
TABLE OF CONTENTS

18.0	SOCIO-ECONOMICS AND LAND USE	3
18.1	Introduction	3
18.2	Legislation, Planning Policy Context and Other Guidance	3
18.3	Assessment Methodology and Significance Criteria	11
18.4	Baseline Conditions	19
18.5	Proposed Development Design and Impact Avoidance	32
18.6	Impacts and Likely Significant Effects	35
18.7	Essential Mitigation and Enhancement Measures	59
18.8	Residual Effects and Conclusions	60
18.9	Summary of Significant Effects	60
18.10	References	62

TABLES

Table 18-1: Sensitivity Classification	13
Table 18-2: Magnitude Classification	14
Table 18-3: Classification of Effects	15
Table 18-4: Skills Profile	20
Table 18-5: Community Facilities and Open Space Within 3 km of the Proposed Development Site	27
Table 18-6: Population Projections by Local Authority	31
Table 18-7: Population Projections by Age	32
Table 18-8: Net Construction Employment in Middlesbrough and Stockton TTWA (Average Number of Workers Onsite Per Year)	37
Table 18-9: Wider Socio-economic Impacts and Effects in the Proposed Development Construction Phase	40
Table 18-10: Net Operational Employment in Middlesbrough and Stockton TTWA (Average Number of Workers Onsite per Year)	51
Table 18-11: Wider Socio-economic Impacts and Effects in the Proposed Development Operational Phase	52
Table 18-12: Summary of Significant Effects	61

PLATES

Plate 18-1: Population Age Breakdown (H2Teesside Study Area, Middlesbrough and Stockton TTWA and England)	20
Plate 18-2: Employment by Industry (H2Teesside Study Area, Middlesbrough and Stockton TTWA and England)	22

VOLUME II: FIGURES (ES VOLUME II, EN070009/APP/6.3)

Figure 18-1: Direct Impact Area and Wider Impact Area

VOLUME III: APPENDICES (ES VOLUME III, EN070009/APP/6.4)

No appendices associated with this chapter.

Rev: 0

18.0 SOCIO-ECONOMICS AND LAND USE

18.1 Introduction

18.1.1 This chapter of the Environmental Statement (ES) identifies the potential impacts and effects on socio-economics and land use that are to be considered as part of the Environmental Impact Assessment (EIA) of the Proposed Development.

18.1.2 This chapter is supported by the following figure:

- Figure 18-1: Direct Impact Area and Wider Impact Area (ES Volume II, EN070009/APP/6.3).

18.2 Legislation, Planning Policy Context and Other Guidance

18.2.1 This section identifies and describes legislation, planning policy and guidance that is of relevance to the assessment of socio-economic and land use effects.

Legislative Background

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations')

18.2.2 The UK Government set out regulations in 2017 regarding the EIA process (HM Government, 2017). In Regulation 5(2), the regulations detail that the EIA must identify, describe and address the direct and indirect significant effects of the following factors:

- population and human health;
- biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC(a) and Directive 2009/147/EC(b);
- land, soil, water, air and climate;
- material assets, cultural heritage and the landscape; and
- the interaction between the factors referred to above.

18.2.3 This has been considered within the assessment of effects in this chapter, with reference to population, land use and employment effects in particular.

Planning Policy Context

National Planning Policy

Overarching National Policy Statement for Energy (EN-1) (2023)

18.2.4 The Overarching NPS for Energy (EN-1) was designated in January 2024 by the Department for Energy Security and Net Zero (DESNZ) (DESNZ, 2023a). The most relevant paragraphs for the socio-economics and land use assessment are paragraphs 4.3.4 and 4.3.5, which state that *"the applicant must set out information on the likely significant environmental, social and economic effects of the development, and show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation*

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- hierarchy.*" The NPS states that this should be considered for effects "*arising from preconstruction, construction, operation and decommissioning*".
- 18.2.5 In addition, paragraph 5.13.4 outlines additional socio-economic impacts to be considered:
- *"the creation of jobs and training opportunities. Applicants may wish to provide information on the sustainability of the jobs created, including where they will help to develop the skills needed for the UK's transition to Net Zero;*
 - *the contribution to the development of low-carbon industries at the local and regional level as well as nationally;*
 - *the provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities;*
 - *any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains;*
 - *effects (positive and negative) on tourism and other users of the area impacted;*
 - *the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and*
 - *cumulative effects - if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region."*
- 18.2.6 In reference to agricultural land, paragraph 5.11.12 outlines that "*Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5).*"
- 18.2.7 In regard to open space, the NPS EN-1 states that "*The government's policy is to ensure there is adequate provision of high quality open space and sports and recreation facilities to meet the needs of local communities.*" Because of this, "*Applicants will need to consult the local community on their proposals to build on existing open space, sports or recreational buildings and land.*" If there are any adverse effects on this, The Secretary of State should consider where "*open space is adequately mitigated or compensated by means of any planning obligations*".
- 18.2.8 In alignment with the NPS EN-1, this chapter considers the socio-economic and land use effects detailed in this policy for the Proposed Development.
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National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (2023)

- 18.2.9 The NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) was designated in January 2024 and should be read in conjunction with NPS EN-1 (DESNZ, 2023b). This NPS ensures that applications can continue to be made in line with current policies to enable the development of natural gas supply and gas and oil pipelines. The impacts concerned in EN-4 are specific to gas supply infrastructure and oil and gas pipelines, where further consideration is necessary above the EN-1 general impacts. Overall, EN-4 and EN-1 taken together can be used to inform assessments relating to impacts on socio-economic receptors.

National Policy Statement for Electricity Networks Infrastructure (EN-5) (2023)

- 18.2.10 The NPS for Electricity Networks Infrastructure (EN-5) was also published in November 2023 and should be read in conjunction with NPS EN-1 of that year (DESNZ, 2023c). This NPS focuses on the applications for new electricity networks infrastructure, which includes ensuring applicants develop and maintain an economical and efficient network.
- 18.2.11 It also notes at paragraph 2.9.25 that *“the Secretary of State should only grant development consent for underground or subsea sections of a proposed line over an overhead alternative if it is satisfied that the benefits accruing from the former proposal clearly outweigh any extra economic, social, or environmental impacts that it presents, the mitigation hierarchy has been followed, and that any technical obstacles associated with it are surmountable.”*

The National Planning Policy Framework (2023)

- 18.2.12 The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities (DLUHC), 2023) sets out the Government’s planning policies in a single document. The NPPF acknowledges that while it *“does not contain specific policies for nationally significant infrastructure projects”* (NSIPs), it may be given weight in decision-making for NSIPs where the policies in the NPPF are *“other matters that are relevant”*.
- 18.2.13 The NPPF places emphasis on its overarching economic, social and environmental objectives and presumption in favour of sustainable development. It states that planning policies should help create the conditions in which businesses can invest, expand and adapt. The following sections of the NPPF are relevant to this topic.
- 18.2.14 Section 8 *“Promoting healthy and safe communities”* makes specific reference to the enablement of *“healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.”* This section also goes on to emphasise the provision of *“social, recreational and cultural facilities the community needs”*.
- 18.2.15 Paragraph 102 describes that *“access to a network of high-quality open spaces and opportunities for sport and physical activity is important for the health and well-*
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being of communities". Moreover, paragraph 104 states that "decisions should protect and enhance public rights of way and access".

18.2.16 In line with the NPPF, this chapter assesses the effect of the Proposed Development on local communities, community facilities, open space and Public Rights of Way (PRoWs).

Planning Practice Guidance: Housing and economic land availability assessment

18.2.17 The Planning Practice Guidance (PPG) for Housing and economic land availability assessments was published in 2014 and last updated in July 2019 (HM Government, 2019). This PPG sets out at paragraph 001 the required assessment methodology to:

- *"identify sites and broad locations with potential for development;*
- *assess their development potential; and*
- *assess their suitability for development and the likelihood of development coming forward (the availability and achievability)."*

18.2.18 The PPG also states at paragraph 016 that *"Development potential is a significant factor that affects the economic viability of a site / broad location and its suitability for a particular use. Therefore, assessing achievability (including viability) and suitability can usefully be carried out in parallel with estimating the development potential".*

18.2.19 In line with PPG, this chapter assesses any impacts of the Proposed Development on the development potential of sites.

Planning Practice Guidance: Open Space, Sports and Recreation Facilities, Public Rights of Way and Local Green Space

18.2.20 This PPG was published in March 2014, and establishes key advice on the designation on open space and PRoWs (HM Government, 2014). Within this, the guidance states that *"Open space should be taken into account in planning for new development and considering proposals that may affect existing open space".* It also states that *"Public rights of way form an important component of sustainable transport links and should be protected or enhanced. The DEFRA Rights of Way Circular (1/09) gives advice to local authorities on recording, managing and maintaining, protecting and changing public rights of way".*

18.2.21 In line with PPG guidance, this chapter assesses the impacts of the Proposed Development on the existing open space and PRoW.

Energy White Paper: Powering Our Net Zero Future (2020)

18.2.22 The Energy White Paper was published by the HM Government in December 2020 (HM Government, 2020). Within this, the Prime Minister's Ten Point Plan is outlined with respect to the areas of focus for green energy in the UK. Among these key points, the Hydrogen and the Carbon Capture, Usage and Storage (CCUS) sectors are considered important emerging green sectors for the UK. For Hydrogen, the paper states that *"the UK is aiming for 5GW of low-carbon hydrogen production*

capacity by 2030". For CCUS, the paper states that "*our ambition is to capture 10Mt of carbon dioxide a year by 2030*". Given the intended future use of the Proposed Development, this chapter takes into account these national goals, which the Proposed Development supports.

Carbon Capture, Usage and Storage Vision (2023)

- 18.2.23 The CCUS Vision was published in 2023 by DESNZ to support the development of the carbon capture market in the UK by 2035 (DESNZ, 2023). Through doing so, the CCUS Vision presents economic benefits to the UK, including supporting up to 50,000 jobs through CCUS projects. This has the potential to support between £4 billion and £5 billion in Gross Value Added from UK CCUS exports by 2050. alongside meeting net zero targets.

Regional Planning Policy

Tees Valley Combined Authority Strategic Economic Plan (2016 to 2026)

- 18.2.24 The Tees Valley Strategic Economic Plan (SEP) (2016 to 2026) sets out the priorities for economic growth in the Tees Valley area (Tees Valley Combined Authority (TVCA), 2016). By 2026, the Combined Authority aim to create 26,000 additional jobs and grow the Tees Valley economy by £2.8 billion. The process, chemicals and energy sector are one of seven priority sectors identified as having the potential for further growth in the Tees Valley. The SEP is focused around six themes which reflect the main priorities over the ten-year plan period. This includes "*research, development, innovation and energy*" where the aim is to "*introduce new processes and practices which reduce carbon emissions, increase productivity and the availability of high value jobs*". This includes Carbon Capture and Storage (CCS).
- 18.2.25 The SEP also includes the Strategic Priority of "*Place*", which aims to "*revitalise our town centres and urban core, bring forward surplus public and blighted brownfield land for development and strengthen our commercial property offer*". It also seeks to create a place where businesses want to invest, which is supported by the Proposed Development. The Proposed Development would also help to promote the location as a core energy cluster, develop brownfield land in the Travel To Work Area (TTWA) and South Tees Development Corporation (STDC) area and promote the use of low carbon energy options.

South Tees Regeneration Master Plan (2017)

- 18.2.26 The South Tees Regeneration Master Plan was published in 2017 by the STDC (STDC, 2017). Within this policy, energy generation is a key priority of the STDC area. The STDC has the following core objectives:
- To further the economic development and regeneration of the South Tees area, so that it becomes a major contributor to the Tees Valley economy and the delivery of the Tees Valley's Strategic Economic Plan;
 - To attract private sector investment and secure new, additional, good quality jobs, accessible to the people of the Tees Valley;

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- To transform and improve the working environment of the MDC area, providing good quality, safe conditions for the workforce and wider community, while taking a comprehensive approach to redevelopment at a scale that enables the realisation of an international-level investment opportunity; and
 - To contribute to the delivery of UK Government's Industrial Strategy, by supporting the growth of internationally competitive industries with access to global markets.
- 18.2.27 CCS is detailed as a key technology for further reduction of emissions in Europe, and is identified as part of the conceptual energy plans for the area. This is supported by the Proposed Development, which will support emissions reduction in the STDC.

Local Planning Policy

- 18.2.28 This section considers the relevant local policies of Redcar and Cleveland Borough Council (RCBC), Stockton on Tees Borough Council (STBC) and Hartlepool Borough Council (HBC).

Redcar and Cleveland Local Plan (2018)

- 18.2.29 The Redcar and Cleveland Local Plan and Policies Map (RCBC, 2018) was adopted in May 2018. A key issue identified in the Local Plan is the fragility of the economic landscape and a need for jobs to be generated in the private sector. The Local Plan indicates future growth is likely to be driven by low carbon technologies and manufacturing, energy and food security and an efficient use of natural resources.
- 18.2.30 The Local Plan indicates that creating local employment opportunities is key to delivering economic growth. The decline of the traditional steel and chemical industries has impacted on many communities in Redcar and Cleveland, leading to areas of deprivation and a declining population.
- 18.2.31 Policy ED 8 focuses on the Rural Economy, stating that, among other actions, the rural economy will be supported by:
- *"promoting and retaining rural community facilities and local services which meet rural needs; and*
 - *supporting the management of land for nature conservation and heritage assets."*
- 18.2.32 The plan also states that *"Rural economic development will not be supported which would result in the loss of the best and most versatile agricultural land"*.
- 18.2.33 The Local Plan allocates land for specialist employment uses, and places focus on the role of the STDC. The Local Plan states that *"this substantial area of economic opportunity"* will *"drive economic growth and regeneration"* in the area. Therefore, the Proposed Development supports the economic ambitions of RCBC, and this chapter will assess to what extent community facilities, agricultural land and development land will be affected by the Proposed Development.
- 18.2.34 In terms of open space, Policy SD 4 states that development will be permitted where it *"will not result in the unacceptable loss or significant adverse impact on important*
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open spaces or environmental, built or heritage assets which are considered important to the quality of the local environment". Furthermore, Policy N3: Open Space and Recreation states that redevelopment of open space will only be considered where:

- *"there is a proven excess of such provision and the proposed loss will not result in a current or likely shortfall in the plan period; or*
- *recreational facilities within the site will be enhanced by the proposed development; or*
- *the community would gain greater or equivalent benefit from the provision of alternative open space, sport or recreational facilities within the local area; and*
- *in all cases, the loss would not harm the character and appearance of the surrounding area."*

Stockton on Tees Local Plan (2019)

18.2.35 Stockton-on-Tees Borough Council Local Plan (STBC, 2019) was adopted in January 2019. A Strategic Priority set out in the Local Plan is to *"encourage economic growth, job creation and a more entrepreneurial culture within the Borough, as a means of diversifying the economic base and strengthening existing economic strengths, clusters and sectors"*.

18.2.36 The Local Plan also allocates sufficient employment sites to ensure economic growth will be prioritised, including the use of previously developed or under-used land. The Proposed Development supports the targets for STBC regarding economic growth in the Borough.

18.2.37 Policy ENV6 supports the protection and enhancement of open space in Stockton-on-Tees, stating that *"the loss of open space as shown on the Policies Map, and any amenity open space, will not be supported unless:*

- *it has been demonstrated to be surplus to requirements; or*
- *the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or*
- *the proposal is for another sports or recreational provision, the needs for which, clearly outweigh the loss; or*
- *the proposal is ancillary to the use of the open space; and e. in all cases there would be no significant harm to the character and appearance of the area or nature conservation interests."*

Hartlepool Local Plan (2018)

18.2.38 HBC adopted the Hartlepool Local Plan in May 2018 (HBC, 2018). A theme of 'Hartlepool's Ambition' for the Local Plan is for 'Jobs and the Economy, Lifelong Learning and Skills'. The Local Plan focuses on this theme through the following spatial objectives:

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- to diversify the economic base of Hartlepool and promote an entrepreneurial culture to create more employment opportunities for local people;
 - to develop Hartlepool as a destination of choice for inward investment;
 - to enhance the tourism offer in order to support the development of educational and training facilities that will develop a skilled workforce;
 - to facilitate development in the key investment areas in the Borough; and
 - to continue to protect and enhance the vitality and viability of the Town Centre.
- 18.2.39 In the policy NE2: Green Infrastructure, it states that *“The Borough Council will investigate the potential for improving access to open spaces and the countryside and will seek opportunities to expand and improve the Rights of Way network”*. In addition, the policy states that *“Where an area of open space is lost to development, the Borough Council will impose planning conditions or a legal agreement as appropriate, to ensure compensatory provision of an alternative site or enhancement of adjoining open space.”*
- 18.2.40 In line with HBC ambitions, the Proposed Development supports objectives for economic growth, and in creating employment opportunities for local people.
- Tees Valley Joint Minerals and Waste Core Strategy Development Plan Document (DPD) and Waste Policies and Sites DPD (both 2011)*
- 18.2.41 The Tees Valley Minerals and Waste DPDs – prepared jointly by the boroughs of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees – bring together the planning issues for minerals and waste within the Tees Valley area (TVCA, 2011).
- 18.2.42 Within Redcar and Cleveland, there are a number of policies relating to minerals, waste and recycling processing, allocated in the Tees Valley Joint Minerals and Waste DPD. These are as follows:
- MWC9 Sewage Treatment: development involving the extension or upgrade of existing sewage treatment facilities, including at the Bran Sands Regional Sludge Treatment Centre (Redcar and Cleveland) will be supported. This is located within the boundary of the Proposed Development Site, adjacent to the Tees.
 - MWC5 Protection of Minerals Extraction sites: operational safeguarding areas are identified around the following minerals extraction sites: Hart Quarry (Hartlepool) and Stockton Quarry (Stockton-on-Tees). The latter is located along the River Tees within the boundary of the Proposed Development Site. Within these areas, development proposals will be required to demonstrate that they are compatible with the permitted minerals operations.
- 18.2.43 Within the Waste Policies and Sites DPD, two Mineral and Waste Policies (MWP) are noted to be located within the vicinity of the Proposed Development Site to the south. These policies, MWP8 and MWP10(b), both refer to the South Tees Eco-Park, and provide proposals for facilities to recycle up to a combined total of 700,000 tonnes per year of construction and demolition wastes by 2016, rising to 791,000
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tonnes per year in 2021. The site of the South Tees Eco-Park is located towards the south of the boundary of the Proposed Development Site.

Other Guidance

18.2.44 Whilst there is no dedicated United Kingdom (UK) legislation that details the content required for a socio-economic assessment as part of an EIA, the preliminary socio-economic assessment presented in this chapter is based upon a range of relevant guidance. This includes:

- Additionality Guide (4th Edition) (Homes and Communities Agency (HCA), 2014);
- Research to Improve the Assessment of Additionality (Department for Business, Innovation and Skills (BIS), 2009);
- The Green Book – Appraisal and Evaluation in Central Government (HM Treasury, 2022); and
- The Magenta Book – Guidance for Evaluation (HM Treasury, 2020).

18.3 Assessment Methodology and Significance Criteria

18.3.1 This assessment is based on information obtained to date. It should be read in conjunction with the following chapters:

- Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2);
- Chapter 5: Construction and Programme Management (ES Volume I, EN070009/APP/6.2);
- Chapter 8: Air Quality (ES Volume I, EN070009/APP/6.2);
- Chapter 9: Surface Water, Flood Risk and Water Resources (ES Volume I, EN070009/APP/6.2);
- Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2);
- Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2);
- Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2);
- Chapter 19: Climate Change (ES Volume I, EN070009/APP/6.2);
- Chapter 20: Major Accidents and Disasters (ES Volume I, EN070009/APP/6.2); and
- Chapter 22: Human Health (ES Volume I, EN070009/APP/6.2).

Study Area

18.3.2 The Office for National Statistics (ONS) statistical geographies have been used to define the Study Area for the socio-economic assessment as described below.

- 18.3.3 The Lower layer Super Output Area (LSOAs)¹ included within the Proposed Development Study Area² follows a best-fit approach, to represent the local areas potentially impacted by the Proposed Development. The inclusion of additional LSOAs were considered as a part of defining the H2Teesside Study Area, including those in the local authority of Hartlepool. However, only a small proportion of the Hartlepool LSOAs lie within the boundary of the Proposed Development Site. Therefore, these areas have not been included in the H2Teesside Study Area.
- 18.3.4 The size of the catchment area for PRow, residential and business properties, educational and community facilities, open space and development land has been determined as 3km based on evidence from previous studies. This size has been chosen to assist in identifying factors such as schools, where there is a wide catchment for students and staff who could be affected by the Proposed Development. It represents a larger than average study area as a conservative estimate in order to fully identify the socio-economic and land use effects.
- 18.3.5 The direct impact areas are listed below for which the statistical information has been compared for this baseline:
- the H2Teesside Study Area;
 - Middlesbrough and Stockton TTWA; and
 - England.

Impact Assessment Methodology

- 18.3.6 An assessment of potential impacts has been undertaken to determine the potential effects of the Proposed Development on baseline socio-economic conditions. This follows the methodology stated in Chapter 2: Assessment Methodology (ES Volume 1, EN070009/APP/6.2) and assesses the level of significance of effects. The following potential effects are assessed:
- direct and indirect employment creation;
 - the potential for the promotion/provision of training and apprenticeship opportunities, upskilling locally unemployed and potential wider economic benefits;
 - local traffic flows on the local and strategic road networks;
 - Potential severance or closure impacts to PRowS;
 - local businesses, residential properties, educational and community facilities, either direct (demolition/land take) or indirect via in combination effects identified by other discipline assessments; and

¹ LSOAs are a geographic hierarchy with an average population of between 1,000 and 2,000 people. LSOAs are used to collect data at a local level to ascertain the key trends of an area in comparison to regional and national trends.

² Includes the following Lower layer Super Output Areas (LSOAs): E01012107, E01032560, E01032561, E01012114, E01012109, E01012198, and E01012279. LSOAs from the Hartlepool local authority only cover a small proportion of the Proposed Development Site and would misrepresent the baseline statistics covered in this section. Therefore, they have not been included within the geography for the H2Teesside Study Area.

- any socio-economic impacts from land use impacts (such as effect on planned developments) or through the imposition of new Control Of Major Accident Hazards (COMAH) zones as a result of the Proposed Development.

Sensitivity of Receptors

18.3.7 The sensitivity of socio-economic receptors is assessed as high, medium, low or very low. Socio-economic receptors for this assessment include:

- agricultural, industrial and development land;
- users of PRoWs;
- private assets (including resident and business premises);
- users of education, open space and community facilities³;
- the construction, operational and decommissioning workforce; and
- construction and decommissioning employees using temporary accommodation.

18.3.8 The criteria for assessing and classifying levels of receptor sensitivity used within the assessment are defined in Table 18-1, based on professional judgement.

Table 18-1: Sensitivity Classification

LEVEL OF SENSITIVITY	DESCRIPTION
High	There are not readily comparable and accessible alternatives to the receptor that exist within the relevant study area; and/or receptors are very vulnerable to change
Medium	There are limited comparable and accessible alternatives to the receptor within the relevant study area; and/or receptors are vulnerable to change.
Low	Receptors are able to relatively easily absorb the change; and/or there are some comparable and accessible alternatives to the receptor that exist within the relevant study area. Receptors are slightly vulnerable to change.
Very low	Receptors are able to easily absorb the change; and/or there are many comparable and accessible alternatives to the receptor that exist within the relevant study area. Receptors are not vulnerable to change.

Magnitude of Impacts

18.3.9 The magnitude of the socio-economic impacts associated with the Proposed Development have been assessed as being high, medium, low or very low, shown in Table 18-2. The receptors detailed in the receptor sensitivity criteria are also

³ Community facilities are any facilities not owned privately, and are used for community activities by individuals and communities. The use of the facilities can be provided by a range of organisations to provide community-led initiatives.

considered for the magnitude criteria. This has been determined by having regard to:

- extent of change – the absolute number of people affected and the size of area in which the impact will be experienced (i.e., the level of change to baseline conditions including the proportion of the existing workforce);
- scale of the impact – the relative magnitude of each impact in its relevant context (for example, the impacts on local employment will be considered in the context of the overall size of the local labour market); and
- Duration of impact – more weight is given to long-term, permanent changes than to short-term, temporary ones. Temporary to short-term impacts are those associated with the construction works. Medium to long-term impacts are those associated with the operation of the Proposed Development.

Table 18-2: Magnitude Classification

MAGNITUDE	DESCRIPTION
High	An impact that is expected to have considerable adverse or beneficial socio-economics effects. Such impacts will typically affect large numbers of receptors.
Medium	An impact that will typically have a noticeable effect on a moderate number of receptors, and will lead to a small change to the study area's baseline socio-economic conditions.
Low	An impact that is expected to affect a small number of receptors or an impact that may affect a larger number of receptors but does not materially alter the study area's baseline socio-economic conditions.
Very low	An impact which has very little change from baseline conditions where the change is barely distinguishable, approximating to a "no change" situation.

Significance Criteria

18.3.10 For socio-economics, there is no accepted definition of what constitutes a Significant (or Not Significant) socio-economic effect. It is recognised that 'significance' reflects the relationship between the scale of impact (magnitude) and the sensitivity (or value) of the affected resource or receptor. As such, the significance criteria for socio-economic effects has been assessed using the expert judgment of the authors with professional experience in socio-economics, and relies on the following considerations:

- the sensitivity of a given receptor: the assessment takes account of the qualitative (rather than quantitative) '*sensitivity*' of each receptor, particularly their ability to respond to change based on the given impacts of the Proposed Development; and

- the magnitude of the impact: this entails consideration of the size of the impact on people, businesses, users of PRowS, private properties, employees and development land in the context of the area in which impacts will be experienced.
- 18.3.11 These factors have then been combined to determine the consequent significance of the effect.
- 18.3.12 The overall effects of the Proposed Development have been defined in line with Chapter 2: Assessment Methodology (ES Volume I, EN070009/APP/6.2):
- Beneficial – advantageous or positive effect to an environmental resource or receptor;
 - Negligible – imperceptible effect to an environmental resource or receptor;
 - Adverse – detrimental or negative effects to an environmental resource or receptor; and
 - No effect – no discernible effects on a receptor.
- 18.3.13 Duration of effect is also considered, with more weight given to permanent changes than to temporary ones. Permanent effects are generally those associated with the completed Proposed Development. Temporary effects are those associated with the construction and decommissioning works but could also occur in the operational phase. For the purposes of this assessment, short-term effects are of one year or less, medium-term effects of one to five years and long-term effects are for effects with a duration over five years.
- 18.3.14 Where an effect is assessed as being beneficial or adverse, the effect has been classified as Major, Moderate, Minor or Negligible. The assessment of significance is informed by considering the sensitivity of the receptor (refer to Table 18-1) and the magnitude of impact (refer to Table 18-2) as set out in Table 18-3. For the purposes of this assessment, only Moderate and Major effects are considered Significant.

Table 18-3: Classification of Effects

MAGNITUDE OF IMPACT	SENSITIVITY/IMPORTANCE OF RECEPTOR			
	HIGH	MEDIUM	LOW	VERY LOW
HIGH	Major	Major	Moderate	Minor
MEDIUM	Major	Moderate	Minor	Negligible
LOW	Moderate	Minor	Negligible	Negligible
VERY LOW	Minor	Negligible	Negligible	Negligible

Cumulative Socio-economics and Land Use Effects

- 18.3.15 An assessment of cumulative effects on Socio-economics and Land Use has been undertaken and is detailed within Chapter 23: Cumulative and Combined Effects (ES Volume I, EN070009/APP/6.2).
- 18.3.16 The assessment of cumulative effects follows the methodology described in Advice Note Seventeen (The Inspectorate, 2019), for more information refer to Chapter 23: Cumulative and Combined Effects (ES Volume I, EN070009/APP/6.2).
- 18.3.17 It is important to note that cumulative effects may vary from the effects of the Proposed Development considered in isolation. For example, it is possible for the Proposed Development to have greater effects cumulatively with other planned developments than if it is considered in isolation against the existing baseline reported in Section 18.4.
- 18.3.18 Sources of Information/ Data The following sources of information have been reviewed and have informed the assessment:
- Census 2021 (ONS, 2021a);
 - Indices of Multiple Deprivation (MHCLG, 2019);
 - Ordnance Survey (OS) Mapping (OS, 2023);
 - Google Earth (Google Earth, 2023);
 - Business Register and Employment Survey (ONS, 2022b);
 - Population Projections (ONS, 2018); and
 - Feedback from scoping consultation with the Planning Inspectorate and the UK Health Security Agency.

Consultation

Scoping Opinion

- 18.3.19 An EIA Scoping Opinion was requested from the Planning Inspectorate (the Inspectorate) on 6 April 2023. A response was received on 17 May 2023. For the Scoping Opinion and the Applicant's responses to them, refer to Appendix 1B (ES Volume III, EN070009/APP/6.4).

Statutory Consultation

- 18.3.20 The PEI Report was published for statutory consultation on 14 September 2023 and the consultation period ended on 26 October 2023. A second statutory consultation was held between 13 December 2023 and 23 January 2024, and additional targeted consultation was held between 9 February 2024 and 10 March 2024. The matters raised have been reviewed and an explanation of how the Applicant has had regard to them is set out in the Consultation Report (EN070009/APP/5.1).
- 18.3.21 As part of this consultation, the methodology for the assessment of employment effects was agreed with the relevant consultation bodies, and an assessment on the residential market and local services has been undertaken upon recommendation

from consultation. For full consultation responses and the Applicant's responses to them, refer to the Consultation Report (EN070009/APP/5.1).

Use of the Rochdale Envelope

- 18.3.22 To ensure a robust assessment of the likely significance of the socio-economic effects of the Proposed Development, the EIA is being undertaken adopting the principles of the 'Rochdale Envelope' approach, where appropriate, in line with the Inspectorate's Advice Note 9 (The Inspectorate, 2018). This involves assessing the maximum (or where relevant, minimum) realistic worst-case parameters for the elements where flexibility needs to be retained (building dimensions or operational modes for example).
- 18.3.23 In this chapter, the minimum scenario will be assessed for employment, as it is envisioned to be a beneficial impact. In contrast, maximum parameters for impacts on other receptors (such as PRow, development land and the employment effect on the housing market and local services) will be assessed, whereby the 'worst case scenario' is considered, as the effect of the Proposed Development is expected to be an adverse impact.
- 18.3.24 In line with the Inspectorate's guidance, the following assumptions have been made with regard to the construction phase of the Proposed Development, as detailed in Chapter 5: Construction and Programme Management (ES Volume I, EN070009/APP/6.2):
- 1,300 maximum direct construction workers;
 - 800 minimum direct construction workers; and
 - length of construction period – 5 years from 2025 to 2030.
- 18.3.25 The number of workers on site during the construction period for the Proposed Development will go up or down depending on the intensity of construction activity during this time. During the construction phase the peak number of workers present on site will be between approximately 800 and 1,300 workers.
- 18.3.26 The following assumptions have been made for the operational phase of the Proposed Development:
- 60 gross direct operational jobs per annum; and
 - length of the operational period – 25 years from 2030 to 2055. To note, the operational life of the Proposed Development Site could last longer should the market conditions and plant condition remain favourable, and this ES does not assume that the facilities will be removed after 25 years (but it is assumed that the same amount of jobs (and their consequential benefits) will exist no matter how long the Proposed Development is in place).
- 18.3.27 Given the above, this assessment presents a reasonable 'worst-case' approach based on the minimum scenario for employment at the Proposed Development.
- 18.3.28 Due to construction phasing, there may be a period following completion of Phase 1 construction where Phase 1 will be operational and Phase 2 in construction.

Within the framework of this chapter's assessment, the worst-case scenario for construction and operation concurrently has been defined and assessed, resulting in Phase 1 being considered a more robust (worst-case) construction stage evaluation. This conclusion is drawn from the increased construction activity in Phase 1 compared to a combined assessment involving Phase 1 operational and Phase 2 construction. The operational stage worst case commences on completion of Phase 2.

Limitations

- 18.3.29 The assessment of the significance of effects has been carried out against a benchmark of current socio-economic baseline conditions prevailing around the Proposed Development Site, as far as is possible within the limitations of such a dataset. Baseline data is also subject to a time lag between collection and publication. As with any dataset, these conditions may be subject to change over time which may influence the findings of the assessment.
- 18.3.30 The assessment of likely socio-economic effects arising from the Proposed Development is based on professional judgement, drawing on relevant guidance as set out in Section 18.3 which considers both potential beneficial and adverse impacts that the Proposed Development is likely to have on socio-economic receptors.
- 18.3.31 As a result of the long time period prior to the decommissioning phase the baseline for all socio-economic effects at the time of decommissioning cannot confidently be ascertained at this time. Therefore, no judgement on significance has been passed for potential effects related to the decommissioning stage, except for employment effects.
- 18.3.32 The Proposed Development Site lies within MSAs for salt and gypsum (anhydrite). MSAs are included for context in the baseline of Chapter 21: Materials and Waste (ES Volume I, EN070009/APP/6.2) however, impacts on MSAs are not assessed in the materials and waste assessment (Chapter 21: Materials and Waste ES Volume I, EN070009/APP/6.2) in accordance with the IEMA Guidance (IEMA, 2020). MSAs are a planning consideration and are considered further in the Planning Statement (EN070009/APP/5.2) submitted with the Development Consent Order (DCO) Application. The Proposed Development uses previously developed industrial land and where possible the Connection Corridors including the pipeline routes have been selected to avoid environmentally sensitive areas and utilise existing, established pipeline routes. The Proposed Development is unlikely to sterilise or prejudice the future extraction of the mineral resource, as the anhydrite and salt resources occur at depth and can be extracted by alternative means (e.g. mining or brine solution). Part of the anhydrite has already been removed by mining by Imperial Chemical Industries (ICI) prior to the 1970s (Mindat, 2023). Gypsum (anhydrite) is scoped out of the assessment as agreed by the Inspectorate which is outlined in the Consultation Report (EN070009/APP/5.1).

18.4 Baseline Conditions

18.4.1 This section outlines the socio-economic baseline conditions in the Direct Impact Area, Wider Impact Area and England. The Direct Impact Area comprises of the Lower layer Super Output Areas (LSOA) that the Proposed Development Site falls into⁴. The Wider Impact Area is the Middlesbrough and Stockton TTWA. Both impact areas are shown in Figure 18-1: Direct Impact Area and Wider Impact Area (ES Volume II, EN070009/APP/6.3). The local labour market in the Wider Impact Area is the main receptor for the assessment of employment effects. The baseline conditions help to determine the impact of employment generated by the Proposed Development, and the impact of the Proposed Development on the economy and other local businesses. The impact is mostly influenced by the size of the labour market and whether it has the relevant skills, occupations and sector strengths to access employment opportunities.

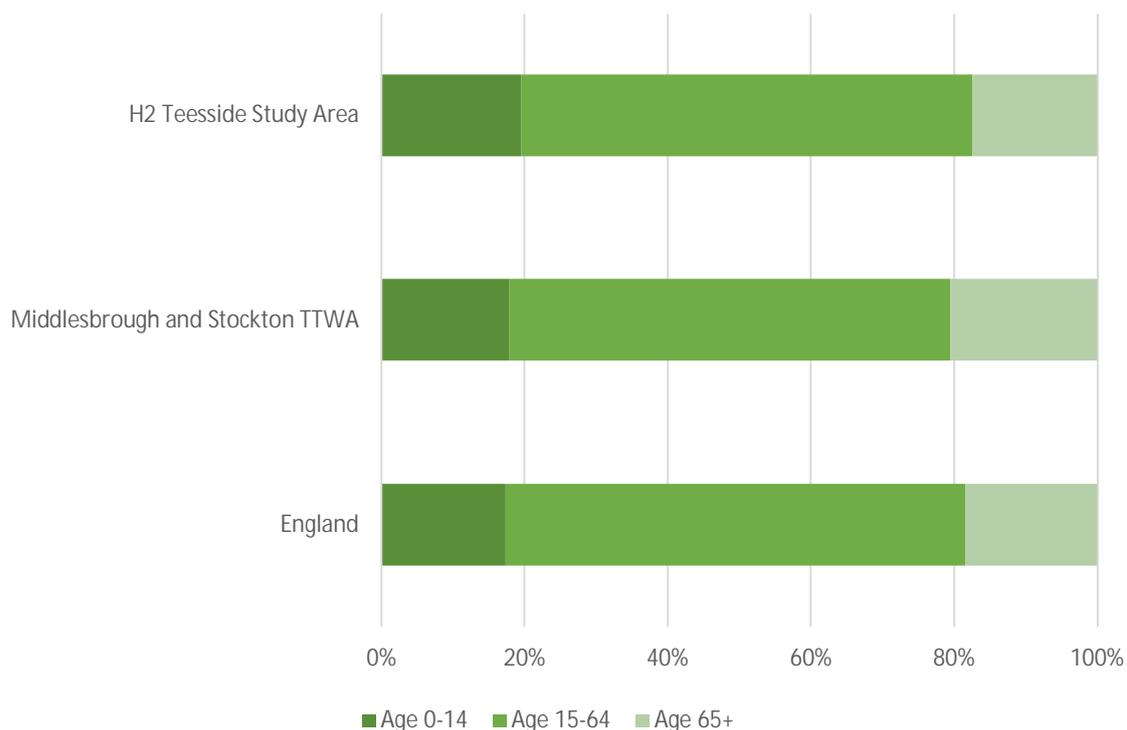
Existing Baseline

Population

18.4.2 The Proposed Development Site is located within three local authorities, Redcar and Cleveland, Stockton-on-Tees, and Hartlepool. The population of the Proposed Development Study Area was 9,702 in 2021, which accounted for approximately 2% of the Middlesbrough and Stockton TTWA (ONS, 2021a). In the Proposed Development Study Area, 63% of the population are of working age⁵, which is in line with national averages and the TTWA. The proportion of elderly people (65+ years) in the H2Teesside Study Area (17%) is comparatively smaller than for the TTWA (21%), and nationally (18%), implying a smaller dependency ratio in the H2Teesside Study Area. This can be seen in Plate 18-1.

⁴ Includes the following Lower layer Super Output Areas (LSOAs): E01012107, E01032560, E01032561, E01012114, E01012109, E01012198, and E01012279. LSOAs from the Hartlepool local authority do not accurately cover the Proposed Development Site and would misrepresent the baseline statistics covered in this section. Therefore, they have not been included within the geography for the H2Teesside Study Area.

⁵ Between 16 and 64 years of age.



Source: Census 2021 Population Estimates (ONS, 2021a)

Plate 18-1: Population Age Breakdown (H2Teesside Study Area, Middlesbrough and Stockton TTWA and England)

Skills

18.4.3 Data from the Census 2021 dataset, presented in Table 18-4, shows that there is a higher proportion of residents with no qualifications in the H2Teesside Area than regionally or nationally (ONS, 2021a). The data also show that the proportion of residents attaining a level 4 qualification (equivalent to degree level) or above is 20% in the H2Teesside Area, compared to 28% in the Middlesbrough and Stockton TTWA and 34% in England.

Table 18-4: Skills Profile

TYPE OF QUALIFICATION	H2TEESSIDE AREA	MIDDLESBROUGH AND STOCKTON TTWA	ENGLAND
No qualifications	25%	21%	18%
Level 1 and entry level qualifications	11%	10%	10%
Level 2 qualifications	15%	14%	13%
Apprenticeship	8%	7%	5%
Level 3 qualifications	19%	18%	17%

TYPE OF QUALIFICATION	H2TEESSIDE AREA	MIDDLESBROUGH AND STOCKTON TTWA	ENGLAND
Level 4 qualifications or above	20%	28%	34%
Other qualifications	3%	3%	3%

Source: Census 2021 Highest Level of Qualification (ONS, 2021a)

Economic Activity Trends

18.4.4 Census 2021 data shows that in the H2Teesside Study Area, approximately 53% of the working age population are economically active, with the most common form of economic activity being full time employment (49%) (ONS, 2021a). Rates of economic activity are in line with the TTWA area (53%), but below national rates (59%). Of the economically active, approximately 4% are unemployed in the H2Teesside Study Area, compared to 3% for the TTWA and nationally. Among the economically inactive in the H2Teesside Study Area, the most common reason is retirement.

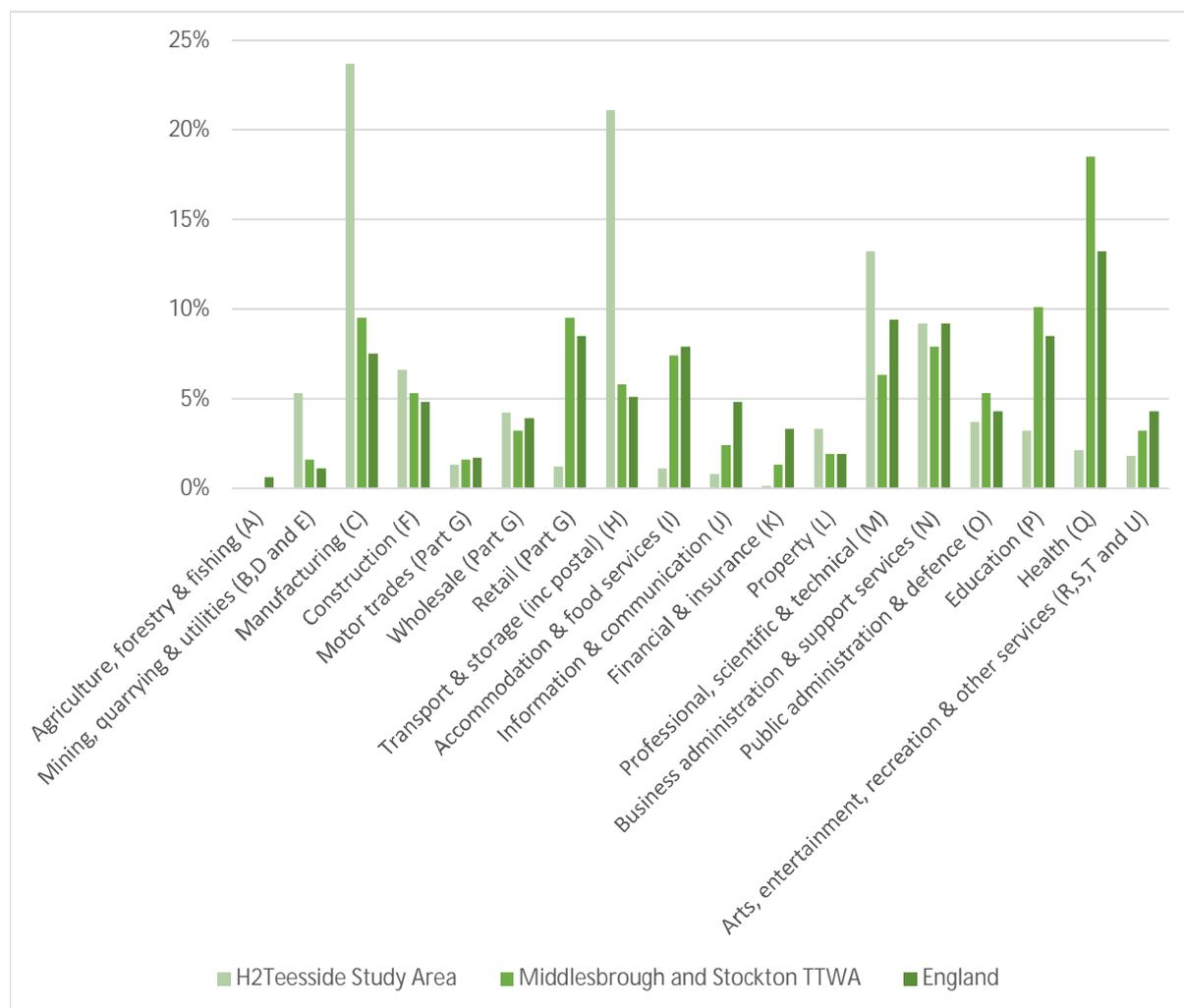
Deprivation

18.4.5 Multiple sections of the H2Teesside Study Area lie in areas of relative deprivation. Of the seven LSOAs within the H2Teesside Study area, four are in the most deprived decile nationally (MHCLG, 2019). More widely, areas of deprivation are prevalent in the local authorities in which the H2Teesside Study Area resides, as Hartlepool, Redcar and Cleveland and Stockton-on-Tees are ranked the 21st, 48th and 76th most deprived local authorities nationally.

Employment by Industry

18.4.6 In the Proposed Development Study Area, manufacturing (Sector C, 24% of total employment) is the largest industry - this percentage is considerably larger than the Middlesbrough and Stockton TTWA (10%) and national average (8%) (ONS, 2022). The second largest industry is transport and storage (Sector H, 21%), followed by professional, scientific and technical (Sector M, 13%), both of which are higher percentages than the TTWA and national averages.

18.4.7 The industries of business administration and support services (Sector N, 9%), mining, quarrying and utilities (Sectors B, D and E respectively, total of 5%) and construction (Sector F, 7%) are comparatively higher for the H2Teesside Study Area than the TTWA and national averages. This compares to the percentages for education (Sector P, 3%), health (Sector Q, 2%) and accommodation and food services (Sector I, 1%) which are considerably lower for the H2Teesside Study Area than for the TTWA and national averages. These trends are shown in Plate 18-2.



Source: Office for National Statistics (ONS) Business Register and Employment Survey (BRES), 2022 (ONS, 2022)

Plate 18-2: Employment by Industry (H2Teesside Study Area, Middlesbrough and Stockton TTWA and England)

Land Use

- 18.4.8 The Proposed Development Site is located in a largely industrial urban area, consisting of existing and former sites of industrial installations north and south of the River Tees. The Main Site is located on the former site of the materials handling area and associated plant for the neighbouring coke ovens and blast furnace of the Teesside Steelworks. The Connection Corridors south of the River Tees are located within or in proximity of the existing industrial area, generally following existing pipeline routes.
- 18.4.9 The Connection Corridors north of the River Tees also generally follow existing pipeline routes within the existing industrial area, as well as extending into areas of open or agricultural land north and west of the existing industrial area.
- 18.4.10 Chapter 10: Geology, Hydrogeology and Contaminated Land (ES Volume I, EN070009/APP/6.2) provides a detailed baseline of the Natural England ALC map

for the North East Region (ALC001) (Natural England, 2023), which is summarised here.

- 18.4.11 For the Proposed Development, the entirety of the Main Site, CO2 Export Corridor, Natural Gas Connection Corridor, Water Connection Corridor and Electrical Connection Corridor are all located on Urban and Non-Agricultural land.
- 18.4.12 The Hydrogen Pipeline Corridor (North of the River Tees) is located in an area of urban, Grade 5, Grade 4 and Grade 3 agricultural land. Of this, the land take at Cowpen Bewley Woodland Park is located in Grade 4 land. The Grade 3 land is the location of the Cowpen Bewley Woodland Park replacement land and is assumed to be Grade 3a land in a worst case scenario (as this is considered BMV). The land take of this Grade 3a land for the Cowpen Bewley Woodland Park is expected to be less than 1 hectare in total.
- 18.4.13 The remainder of the Grade 3 land in the Hydrogen Pipeline Corridor, located at Billingham Cemetery, is not considered for assessment as the area of land comprises an existing road. For the Hydrogen Pipeline Corridor, there is a low likelihood that Grade 2 ALC encroaches onto the east side of the southeastern extent at Lackenby industrial works area. However, it is considered that this is most likely to be a mapping overlay error as the area is already in industrial use, comprising a pipeline network. Therefore, it is not considered further in the assessment in Chapter 10: Geology, Hydrogeology and Contaminated Land (ES Volume I, EN070009/APP/6.2).

Public Rights of Way

- 18.4.14 There are no PRoWs within the Main Site. The Teesdale Way long distance route runs through from the northern boundary of the Main Site to the south of the Proposed Development, north of Grangetown. There are multiple footpaths that lie within the boundary of the Proposed Development Site as detailed below. This is also shown on Figure 3-1: Environmental Constraints within 1 km of the Proposed Development Site (ES Volume II, EN070009/APP/6.3), which shows all ProW within 1 km of the Proposed Development Site:
- Bridleway 116/10/2, which runs along the eastern boundary of the Wilton International site, in Kirkleatham;
 - Footpaths 102/2A/1, 102/2A/2, 116/31/1, 116/31/2 and 116/31/3, which run adjacent to the Teesport Estate and Tees Dock Road;
 - Footpaths 102/2/1, 102/2/2 and 102/2/3 and bridleways 116/9/1 and 116/9/2, which are located to the south of the above footpaths and the Teesport Estate, and form part of the Teesdale Way long distance footpath and the England Coastal Path (Filey Brigg to Newport Bridge);
 - Footpaths 116/9/2, 116/10/1 and 116/10/2, which run alongside the south of the Proposed Development, to the west and south-west of Dormanstown.
 - Footpaths SM|Billingham|30, SM|Billingham|31 and SM|Billingham|34 to the north west of the Proposed Development, north east of Cowpen Bewley;

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- Footpath 31, which connects Cowpen Lane and Seal Sands Link Road;
 - An unnamed footpath, which runs along the railway line north of Claxton Beck, north-east of Cowpen Bewley Woodland Park; and
 - Three unnamed footpaths, which run north-east from Tees Road to Marsh House Lane; part of the southernmost of these is part of the England Coastal path (Newport Bridge to North Gare).
- 18.4.15 These ProW may be affected by the selected routes of the hydrogen pipelines and other connections. In addition to the above, byway 30 is adjacent to the Proposed Development Site, north of Wolviston Back Lane. Bridleway 102/194/2 is located adjacent to the Proposed Development Site in Grangetown.
- 18.4.16 Footpaths 116/1/1, 116/1/2, 116/2/1, 116/37/1, 116/38/1 and 116/39/1 and bridleways 116/32/1, 116/33/1 and 116/36/1 are also located to the north-east of the Proposed Development Site, in Warrenby and Coatham. Bridleways 116/32/1 and 116/36/1 are the closest of this group to the Proposed Development Site; at the closest point (where they connect to the Teesdale Way long distance route), they are located approximately 310 m north-east of the Proposed Development Site. Bridleways 116/32/1 and 116/33/1 are part of the England Coastal Path (Filey Brigg to Newport Bridge).

Residential Properties

- 18.4.17 The Proposed Development Site is situated in a predominantly industrial area, with some agricultural land towards the north-west, near Billingham.
- 18.4.18 There are no residential areas within the Main Site or within 1 km of the Main Site. Marsh Farmhouse is the closest residential receptor to the Main Site, located approximately 1.3 km to the east in Warrenby. The nearest residential settlement to the Main Site is the town of Redcar (approximately 2.6 km east of the Main Site), including the borough of Dormanstown (approximately 1.3 km south-east of the Main Site).
- 18.4.19 The nearest residential settlements to the Connection Corridors are:
- Cowpen Bewley Village, located approximately 400 m from the Hydrogen Pipeline Corridor, and approximately 8 km west from the Main Site;
 - Dormanstown, located approximately 300 m to the east of the Water Connections Corridor, approximately 700 m to the east of the Hydrogen Pipeline Corridor and Electrical Connection Corridor, approximately 900 m to the south-east of the Natural Gas Connection Corridor and approximately 900 m to the south-east of the CO₂ Export Corridors;
 - Redcar, located approximately 1.8 km to the north-east of the Electrical Connection Corridor, approximately 2 km to the north-east of the Hydrogen Pipeline Corridor, approximately 2 km to the east of the Natural Gas Connection Corridor and Water Connections Corridor, and approximately 2 km to the east of the CO₂ Export Corridors;

- Kirkleatham, which is to the immediate east of the Hydrogen Pipeline Corridor, where it extends into the Wilton International Estate;
- Billingham and Wolviston, located approximately 1.2 km south-west and 600 m west of the Hydrogen Pipeline Corridor's western extent respectively;
- Grangetown, adjacent to the Electrical Connection Corridor at its southern end; and
- Greatham, located approximately 600 m north-west of the Hydrogen Pipeline Corridor.

Business Premises

- 18.4.20 The Proposed Development Site is within proximity to multiple businesses, although there are none within its boundary. To the west of the River Tees, there are sites for Conoco Philips, Seal Sands, Intertek, Greenenergy Biofuels Teesside Ltd, KD Pharma Ltd, Lianhetech, Teesside Gas Processing Plant, Wood UK Ltd, Hertal Industrial Services, BOC Teesside Hydrogen and Oceanering International Services.
- 18.4.21 To the east of the River Tees, there are business premises located close to the docks, including a Tesco and ASDA distribution centre, Northumbrian Water, Kemira, BOC Ltd, PD Ports, Doosan Babcock, HM Customs and Excise and British Steel Lackenby.
- 18.4.22 Further to the east of the Proposed Development Site are the businesses located in Lazenby, including Hoggart Haulage, Falck Fire Services UK, Anglo American Wilton site, Talke UK, Viswalab UK PTE Limited, Wilton Power stations, Sembcorp Utilities UK, SUEZ recycling and recovery, Blue Phoenix, Wurth Trade Store, Telcoss, Algeco, Nippon Gases, Ensus and XPO Logistics.
- 18.4.23 The residential areas mentioned in the preceding section also contain a variety of businesses. To the east, there are clusters of businesses in Billingham and Stockton-on-Tees, and to the south in Middlesbrough city centre. There are also many businesses to the east in Redcar and Marske-by-the-Sea.

Education

- 18.4.24 There are no educational facilities located within the Proposed Development Site; however, there are multiple schools within approximately 3 km of the Proposed Development Site's boundary. The following schools are located in Redcar and Dormanstown within 3 km of the Proposed Development Site's boundary:
- Coatham Primary School;
 - Redcar And Cleveland College;
 - Mo Mowlam Academy;
 - Sacred Heart Catholic Secondary School;
 - St. Benedict's Catholic Primary School;
 - Dormanstown Primary Academy;
 - Lakes Primary School;

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- Outwood Academy Redcar;
 - Riverdale Primary School; and
 - Kirkleatham Hall School.
- 18.4.25 There are also schools within 3 km to the south of the Proposed Development Site in Middlesbrough:
- Wilton Primary Academy;
 - Grangetown Primary School;
 - Whale Hill Primary School;
 - Pathways School;
 - St. Mary's Primary School;
 - Teesville Academy;
 - St. Margaret Clitherow School;
 - South Bank Community Primary School;
 - Outwood Academy Normanby;
 - St. Peter's Catholic College; and
 - Caedmon Primary School.
- 18.4.26 To the west of the Proposed Development Site, there are a number of educational facilities in Billingham and Stockton-on-Tees:
- Bewley Primary School;
 - Billingham South Community Primary School;
 - St. John the Evangelist RC Primary School;
 - Ash Trees Academy;
 - St. Joseph's Catholic Primary School;
 - Oakdene Primary School;
 - Our Lady of the Most Holy Rosary Catholic Primary School;
 - Roseberry Primary School;
 - Prior's Mill CE Primary School;
 - Pentland Primary School; and
 - St. Michael's Catholic Academy.

Community Facilities and Open Space

- 18.4.27 Open space is defined as any land laid out as a public garden, or used for the purposes of public recreation, or land being a disused burial ground. Community facilities are typically public facilities that are either used for local governance,

recreation, or religious activity. Within 3 km of the Proposed Development Site there are a range of community and recreational facilities, as detailed in Table 18-5.

Table 18-5: Community Facilities and Open Space Within 3 km of the Proposed Development Site

RECEPTOR	DESCRIPTION
<i>Churches</i>	
All Saints Church	Church in the town of Redcar
Christ Church, Coatham	Church in the town of Redcar
Sacred Heart Catholic Church	Church in the town of Redcar
Redcar URC Church	Church in the town of Redcar
Newcomen Methodist Church	Church in the town of Redcar
St. Hilda's Church	Church in the town of Redcar
South Bank Baptist Church	Church in Middlesbrough
St. Johns Parish Office	Church in South Bank
Saint Peter's Catholic Church	Church in South Bank
Eston Congregational Church	Church in Eston
Christ Church	Church in Eston
St. Anne's RC Church	Church in Eston
Church of Saint Hilda	Church in Eston
St. Luke's Church	Church in the town of Billingham
St. Joseph's R C Church	Church in the town of Billingham
North Billingham Methodist Church	Church in the town of Billingham
New Life Church, Teesside	Church in the town of Billingham
St. Aidan's Church	Church in the town of Billingham
St. Columba's URC Church	Church in the town of Billingham
Billingham Baptist Church	Church in the town of Billingham
St. Michael and All Angels Church	Church in Stockton-in-Tees
St. Mary's Church, Norton	Church in Stockton-in-Tees
Norton Methodist Church	Church in Stockton-in-Tees
<i>Social Clubs and Community Centres</i>	
St. Williams Social Club	Social club in the town of Redcar
Severn Road Community Centre	Community Centre in Redcar
Redcar Leisure Centre	Leisure Centre in Redcar
Grenfell Club	Club in Redcar
Cliff Houlding Community Centre	Community Centre in Dormanstown

RECEPTOR	DESCRIPTION
Community Stepping Stones CIC	Community Centre in Dormanstown
St. Marys Social Club	Social club in Middlesbrough
Grangetown Youth and Community Centre	Community Centre in Grangetown
Whale Hill Community Centre	Community Centre in Eston
Middlesbrough Football Community Centre	Community Centre in Teesville
Nite Light CIC	Community Centre to the North of South Bank
Cloud 9 Community Centre	Community centre to the east of Middlesbrough
Low Grange Community Centre	Community centre to the east of Billingham
Marsh House Sports and Community Centre	Community centre in Billingham
Monkseaton Community Centre	Community centre to the west of Billingham
Grangetown Youth and Community Centre	Youth and community centre to the east of Middlesbrough
Coatham Childrens Centre	Community centre located in the village of Redcar
Glebe Community Centre	Community centre located to the north of Stockton-on-Tees
Primrose Hill Community Centre	Community centre in Stockton-on-Tees
Willows Community Centre	Community centre in Stockton-on-Tees
Portrack Community Centre	Community centre in Stockton-on-Tees
<i>Open space and Nature Reserves</i>	
Playing fields near Billingham	Playing fields south- west of the development site, adjacent to High Clarence Primary School
Coatham Green	Playing fields in the town of Redcar
Mannion Nature Park	Park to the east of Middlesbrough
Cowpen Bewley Woodland Park	Park within the Proposed Development Site,
South Gare and Coatham Sands	Site of Special Scientific Interest (SSSI) to the west of Redcar
Saltholme East Pool	Nature reserve to the south-east of Billingham
Dorman Pool	Nature reserve to the south-east of Billingham
Paddy's Pool	Nature reserve to the south-east of Billingham
RSPB Saltholme	Nature reserve to the south-east of Billingham

RECEPTOR	DESCRIPTION
Teesmouth National Nature Reserve	Nature reserve to the north-west of the Proposed Development Site
<i>Other Recreational Facilities</i>	
The Lobster Inn	Pub in the town of Redcar
Eston Leisure Centre	Leisure Centre in Eston
The Three Horseshoes	Pub to the east of the town of Billingham
Billingham Community Fire Station	Fire station in the town of Billingham
Haverton Hill Hotel	Hotel to the south-east of Billingham
Old Billingham Community Centre	Event venue in Stockton-on-Tees

18.4.28 To note, the Proposed Development Site boundary encroaches onto the site of Cowpen Bewley Woodland Park, which is noted in the table above.

Development Land

18.4.29 The Proposed Development Site intersects with the boundary of HyGreen, which is a green hydrogen facility, which will be used for power generation. A decision on planning permission is expected to be made by RCBC in early 2024, with HyGreen expected to be operational by 2026 (bp, 2024).

18.4.30 Parts of the Proposed Development Site lie within the boundary of the STDC area, which is now known as South Tees Development Corporation (STDC). STDC is a Mayoral Development Corporation, established to further the economic development of the South Tees Area through physical, social and environmental regeneration. RCBC retains planning powers for the area and continues to act as the Local Planning Authority (LPA) in respect of planning policy and development management and the processing and determination of planning applications. The site redevelopment will be focused on industrial related employment, with zones implemented for different types of business and industrial use.

18.4.31 On 16 February 2024, the Net Zero Teesside development was granted a Development Consent Order, and will lead to operations beginning at the development in 2027. The Proposed Development Site interacts with that of the Net Zero Teesside development.

18.4.32 In September 2014, York Potash Ltd submitted a planning application for a mineral (polyhalite) granulation and storage facility involving the construction of buildings, a conveyor system, substations, water treatment plant, internal access roads, car parking, attenuation ponds, landscaping, restoration and aftercare, and construction of a tunnel portal including the landforming of spoil and associated works. The development is located approximately 0.3 km to the south of the Main Site. The application was granted in August 2015 and construction is currently underway.

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- 18.4.33 Tees Combined Cycle Power Plant (CCPP) is a proposed gas-fired combined cycle gas turbine (CCGT) power station with a maximum generating capacity of up to 1,700 MW. It is proposed on approximately 15 hectares (ha) of land formerly used as a gas-fired generating station within the south-western part of the Wilton International Complex, to the south of the Proposed Development Site. The DCO application was approved in April 2019, but is understood to be undergoing an amendment to enable development of the Whitetail project – a proposed 300 MW power plant at Sembcorp Energy UK's Wilton International site, with CCS. It is expected that construction of the Tees CCPP will begin in 2024, with the generating station becoming operational in 2027.
- 18.4.34 Redcar Energy Centre (REC) is a proposed material recovery facility incorporating a bulk storage facility, an energy recovery facility, and an incinerator bottom ash recycling facility along with ancillary infrastructure and landscaping, located to the immediate west of the Main Site. A planning application for REC was submitted in August 2020 and granted in January 2021. It was anticipated that construction would begin within approximately 15 months of the decision date, but construction is yet to begin. In 2023, REC's environmental permit application was duly made by the Environment Agency (EA), with a determination process to take place before the end of 2023 (REC, 2023).
- 18.4.35 In July 2016, CBRE UK submitted a planning application for an anaerobic biogas production facility and Combined Heat and Power (CHP) plant, south-east of the Main Site. This facility would involve the anaerobic digestion of mixed feedstock to create a biogas to be used as fuel in the CHP. Planning permission was granted in October 2016, but construction is yet to begin.
- 18.4.36 In September 2022, Tees Valley Lithium Ltd submitted a planning application for the construction of a lithium hydroxide monohydrate manufacturing plant and ancillary development (the "Tees Valley Lithium Project"), within the Wilton International Estate, Redcar. Planning permission was granted in November 2022. The development is located within the Wilton International estate, south-east of the Main Site. The development will be constructed on a phased basis and eventually comprise four process trains. Train 1 will employ a caustication process, whilst Trains 2, 3 and 4 will utilise an electrochemical process. It is anticipated that construction of Train 1 will be complete by Q4 2024, and construction of Trains 2, 3 and 4 will be complete by Q4 2025.
- 18.4.37 In July 2023, RCBC granted planning permission for the Green Lithium development programme within the Wilton International Chemicals Park in Teesside. This will support the development of commercial lithium in Europe. The project is expected to produce 50,000 tonnes of lithium hydroxide annually and generate approximately 1,200 construction jobs and approximately 250 operation jobs.
- 18.4.38 Off-site storage of hydrogen is not included within the Proposed Development Site. Should there be the requirement for off-site storage, it is expected that these would be owned and operated by a third-party provider who would be responsible for any consenting requirements. Details regarding this will be limited, with any potential developments being at a pre-planning stage, although the potential for cumulative
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effects will be assessed at a high level, based on available information. In the event any proposals come forward, these would be assessed from a cumulative perspective for any relevant projects.

- 18.4.39 Within the Stockton-on-Tees Local Plan (STBC, 2019), a number of sites are identified for Specialist Employment Allocations (SDG4, EG4) and General Employment Allocations (SD4, EG1). These have not been proposed at this time.
- 18.4.40 The South Tees Regeneration Master Plan (STDC, 2017) identifies the South Tees area as a major international level opportunity. The Proposed Development is located within the North area noted in the master plan, and aligns with the ambitions to use CCS technology noted .

Future Baseline

- 18.4.41 This section outlines future socio-economic baseline conditions. The future baseline conditions help to identify any changes anticipated to baseline conditions in the absence of the Proposed Development.
- 18.4.42 Data on future population projections for the H2Teesside Study Area and the Middlesbrough and Stockton TTWA are not available as they have not been released for these areas by ONS. In the absence of these, data from the local authorities for Stockton-on-Tees and Redcar and Cleveland have been used to identify future employment patterns, as these local authorities most closely match the H2Teesside Study Area.
- 18.4.43 Table 18-6 shows population projections for these local authorities and shows that the resident population is expected to marginally increase in both local authorities between 2023 and 2043 (ONS, 2018). Between 2023 and 2043, the population of Stockton-on-Tees is expected to increase by approximately 1% (circa 2,000) to 202,000 to 2043, whilst the population of Redcar and Cleveland is expected to increase by 2% (circa 3,000) to 143,000. This is compared to an expected 7% (4,187,000) increase in England’s population to 2043.

Table 18-6: Population Projections by Local Authority

YEAR	2023	2043	INCREASE (%)
Stockton-on-Tees	199,465	201,186	0.9%
Redcar and Cleveland	139,201	142,548	2.3%
England	57,557,526	61,744,108	6.8%

Source: Population Projections, ONS, 2018

- 18.4.44 Table 18-7 shows that, in both local authorities, the proportion of young people (0-15) is expected to fall by 2043, and both local authorities will experience an increasing population cohort aged 65 or over, which is in line with national trends. The proportions of the working age population are expected to fall by 3% between 2023 and 2043 for all geographies, highlighting that there is expected to be a higher dependency ratio in the future, at both a local and national level.

Table 18-7: Population Projections by Age

YEAR	AGE COHORT	2023	2043
Stockton-on-Tees	0 to 15	18%	16%
	16 to 64	58%	55%
	65+	24%	29%
Redcar and Cleveland	0 to 15	20%	17%
	16 to 64	61%	58%
	65+	20%	25%
England	0 to 15	19%	17%
	16 to 64	62%	59%
	65+	19%	24%

Source: Population Projections, ONS, 2018

18.4.45 In terms of the local economy, it would be reasonable to expect that employment and Gross Value Added (GVA) will increase, associated with the expected increase in population over time. However, this is likely to be restrained by the reduction in the working age population in the future.

18.4.46 It is expected that ProW in the area will continue to be used. Businesses and community facilities may open and close. It is likely that the availability of development land will gradually reduce as businesses receive planning permission to use the available sites, leading to less development land in the future. There is expected to be a gradual increase in residential properties in line with an increasing population size. Agricultural and open space land use is expected to stay the same in the future.

18.4.47 As detailed in Chapter 20: Major Accidents and Disasters (ES Volume I, EN070009/APP/6.2) the Proposed Development is expected to form part of a cluster of developments operated by bp on or adjacent to the Main Site, which also includes Net Zero Teesside and HyGreen. These establishments are also expected to be COMAH sites which may increase the risks or consequences of a major accident due to the domino group effect as described in the referenced chapter.

18.4.48 Notwithstanding these factors and the effects of the Proposed Development, in general, it is not expected that there will be any perceptible changes to the local economic baseline. Therefore, the Proposed Development should be assessed against current baseline conditions and policies. These changes are not considered to constitute significant changes to the existing baseline.

18.5 Proposed Development Design and Impact Avoidance

18.5.1 The EIA process aims to avoid, prevent, reduce or offset potential environmental effects through design and/or management measures. These are measures that are inherent in the design and construction of the Proposed Development (also known as 'embedded measures').

18.5.2 The following impact avoidance measures have either been incorporated into the design or are standard construction or operational practices. These measures have, therefore, been taken into account during the impact assessment and will be secured through the DCO.

Construction

18.5.3 The Framework Construction Environmental Management Plan (CEMP) (EN070009/APP/5.12), sets out the key measures to be employed during the construction of the Proposed Development, to control and minimise the impacts on the environment. This includes disruption from noise and vibration effects, potential habitat loss, increased traffic flows, changes to the landscape and climate change effects. These effects could lead to effects on socio-economic receptors without mitigation, which is covered within the Framework CEMP. A Final CEMP(s) will be prepared by the EPC Contractor(s) in substantial accordance with the Framework CEMP prior to construction. The submission, approval, and implementation of the Final CEMP(s) will be secured by a Requirement of the DCO.

18.5.4 A Construction Traffic Management Plan (CTMP) (EN070009/APP/5.16) and a Construction Workers Travel Plan (CWTP) (EN070009/APP/5.15) will also be implemented to control the impact of Heavy Goods Vehicles (HGVs) and construction workforce traffic on the local road network during construction, which in turn will minimise the disruption to access of ProWs, community facilities, private assets and open space, all of which are socio-economic receptors.

18.5.5 An Indicative Lighting Strategy (Construction) has been included at Appendix C of the Framework CEMP (EN070009/APP/5.12) has also been produced, which sets out the key measures to apply to the installation of any proposed lighting as a result of the Proposed Development. This considers lighting in both the construction and the operational phase of the Proposed Development, in order to minimise disruption to both private businesses and residential receptors in the Direct Impact Area.

Cowpen Bewley Woodland Park

18.5.6 To mitigate the land loss associated with Cowpen Bewley Woodland Park, for sections of the pipeline, trenchless methods of construction will be used to avoid the removal of any existing trees. Therefore, there will be a line of trees between the railway and the AGI which are left intact throughout construction, providing some visual screening of the activities north of the railway.

18.5.7 There is a section of pipeline at normal depth of cover which runs into the AGI, approximately 40m in length. This section of pipeline will be installed by open cut methods, which will require a cleared route which will be approximately 30m wide. To do this, vegetation and trees will be removed. Topsoil will be stripped; however, this will be stored locally, then replaced after the pipeline is lowered and backfilled. Using the expected length and width, the total area of cleared vegetation for the open cut pipeline easement is 480m², which will be a permanent change to the area. The AGI itself will cover an area of 607m².

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- 18.5.8 There are multiple existing pipeline easements around the existing AGI which are cleared of large vegetation, which form natural walking routes. After the completion of the construction period, the hydrogen pipeline easement will form a similar natural walking route through Cowpen Bewley Woodland Park.
- 18.5.9 Public access to the woodland immediately surrounding the existing AGI is expected to be limited during construction due to the nature of the work (i.e. construction safety).
- 18.5.10 The Applicant intends to mitigate the permanent loss of land at Cowpen Bewley Woodland Park with a replacement area of land that would be of at least the same size and standard as the land required by the project. The Applicant will work with Stockton-on-Tees Borough Council to agree the layout and planting of this land.
- 18.5.11 In addition to the above, the Applicant has devised an Outline Landscape Biodiversity Management Plan (LBMP) to ensure that any biodiversity loss is reduced and mitigated as much as possible to ensure minimal impacts on socio-economic receptors as a result of the Proposed Development. The proposed measures include the reinstatement and enhancement of bankside vegetation and woodland planting as compensatory habitat for the loss of public open space within Cowpen Bewley Woodland Park. This will mitigate both the socio-economic and land use effects and the loss of biodiversity through the loss of open space at this site.

Operation

- 18.5.12 The Proposed Development will comply with the Environmental Permitting (England and Wales) Regulations 2016 under its Environmental Permit so that any impacts of emissions to air, soil, surface water and groundwater on the environment and human health will be minimised and avoided where possible.
- 18.5.13 Operational impacts will be controlled by the Environmental Permit and an Environmental Management System (EMS) which will attest to meet the requirements of the International Standards Organisation (ISO) 14001 (International Organisation for Standardization, 2015). The EMS will outline requirements and procedures required to ensure that the Proposed Development Site is operating to the appropriate standard.

Decommissioning

- 18.5.14 A Decommissioning Environmental Management Plan (DEMP) would be produced pursuant to a DCO Requirement and at the time of decommissioning. The DEMP would consider in detail significant potential environmental risks on the Proposed Development Site and contain guidance on how risks can be removed or mitigated. The DEMP would be secured by a Requirement on the DCO, if granted. The DEMP would also include an outline programme of works.

18.6 Impacts and Likely Significant Effects

18.6.1 This section identifies the likely impacts and effects on socio-economics and land use resulting from the Proposed Development. This section considers construction, operation and decommissioning phases.

18.6.2 Each section is split to first show the assessment of potential employment impacts, before detailing other potential socio-economic impacts associated with the Proposed Development.

Construction

18.6.3 The following section estimates gross construction employment arising from the Proposed Development and accounts for leakage, displacement and multiplier effects (to define the indirect⁶ and induced⁷ employment) to assess net impacts on the sub-regional and national economies, as detailed in the HCA Additionality Guide (HCA, 2014). The factors of leakage, displacement and multiplier effects contribute to the net construction effects and as such are detailed in the following paragraphs. Gross construction employment will be assessed at a minimum level for both construction phases of the Proposed Development.

Construction Employment

18.6.4 Construction is anticipated to commence in 2025 and will be split into two phases. Phase 1 will last approximately three years to 2028, with Phase 2 commencing thereafter for another two years, with overall construction expected to be completed by 2030 (refer to Chapter 5: Construction Programme (ES Volume I, EN070009/APP/6.2). Phase 2 of the construction phase includes an overlap with Phase 1 of the operational phase in Q2 of the operational phase in 2028. This five-year period will generate employment opportunities in construction, which will represent a temporary positive economic impact for the area. This is through the direct expenditure involved in the construction phase, which will lead to increased output generated in the Middlesbrough and Stockton TTWA economy.

18.6.5 As detailed in Chapter 5: Construction Programme and Management (ES Volume I, EN070009/APP/6.2) based on an initial estimate, it is considered likely that construction workforce peak numbers would be approximately 1,300 direct construction workers per day across both Phases 1 and 2. However, given that the employment assessment will assess the minimum employment as a worst case scenario, the number of direct construction workers has been estimated at 800 based on minimum estimates for the construction phase of the Proposed Development. This is assumed as the minimum employment across the required workforces for both Phase 1 and Phase 2 of the construction period.

Leakage

18.6.6 Leakage effects refer to the proportion of jobs within an Impact Area that are filled by residents living outside the Wider Impact Area (defined as the Middlesbrough

⁶ Indirect employment is employment generated through supporting direct employment on the site, for example, in related industries that supply goods and services related to the construction of the Proposed Development.

⁷ Induced employment is employment generated through additional spending from direct and indirect employment as a result of the Proposed Development.

and Stockton TTWA). Overall, it is assumed that the majority of the employment generated would be occupied by people living in the Middlesbrough and Stockton TTWA, as the construction employment required is generally not specialised (therefore not requiring a specialised workforce to be sought), the site is accessible by car, and there is already a substantial construction workforce resulting from residents in the TTWA. As such, leakage effects are considered to be low. Leakage has been set at 25%, (Medium), whereby *“The majority of benefits will go to people living within the target area”*, in line with the guidance from HCA Additionality Guide (HCA, 2014). A 25% discount is applied to the estimated 800 gross direct jobs created. As such, it is anticipated that approximately 200 workers from outside the Middlesbrough and Stockton TTWA and approximately 600 workers from within the TTWA would benefit from working at the Proposed Development Site during the construction period.

Displacement

- 18.6.7 Displacement measures the extent to which the benefits of a given project are offset by reductions of output or employment elsewhere. Any additional demand for labour cannot simply be treated as a net benefit – it removes workers from other posts and the net benefit is reduced to the extent that this occurs.
- 18.6.8 Overall, it is assumed that due to the flexibility of a typical construction workforce (i.e., they quickly move from project to project) displacement effects are considered to be low. This is further supported by the high level of construction activity in the Middlesbrough and Stockton TTWA, particularly in the future due to concurrent projects which are detailed in Section 18.8. The HCA Additionality Guide (HCA, 2014) suggests 25% as a ‘ready reckoner’ for low levels of displacement (i.e., *“there are expected to be some displacement effects, although only to a limited extent”*). Applying this level of displacement to total gross direct employment results in net direct and indirect employment estimate of 600.

Multiplier Effect

- 18.6.9 In addition to the direct construction employment generated by the Proposed Development itself, there will be an increase in local employment arising from indirect and induced effects of the construction activity. Employment growth will arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers will be spent in the Middlesbrough and Stockton TTWA, generating further employment (induced or income multipliers).
- 18.6.10 The impact of the multiplier depends on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The HCA Additionality Guide (HCA, 2014) provides ‘ready reckoners’ of composite multipliers – the combined effect of indirect and induced multipliers. It has been assumed that the Middlesbrough and Stockton TTWA has ‘low’ supply linkages (*“Limited local supply linkages and induced or income effects”*) based on the scale and nature of its economy and to be conservative in estimation. A regional

multiplier of 1.3 is determined for this level from the HCA guidance. Applying this multiplier generates an additional 180 indirect and induced jobs.

Net Construction Employment

18.6.11 Based on the gross construction worker requirements in the construction schedule and the additionality factors outlined above, it is estimated that 780 net construction jobs would be generated by the construction of the Proposed Development, of which around 585 are expected to be from the Middlesbrough and Stockton TTWA. Using the latest Gross Value Added (GVA) per filled job⁸ data for the North East region as a proxy for productivity, it is estimated that the 780 net additional construction jobs will generate £38.1m GVA per annum in this phase, of which £28.6m will be generated by the 585 jobs in the Middlesbrough and Stockton TTWA (ONS, 2023a).

18.6.12 Table 18-8 summarises the net construction employment arising from the Proposed Development's construction phase in the Middlesbrough and Stockton TTWA.

Table 18-8: Net Construction Employment in Middlesbrough and Stockton TTWA (Average Number of Workers Onsite Per Year)

EMPLOYMENT IMPACTS	WITHIN MIDDLESBROUGH AND STOCKTON TTWA	OUTSIDE MIDDLESBROUGH AND STOCKTON TTWA	TOTAL
Gross Direct Employment	600	200	800
Less displacement	150	50	200
Net Direct Employment	450	150	600
Net Indirect/ induced employment	135	45	180
Total Net Employment	585	195	780

18.6.13 The sensitivity of the receptors in the vicinity of the Proposed Development Site is considered High, and the magnitude of the impact of the Proposed Development Site upon employment during the construction phase is considered Low. This is because the net employment generated by the Proposed Development in the Middlesbrough and Stockton TTWA represents 5% of total employment in construction for the area (ONS, 2022). Therefore, this results in a medium-term, temporary Moderate Beneficial (Significant) effect.

⁸ GVA per filled job is calculated using a productivity jobs series by ONS, which includes employee jobs, self-employed jobs, government-supported trainees (GST) and members of Her Majesty's Forces. When assessing regional economic performance, it is recommended to use GVA per job filled rather than GVA per head, because this provides a direct comparison between the level of economic output and the direct labour input of those who produced that output, unlike GVA per head, as the GVA per head measure includes people not in the workforce (including children, pensioners and others not economically active).

Effect of Construction Employment on Local Housing Market and Tourist Accommodation

- 18.6.14 To assess the effects of demand from the construction workforce on the local housing market, it is necessary to understand both the proportion of workers who might require accommodation and the likely availability of accommodation available to meet this requirement. To note, there is an expectation that the Proposed Development's contractors will attempt to source a large proportion of Full Time Equivalents (FTEs) locally from 'home based' workers, which is the Wider Impact Area.
- 18.6.15 For this assessment, the maximum level of construction employment is used as the effect on the local housing market and local services and is expected to be an adverse effect, as per the Rochdale envelope assessment method. Through applying the same assumptions detailed above for deadweight, leakage and a multiplier to the maximum workforce figure of 1,300, it suggests that at maximum, 1,267 net construction employees will be generated, of which 950 will be taken by residents in the Wider Impact Area.
- 18.6.16 This represents the 'home based' proportion of employment, defined as already living within the Study Area, and the remaining 317 construction employees will be 'non-home based' and potentially requiring housing accommodation during the construction phase. ONS data shows that the Proposed Development employment requirements for the construction phase in a worst-case scenario are smaller than the total construction workforce in the Middlesbrough and Stockton TTWA (11,000 total employees; ONS, 2022).
- 18.6.17 The private rented homes sector is considered to be the principal sector for accommodating demand for housing from 'non-home based' construction workers in an urban development context. According to the English Housing Survey 2021 to 2022 (DLUHC, 2023), in the north east, approximately 15.5% of households were occupied by private renters. Applying this figure to the 202,733 households in the Middlesbrough and Stockton TTWA (ONS, 2021a) implies that approximately 31,507 households are privately rented in the Middlesbrough and Stockton TTWA. Although no area-based statistics are available, when last recorded by the ONS in 2021, 6.1% of dwellings were unoccupied in England (ONS, 2023b), noting that not all of these properties would be available for occupancy. Taking a cautious approach and assuming that 5% are available implies there were 1,575 properties within the Middlesbrough and Stockton TTWA in 2021 that could potentially be occupied by construction workers.
- 18.6.18 As a result, this assumed capacity is considered to be more than sufficient supply to meet demand arising from the Proposed Development. The demand for 317 properties in a maximum scenario leads to a surplus capacity of approximately 1,258 properties for the non-home based construction workforce.
- 18.6.19 Whilst forecasting availability over the construction period (expected to be five years) is limited, it is noted that demand from workers is typically also met by bed and breakfast accommodation for shorter stays, providing a further option for

accommodating construction worker need from the Proposed Development if required. The England Occupancy Survey provides data on occupancy for hotels and other accommodation businesses in the UK (Visit England, 2023). This shows that in 2023, occupancy rates peaked in July, at 85%. For the North East region, this peak was slightly lower at 83% for July 2023. Data on the total number of rooms available in the Wider Impact Area is not provided. However, using the occupancy rates as an approximation for the worst case scenario for temporary accommodation in the Wider Impact Area, it is assumed that 17% of all hotels and accommodation would be available for short term accommodation for construction workers, which is deemed sufficient to meet the labour supply in the construction phase.

- 18.6.20 Given the extent of the construction workforce required to temporarily move to the Wider Impact Area and the duration of the construction phase, the magnitude of the impact of construction employment generation on the local housing market and temporary accommodation is considered to be Low.
- 18.6.21 Receptor sensitivity is considered medium, given the capacity of the private-rented housing and accommodation sectors to meet the worst-case potential demand for accommodation. Overall, the effect is Minor Adverse (Not Significant).

Wider Impacts and Effects During the Construction Phase

- 18.6.22 This section considers the wider likely socio-economic effects during the Proposed Development construction phase in Table 18-9. Given the length of the construction phase, the duration of these potential impacts is considered medium term.

Table 18-9: Wider Socio-economic Impacts and Effects in the Proposed Development Construction Phase

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
Agricultural and industrial land	Land take required to construct the Proposed Development	<ul style="list-style-type: none"> • Temporary and permanent land take; and • Potential for noise and vibration, air quality and visual effects arising from construction activities associated with the construction on the Proposed Development Site. 	Medium	Low	<p>For the Proposed Development, the entirety of the Main Site is located on Urban and Non-Agricultural land.</p> <p>The land take at Cowpen Bewley Woodland Park to install the AGI takes place on Grade 4 agricultural land. It is expected that residents will be able to use the remainder of Cowpen Bewley Woodland Park during the construction phase, and the disruption will be minimal.</p> <p>The replacement land for Cowpen Bewley Woodland Park is located on Grade 3a land. The land take of this Grade 3a agricultural land for the Cowpen Bewley Woodland Park replacement land is expected to be less than 1 hectare in total.</p> <p>As a result, the impacts of the Proposed Development are expected to be minimal on both receptors, especially on BMV, given the relatively small area of BMV that is affected by the Proposed</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					<p>Development. No significant residual adverse effects are identified for BMV in Chapter 10: Geology, Hydrology and Contaminated Land (ES Volume I, EN070009/APP/6.2).</p> <p>No residual adverse effects are identified in residential areas for Chapter 8: Air Quality and Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2). During construction, two residual adverse visual amenity effects are identified in close proximity to the town of Redcar in Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2), however, this does not affect the land take at Cowpen Bewley Woodland Park given its distance from the town of Redcar.</p> <p>Given these factors, the magnitude of the effect is assessed to be Low, and the sensitivity is assumed to be Medium. The overall effect of the Proposed Development Site on these receptors is Minor Adverse (Not Significant).</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
ProW and Open Space	Land take required to construct the Proposed Development	<ul style="list-style-type: none"> • Temporary and permanent loss of open space; • Potential temporary disruption of access to ProW during construction; and • Potential temporary disruption of access to any visitor attractions or open space leading to impact on residents' physical activity and health. 	Medium	Low	<p>The Proposed Development will lead to the permanent loss of 18,615m² (6.2% of the total park size) at Cowpen Bewley Woodland Park due to the installation of Above Ground Infrastructure (AGI) and associated pipeline, where the Proposed Development Site boundary encroaches onto the site. Direct access to the woodland will be affected during construction as the footpaths through the woodland may be temporarily closed, With regard to PROWs, two PROWs within Cowpen Bewley Woodland Park will close temporarily during construction. However, the nature of the works will be short term, and the affected PROWs will not be closed concurrently to allow for a route of access for users within the Park. In addition, it is expected that residents will be able to access all other areas of Cowpen Bewley Woodland Park during the construction phase.</p> <p>Temporary disruption will also occur at the open space adjacent to Coatham</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					<p>Marsh whilst a water connection is built, leading to a temporary loss of 37,531m² of land, equivalent to 5.8% of the site. This will be restored to its original state at the end of the construction phase.</p> <p>One PRoW (England Coast Path) will also be temporarily closed at two different points during construction. Each closure will be for six months. In addition, another PRoW (Teesdale Way LDR) will also be closed for a period of six months.</p> <p>Together, these elements will lead to minor disruption to these areas during the construction phase. However, as detailed in Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2), there are no significant residual adverse effects on ProW in this phase.</p> <p>The scale of the land take at Cowpen Bewley Woodland Park and Coatham Marsh is small, as detailed above. The land take does not interfere with the key characteristics of the open space, including the Wildlife Lake and the local</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					walkways. There are no visitor attractions affected by the construction phase of the Proposed Development. As a result, and considering the total effect of the Proposed Development, the magnitude of the effect is assessed to be Medium. As the sensitivity of the receptors is assessed to be Medium, the overall effect of the Proposed Development Site on recreational routes, ProW and open space during the construction phase is Moderate Adverse (Significant).
Private assets (residential and business premises)	Land take required to construct the Proposed Development Construction activities in proximity to private and community facilities as a result of the Proposed Development	<ul style="list-style-type: none"> • Temporary land take of residential premises; • Temporary land take of business premises; • Potential for noise and vibration, air quality, visual and traffic and transport effects arising from construction activities associated with the construction of the Proposed 	Medium	Low	There are no residential properties within the boundary of the Proposed Development Site, but many residential areas and businesses lie close by. Occupied businesses, their apparatus and operational accesses have been avoided where possible in the Proposed Development Site. Where permanent acquisition and rights have been sought, these are predominantly in areas using existing apparatus or have low impact on business landowners. During

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
		<p>Development Site to impact on the amenity of residential and business premises; and</p> <ul style="list-style-type: none"> Potential temporary disruption of access to residences during construction. 			<p>construction, access will be maintained to ensure continuity of operations. Where required these arrangements have been or will be formalised by agreement with business landowners in the form of protective provisions.</p> <p>No residual adverse effects are identified in residential areas for Chapter 8: Air Quality, Chapter 11: Noise and Vibration, and Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2). During construction, one residual adverse visual amenity effect is identified in close proximity to the town of Redcar in Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2), for viewpoint 8 (Redcar seafront). However, this is the only significant residual effect identified, and this effect is isolated for the residents and businesses in Redcar, and only for the construction phase. Overall, the socio-economic effect on these receptors is expected to be minimal. Given this, the effect of the Proposed</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					Development is Minor Adverse (Not Significant).
Education and community facilities			Medium	Low	<p>There are some educational and community facilities within close proximity of the Proposed Development Site. Because the majority will not be affected by disruption, and no land take is expected on these facilities from the Proposed Development.</p> <p>No residual adverse effects are identified in areas nearby schools and community facilities for Chapter 8: Air Quality, Chapter 11: Noise and Vibration, and Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2). During construction, one residual adverse visual amenity effect is identified in close proximity to local educational facilities in Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2), for viewpoint 8 (Redcar seafront). However, this is the only significant residual effect identified, and affects only the users of educational</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					and community facilities in Redcar during the construction phase. Therefore, the socio-economic effect on these receptors is expected to be minimal. The effect of the Proposed Development is Minor Adverse (Not Significant).
Development land	Land take required to construct the Proposed Development	<ul style="list-style-type: none"> • Potential severance to development land at nearby sites with planning permission during construction • Potential temporary land take of development land through construction activities at the Proposed Development Site. 	Medium	Low	There are multiple planning applications or permissions within the vicinity of the Proposed Development Site that do not correspond to the Proposed Development itself. However, the potential for the impacts at the Proposed Development Site on this receptor are expected to be minimal, with low, temporary levels of disruption and no land take expected. The Proposed Development's Order limits cross over with the Order limits for Net Zero Teesside (being brought forward by bp entities) (bp, 2021), the red line boundary for ID53 (obtained by STDC) and the forthcoming red line boundary for the HyGreen project (being brought forward by bp entities). The

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					<p>Applicant intends to work closely with these developments to ensure that they develop in a co-ordinated fashion that allows the benefits of all projects to be achieved. Given this, and that the Proposed Development aligns closely with STDC's aspirations for Teesworks for industrial development to be brought forward, it is considered that there would not be a significant effect on development land in respect of these developments.</p> <p>Given this, the effect is Minor Adverse (Not Significant).</p>
Demographic effects and community disruption	Increase in construction workers from the construction phase	<ul style="list-style-type: none"> • Potential change in the demographic characteristics of the local area. • Potential disruption to community facilities and activities. 	Medium	Low	<p>The sensitivity has been assessed as Medium due to the ability of the local population and community to generally have a moderate capacity to experience these impacts without incurring a change on their economic well-being. No significant difference from baseline conditions is expected in relation to demand for local services, such as schools or health services, as a result of employment during the construction</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SENSITIVITY OF RECEPTORS	MAGNITUDE OF EFFECTS	LIKELY SIGNIFICANCE OF EFFECT
					<p>phase, and therefore no additional provision of local services or infrastructure is required. This is in line with expectations that local housing and accommodation availability will experience only small impacts from the construction workforce, the majority of which it is expected already live in the Wider Impact Area, as noted previously in the assessment in paragraph 18.6.21,. Therefore, the magnitude has been assessed as Low. A Minor Adverse (Not Significant) effect is anticipated on the demographic characteristics of the local area.</p>

Operation

Net Operational Employment

- 18.6.23 The Proposed Development would generate long-term jobs once the operational phase has commenced. This section details the operational employment estimates arising from the Proposed Development, and takes into account the additionality factors (deadweight, leakage, displacement and multiplier effects) to assess the net impacts in the Middlesbrough and Stockton TTWA.
- 18.6.24 Following the completion of the construction stage, the operational stage is expected to last for 25 years for both the Phase 1 and Phase 2 elements. The operational life of the Proposed Development Site could last longer should the market conditions and plant condition remain favourable but this would not change the number of jobs. Should this occur, then the socio-economic benefit of operational employment would be extended for the Proposed Development.
- 18.6.25 In this phase, it is considered likely that operational workforce peak numbers would be approximately 130 operational workers per day⁹ across both Phases 1 and 2. However, as described in the operational phase, Gross operational employment will be assessed at a minimum level for both Phases of the Proposed Development. This has been assessed to be 60 gross direct jobs¹⁰.
- 18.6.26 It is noted that operational employment will increase during periods of maintenance to around 400 workers on site. This will be infrequent in nature and short term (approximately every 4 years for a period of 28 days) and will be managed through the adoption of a planned routine turnaround (TAR). Given the temporary and sporadic nature of this employment, the effect of the periodic maintenance workers in the operational phase has not been assessed.

Summary of Operational Employment Effects

- 18.6.27 As with the construction employment, additionality values have been used to estimate the net operational employment. These include a 25% leakage figure (a low ready reckoner from the HCA Additionality Guide (HCA, 2014)), a 25% displacement figure (a low ready reckoner from the HCA Additionality Guide), and a multiplier of 1.3 (a multiplier for "average" supply linkages in the economy of the Middlesbrough and Stockton TTWA, from the HCA Additionality Guide). Accounting for these additionality values, it is estimated that there would be 58 net jobs, with 44 of these filled by residents of the Middlesbrough and Stockton TTWA. Using the latest Gross Value Added (GVA) per filled job¹¹ data for the North East region as a proxy for productivity, it is estimated that the 58 net additional construction jobs

⁹ This is comprised of the following staff: 10 management, 8 engineering, 104 operations and maintenance technicians, 5 specialist contractors, and 3 security staff. The source of this assumption is from the Applicant.

¹⁰ This is comprised of the following staff: 5 management, 5 engineering, 45 operations and maintenance technicians, 3 specialist contractors, and 2 security staff. The source of this assumption is from the Applicant.

¹¹ GVA per filled job is calculated using a productivity jobs series by ONS, which includes employee jobs, self-employed jobs, government-supported trainees (GST) and members of Her Majesty's Forces. When assessing regional economic performance, it is recommended to use GVA per job filled rather than GVA per head, because this provides a direct comparison between the level of economic output and the direct labour input of those who produced that output, unlike GVA per head, as the GVA per head measure includes people not in the workforce (including children, pensioners and others not economically active).

will generate £2.8 m GVA per annum in this phase, of which £2.1 m will be generated by the 44 jobs in the Middlesbrough and Stockton TTWA (ONS, 2023a).

18.6.28 A breakdown of additionality factors is shown in Table 18-10. This is a Medium sensitive receptor, and an impact of Very Low magnitude, resulting in a long-term Negligible effect (Not Significant).

Table 18-10: Net Operational Employment in Middlesbrough and Stockton TTWA (Average Number of Workers Onsite per Year)

EMPLOYMENT	WITHIN MIDDLESBROUGH AND STOCKTON TTWA	OUTSIDE MIDDLESBROUGH AND STOCKTON TTWA	TOTAL
Gross Direct Employment	45	15	60
Less displacement	11	4	15
Net Direct Employment	34	11	45
Net Indirect/ Induced Employment	10	3	13
Total Net Employment	44	14	58

18.6.29 Given the relatively small size of the operational workforce, the effect of this on the housing market and temporary accommodation in the area is expected to be Negligible. Similarly, there are not expected to be any demographic effects or community disruption in the operational phase. The magnitude of this impact is Very Low given this, and the sensitivity of the receptors is considered to be Medium given the breadth of role types offered by the Proposed Development and the ability of the labour market in the Middlesbrough And Stockton TTWA to respond to this increase in employment. Therefore, it is assumed that the operational workforce has a Negligible (Not Significant) effect on employment.

Wider Impacts and Effects During the Operational Phase

18.6.30 This section considers the wider socio-economic effects during the Proposed Development operational phase in Table 18-11. Given the length of the operational phase, the duration of any potential impacts are generally considered long term.

Table 18-11: Wider Socio-economic Impacts and Effects in the Proposed Development Operational Phase

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
Agricultural and industrial land	Potential land take in the operational phase.	<ul style="list-style-type: none"> Permanent loss of agricultural and industrial land. 	Medium	Low	<p>For the Proposed Development, the entirety of the Main Site is located on Urban and Non-Agricultural land.</p> <p>As noted in the assessment of construction effects, there is a permanent land take at Cowpen Bewley Woodland Park which takes place on Grade 4 agricultural land. The replacement land at Cowpen Bewley Woodland Park, is on Grade 3a agricultural land, but is less than 1 hectare in size. It is expected that residents will be able to use the remainder of Cowpen Bewley Woodland Park during the operational phase, and the disruption in this phase will be minimal. As a result, the impacts of the Proposed Development are expected to be minimal on both receptors, especially on BMV, given the relatively small area of BMV that is affected by the Proposed Development. No significant residual adverse effects are identified for BMV in Chapter 10: Geology, Hydrology and</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
					Contaminated Land (ES Volume I, EN070009/APP/6.2) Given these factors, the magnitude of the effect is assessed to be Low, and the sensitivity is assumed to be Medium. The overall effect of the Proposed Development Site on these receptors is Minor Adverse (Not Significant).
ProW and Open Space	Potential land take in the operational phase.	<ul style="list-style-type: none"> • Potential permanent disruption of access to residences during operational phase; and • Potential permanent disruption of access to visitor attractions or open space leading to impact on residents' physical activity and health. 	Medium	Low	There are recreational routes and ProWs located close to the Proposed Development, but the effects on these are expected to be Negligible, as there is only minimal land take for these elements, and none of these receptors will be required to permanently close or be diverted. As mentioned in the construction effects, there is a 18,615m ² permanent land take at Cowpen Bewley Woodland Park (6.2% of total park size). In the operational phase, there are no significant adverse effects on users of ProW, as the affected ProW routes in Cowpen Bewley Woodland Park will reopen following the end of the construction phase. This is also stated more generally for ProW in Chapter 15:

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
					<p>Traffic and Transport (ES Volume I, EN070009/APP/6.2), where no residual significant adverse effects were identified. As mentioned in the construction effects, the land take at Coatham Marsh is temporary and will be reinstated in the operational phase.</p> <p>There are no visitor attractions affected by the operational phase of the Proposed Development.</p> <p>Given these factors, the magnitude is assumed to be Low. The sensitivity is assumed to be Medium, which is the same assumption noted in the construction phase.</p> <p>Overall, in a worst-case scenario, the effect of the Proposed Development Site on recreational routes, ProW and open space for the operational phase is Minor Adverse (Not Significant).</p>
Private assets (resident and business premises)	Potential land take in the operational phase. Potential disruption and congestion	<ul style="list-style-type: none"> • Permanent land take; and • Potential permanent disruption of access to residences and 	Low	Low	There are no residential properties within the boundary of the Proposed Development Site, but many businesses lie close by. No occupied business premises are impacted throughout the

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
	impacts from the operational workforce at the Proposed Development.	business premises from operational activities.			<p>Development Site or along the connection corridors. Most of the operational activity takes place along existing infrastructure in heavily industrialised sites. Where permanent acquisition and rights have been sought, these are predominantly in areas using existing apparatus or have low impact on business landowners.</p> <p>Furthermore, the operational activities of the site are not likely to cause disruption to socio-economic activities for residents and business owners in private assets.</p> <p>In the operational phase, no residual adverse effects are identified in areas nearby schools and community facilities for Chapter 8: Air Quality, Chapter 11: Noise and Vibration, and Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2). One residual adverse visual amenity effect is identified in Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2), for viewpoint 8 (Redcar seafront). However, this is the only significant residual effect identified, and is not located close to the town of</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
					Redcar (approximately 1.5 km from the town of Redcar). As a result, the socio-economic effect on these receptors is expected to be minimal in this phase. Therefore, based on current information, the effect of the Proposed Development is Negligible (Not Significant).
Education and community facilities	Potential land take in the operational phase. Potential disruption and congestion impacts from the operational workforce at the Proposed Development.	<ul style="list-style-type: none"> • Permanent land take; and • Potential permanent disruption of access to educational and community facilities from operational activities. 	Low	Low	There are some educational and community facilities within proximity of the Proposed Development Site. However, the Proposed Development Site does not involve any land take of these facilities through the operational phase. In the operational phase, no residual adverse effects are identified in areas nearby schools and community facilities for Chapter 8: Air Quality, Chapter 11: Noise and Vibration, and Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2). One residual adverse visual amenity effect is identified in Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2), for viewpoint 8 (Redcar seafront). However, this is the only significant residual effect identified,

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
					and is not located close to the town of Redcar and its associated educational facilities (approximately 1.5 km from the town of Redcar). As a result, the socio-economic effect on these receptors is expected to be minimal in this phase. Therefore, the effect of the operational phase of the Proposed Development is Negligible (Not Significant).
Development land	Potential land take in the operational phase. Potential disruption and access impacts from the operational workforce at the Proposed Development.	<ul style="list-style-type: none"> • Potential severance to development land at housing and employment site allocations during the operation phase. • Potential land take of development land resulting from construction and operation activities at the Proposed Development Site. • Potential disruption to land from COMAH installations at the 	Medium	Low	<p>There are multiple planning applications or permissions within the vicinity of the Proposed Development Site that do not correspond to the Proposed Development itself. The effects of the Proposed Development on these sites is expected to be minimal, as it does not cause disruption to these sites, or involve land take.</p> <p>The Proposed Development's Order limits cross over with the Order limits for Net Zero Teesside (being brought forward by bp entities) (bp, 2021), the red line boundary for ID53 (obtained by STDC) and the forthcoming red line boundary for the HyGreen project (being brought forward by bp entities). The Applicant</p>

RECEPTOR	POTENTIAL IMPACT(S)	POTENTIAL EFFECTS	SIGNIFICANCE OF RECEPTORS	MAGNITUDE OF EFFECT	LIKELY SIGNIFICANCE OF EFFECT
		<p>Proposed Development, and from the need to comply with COMAH regulations.</p>			<p>intends to work closely with these developments to ensure that they develop in a co-ordinated fashion that allows the benefits of all projects to be achieved. Given this, and that the Proposed Development aligns closely with STDC's aspirations for Teesworks for industrial development to be brought forward, it is considered that there would not be a significant effect on development land in respect of these developments.</p> <p>Chapter 20: Major Accidents and Disasters (ES Volume I, EN070009/APP/6.2) assesses various risk events during the operational phase. It states that the production of a COMAH Safety Report will demonstrate that risk at the Proposed Development is ALARP and so no significant effects are expected during the operational phase of the Proposed Development.</p> <p>Given these factors, the effect of the Proposed Development Site is Minor Adverse (Not Significant).</p>

Decommissioning

- 18.6.31 The Hydrogen Production Facility would have a design life of 25 years. However, the operational life could be longer, subject to market conditions and plant condition, and this ES does not assume that the facilities will be removed after 25 years. At the end of its operational life, the most likely scenario would be that the Proposed Development Site would be shut down, with all above ground structures on the Main Site removed, and the ground restored to its original condition as required to facilitate future re-use, with below ground infrastructure left in situ. The same timescales would apply for the hydrogen pipeline and connections.
- 18.6.32 Sufficient information is not available at the time of assessment to inform an employment assessment of decommissioning impact. However, it is generally assumed that the effects associated with decommissioning will be no worse than those experienced during construction. As such, socio-economic effects during Proposed Development decommissioning are likely to be similar to the construction effects as identified in Table 18-8 and Table 18-9. In particular, likely employment effects during decommissioning are anticipated to be temporary Moderate Beneficial (Significant), in line with those in the construction phase.

18.7 Essential Mitigation and Enhancement Measures

Construction

Essential Mitigation

- 18.7.1 The Applicant intends to mitigate the permanent loss of land at Cowpen Bewley Woodland Park with a replacement area of land that would be of at least the same standard as the land required by the project. The Applicant will work with Stockton-on-Tees Borough Council to agree the layout and planting of this land. This is secured through the DCO.
- 18.7.2 No other additional mitigation measures, over and above those stated in the other technical chapters of this ES are required to avoid or minimise the socio-economic effects identified in this chapter.
- 18.7.3 The Applicant is committed to working with the promoters of other cumulative schemes to mitigate and reduce the effect of the cumulative construction workforce as far as possible. This includes setting up a working group for the Proposed Development and other cumulative developments in order to communicate and coordinate construction works at the individual developments in order to reduce any issues created by the additional construction workforce in the vicinity of the respective cumulative developments.

Enhancement Measures

- 18.7.4 The employment effects will be enhanced by the Applicant providing support to local businesses and stakeholders and supporting skills development at the Proposed Development. This is secured via a DCO Requirement requiring a skills and employment strategy to be developed.

Operation

- 18.7.5 No further or additional mitigation measures or enhancement measures related to socio-economics and land use are proposed.

Decommissioning

- 18.7.6 No further or additional mitigation measures or enhancement measures related to socio-economics and land use are proposed.

18.8 Residual Effects and Conclusions

- 18.8.1 The Applicant intends to mitigate the permanent loss of open space at Cowpen Bewley Woodland Park with a replacement area of land that would be of at least the same size and standard as the land required by the project. This will downgrade the magnitude of impact of the Proposed Development on PRow and Open Space in the construction phase to Low. Overall, the residual effect of the Proposed Development on PRow and Open Space is assessed to be Minor Adverse (Not Significant) as a result.

- 18.8.2 Given this, it is considered that the Proposed Development would have an overall positive economic effect on the Middlesbrough and Stockton TTWA economy through the provision of employment and through associated multiplier effects.

18.9 Summary of Significant Effects

- 18.9.1 A summary of the potential significant effects associated with the construction and decommissioning of the Proposed Development is presented in Table 18-12. No significant effects are expected in the operational phase.

Table 18-12: Summary of Significant Effects

RECEPTOR/ RECOURCE	IMPORTANCE AND VALUE/ SENSITIVITY	MAGNITUDE OF IMPACTS	LIKELY SIGNIFICANT EFFECTS	PROPOSED MITIGATION / ENHANCEMENT	RESIDUAL EFFECTS
Construction Employment	High	Low	Moderate Beneficial (Significant)	Applicant to provide support to local businesses and stakeholders and supporting skills development at the Proposed Development.	Moderate Beneficial (Significant)

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