, general communication programmes in relation to project safety and contribution to decarbonisation will provide a source of clear and objective information to increase knowledge and awareness. **Chapter 16: Major Accidents and Disaster** also provides consideration of risks to safety arising from the Project. Additional levels of concern are considered likely to be rare and the Applicant will work with health professionals as required on a case-by-case basis. The overall effects are assessed as significant due to the

⁴¹ Ingaldi, M; Klimecka-Tatar, D. People's Attitude to Energy from Hydrogen—From the Point of View of Modern Energy Technologies and Social Responsibility, Faculty of Management, Czestochowa University of Technology, December 2020.

⁴² Ricci, M.; Flynn, R.; Bellaby, P. (Eds.) Public Attitudes towards Hydrogen Energy: Preliminary Analysis of Findings from Focus Groups in London, Teesside and Wales; Report for UK Sustainable Hydrogen Consortium; ISCP: Ann Arbor, MI, USA; University of Salford: Salford, UK, 2006.

⁴³ Cherryman, S.J.; King, S.; Hawkes, F.R.; Dinsdale, R.; Hawkes, D.L. An exploratory study of public opinions on the use of hydrogen energy in Wales. Public Underst Sci. 2008, 17, 397–410.

⁴⁴ ONS, (2021). Data from the Opinions and Lifestyle Survey (OPN), about public attitudes towards the future of the environment and the impact of climate change, (online) Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/dataonpublicattitudestotheenvironmentandtheimpactofclimatechangeinbritain>. (Accessed August 2022).

scale of decarbonisation enabled by the Project and potential concerns related to hydrogen infrastructure.

Operational phase

People and communities affected by project activities with temporary effects on amenity use of land

- 15.10.30 The Project will restore green belt land after temporary activities related to construction of the pipeline infrastructure, construction compounds and material storage locations to a condition that minimises impacts on amenity uses. The effects are considered to be minor in a general context where green belt land is not completely undeveloped and changes are temporary.

Users and producers of hydrogen

- 15.10.31 The Project provides the network essential for enabling hydrogen producers to supply hydrogen users. A network is required as part of the HyNet North West programme and alternatives, such as distribution of hydrogen using road transport would be very different in safety, design and level of costs. The effects of the Project are to make the overall HyNet North West programme feasible and contribute to the body of skills and experience that will enable the sector to develop.

Landowners and developers; local authorities with statutory responsibility for planning

- 15.10.32 Impacts in the operational phase will follow-on from those assessed in the construction phase. As such the impact on statutory planning authorities and developers is limited to sections outside the green belt where there may be localised impacts. The effects on individual locations will be addressed in the ES.

General public

- 15.10.33 As in the construction phase, there is expected to be continued public concern over climate change and concerns related to the safety and costs of hydrogen energy, while the Project provides an essential component of decarbonisation in the North West. As stated previously, **Chapter 16: Major Accidents and Disaster** provides consideration of risks to safety arising from the Project.
- 15.10.34 The opinion and concerns of the general public are likely to be significantly affected by operational experience of the Project. It should however be noted that there is an existing hydrogen infrastructure in the area⁴⁵, which the public are unlikely to be aware of. A record of safe and reliable performance will contribute to positive attitudes, while increased familiarity and acceptance may lead to corresponding concerns over limits to network capacity and access for additional hydrogen producers and users.

⁴⁵ Inovyn currently operate a 3km hydrogen pipeline in the area.

- 15.10.35 The concerns of the general public will continue to be addressed through communication programmes including a public-facing website⁴⁶, which provides a source of information to increase knowledge and awareness and through work with health professionals as required on a case-by-case basis.

Decommissioning phase

- 15.10.36 The decommissioning phase will require removing the hydrogen while leaving the pipeline in situ so as to reduce potential environmental effects. Decommissioning will otherwise be the reverse of the construction sequence with activities along the same corridors and involving the application of similar construction plant and methods. In addition, a Decommissioning Plan will ensure that activities meet relevant statutory requirements, reflect commitments to landowners/statutory authorities and take account of any developed technology and good practice. The socio-economic impacts are likely to be similar to those in the construction phase but of a lesser magnitude.

15.11 Preliminary significance conclusions

- 15.11.1 A summary of the results of the preliminary People and Communities assessment is provided in **Table 15.20**.

⁴⁶ <https://www.hynethydrogenpipeline.co.uk/>

Table 15.20 Preliminary summary of significance of effects (*)

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
Construction				
Individuals and communities travel needs within the area of the Project	High	Low	Moderate adverse (potentially significant)	People are generally sensitive to disruption of transport networks and project activities are widespread across the area, but awareness of this and avoidance is embedded in the engineering approaches adopted.
Individuals and communities with needs to access particular land and amenities	High	Low	Moderate adverse (potentially significant)	People are generally sensitive to disruption to access and project activities are widespread across the area but awareness of this issue underpins the engineering approaches adopted.
Employment markets	High	High	Major adverse (significant)	Employment markets are large but currently tight and the level of demand for construction workers from the Project is equivalent to over 20% of the predicted level of deficiency in labour supply.
Potential workers	Medium	Low	Minor beneficial (not significant)	In current and forecast market conditions, workers are expected to have a range of employment options as well as the Project.
Materials, equipment and services markets	Low	Low	Minor beneficial (not significant)	The relevant markets in the North West and northern UK are large and serve many customers. The Project

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
				requirements are unlikely to produce excessive demands.
Potential suppliers, including local business	Medium	Low	Minor beneficial (not significant)	Individual suppliers with specific locational and technical advantages may gain large orders due to project volumes, but orders may also be broken down across a wider market to have a lesser impact.
Landowners and developers; local authorities with statutory responsibility for planning.	Low	Low	Minor adverse (not significant)	The majority of the network is planned to be implemented on green belt land which would remain as green belt and would not be expected to have another use under local authority or private developer plans. Certain areas of development outside the green belt may have localised impacts.
The economy	Low	Medium	Minor beneficial (not significant)	The value added (GVA) from project activities during construction is expected to make up 5% of the total for the HyNet North West programme, with an effect in the North West amounting to 1.2% of the current GVA in the construction sector.
Commercial markets for hydrogen infrastructure development nationally and internationally	High	Low	Moderate beneficial (potentially significant)	The international market for hydrogen infrastructure is growing rapidly. The experience of the Project contributes towards future capability in supply but does not establish a major new supplying organisation.

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
General public	High	High	Major adverse & beneficial (significant)	There is appreciable public concern over climate change and while there is concern with the safety and costs of hydrogen energy, the Project provides an essential component of decarbonisation in the North West.
Operation				
People and communities affected by project activities with temporary effects on amenity use of land	High	Very Low	Minor adverse (not significant)	Changes to land areas reinstated after temporary construction works are considered to be minor in a general context where the green belt land proposed for development is not completely undeveloped and changes are temporary.
Users and producers of hydrogen	High	High	Major beneficial (significant)	The distribution network provided by the Project would be an irreplaceable component in the decarbonisation strategy for the North West.
Landowners and developers; local authorities with statutory responsibility for planning.	Low	Low	Minor adverse (not significant)	The majority of the network is planned to be implemented on green belt land, which would remain as green belt, and would not be expected to have another use under local authority or private developer plans. Certain areas proposed for development outside the green belt may experience localised impacts.

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
General public	High	High	Major adverse & beneficial (significant)	There is appreciable public concern over climate change and during operation concern with the safety and costs of hydrogen energy will remain while the Project provides a continuing and essential component of decarbonisation in the North West.
Decommissioning				
Impacts arising from decommissioning are expected to be similar to those for construction but of a lesser magnitude. No significant effects are anticipated.				

Notes: (*) The assessment of effects is pending further assessment in the ES, particularly regarding individual locations.

(1) The sensitivity/importance/value of a receptor is defined using the criteria set out in **Section 15.9** and is defined as [very low, low, medium, and high].

(2) The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in **Section 15.9** and is defined as [very low, low, medium, and high].

(3) The significance of the environmental effects is based on the combination of the sensitivity/importance/value of a receptor and the magnitude of change and is expressed as major (significant), moderate (potentially significant) or minor/negligible (not significant), subject to the evaluation methodology outlined in **Section 15.9**.

15.12 Further work to be undertaken

- 15.12.1 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 People and Communities assessment presented in the ES.

Baseline

- 15.12.2 The baseline characteristics of people and communities will be collated for the assessment of the socio-economic impacts arising at individual locations.
- 15.12.3 The developments in the area relevant to the assessment of cumulative effects will be identified.

Assessment

- 15.12.4 The assessment of the socio-economic impacts arising at individual locations will take into account further detail of planned activities.
- 15.12.5 The developments in the area relevant to the assessment of cumulative effects will be reviewed for their socio-economic effects.
- 15.12.6 A cumulative effects assessment (CEA) will be undertaken for the Project which considers the combined impacts with other developments on the same single receptor or resource (inter-project effects). The detailed method to be followed in identifying and assessing potential cumulative effects is set out in **Section 3.9 of Chapter 3: Approach to Preparing the PEIR**.

Environmental measures

- 15.12.7 Environmental measures for addressing socio-economic impacts arising at individual locations will be identified as appropriate.

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