RWE Renewables UK Dogger Bank South (West) Limited

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Dogger Bank South Offshore Wind Farms

Environmental Statement

Volume 7

Chapter 28 – Socio-economics

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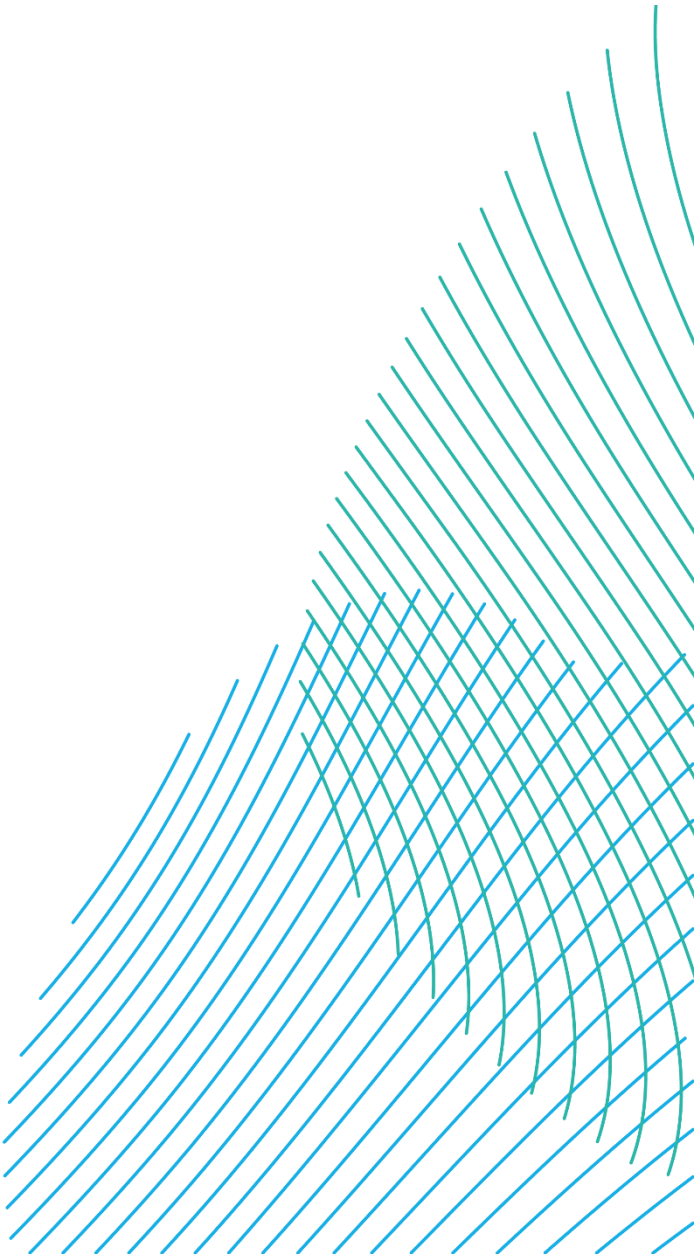

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Glossary

Term	Definition
Concurrent Scenario	A potential construction scenario for the Projects where DBS East and DBS West are both constructed at the same time.
Development Scenario	Description of how the DBS East and / or DBS West Projects would be constructed either In Isolation, Sequentially or Concurrently.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
In Isolation Scenario	A potential construction scenario for one Project which includes either the DBS East or DBS West array, associated offshore and onshore cabling and only the eastern Onshore Converter Station within the Onshore Substation Zone and only the northern route of the onward cable route to the proposed Birkhill Wood National Grid Substation.
Onshore Development Area	The Onshore Development Area for ES is the boundary within which all onshore infrastructure required for the Projects would be located including Landfall Zone, Onshore Export Cable Corridor, accesses, Temporary Construction Compounds and Onshore Converter Stations
Sequential Scenario	A potential construction scenario for the Projects where DBS East and DBS West are constructed with a lag between the commencement of construction activities. Either Project could be built first.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).

Term	Definition
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).

Acronyms

Term	Definition
CEA	Cumulative Effect Assessment
DCO	Development Consent Order
DBS	Dogger Bank South
EIA	Environmental Impact Assessment
ES	Environmental Statement
GDP	Gross Domestic Product
GP	General Practitioner
GVA	Gross Value Added
GW	Gigawatt
HDD	Horizontal Direction Drill
HVDC	High Voltage Direct Current
LEP	Local Enterprise Partnership
LSOA	Lower-layer Super Output Areas
MW	Megawatt
NPS	National Policy Statement
NVQ	National Vocational Qualifications
ONS	Office for National Statistics
SIC	Standard Industrial Classification

28 Socio-economics

28.1 Introduction

1. This chapter of the Environmental Statement (ES) considers the likely significant effects of the Projects on socio-economics. This includes direct socio-economic effects associated with the Projects and an assessment of any secondary socio-economic implications arising from significant effects identified elsewhere in the ES.
2. The chapter provides an overview of the existing environment for the proposed Onshore and Offshore Development Area, followed by an assessment of likely significant effects for the construction, operation, and decommissioning phases of the Projects.
3. This chapter should be read in conjunction with the following linked chapters:
   - **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)**;
   - **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**;
   - **Volume 7, Chapter 21 Land Use (application ref: 7.21)**;
   - **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**;
   - **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**;
   - **Volume 7, Chapter 25 Noise (application ref: 7.25)**; and
   - **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**.
4. Additional information to support the socio-economics assessment include:
   - **Volume 7, Appendix 28-1 Consultations (application ref: 7.28.28.1)**

28.2 Consultation

5. Consultation with regard to socio-economics has been undertaken in line with the general process described in **Volume 7, Chapter 7 Consultation (application ref: 7.7)** and the **Consultation Report (Volume 5, application ref: 5.1)**. The key elements were scoping, the ongoing Evidence Plan Process and the Preliminary Environmental Information Report (PEIR).

6. The feedback received from the Statutory Consultation is considered within the ES. This chapter has been updated following consultation in order to produce the final assessment submitted within the Development Consent Order (DCO) application. **Volume 7, Appendix 28-1 (application ref: 7.28.28.1)** provides a summary of the consultation responses received to date relevant to this topic, and details how the comments have been addressed within this chapter.

7. The consultation process is described further in **Volume 7, Chapter 7 Consultation (application ref: 7.7)**. Full details of the consultation process are presented in the **Consultation Report (Volume 5, application ref: 5.1)**, which has been submitted as part of the DCO application.

28.3 Scope

28.3.1 Effects Scoped In and Scoped Out

8. This chapter considers the potential impacts from the Projects on:

- Economic activity;
- Employment;
- Demographics;
- Loss of, disruption to or pressure on local infrastructure; and
- Disturbance (noise, air quality, visual and traffic) to social infrastructure.

9. Impacts on tourism and any implications on the scale of economic activity and employment supported by this sector have been considered separately in **Volume 7, Chapter 29 Tourism and Recreation (application ref: 7.29)**.

10. Following the Scoping Opinion, it was agreed operational effects from disruption/pressure on local infrastructure and to offshore activities; disturbance (noise, air, visual and traffic) to social infrastructure; and disruption to tourism and recreation could be scoped out for offshore assets. Consideration of these impacts was required for the Onshore Converter Stations activity during operations.

11. Similarly, the Scoping Opinion required consideration of economic implications to other disciplines, including from severance, as captured elsewhere in the ES (e.g., commercial shipping, land use).

28.3.2 Study Area

12. The Projects are located in a shallow area of the North Sea known as Dogger Bank. The Projects are around 100km from the north-east coast of England.

13. The study areas considered in the assessment are based on BiGGAR Economics' guidance on the definition of local areas in the context of offshore renewable energy projects, as drafted on behalf of Marine Scotland (Scottish Government, 2022). The process provides a set of principles that can be applied to projects across the UK.

14. The guidance identifies six principles for the identification of local areas through a consultation programme and case study analysis. These can be used to define local areas based on pre-existing geographies that contain the epicentres of impact. The principles are:

- Principle 1 (Dual Geographies) - The local area for the supply chain and investment impacts should be separate from the local area(s) for wider socio-economic impacts, including tourism and recreation;
- Principle 2 (Appropriate Impacts) - The appropriate impacts to be considered for assessments should be identified before defining the local areas;
- Principle 3 (Epicentres) - The local areas should include all the epicentres of the appropriate impacts;
- Principle 4 (Accountability) - The local areas used in the assessment should comprise of pre-existing economic or political geographies (community councils, local authorities, development agencies) to enhance accountability;
- Principle 5 (Understandable) - The local areas should be defined in such a way that they are understandable to the communities they describe; and
- Principle 6 (Connected Geography) - The local area for the supply chain and investment impacts should consist of connected (including coastal) pre-existing economic or political geographies.

15. The study area for the economic and demographic impacts is the smallest that would include all likely epicentres of impact, namely (**Plate 28-1**):

- The Humber Region – defined as the combined local authorities of:
  - East Riding of Yorkshire;
  - City of Hull;
  - North East Lincolnshire; and
  - North Lincolnshire.

16. The exact port locations for both construction and operations are currently unknown, however given the proximity of the Humber Region to the Projects and onshore export cable corridor, this is considered the most appropriate local study area. This is also the case with regard to any knock-on effects on infrastructure and demographics.

Plate 28-1 Map of Economic and Demographic Study Areas in Assessment

17. In addition, given the scale of the Projects, the assessment of impacts would be carried out at UK level (this study area is referred to as 'UK' throughout). This would provide additional evidence on the role the Projects could have towards the transition to net zero as a stimulus to economic activity.

28.3.3 Realistic Worst Case Scenario

28.3.3.1 General Approach

18. The socio-economic impact assessment is not sensitive to the design parameters outlined in other ES chapters. These parameters are described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**, which provides further details regarding specific activities and their durations.

19. The analysis of economic impacts relies on high level cost assumptions reflecting the capacity of the Projects. Those same assumptions affect impacts on demographics, which are directly driven by the creation of employment. Impacts on social assets and infrastructure are based on the interaction between socio-economics and the analysis from **Volume 7, Chapter 21 Land Use (application ref: 7.21)**, **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**, **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**, **Volume 7, Chapter 25 Noise (application ref: 7.25)** and **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**.

20. Consideration is also given to the different Development Scenarios still under consideration as set out in sections 28.3.3.2 to 28.3.3.4.

28.3.3.2 Development Scenarios

21. Following Statutory Consultation high voltage alternating current (HVAC) technology (previously assessed in PEIR) was removed from the Projects' design envelope (see **Volume 7, Chapter 4 Site Selection and Assessment of Alternatives (application ref: 7.4)** for further information). As a result, only high voltage direct current (HVDC) technology has been taken forward for assessment purposes. The ES considers the following development scenarios:

- Either DBS East or DBS West is built In Isolation; or
- DBS East and DBS West are both built Sequentially or Concurrently.

22. An In Isolation Scenario has been assessed within the ES on the basis that theoretically one Project could be taken forward without the other being built out. If an In Isolation Scenario is taken forward, either DBS East or DBS West may be constructed. As such, the onshore assessment considers both the Projects In Isolation.

23. If an In Isolation Scenario is taken forward, only the eastern Onshore Converter Station within the Onshore Substation Zone would be constructed. In either the concurrent or sequential scenario, both Onshore Converter Station locations within the Onshore Substation Zone would be taken forward for the onshore assessment.

24. In order to ensure that a robust assessment has been undertaken, all Development Scenarios have been considered to ensure the realistic worst case scenario for each topic has been assessed. A summary is provided here, and further details are provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5).**

25. The three Development Scenarios to be considered for assessment purposes are outlined in **Table 28-1**.

Table 28-1 Development Scenarios and Construction Durations

Development Scenario	Description	Total Maximum Construction Duration (Years)	Maximum Construction Duration Offshore (Years)	Maximum Construction Duration Onshore (Years)
In Isolation	Either DBS East or DBS West is built In Isolation	Five	Five	Four
Sequential	DBS East and DBS West are both built Sequentially, either Project could commence construction first with staggered / overlapping construction	Seven	A five year period of construction for each project with a lag of up to two years in the start of construction of the second project (excluding landfall duct installation) – reflecting the maximum duration of effects of seven years.	Construction works (i.e. onshore cable civil works, including duct installation) to be completed for both Projects simultaneously in the first four years, with additional works at the landfall, substation zone and cable joint bays in

Development Scenario	Description	Total Maximum Construction Duration (Years)	Maximum Construction Duration Offshore (Years)	Maximum Construction Duration Onshore (Years)
				the following two years. Maximum duration of effects of six years.
Concurrent	DBS East and DBS West are both built Concurrently reflecting the maximum peak effects	Five	Five	Four

26. Any differences between the Projects, or differences from how the first and the second Project are built (concurrent or sequential and the length of any gap) are identified and discussed where relevant in section 28.1. For each potential impact, the worst case construction scenario for the In Isolation, Sequential or Concurrent Scenario is presented.

28.3.3.3 Operation Scenarios

27. Operation scenarios are described in detail in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. The assessment considers the following scenarios:

- Only DBS East in operation;
- Only DBS West in operation; and
- DBS East and DBS West operating Concurrently with or without a lag of up to two years between each Project commencing operation.

28. If the Projects are built out using a phased approach, there would also be a phased approach to starting the operational phase. The worst case scenario for the operational phase for the Projects have been assessed. See section 5.1.1 of **Volume 7, Chapter 5 Project Description (application ref: 7.5)** for further information on phasing scenarios for the Projects.

29. The operations lifetime of each Project is expected to be 30 years.

28.3.3.4 Decommissioning Scenarios

30. Decommissioning scenarios are described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. Decommissioning arrangements will be agreed through the submission of a Decommissioning Plan to be submitted and approved following cessation of commercial operation prior to decommissioning commencing. For this assessment it is assumed that decommissioning of the Projects could be conducted separately, or at the same time.

28.3.4 Embedded Mitigation

31. The Projects have undergone careful design embedding a range of mitigations as set out, for instance, in the **Outline Code of Construction Practice (Volume 8, application ref: 8.9**) and the **Outline Public Rights of Way Management Plan (Volume 8, application ref: 8.9)** both submitted as part of the DCO application**.**

32. No additional embedded mitigation measures relevant to the socio-economic assessment are incorporated into the design of the Projects. The Applicants, however, would pursue activities to maximise the potential beneficial effects and a Supply Chain Plan, or their replacement under the Contracts for Difference regime, would be developed to outline how the Applicants would work with the supply chain to boost opportunities for UK suppliers. The Applicants have also developed an **Outline Skills and Employment Strategy (Volume 8, application ref: 8.5)** submitted with the DCO application**.** The purpose of the Outline Skills and Employment Strategy is to provide an outline strategy that can be developed further with the relevant key consultees into a Skills and Employment Strategy that will facilitate positive and meaningful commitments and activities in the Humber Region.

28.4 Assessment Methodology

28.4.1 Policy, Legislation and Guidance

28.4.1.1 National Policy Statements

33. The assessment of potential impacts upon socio-economics has been made with specific reference to the relevant National Policy Statements (NPS) including the Overarching NPS for Energy (EN-1), the NPS for Renewable Energy Infrastructure (EN-3) and the NPS for Electricity Networks Infrastructure (EN-5). These were published in November 2023 and were designated in January 2024. The specific assessment requirements for socio-economics, as detailed in the NPS, are summarised in **Table 28-2** together with an indication of the section of this chapter where each is addressed.

Table 28-2 NPS Assessment Requirements

NPS Requirement	NPS Reference	ES Section Reference
EN-1 NPS for Energy		
Applicants are encouraged to engage with relevant local authorities during the early stages of the project development to gain a better understanding of local or regional issues and opportunities	EN-1 paragraph 5.13.3	The Applicants have engaged with relevant authorities and sought their feedback on the Scoping Report and PEIR.
Applicants may wish to provide information on the sustainability of the jobs created, including where they would help to develop the skills needed for the UK's transition to net zero.	EN-1 paragraph 5.13.4	Sustainability of jobs is considered alongside the impact on employment from the Projects in section 28.5
The assessment should consider the contribution to the development of low-carbon industries at the local and regional level as well as nationally.	EN-1 paragraph 5.13.4	The contribution to the development of low-carbon industries is considered in section 28.1. The key port locations have not been determined at this stage and socio-economic impacts are assessed at the level of the Local Economic Area, which covers multiple local authorities in the

NPS Requirement	NPS Reference	ES Section Reference
		North West of England and Wales. Tourism and recreation impacts are assessed at a more local level.
The assessment should consider any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains.	EN-1 paragraph 5.13.4	The impacts on Gross Value Added (GVA) and employment include indirect/supply chain impacts, as considered in section 28.1
Applicants are advised to consider any effects on local services and infrastructure, including the provision of educational and visitor facilities	EN-1 paragraph 5.13.4	Effects on local services and social infrastructure, including educational and health facilities are considered in section 28.1
Applicants are advised to consider that if development consent were to be granted for a number of projects within a region and these were developed in a similar timeframe, there could be short-term negative effects, for example a shortage of construction workers to meet the needs of other industries and major projects within the region.	EN-1 paragraph 5.13.4	Cumulative effects, including any labour market pressures, are considered in section 28.7.
Applicants are encouraged, where possible, to ensure local suppliers are considered in any supply chain.	EN-1 paragraph 5.13.6	Reference to ways in which the Applicants intend to maximise local economic benefits is set out in section 28.5.
Applicants are advised they should also consider developing accommodation strategies where appropriate, especially during construction and decommissioning stages, that would include for the need to provide temporary	EN-1 paragraph 5.13.6	

NPS Requirement	NPS Reference	ES Section Reference
accommodation for construction workers if required.		
EN-3 NPS for Renewable Energy Infrastructure		
Offshore wind farms and offshore transmission would occupy an area of the sea or seabed. For offshore wind farms in particular it is inevitable that there would be an impact on navigation in and around the area of the site. This is relevant to both commercial and recreational users of the sea who may be affected by disruption or economic loss because of the proposed offshore wind farm and/or offshore transmission	EN-3 paragraph 2.8.168	Impacts on shipping and navigation have been considered in section 28.1 and are based on the analysis in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14).** Recreational tourism is discussed in **Volume 7, Chapter 29 Tourism and Recreation (application ref: 7.29)**

28.4.1.2 Strategic Context and Policy

34. The study areas for the socio-economic assessment are also covered by various local and industrial strategies that are relevant to this assessment.

28.4.1.2.1 Humber Local Energy Strategy

35. Published in 2019, the Humber Local Energy Strategy (Humber Local Enterprise Partnership, 2019) outlines two key objectives for the region:

- To ensure the Humber region plays a leading role in the UK's decarbonisation efforts by making targeted interventions to reduce emissions in the electricity, heat and transport sectors; and
- To foster clean energy growth by supporting public and private sector investments in novel low carbon technologies to take advantage of the opportunities presented by the emerging low carbon economy.

36. The strategy highlights the Humber's pivotal role in the transition from fossil fuels to renewables, with the natural resources of the area already supporting the Hornsea offshore wind farm projects located 120km off the coast. The document emphasises, that while the offshore wind sector already plays a significant role in the economy of the Humber, taking

advantage of the possible benefits of the sector requires support by business-friendly policies and investment from local municipalities and central government. The strategy outlines four activities for the Local Enterprise Partnership (LEP) with the aim of supporting the expansion of the offshore wind cluster and maintaining the Humber as a key national hub for offshore wind manufacture and operations:

- To facilitate skill development, job security and creation through the existing supply chain, higher education and training providers;
- To build on existing capabilities, competencies, and infrastructure to ensure the offshore wind ecosystem becomes more efficient;
- To undertake campaigns aimed at attracting new inward investment into the sector and investment in innovation; and
- To offer services and expertise to other regions in the UK and internationally.

28.4.1.2.2 Hull and East Yorkshire Economic Strategy

37. Hull and East Yorkshire LEP (HEY LEP) published its Economic Growth and Workforce Wellbeing Strategy for 2021 to 2026 (HEY LEP, 2021). The strategy considers some of the challenges that the region has faced regarding the impact of the Covid-19 pandemic and the implications of the UK leaving the EU on the maritime and trading activities. This strategy outlines four priorities for the area, namely;

- A productive and innovative economy;
- Clean growth economy;
- Skilled and inclusive economy; and
- Competitive and resilient local economy.

38. Offshore wind is discussed as an important development sector throughout the strategy. This includes;

- The sector is discussed within the UK context, in particular the Sixth Carbon Budget, which highlights the connecting of economic and environmental policy;
- The reputation and skills that already exist in the area as a result of the development of offshore wind to date are considered a strength of the area, with opportunities to export both goods and services to a growing global market;
- Innovation in the offshore wind sector, particularly during the operations and maintenance phase, is being driven by developments in the area,

including the Aura Innovation Centre and the wider conglomeration of offshore operations and maintenance facilities in the area; and

- The location of the Humber and its ports are a comparative advantage for the development of both manufacturing facilities and further installation activity as the whole southern North Sea is within easy reach.

39. The economic opportunities from the development of the offshore wind sector, and the wider Net Zero ambitions, are considered to be critical for the economic future of the area. To support this, the LEP would be progressing actions within the skills and employment strategies and the industrial cluster plan so that organisation and individuals are able to benefit from these opportunities.

28.4.1.2.3 Greater Lincolnshire LEP Local Industrial Strategy

40. In January 2021, Greater Lincolnshire LEP published a draft Local Industrial Strategy (Greater Lincolnshire LEP, 2021) which sets out the opportunities for growth within the LEP area and how the LEP plans to maximise the benefits of these opportunities. The strategy highlights the region's established and emerging clusters in:

- Agri-food;
- Ports;
- Logistics and defence; and
- Energy and new fuels.

41. These clusters present opportunities for Greater Lincolnshire to build on the area's manufacturing and engineering base.

42. The strategy recognises that offshore wind manufacturing, installation, operations and maintenance businesses are now established in the region as a result of existing offshore wind clusters in the area. It acknowledges that offshore wind developments are creating sustainable jobs in the area and supporting the local economy and would continue to do so as the sector grows.

43. The strategy highlights opportunities the offshore wind sector presents for Greater Grimsby, which currently has low wages and productivity, as well as high unemployment and challenges retaining businesses and skilled workers in the area. The strategy discusses how the development of the offshore wind sector could support the economic development through establishing offshore wind operations and maintenance businesses in the area.

28.4.1.2.4 UK Offshore Wind Sector Deal

44. The Offshore Wind Sector Deal (UK Government, 2019), updated by the UK government in 2020, sets out the government's aim to support the development of offshore wind energy generation in the UK, making the sector a significant part of a low-cost, low-carbon flexible grid system. The Sector Deal also emphasises how UK companies can benefit from the opportunities presented by the expansion of the offshore wind sector, enhancing the competitiveness of UK firms internationally and sustaining the UK's role as a global leader in offshore wind generation.

45. The Sector Deal highlights that some estimates suggest that offshore wind capacity globally would grow by 17% annually from 22GW to 154GW in 2030, which could mean the UK would contribute up to 40GW of generating capacity. The government aims to reach this capacity in a sustainable, timely way, and commits to working with the offshore wind sector and wider stakeholders to deliver the expansion of the sector, addressing strategic deployment issues, transmission issues and environmental impacts. Reaching this level of capacity could support up to 27,000 jobs in the UK. The sector would work with government, existing institutions, and universities to increase job mobility between energy sectors, increase apprenticeship opportunities and coordinate local efforts, further developing the benefits to the UK economy.

46. The Sector Deal emphasises the Humber as a majorly significant region to the development of the sector in the UK. The region already supports a wind farm cluster with a pre-existing manufacturing base, enabling economies of scale and increased productivity which could drive innovation and improve competitiveness in the sector.

28.4.1.3 Other

47. Further detail is provided in **Volume 7, Chapter 3 Policy and Legislative Context (application ref: 7.3)**.

28.4.2 Data and Information Sources

48. The sources that have been used to inform the assessment are listed in **Table 28-3**.

Table 28-3 Available Data and Information Sources

Data Set	Year	Notes
BVG Associates, UK and Scottish content baseline and roadmap: A report for the Scottish Offshore Wind Energy Council	2021	Evidence on ways in which to maximise content from the construction and operation of offshore wind farms in the UK
BVG Associates, Guide to an Offshore Wind Farm	2019	Breakdown of contracts required in the delivery, operation and decommissioning of an offshore wind farm
ONS, Regional gross value added (balanced) per head and income components	2023	Data on regional Gross Value Added
ONS, Regional gross domestic product: local authorities	2023	Data on GDP at local authority level
ONS, Median House Prices by lower layer super output area: HPSSA dataset 46	2023	Data on house prices
ONS, Population Estimates	2022	Data on current population and its structure
ONS, Annual Population Survey	2022	Labour market data, including on economic activity and unemployment
ONS, Jobs Density Survey	2022	Data on job density
ONS, Annual Survey of Hours and Earnings	2022	Data on earnings and hours worked
ONS, UK Business Counts – enterprises by industry and employment size band	2022	Data on business size and employment
ONS, Business Register and Employment Survey	2022	Data on sectoral employment

Data Set	Year	Notes
ONS, Input-output supply and use tables	2022	Employment and GVA multipliers
ONS, Population Projections 2018-2043	2020	Data on future population and its structure
UK Government, local authority data: housing supply	2023	Data on housing supply
UK Government, English Indices of deprivation 2019.	2019	Evidence on levels of relative deprivation across the UK

28.4.3 Impact Assessment Methodology

49. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** provides a summary of the general impact assessment methodology applied. The following sections describe the methods used to assess the likely significant effects on socio-economics.

28.4.3.1 Definitions

50. For each potential impact, the assessment identifies receptors sensitive to that impact and implements a systematic approach to understanding the impact pathways and the level of impacts (i.e. magnitude) on given receptors. The definitions of sensitivity and magnitude for the purpose of the socio-economics assessment are provided in **Table 28-4, Table 28-5, Table 28-6** and **Table 28-7**.

51. The sensitivity of the receptor is determined by assessing the following considerations:

- Adaptability – the degree to which a receptor can avoid or adapt to an impact;
- Tolerance – the ability of a receptor to accommodate temporary or permanent change without a significant adverse impact;
- Reversibility and recoverability – the temporal scale over and extent to which a receptor would recover following an impact; and
- Value and importance – a measure of the receptor's importance in terms of its relative ecological, social or economic value or status.

52. This section discusses how this sensitivity has been applied to socio-economic receptors.

53. The magnitude of an impact is determined by assessing the following considerations:

- Spatial extent - the geographical area over which an impact occurs;
- Temporal extent - the duration over which the impact occurs;
- Frequency of occurrence - how often the impact occurs; and
- Severity - the degree of change relative to the baseline level.

54. The socio-economic impacts are considered over distinct study areas to capture the spatial extent of any impact. The magnitude and significance of any impact are then considered in relation to the baseline conditions within those study areas.

55. The frequency and temporal extent of any impact would be considered and those which occur over a short period of time would be described as temporary and those which occur over a longer period of time would be described as permanent.

56. The approach to determining the sensitivity and magnitude, of any socio-economic impacts is outlined below and includes:

- Changes in economic activity; and
- Demographic and service demand impacts.

28.4.3.1.1 Economic Impacts, Including Sector Specific Impacts

57. The sensitivity of an economy is linked to how well it is able to absorb change. To consider the sensitivity of an economy, or a sector within that economy, it is necessary to consider both the resilience and agility of the economy. There are several factors that contribute to an assessment of resilience and agility, these include:

- The scale of the economy;
- The diversity of sectors in the economy;
- The level of economic activity;
- The level of skills and education; and
- The level of economic potential from utilising capital (natural, human, social, economic).

58. The scale of an economy is particularly relevant in rural areas. An economy that is small in absolute terms may have less agility, particularly if the structure is well established. Demographic trends are also likely to be relevant.

59. The diversity of the economy, as defined by the spread of sectors, is a good indicator of resilience. If an economy is over reliant on one sector, then a

shock that impacts on this sector could have a disproportionate impact on the economy as a whole.

60. The economic activity rate in an economy, particularly how this compares to the wider national economy and trends in this rate, is an indicator of economic resilience. A declining, either in absolute or relative terms, economically active population could indicate that the economy has been less able to accommodate changes. Conversely, an economically active population that is growing at a faster rate than the national average could indicate a greater level of agility.

61. The level of skill in an economy, as described by the level of qualifications and occupation level, indicate the ability of the workforce to react to new employment opportunities or find new work if there is a loss of employment.

62. The economic potential of an economy is linked to the natural, human, social and economic capital that is available.

Table 28-4 Definition of Sensitivity for an Economic Receptor

Sensitivity	Definition
High	A highly (major) sensitive economy would not be able to absorb changes without fundamentally altering its present character or value. Factors that would contribute to an economy being considered of high sensitivity include: • The economy is particularly reliant on a single sector; • The number of jobs in the economy has been declining over multiple years; and • The share of people with no qualifications is significantly above the average for the wider economy.
Medium	An economic with medium sensitivity has a moderate capacity to absorb changes without fundamentally altering its present character or value, however it would be less resilient than the wider economy. Factors that would contribute to an economy being considered of medium sensitivity include: • The economy is particularly reliant on a small number of sectors; • The number of jobs in the economy has grown less than the wider economy; and • The share of people with no qualifications is above the average for the wider economy.

Sensitivity	Definition
Low	A low (minor) sensitive economy is tolerant to changes without fundamentally altering its present character or value. Factors that would contribute to an economy being considered of low sensitivity include: • Most sectors of the economy are well represented; • The number of jobs in the economy has grown in line with the wider economy; and • The level of educational attainment is in line with the wider economy.
Negligible	An economy with negligible sensitivity is very agile and would be able to accommodate changes without affecting its character or overall value. Factors that would contribute to an economy having negligible sensitivity include: • The economy is well balanced between sectors; • The number of jobs in the economy has grown at a quicker rate than the wider UK economy; and • The share of people with no qualifications is below average for the wider economy.

63. The magnitude of activity is determined with reference to long-term sectoral and economy-wide trends.

64. Between 2000 and 2019, the average level of Gross Domestic Product (GDP) per capita growth in the UK was 1% per annum (IMF, 2022). Similarly, between 2000 and 2019 the number of jobs has grown by 1% per annum (ONS, 2022). The magnitude of any change in an economy should be considered within this context.

65. The magnitude of employment impacts should be considered in relation to the levels of economic activity within a study area. For this reason, it should be relative to the number of people in employment, rather than the unemployed. The geographic split of impact analysis should consider workplaces (jobs), in line with how we split contracts between study areas based on the locations of companies. This avoids any issues arising from commuting patterns across different geographies.

66. In addition to the change in the overall impact in the GVA or employment of an area, consideration should also be made for the sectors of the economy which are considered to contribute to the economic sensitivity of the area. For example, if there is a high level of concentration of employment in the tourism trade, particular attention should be given to the magnitude of change within these sectors. Similarly, sectors may contribute to the economic sensitivity of an area because of their relationship to the Projects. For example, in the context of the Projects and offshore wind, then the construction, manufacturing and professional services sectors present in an area are likely to contribute towards its sensitivity.

67. The definitions used in this approach are outlined in **Table 28-5**.

Table 28-5 Definitions of Magnitude for Economic Impacts, Including Sector Specific Impacts

Magnitude	Definition
High	An effect would be considered to have a high magnitude if it was equivalent to all of the typical economic growth per capita. Specifically, for each study area: • Peak annual GVA impact is greater than, or equal to, 1% of the economy; or • Peak employment supported is greater than, or equal to, 1% of the total number of jobs.
Medium	An effect would be considered to have a medium magnitude if it was equivalent to half of the typical economic growth per capita. Specifically, for each study area: • Peak annual GVA impact is greater than, or equal to, 0.5% and less than 1% of the economy, or a given sector; or • Peak employment supported is greater than, or equal to, 0.5% and less than 1% of the total number of jobs, or jobs in a given sector.
Low	An effect would be considered to have a low magnitude if it was equivalent to a quarter of the typical economic growth per capita. Specifically, for each study area: • Peak annual GVA impact is greater than, or equal to, 0.25%, and less than 0.5% of the economy, or a given sector; or • Peak employment supported is greater than, or equal to, 0.25%, and less than 0.5% of the total number of jobs, or jobs in a given sector.

Magnitude	Definition
Negligible	An effect would be considered to have a negligible magnitude if it was equivalent to less than a quarter of the typical economic growth per capita. Therefore, for each study area: • Peak annual GVA impact is less than 0.25% of the economy, or a given sector; or • Peak employment supported is less than 0.25% of the total number of jobs, or jobs in a given sector.

28.4.3.1.2 Changes in Demography, Community and Social Assets

68. The effect on the community and social assets is scoped into this assessment. This includes the demand for housing, health services and education services.

69. The adaptability and tolerance of the housing market to accommodate change in each study area is implied by the relative change in the price of housing stock compared to the wider economy. If prices have increased significantly more within a study area, this would suggest that the housing market has not been able to adapt to a change in demand.

70. In the long term, community and social assets would adapt to serve the communities they are in. Hospitals and education facilities are planned based on the demographic demands in a particular area. Therefore, these sensitivities are considered for short-term impacts only and the long-term sensitivities of these receptors would be negligible. As a result, the impacts on community and social assets are only considered during the development and construction phase.

71. The sensitivity of the public assets such as health services or schools would be dependent on the concentration of resources that are allocated to these assets. It is assumed that the ability of these assets to adapt to change would not vary geographically. Therefore, the key factor of sensitivity is tolerance to change. It is assumed that this is linked to the relative size of the community that is served by these assets. If a teacher or doctor has less students or patients than the national average, they are more likely to be able to tolerate changes, specifically increases, in these numbers. As a result, these assets would be less sensitive to change.

72. A summary of the definitions and contributing factors for the sensitivity of community and social assets are given in **Table 28-6**.

Table 28-6 Definition of Sensitivity for a Social and Community Asset Receptor

Sensitivity	Definition
High	A community or social asset with high sensitivity would not be able to tolerate or adapt to impacts as these would result in a fundamental change in the ability of these assets to meet the needs of the community. Factors that would contribute to a community or social asset being considered of high sensitivity include: • House prices have increased at a notably faster rate than the national average; • The number of General Practitioners (GPs) per capita is much lower than the national average; and • The number of pupils per teacher is much higher than the national average.
Medium	A community or social asset with medium sensitivity would have a limited capacity to tolerate or adapt to impacts as these would result in a moderate change in the ability of these assets to meet the needs of the community. Factors that would contribute to a community or social asset being considered of medium sensitivity include: • House prices have increased at a faster rate than the national average; • The number of GPs per capita is lower than the national average; and • The number of pupils per teacher is higher than the national average.
Low	A community or social asset with low sensitivity would be able to tolerate or adapt to impacts without a change in the ability of these assets to meet the needs of the community. Factors that would contribute to a community or social asset being considered of low sensitivity include: • House prices have increased at a similar rate than the national average; • The number of GPs per capita is similar to the national average; and • The number of pupils per teacher is similar to the national average.
Negligible	A community or social asset with a negligible sensitivity would be resistant to change as they would have a greater capacity to tolerate changes than the wider country. Factors that would contribute to a community or social asset being considered of negligible sensitivity include: • House prices have increased at a slower rate than the national average; • The number of GPs per capita is higher than the national average; and • The number of pupils per teacher is lower than the national average.

73. The magnitude of impacts on the social or community assets is dependent on the demographic changes that would occur in each of the study areas because of the Projects (**Table 28-7**).

74. The severity of any change in demographics is measured against the level of annual change that is typical in the study area that it serves. This would be in line with the change a community or social asset would accommodate in a year.

Table 28-7 Definitions of Magnitude of Social and Community Asset Impacts

Magnitude	Definition
High	The effect on a social or community asset would be considered to have a high magnitude if the change in residual population was equivalent to 100% or more of the average annual growth rate for the study area.
Medium	The effect on a social or community asset would be considered to have a medium magnitude if the change in residual population was equivalent to between 50% and 100% of the average annual growth rate for the study area.
Low	The effect on a social or community asset would be considered to have a low magnitude if the change in residual population was equivalent to between 25% and 50% of the average annual growth rate for the study area.
Negligible	The effect on a social or community asset would be considered to have a negligible magnitude if the change in residual population was equivalent to less than 25% of the average annual growth rate for the study area.

28.4.3.2 Significance of Effect

75. The assessment of significance of an effect is informed by the sensitivity of the receptor and the magnitude of the impact. The determination of significance is guided by the use of an impact significance matrix presented in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)**. Definitions of each level of significance are provided in **Table 28-8**. For the purposes of this assessment, any effect that is of major or moderate significance is considered to be significant in EIA terms, whether this be adverse or beneficial. Any effect that has a significance of minor or negligible is not significant.

Table 28-8 Definition of Effect Significance

Significance	Definition
Major	Very large or large change in receptor condition, which is likely to be an important consideration at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which is likely to be an important consideration at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be an important consideration in the decision-making process.
Negligible	No discernible change in receptor condition.

28.4.4 Cumulative Effect Assessment Methodology

76. The Cumulative Effect Assessment (CEA) considers other schemes, plans, projects and activities that may result in significant effects in cumulation with the Projects. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** (and accompanying **Volume 7, Appendix 6-1 application ref: 7.6.6.1)**) provides further details of the general framework and approach to the CEA.

77. Based on this approach, section 28.7 presents the CEA with respects to socio-economics and includes:

- Screening for potential cumulative impacts;
- A short list of schemes with potential for cumulative effects on socio-economics; and
- The assessment of potential cumulative effects arising from the shortlisted schemes.

28.4.5 Assumptions and Limitations

78. Data from official statistical sources, such as the surveys carried out by the Office for National Statistics (ONS), are generally published with a lag of between one and two years. This means that part of the information included in the baseline does not reflect current economic activity, while being based on the latest available data. To provide the most up to date information possible, the baseline assessment was carried out close to the submission of the ES.

79. The impact assessment is based on the latest information available regarding the generating capacity of the Projects. For the purposes of this assessment, it was assumed that the Projects would have a total generating capacity of 3GW, with each generating 1.5GW. The worst case scenarios were designed with this in mind and by making assumptions on when the Projects could take place.

80. The economic model estimating the economic impact from the Projects relies on an Input-Output Methodology. One of the main data sources associated with this document is the UK Input-Output Tables, which, while last published in 2022, refers to sectoral interactions as of 2018.

81. The analysis relies on the matching of economic activity and wind farm-related contracts to appropriate sectoral codes from the ONS Standard Industrial Classification (SIC) of Economic Activities. Data availability becomes limited the more detailed the assessment of contracts. For this reason, the economic model relies on a breakdown of economic activity by sector up to SIC level 2.

82. None of the assumptions and limitations listed above are likely to affect the overall assessment of effects from the development, construction, operations and decommissioning of the Projects.

28.5 Existing Environment

83. This section sets out the socio-economic baseline for the study areas considered in the assessment, namely:

- The Humber Region; and
- UK.

28.5.1 Current Demographics and Projections

84. In 2021, the study area of the Humber Region had a population of 936,700, accounting for 1.4% of the UK's total population.

85. As shown in **Table 28-9**, around 61% of the Humber Region's total population is of working age (16-64 years old), a slightly lower share than that accounted for by this age group across the UK (63%). Conversely, the Humber Region has a higher share of the population aged 65 and over (22%) than the UK as whole, where 19% of the population falls within this group.

Table 28-9 Population Structure

	Humber Region	**UK**	**Humber Region**	**UK**
	2021		**2043***	
Total	936,700	67,026,300	959,363	72,563,425
% under 16 years old	18%	18%	16%	17%
% aged 16-64 years old	61%	63%	56%	59%
% aged 65 years old and over	22%	19%	28%	24%

*Source: ONS (2021), Population Estimates, * ONS (2020), Population Projections: local authority based by single year of age.*

86. The population of the Humber Region is expected to increase by 2.4%, to 959,363, by 2043. However, as shown on **Plate 28-2**, this population increase is entirely driven by an increase in those aged 65 or over. By 2043, it is projected that the number of working age people in the Humber Region would decrease by 29,234. This is equivalent to a loss of 1,330 working age people every year. Similarly, there is projected to be 10,468 fewer children in the Humber Region in 2043 than in 2021.

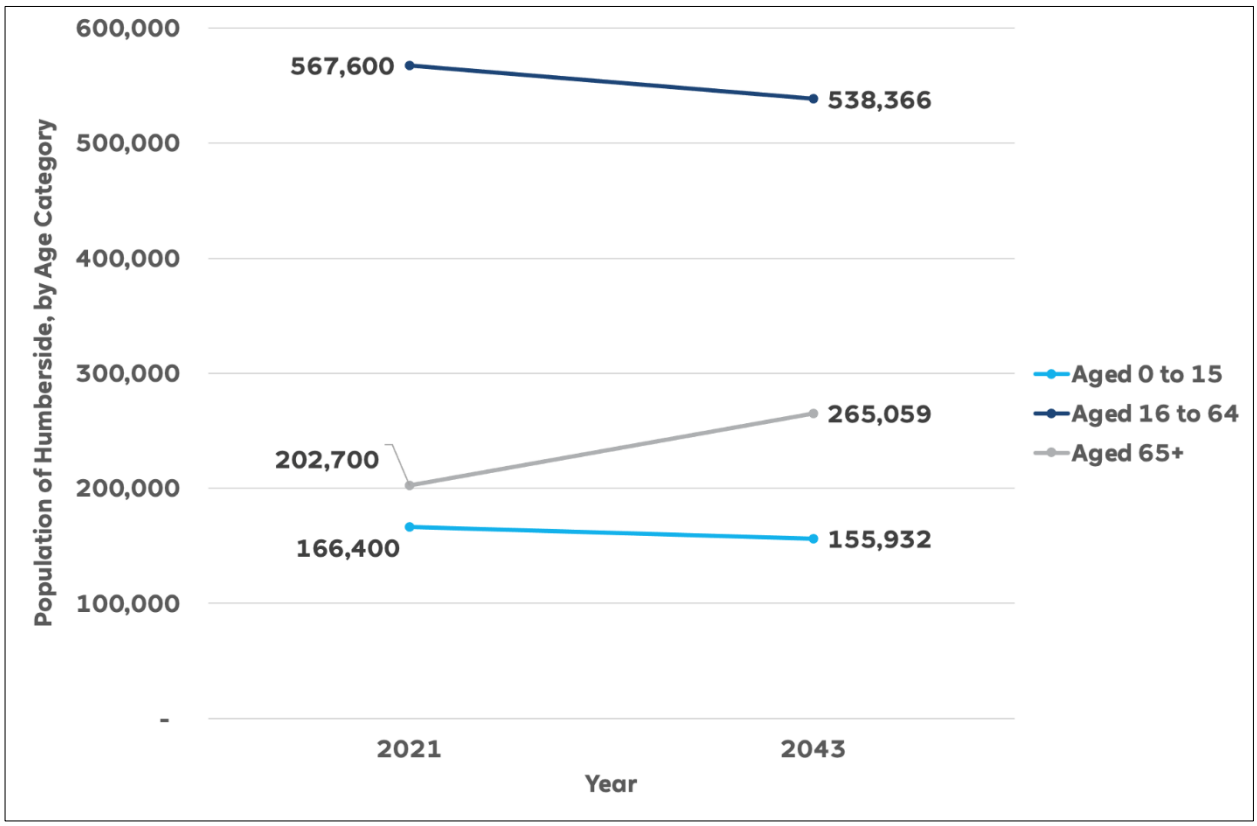

Plate 28-2 Population Projections by Age Category 2021 - 2043

Source: ONS (2020), Population Projections: local authority based by single year of age.

87. The projected population change in the Humber Region would increase the demographic differences between the area and the wider UK. In particular, the difference in the share of the population that is aged over 65 would increase from three percentage points in 2021 to four percentage points in 2043.

28.5.2 Labour Market Performance and Trends

88. The labour market in the Humber Region performed worse than the wider UK labour market across most measures, including economic activity, jobs growth and pay.

89. As shown in **Table 28-10**, in 2021 the Humber Region had a lower economic activity rate (77%) than the UK (78%).

90. In 2022, the unemployment rate was similar in the Humber Region (3.7%) and across the UK (3.6%). This is the lowest rate the region has experienced over the past ten years, falling from slightly over 9% in 2011.

91. In the Humber Region around 23% of those of working age were economically inactive, which is a larger share compared to the UK (22%). Of those who are economically inactive in the Humber Region, approximately 22% want a job, representing 27,700 residents seeking job opportunities in the area to re-join the labour market.

92. The level of employment growth in the Humber Region has been lower than the UK as a whole. Over the period 2011-2021, the total number of jobs in the Humber Region has increased by 10%. This is lower than the growth rate for the UK as a whole.

93. Residents of the Humber Region have lower average earnings than those living in the UK, with the median annual gross income for full-time workers being £29,508 and £33,000 respectively.

Table 28-10 Labour Market Performance

	Humber Region	**UK**
Economic Activity Rate	77%	78%
Economic Inactivity Rate	23%	22%
Economically Inactive seeking a Job	22%	18%
Unemployment Rate	3.7%	3.6%
Job Growth (2011-2021)	10%	13%
Median Annual Gross Income (Resident Analysis) *	£29,508	£33,000

*Source: ONS (2022a), Annual Population Survey. * ONS (2022b), Job Density Survey. ** ONS (2022c), Annual Survey of Hours and Earnings.*

28.5.3 Sectoral Employment

94. Almost a fifth (18%) of employment in the Humber Region is concentrated in the manufacturing sector. This is considerably larger than the relative employment supported by the sector across the UK economy (8%) as set out in **Table 28-11**.

95. In 2022, there were a total 2,250 manufacturing businesses in the Humber Region, accounting for 7.2% of businesses in the area (ONS, 2022d).

96. In 2021, human health and social work activities (15%) and wholesale and retail trade (14%) were the second and third largest sectors of employment

in the Humber Region, with retail businesses accounting for about 16% of businesses in the region.

97. Employment in the construction industry in the Humber Region is above the UK average at 6% compared to 5% respectively, and accounts for 14.6% of all businesses.

98. The Projects may result in opportunities for both the manufacturing and construction sectors and benefit from the relative strength of these sectors in the Humber Region.

Table 28-11 Share of Employment by Industrial Sector

	The Humber Region	**UK**
Manufacturing	18%	7%
Human health and social work activities	15%	13%
Wholesale and retail trade; repair of motor vehicles and motorcycles	14%	14%
Education	9%	8%
Administrative and support service activities	7%	9%
Accommodation and food service activities	7%	7%
Transportation and storage	6%	5%
Construction	6%	5%
Professional, scientific and technical activities	5%	9%
Public administration and defence; compulsory social security	4%	4%
Agriculture, forestry and fishing	2%	2%
Other service activities	2%	2%
Information and communication	2%	4%
Arts, entertainment and recreation	2%	2%
Real estate activities	1%	2%

	The Humber Region	UK
Water supply; sewerage, waste management and remediation activities	1%	1%
Financial and insurance activities	1%	3%
Electricity, gas, steam and air conditioning supply	0%	0%
Mining and quarrying	0%	0%
Total	**410,820**	**32,172,341**

28.5.4 Gross Value Added (GVA)

99. In 2021, the GVA generated in the Humber Region totalled almost £22.2 billion. This is equivalent to a GVA per head of £23,649 in the Humber Region, which is considerably lower than the £30,443 GVA per head in the UK. This suggests that the region has a lower level of productivity than the UK shown in **Table 28-12**.

Table 28-12 Gross Value Added (Balanced) at Current Prices (£ billion).

	The Humber Region	UK
2011	17.0	1,485.9
2021	22.2	2,040.5
Change (2011-2021)	31%	37%
GDP per head (£)	£27,281	£33,745

28.5.5 Deprivation

100. The Index of Multiple Deprivation considers seven different dimensions of deprivation related to income, crime, employment, education, health, housing and the living environment. These data are gathered for each of the Lower-layer Super Output Areas (LSOAs) of England.

101. Data from the Index of Multiple Deprivation suggest that the Humber Region is relatively more deprived than England as a whole. As shown in **Table 28-13** of the 569 LSOAs in the Humber Region, 29% fall within England's 20% most deprived areas. Almost 50% of LSOAs in the Humber Region are within the country's 40% most deprived areas. In comparison, 16% of LSOAs in the Humber Region are within England's least 20% deprived areas.

Table 28-13 Index of Multiple Deprivation, The Humber Region

	Proportion of LSOAs
1 (most deprived quintile)	29%
2	19%
3	17%
4	20%
5 (least deprived quintile)	16%

28.5.6 Education and Skills

102. The working-age population of the Humber Region has achieved lower levels of educational qualifications than that of the UK. A total of 31% of the working age population of the Humber Region hold at least a National Vocational Qualification 4+ (NVQ) (a bachelor's degree or equivalent), in comparison to 44% across the UK.

103. Lower educational attainment in the Humber Region is also captured by the lower shares of those holding at least an NVQ at levels 3, 2 and 1 summarised in **Table 28-14**. The proportion of the working age population who do not hold any NVQs is also higher than that of the UK.

Table 28-14 Proportion of the Population aged 16 – 64 by Highest Level of Qualification

	Humber Region	**UK**
NVQ4+	31%	44%
NVQ3+	53%	61%
NVQ2+	74%	78%

	Humber Region	UK
NVQ1+	85%	87%
Other qualifications	5%	6%
No qualifications	10%	7%

Source: ONS (2022), Annual Population Survey.

104. As shown in **Table 28-15**, in 2021/22 the pupil to teacher ratio across all types of schools in Yorkshire and the Humber was 18.5, slightly above the English average of 18.0. This ratio has remained relatively stable over the past five years, increasing from 18.6 in 2017/18.

Table 28-15 Pupil to Teacher Ratios by School Type

	Yorkshire and the Humber	England
Nursery	22.2	23.4
Primary	21.1	20.6
Secondary	17.0	16.7
Other	6.8	6.3
All Types of Schools	18.5	18.0

Source: Department for Education (2021), Education and Training Statistics for the UK.

105. There are slightly more pupils per teachers in both primary and secondary schools in Yorkshire and the Humber and slightly less across nurseries compared to the English average.

28.5.7 Health

106. Data on the GP Workforce in England, collected by the National Health Service, indicates that, as of July 2022, there were 492 GPs in the Humber Region.

107. Given that the population of the Humber Region is 934,400, dividing the population by the number of GPs estimates that there are approximately 1,900 patients per GP in the region. In comparison, there are 34,392 GPs across England, again dividing the population by this number, it is estimated that there are 1,627 patients per GP across the country shown in **Table 28-16**. Based on this data, there is more pressure on GP services, in terms of the number of patients per GP, in the Humber Region than England.

Table 28-16 General Practitioners per Person, 2022

	Humber Region	UK
People per GP	1,900	1,627

Source: NHS Digital, (2022). General Practice Workforce, England & ONS (2021), Population Estimates.

28.5.8 Housing Stock and Affordability

108. Total housing stock in the Humber Region is 449,543, of which the majority (85%) is private sector housing. The proportion of private housing in the region is two percentage points higher than the national figure, whilst the proportion of local authority housing is greater in the Humber Region (8%), compared to 6% across England (UK Government, 2023).

109. In 2022, a total of 12,577 residential properties were sold in the Humber Region, an increase of 2,394 above the 2012 figure. Over the past ten years, 1,167 affordable homes have been built and bought in the Humber Region, with most of this activity occurring between 2018 and 2022. During the same period, 4,506 affordable rent housing has been built and 1,486 social rented homes. A total of 7,233 affordable housing units have been built between 2011/12 and 2021/22 (UK Government, 2023).

110. The average median house price paid in the Humber Region in 2022 was £171,384, considerably lower than the £326,153 for England and Wales (ONS, 2023b). This equates to the average house price paid in the Humber Region being 6 times the average annual gross income of residents. This is considerably lower than the average for the UK, where the average house price paid is 9 times the average annual income.

111. Between 2011 and 2022, house prices in the Humber Region have increased by 51%, compared to 72% across England and Wales as shown in **Table 28-17**.

Table 28-17 Median House Price Values and Changes, 2012 - 2022

	2012	2022	Change
Humber Region	113,623	171,384	51%
England and Wales	189,134	326,153	72%

Source: ONS, (2023b), Median House Prices by lower layer super output area: HPSSA dataset 46.

28.5.9 Summary of Socio-economic Baseline and Sensitivities

28.5.9.1 Economy of the Humber Region

112. The economy of the Humber Region is one of the receptors that has been scoped into the assessment. The socio-economic baseline has identified that in the Humber Region:

- The role of the manufacturing sector, which is also important to the offshore wind industry, is much greater than the UK as a whole;
- The level of educational attainment is lower than the wider UK economy, in particular the share of the population with higher level qualifications is considerably lower than the UK average; and
- The level of jobs growth in the Humber Region is less than half that of the UK as a whole.

113. The sensitivity of the economy of the Humber Region has therefore been assessed as Medium, in line with the approach outlined in **Table 28-10**.

28.5.9.2 Economy of the UK

114. The economy of the UK is one of the receptors that has been scoped into the assessment. The socio-economic baseline has identified that in the UK:

- The economy is well balanced between sectors; and
- Educational attainment and jobs growth are, by definition, in line with the UK average.

115. The sensitivity of the economy of the UK has therefore been assessed as Low, in line with the approach outlined in **Table 28-10**.

28.5.9.3 Demographics of the Humber Region

116. The demographics of the Humber Region is one of the receptors that has been scoped into the assessment. The socio-economic baseline has identified that;

- The population of the Humber Region is just under 1 million and is projected to grow over the coming decades;
- The population within the Humber Region is older than the UK average; and
- The working age population is projected to decline in coming decades.

117. The sensitivity of any receptor considers how well it is able to accommodate and react to changes in the environment. The population of the Humber Region is of a scale that it would be able to absorb many changes. However, the projected declining working age population, particularly relative to the UK growth in this demographic, would suggest that it may not be able to react to change as well as the wider UK. Therefore, the sensitivity of the demographics of The Humber Region has been assessed as Medium.

28.5.9.4 Social and Community Assets in the Humber Region

118. The social and community assets in the Humber Region, such as housing, education and health services and how current users of these assets are affected by new people moving into the area is one of the receptors that has been scoped into the assessment. The socio-economic baseline has identified that in the Humber Region;

- The value of house prices has increased at a similar rate to that of the UK as a whole;
- Across nursery, primary and secondary education, the ratio of teachers to pupils is similar to that of the UK as a whole; and
- The number of patients per GP is similar to that of England as a whole.

119. The sensitivity of the social and community assets in the Humber Region has therefore been assessed as Low, in line with the approach outlined in **Table 28-7**.

28.5.10 Future Trends

120. In the event that the Projects are not developed, an assessment of future conditions for socio-economics has been carried out and is described within this section.

121. In the context of the Projects not being constructed, the future socio-economic conditions would be likely to continue on current trajectories. This would include a decline in the working age population over the coming decades.

122. Within the Humber Region, the relevant economic strategies consider the development of the offshore wind sector to be a core opportunity for growth as it would enable the area to maximise on its comparative advantages of port infrastructure, manufacturing skillsets and proximity to offshore wind development sites. Each Project represents a significant near future North Sea construction project. If both Projects are constructed this would be one of the largest offshore wind projects to be constructed in the North Sea. If not developed, these Projects would reduce the ability of the Humber Region to realise the economic potential of the offshore wind sector, as described in the local economic strategies.

28.6 Assessment of Significance

28.6.1 Potential Effects During Construction

123. This section considers the potential impacts arising during the construction of the Projects, namely:

- Impact from economic expenditure;
- Impact from increased employment;
- Impact from change in demographics due to immigration;
- Impact from loss of, disruption to or pressure on local infrastructure; and
- Impact from disturbance (noise, air quality, visual and traffic) to social infrastructure.

124. The analysis covers these impacts and their effects on receptors across three scenarios:

- Either one of DBS East or DBS West are built In Isolation;
- the Projects are built Concurrently;
- the Projects are built Sequentially.

28.6.1.1 Estimating Construction Expenditure

125. The assessment of construction impacts is driven by the level of spending and economic activity associated with the construction of the Projects.

126. Construction and development expenditure was based on the following assumptions regarding generating capacity:

- DBS East or DBS West are built In Isolation: a total generating capacity of 1.5GW; and
- the Projects are built together (Sequential or Concurrent): a total generating capacity of 3GW.

127. It is expected that a fixed offshore wind farm project in the UK would spend around £2.3 billion per GW installed (BVG Associates, 2021). It is therefore estimated that the spending on the development and construction of this project would be:

- £3.5 billion if DBS East or DBS West are built In Isolation; and
- £7.0 billion if the Projects are built together (Sequential or Concurrent).

128. Capital investment would be split across a series of primary contracts. The Applicants are currently developing a supply chain strategy, which would outline their commitments to working with UK contractors. The Applicants would set out how they plan to engage with local contractors and enable the maximisation of benefits across the UK supply chain. This includes creating economic benefits both directly and through supporting the development of the skills and services required to ensure the UK economy benefits from the opportunities created by the offshore wind sector.

129. The Applicants would build on previous experience of delivering similar projects including Triton Knoll offshore wind farm, located off the coast of Lincolnshire. In the context of that project, the Applicants engaged with local contractors with the aim of maximising the share of spending awarded to companies within the UK, and the East Coast of England specifically. This resulted in over half of the lifetime spending on the project being spent in the UK.

130. The Applicants have also used a supplier portal to help maximise use of local suppliers. This process is currently being used for Sofia Offshore Wind Farm, also located on the Dogger Bank. The supplier portal allows contractors to register their interest and ability to support the project. This is kept up to date throughout the project's development and is used to advertise potential opportunities. The portal also ensures that the Applicants have direct knowledge of the available local contractors.

131. Based on the Applicants' previous work with local suppliers, and distribution in industry cost guides (BVG Associates, 2019), the distribution of spending has been estimated, and is shown in **Table 28-18**.

Table 28-18 Construction and Development: Potential Expenditure by Category

	Value (£m) – one project	Value (£m) – both projects	Share of Spend
Wind Turbine	1,575	3,150	45.2%
Foundations	465	930	13.3%
Offshore Cable Installation	330	660	9.5%
Cable Supply	251	501	7.2%
Offshore Substation	240	480	6.9%
Financial/Insurance Costs	232	463	6.6%
Foundations Installation	188	375	5.4%
Development and Consenting	99	198	2.8%
Onshore Converter Station(s)	83	165	2.4%
Enabling Infrastructure	15	30	0.4%
Onshore Cable Installation	8	15	0.2%
Operations and Maintenance Base	5	9	0.1%
Total	**3,488**	**6,976**	**100%**

Source: BiGGAR Economics analysis of Applicants' data and BVG Associates

132. The economic impacts from development and construction activity have been estimated for both the Humber Region and the UK.

133. The UK Government's (2019) Offshore Wind Sector Deal has the target that projects constructed in 2030 would achieve 60% of UK content during their lifetime. This includes the capital investment and the ongoing operations and maintenance expenditure. To meet this target, there would need to be significant investment in the manufacturing capabilities of the UK offshore wind supply chain.

134. In line with the worst case scenario analysis, it has been assumed the Projects would not achieve this target but would achieve the level of UK content that is typical of offshore wind projects in the UK that have been built to date. This is equivalent to 46% of total spend and 19% of development and construction spend (BVG Associates, 2021).

135. The distribution of UK content by category is shown in **Table 28-19**. The distribution of contracts within the Humber Region is based on current industrial capabilities and the assumption that the main construction port would be in the region. This is not based on any commitments to date.

Table 28-19 Construction and Development: Potential Expenditure by Category and Study Area

	Humber Region	**UK**	**Imports**
Wind Turbine	7%	7%	93%
Foundations	0%	7%	93%
Offshore Cable Installation	3%	7%	93%
Cable Supply	0%	7%	93%
Offshore Substation	11%	19%	81%
Financial/Insurance Costs	0%	76%	24%
Foundations Installation	26%	36%	64%
Development and Consenting	25%	86%	14%
Onshore Converter Station(s)	64%	90%	10%
Enabling Infrastructure	100%	100%	0%
Onshore Cable Installation	100%	100%	0%
Operations and Maintenance Base	100%	100%	0%
Total	**9%**	**19%**	**81%**

Source: BiGGAR Economics analysis of capacity in The Humber Region and BVG Associates, 2021

136. Most of the spending on the wind turbines is expected to benefit businesses outside the UK.

28.6.1.2 Impact 1: Economic Expenditure

137. The first round of expenditure and economic impact would occur within the Applicants' organisation and through their directly procured contractors. For the purposes of the assessment both the Applicants and their directly procured contractors are considered as one group within the direct impact analysis. This expenditure would generate GVA within these companies, which is measured by the sum of the profits and staff costs that would be stimulated by construction and development spending.

138. The level of GVA that is supported by a given amount of turnover is dependent on the sector that the company is operating in. To estimate the direct GVA from each of the main contract categories, each contract was split into sub-contracts. Using industry-specific data on turnover and GVA from the Annual Business Survey (ONS,2022), turnover/GVA ratios were applied to each specific sub-contract to estimate GVA.

139. There would also be knock on effects in the supply chain as these directly procured companies purchase goods and services to support their activities. These effects are estimated by applying Type 1 (Indirect) GVA multipliers, which are sourced from the ONS (ONS, 2022), to the direct GVA impacts.

140. Those who are directly employed on the Project, or through the supply chain, would also have an impact through the spending of their salaries across the economy. This is the induced impact, and it is calculated using the Type 2 multipliers, that are based on the Input – Output Tables produced by the ONS.

141. The ONS provide estimates of both the Type 1 (indirect) and Type 2 (induced) multipliers for the UK economy. These have been adjusted to account for differences in scale and characteristics, when considering impacts on the economy of the Humber Region.

28.6.1.2.1 Magnitude of Impact

142. The magnitude of the economic impact from the expenditure during the development (consenting, design and procurement) and construction phase has been estimated in line with the methodology outlined in paragraph 48d. For the purposes of this assessment, only the direct and indirect economic impacts are considered when determining the magnitude of the impact. These describe the economic activity required to realise the Projects and are the focus of other economic assessments associated with offshore wind projects.

143. The induced impacts are quantified and presented for completeness but are not used in the assessment of magnitude. This is in line with the focus on direct and indirect activity included in the Contracts for Difference supply chain plans. A similar approach is typical across similar assessments.

28.6.1.2.1.1 Magnitude of Impact - DBS East or DBS West In Isolation

144. As set out in **Table 28-20**, the spending associated with the construction of DBS East or DBS West In Isolation is expected to generate a total (direct and indirect) impact of:

- £200 million GVA in the Humber Region; and
- £488 million GVA across the UK.

Table 28-20 Construction and Development: Total GVA – DBS East or DBS West In Isolation

	Humber Region	**UK**
Direct GVA (£m)	117	266
Indirect GVA (£m)	83	222
Total GVA (£m)	**200**	**488**
Induced GVA (£m)	54	216
Total GVA Including Induced (£m)	**254**	**705**

145. An indicative programme for the construction of the Project is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the DBS East or DBS West In Isolation is expected to cover the period of 2022 to 2031. The majority of this activity would occur during the construction phase between 2027 and 2031. It is at this point that the economic activity supported by the Project would peak. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

146. Based on the indicative construction programme, at its peak (Q3 2029-Q2 2030**, Plate 28-3**) the construction of DBS East or DBS West In Isolation is expected to support the equivalent of £60 million GVA in the Humber Region and £100 million GVA in the UK.

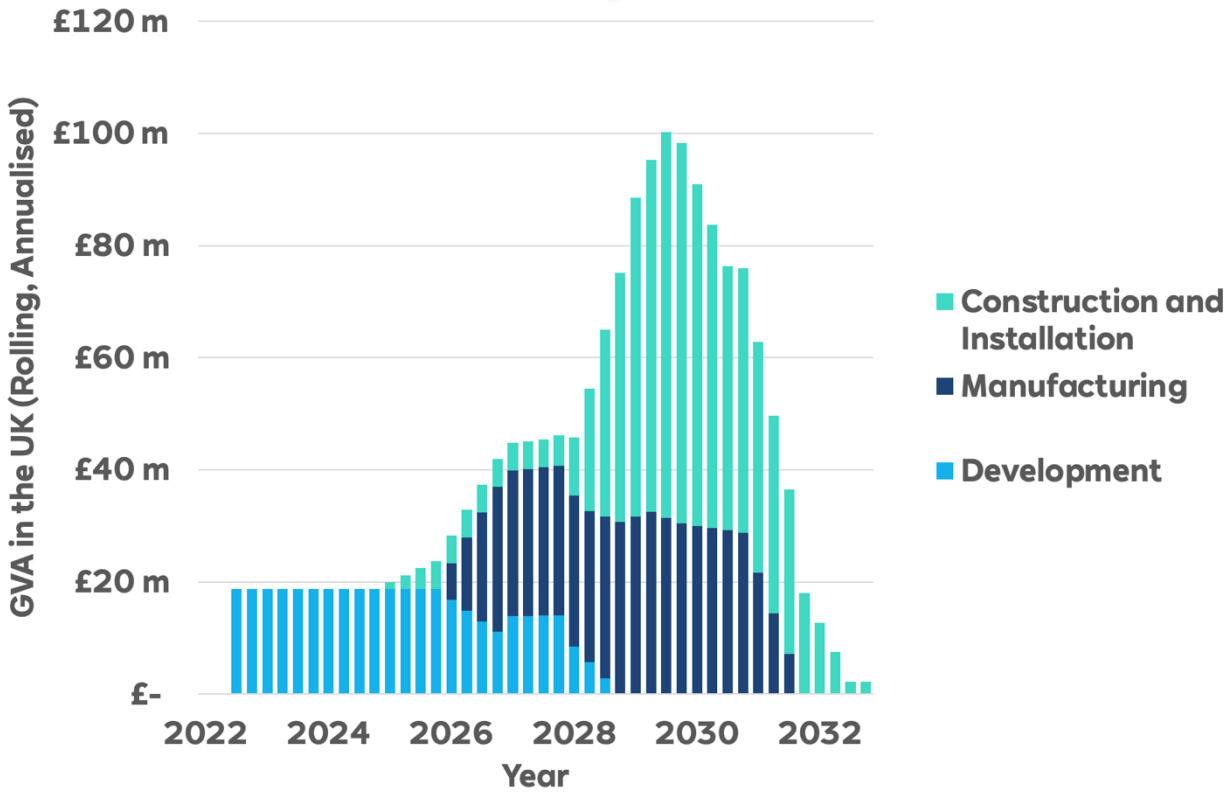

Plate 28-3 Indicative GVA (direct and indirect) in the UK by Year (rolling, annualised)

147. At its peak, the construction of the DBS East or DBS West In Isolation would contribute 0.29% of the GVA generated across the Humber Region and less than 0.01% of UK GVA. Based on the methodology set out in **Table 28-21** the magnitude of impact is assessed as low (beneficial) with respect to the Humber Region economy and as negligible (beneficial) with respect to the UK economy.

Table 28-21 Construction and Development: Magnitude of GVA impact - DBS East and DBS West In Isolation

	Humber Region	**UK**
Peak GVA (£m)	60	100
Current GVA of Study Area (2020, £m)	20,600	1,949,600
Peak GVA as % Current GVA	0.29%	<0.01%
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)

148. In addition to the impacts on GVA from the construction of the Projects, the analysis has considered the potential for impacts on economic activity linked to the findings of other ES chapters. This included a review of **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)**, **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** and **Volume 7, Chapter 21 Land Use (application ref: 7.21)**.

149. **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)** found that there may be moderate adverse effects on commercial fisheries, in particular inshore static gear during the construction phase. The Applicants will explore additional mitigation options, which may include cooperation agreements and associated payments. On this basis, no economic impact is expected to occur.

150. As set out in **Table 14-31**, **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** did not find any significant effects from the construction of the Projects.

151. As set out in **Table 21-21 of Volume 7, Chapter 21 Land Use (application ref: 7.21)**, following mitigation there would remain a moderate adverse effect on agricultural land from temporary loss of over 20 hectares of agricultural land across all scenarios. However, from an economic perspective no significant effects are expected since the implementation of private agreements is expected.

28.6.1.2.1.2 Magnitude of Impact – DBS East or DBS West Concurrently

152. As set out in **Table 28-22**, the spending associated with the construction of the Projects Concurrently is expected to generate a total (direct and indirect) impact of:

- £400 million GVA in the Humber Region; and
- £976 million GVA across the UK.

Table 28-22 Construction and Development: Total GVA – DBS East and DBS West Concurrently

	The Humber Region	**UK**
Direct GVA (£m)	235	533
Indirect GVA (£m)	165	444
Total GVA (£m)	**400**	**976**
Induced GVA (£m)	108	433
Total GVA Including Induced (£m)	**508**	**1,409**

153. An indicative programme for the construction of the Projects is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the Projects Concurrently is expected to cover the period of 2022 to 2031. The majority of this activity would occur during the construction phase between 2027 and 2031. It is at this point that the economic activity supported by the Projects would peak. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

154. Based on the indicative construction programme, at its peak the construction of the development and construction of the Projects Concurrently is expected to support the equivalent of £120 million GVA in the Humber Region and £200 million GVA in the UK. The analysis used in this assessment considered the level of activity in each quarter, however GVA values are normally reported on an annual basis. Therefore, to estimate the equivalent peak value of GVA, a rolling average of annual equivalent GVA was estimated for each quarter. This is shown on **Plate 28-4**. The peak is expected to occur at the end of 2029 and into 2030, to reflect the overlap of manufacturing and installation activities.

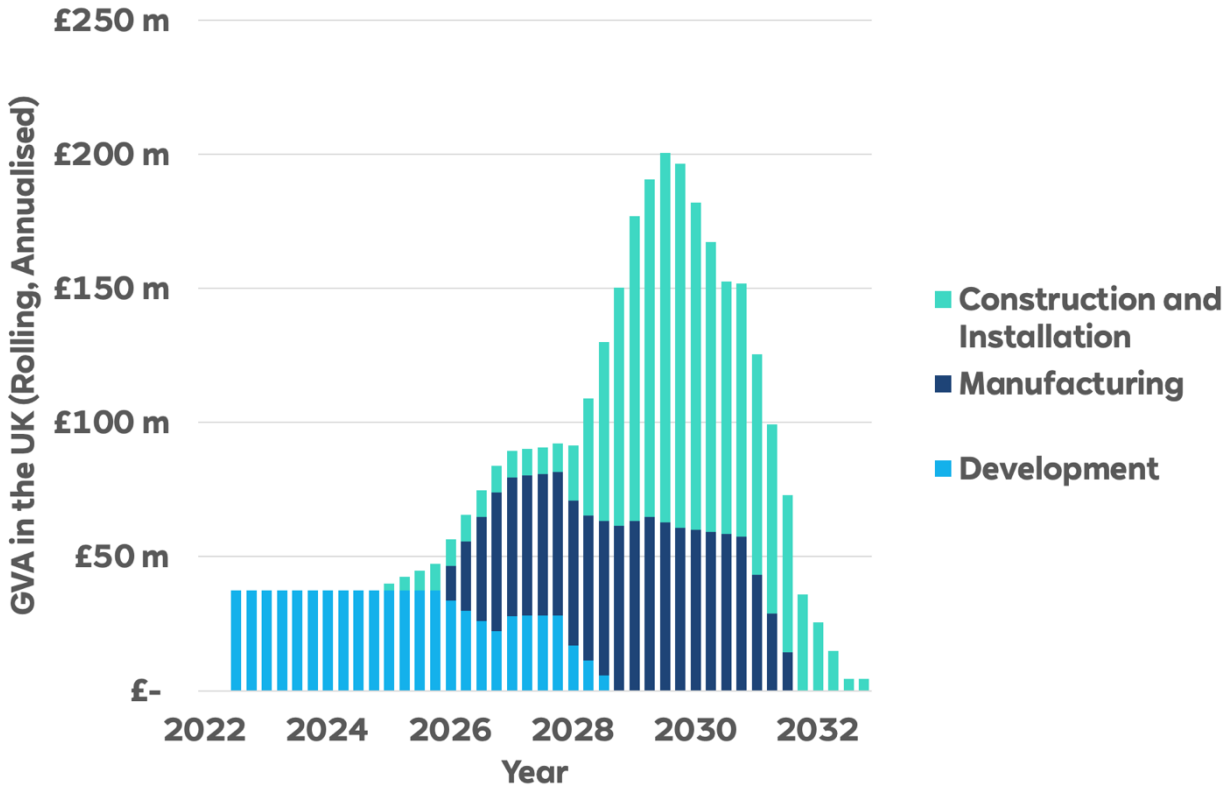

Plate 28-4 Indicative GVA (direct and indirect) in the UK by Year (rolling, annualised)

155. Construction activity is expected to peak at the end of 2029, when it is expected to generate the annualised equivalent of:

- £120 million GVA in the Humber Region; and
- £200 million GVA across the UK

156. At its peak, the construction of the Projects would contribute around 0.58% of the GVA generated across the Humber Region and 0.01% of UK GVA. Based on the methodology set out in **Table 28-23**, the magnitude of impact is assessed as medium with respect to the Humber Region economy and as negligible with respect to the UK economy. In both study areas the impact would be beneficial.

Table 28-23 Construction and Development: Magnitude of GVA Impact - DBS East and DBS West Concurrently

	Humber Region	**UK**
Peak GVA (£m)	120	200
Current GVA of Study Area (2020, £m)	20,600	1,949,600
Peak GVA as % Current GVA	0.58%	0.01%
Magnitude of Effect	Medium (Beneficial)	Negligible (Beneficial)

157. No impact on economic activity is expected as a result of construction activity interacting with commercial fisheries, fishing and navigation, and land use.

28.6.1.2.1.3 Magnitude of Impact – DBS East or DBS West Sequentially

158. As set out in **Table 28-24**, the spending associated with the construction of the Projects Sequentially is expected to generate a total (direct and indirect) impact of:

- £400 million GVA in the Humber Region; and
- £976 million GVA across the UK.

Table 28-24 Construction and Development: Total GVA – DBS East and DBS West Sequentially

	Humber Region	UK
Direct GVA (£m)	235	533
Indirect GVA (£m)	165	444
Total GVA (£m)	**400**	**976**
Induced GVA (£m)	108	433
Total GVA Including Induced (£m)	**508**	**1,409**

159. An indicative programme for the construction of the Projects is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the Projects Sequentially is expected to cover the period 2022-2033. The majority of this activity would occur during the construction phase between 2027 and 2032. It is at this point that the economic activity supported by the Projects would peak. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

160. Based on the indicative construction programme, at its peak the construction of the Projects Sequentially is expected to support the equivalent of £63 million GVA in the Humber Region and £117 million GVA in the UK. The analysis used in this assessment considered the level of activity in each quarter, however GVA values are normally reported on an annual basis. Therefore, to estimate the equivalent peak value of GVA, a rolling average of annual equivalent GVA was estimated for each quarter. This is shown on **Plate 28-5**.

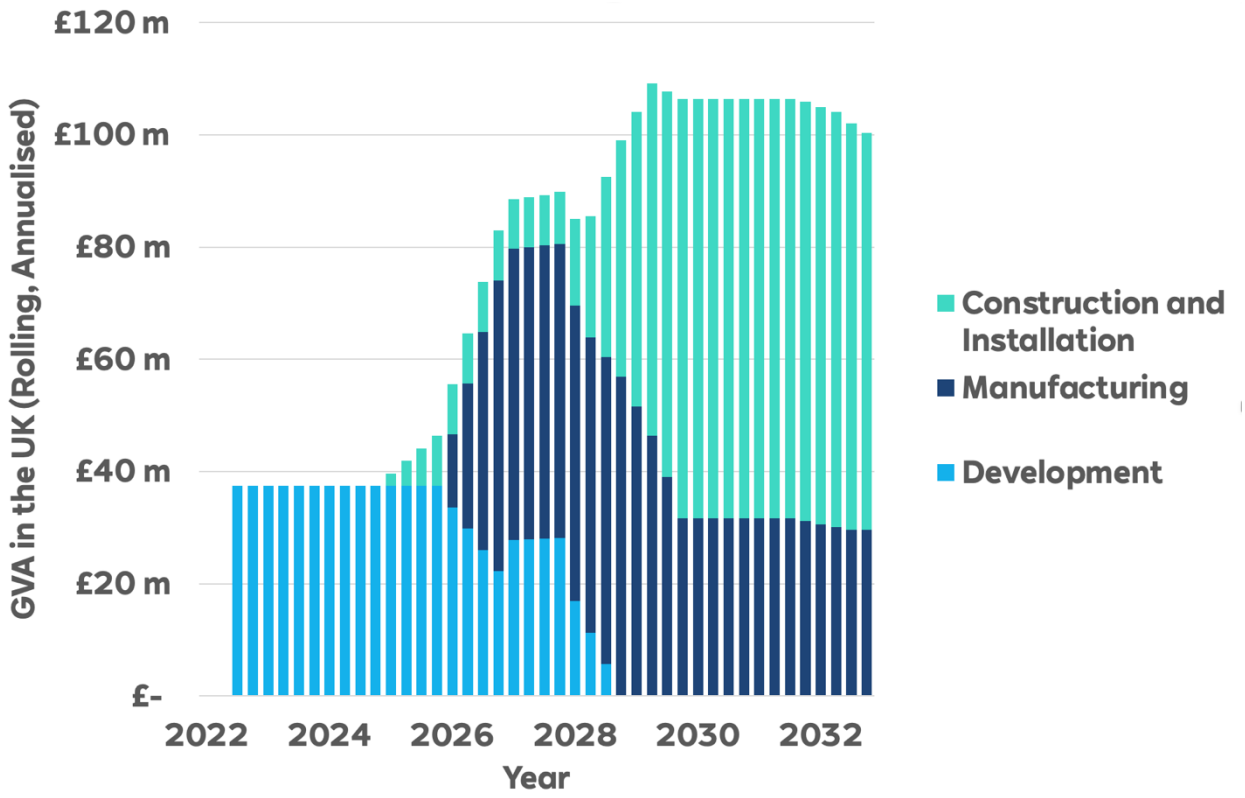

Plate 28-5 Indicative GVA (direct and indirect) in the UK by Year (rolling, annualised)

161. Construction activity is expected to peak in 2029, when it is expected to generate the annualised equivalent of:

- £63 million GVA in the Humber Region; and
- £117 million GVA across the UK.

162. At its peak, the construction of the Projects would contribute around 0.31% of the GVA generated across the Humber Region and 0.01% of UK GVA. Based on the methodology set out in **Table 28-25,** the magnitude of impact is assessed as low with respects to the Humber Region economy and as negligible with respects to the UK economy. In both study areas the impact would be beneficial.

Table 28-25 Construction and Development: Magnitude of GVA Impact - DBS East and DBS West Sequentially

	Humber Region	UK
Peak GVA (£m)	63	117
Current GVA of Study Area (2020, £m)	20,600	1,949,600
Peak GVA as % Current GVA	0.31%	0.01%
Magnitude of Effect	Low (Beneficial)	Negligible (Beneficial)

163. As set out in **Table 13-59** of **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)** following mitigations a moderate adverse effect from lost or restricted access on fishing grounds for dredge was identified along the Offshore Export Cable Corridor. As the Applicants would encourage coexistence through disruptions payments and cooperation agreements, as set out in the **Outline Fisheries Liaison and Coexistence Plan (Volume 8, application ref: 8.28**), it is not expected there would be significant socio-economic implications for commercial fisheries.

28.6.1.2.2 Sensitivity of Receptor

164. The relative sensitivity of the two study areas to socio-economic changes is assessed as:

- medium for the Humber Region; and
- low for the UK.

28.6.1.2.3 Significance of Effect

28.6.1.2.3.1 Significance of Effect – the Projects In Isolation

165. Based on the assessments of magnitude and sensitivity summarised in **Table 28-26** the effect of expenditure from the construction of DBS East or DBS West In Isolation is assessed as **minor (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-26 Significance of Expenditure Effect - DBS East and DBS West In Isolation

	Humber Region	**UK**
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.1.2.3.2 Significance of Effect – DBS East and DBS West Concurrently

166. Based on the assessments of magnitude and sensitivity summarised in **Table 28-27** the effect of expenditure resulting from the construction of the Projects Concurrently is as **moderate (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-27 Significance of Expenditure Effect – DBS East and DBS West Concurrently

	Humber Region	**UK**
Magnitude of Impact	Medium (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance	**Moderate (Beneficial)**	**Negligible (Beneficial)**

28.6.1.2.3.3 Significance of Effect – DBS East and DBS West Sequentially

167. Based on the assessments of magnitude and sensitivity summarised in **Table 28-28** the effect of expenditure resulting from the construction of the Projects Sequentially is assessed as **minor (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-28 Significance of Expenditure Effect - DBS East and DBS West Sequentially

	Humber Region	**UK**
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.1.2.4 Mitigation and Residual Significance of Effect

168. Since construction spending is expected to result in a beneficial impact on GVA, no additional mitigation measures are envisaged.

28.6.1.3 Impact 2: Employment

169. The construction of the Projects would also result in the creation of temporary employment. The estimation of employment impacts relied on the same methodology and assumptions adopted to estimate the impact on GVA.

170. As the construction of the Projects would generate short-term employment, impacts on employment are estimated in terms of 'years of employment'. This is a measure of temporary employment, whereby a job lasting for 18 months is to be interpreted as 1.5 years of employment.

28.6.1.3.1 Magnitude of Impact

28.6.1.3.1.1 Magnitude of Impact – DBS East or DBS West In Isolation

171. Based on the methodology set out above and shown in **Table 28-29** it was estimated that the construction and development of DBS East or DBS West In Isolation could support a total (direct and indirect):

- 2,700 years of employment in the Humber Region; and
- 5,570 years of employment across the UK.

Table 28-29 Construction and Development: Employment (Years of Employment) – DBS East or DBS West In Isolation

	The Humber Region	**UK**
Direct Employment	1,500	2,870
Indirect Employment	1,200	2,700
Total Employment	**2,700**	**5,570**
Induced Employment	730	2,340
Total Employment including Induced (Years of Employment)	**3,430**	**7,910**

172. The spending of those working towards the delivery of DBS East or DBS West (induced impact) is expected to support a further 730 years of employment across the Humber Region and 2,340 years of employment in the UK. In line with the approach followed in assessing the magnitude of impact from construction spending, induced employment impacts are not considered in the assessment.

173. An indicative programme for the construction of the Project is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the Project is expected to cover the period of 2022 to 2031. The majority of this activity would occur during the construction phase between 2027 and 2031. It is at this point that the economic activity supported by the Project would peak. An indicative programme for the construction of the Project is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

174. Based on the indicative construction programme, at its peak the construction of the Project is expected to support 760 jobs in the Humber Region and 1,190 jobs across the UK. This peak is expected to occur in 2029, to reflect the overlap of manufacturing and installation activities. An indicative employment profile is shown on **Plate 28-6.**

Plate 28-6 Indicative Employment Profile (direct and indirect) in the UK, by Year

175. In line with the approach set out in paragraph 48, when construction activity peaks, DBS East or DBS West would support the equivalent of 0.17% of current employment in the Humber Region and less than 0.01% of current employment across the UK set out in **Table 28-30**. On this basis, the magnitude of impact on employment is assessed as negligible for both the Humber Region and the UK economy. Both impacts would be beneficial.

Table 28-30 Construction and Development: Magnitude of Employment Impact – DBS East or DBS West In Isolation

	Humber Region	**UK**
Peak Employment (Jobs)	760	1,190
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.17%	< 0.01%
Magnitude of Impact	Negligible (beneficial)	Negligible (beneficial)

28.6.1.3.1.2 Magnitude of Impact – DBS East or DBS West Concurrently

176. If the Projects are constructed Concurrently, it was estimated that the construction and development of the Projects could support a total (direct and indirect) (**Table 28-31**):

- 5,410 years of employment in the Humber Region; and
- 11,150 years of employment across the UK.

Table 28-31 Construction and Development: Employment (Years of Employment) – DBS East and DBS West Concurrently

	Humber Region	**UK**
Direct Employment	3,000	5,750
Indirect Employment	2,410	5,400
Total Employment	**5,410**	**11,150**
Induced Employment	1,460	4,670
Total Employment including Induced (Years of Employment)	**6,870**	**15,820**

177. The spending of those working towards the delivery of the Projects (induced impact) is expected to support a further 1,460 years of employment across the Humber Region and 4,670 years of employment in the UK.

178. An indicative programme for the construction of the Project is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the Projects Concurrently is expected to cover the period of 2022 to 2031. The majority of this activity would occur during the construction phase between 2027 and 2031. It is at this point that the economic activity supported by the Projects would peak. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

179. Based on the indicative construction programme, at its peak the construction of the Project is expected to support 1,520 jobs in the Humber Region and 2,390 jobs across the UK. This peak is expected to occur in 2029, to reflect the overlap of manufacturing and installation activities. An indicative employment profile is shown on **Plate 28-7.**

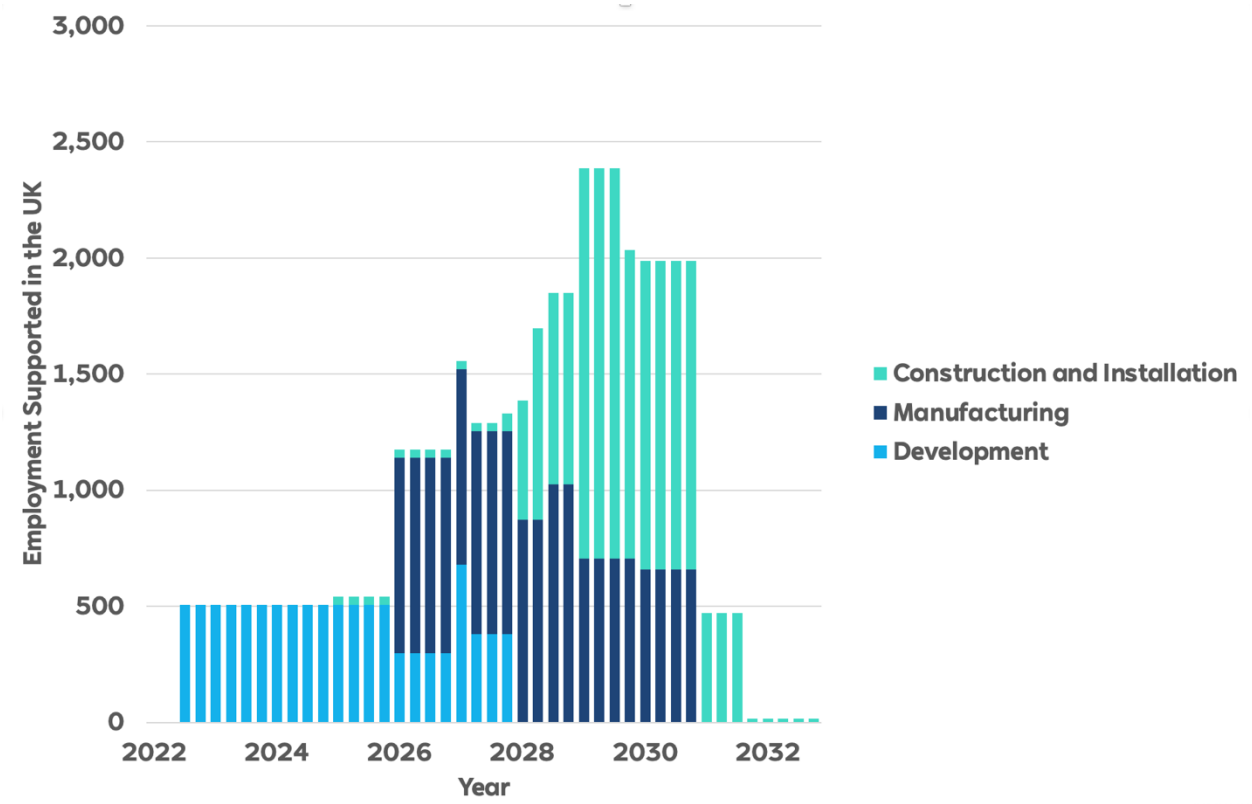

Plate 28-7 Indicative Employment Profile (direct and indirect) in the UK, by Year

180. At its peak, the Projects are expected to support a total of:

- 1,520 jobs across the Humber Region; and
- 2,390 jobs across the UK.

181. In line with the approach set out in paragraph 48, when construction activity peaks, the Projects would support the equivalent of 0.35% of current employment in the Humber Region and 0.01% of current employment across the UK summarised in **Table 28-32.** On this basis, the magnitude of impact on employment is assessed as low for the Humber Region economy and as negligible for the UK economy. The impact in both areas is considered to be beneficial.

Table 28-32 Construction and Development: Magnitude of Employment Impact - DBS East and DBS West Concurrently

	Humber Region	**UK**
Peak Employment (Jobs)	1,520	2,390
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.35%	0.01%
Magnitude of Impact	Low (beneficial)	Negligible (beneficial)

28.6.1.3.1.3 Magnitude of Impact – DBS East or DBS West Sequentially

182. If the Projects are constructed Sequentially, it is estimated that the construction and development of the Projects could support a total (direct and indirect) (**Table 28-33**):

- 5,410 years of employment in the Humber Region; and
- 11,150 years of employment across the UK.

Table 28-33 Construction and Development: Employment (Years of Employment – DBS East and DBS West Sequentially

	Humber Region	**UK**
Direct Employment	3,000	5,750
Indirect Employment	2,410	5,400
Total Employment	5,410	11,150
Induced Employment	1,460	4,670
Total Employment including Induced (Years of Employment)	**6,870**	**15,820**

183. The spending of those working towards the delivery of the Projects (induced impact) is expected to support a further 1,460 years of employment across the Humber Region and 4,670 years of employment in the UK.

184. An indicative programme for the construction of the Project is described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. For the purposes of the assessment, it is assumed that the construction period would start in 2027. The development and construction of the Projects Sequentially is expected to cover the period of 2022 to 2033. The majority of this activity would occur during the construction phase between 2027 and 2032. It is at this point that the economic activity supported by the Projects would peak. It is assumed that the manufacturing of components, including jackets and wind turbine components, would occur in the year prior to their installation.

185. Based on the indicative construction programme, at its peak the construction of the Projects is expected to support 930 jobs in the Humber Region and 1,550 jobs across the UK. This peak is expected to occur in 2029. An indicative employment profile is shown on **Plate 28-8**.

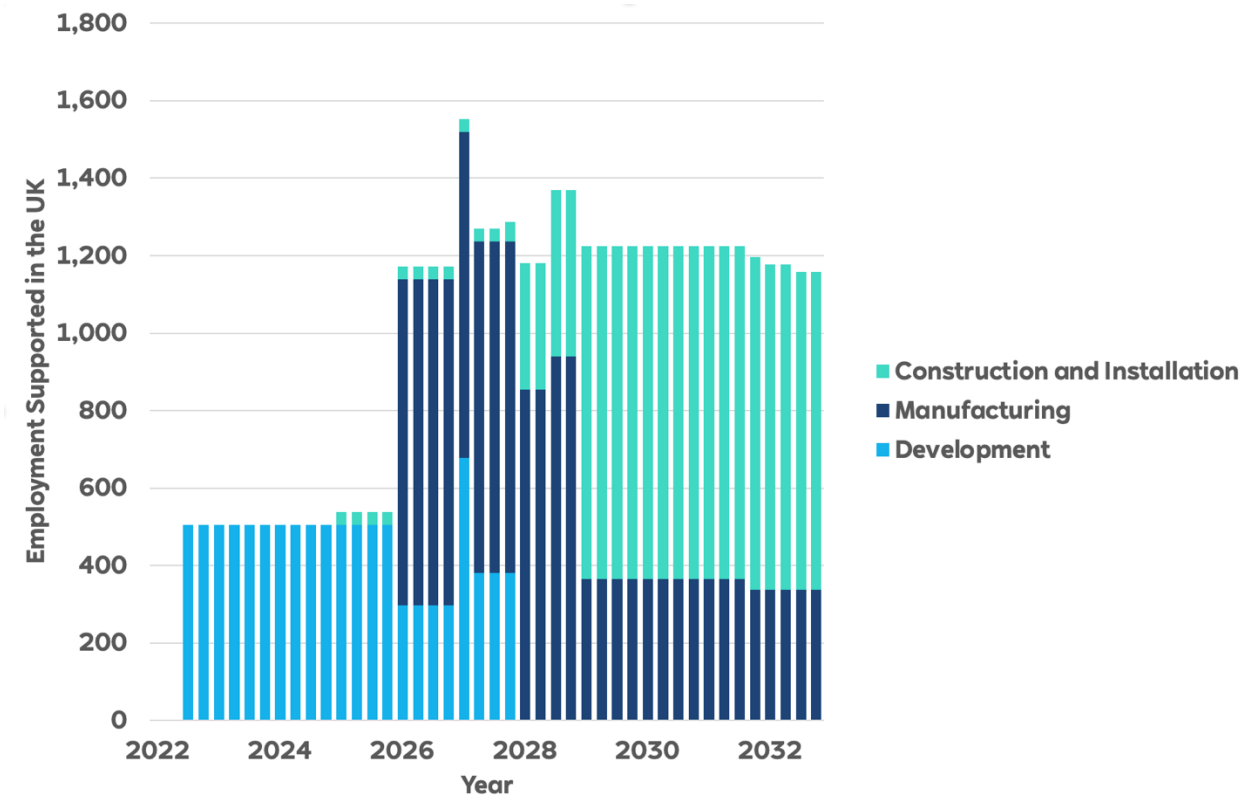

Plate 28-8 Indicative Employment Profile (direct and indirect) in the UK, by Year

186. At its peak, the Projects are expected to support a total:

- 930 jobs across The Humber Region; and
- 1,550 jobs across the UK.

187. In line with the approach set out in section 48, when construction activity peaks, the Projects would support the equivalent of 0.21% of current employment in the Humber Region and less than 0.01% of current employment across the UK. On this basis, the magnitude of impact on employment is assessed as negligible for the Humber Region economy and as negligible for the UK economy. The impact in both areas is considered to be beneficial and is shown in **Table 28-34.**

Table 28-34 Construction and Development: Magnitude of Employment Impact - DBS East and DBS West Sequentially

	Humber Region	**UK**
Peak Employment (Jobs)	930	1,550
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.21%	<0.01%
Magnitude of Impact	Negligible (beneficial)	Negligible (beneficial)

28.6.1.3.2 Sensitivity of Receptor

188. The relative sensitivity of the two study areas to socio-economic changes is assessed as:

- Medium for the Humber Region; and
- Low for the UK.

28.6.1.3.3 Significance of Effect

28.6.1.3.3.1 Significance of Effect – DBS East or DBS West In Isolation

189. Based on the assessment of sensitivity and magnitude, the effect associated with the employment supported by the construction of DBS East or DBS West In Isolation is assessed as **minor** with respect to the Humber Region economy and as **negligible** with respect to the UK economy. This is shown in **Table 28-35.**

Table 28-35 Significance of Employment Effect - DBS East or DBS West In Isolation

	Humber Region	**UK**
Magnitude of Impact	Negligible (beneficial)	Negligible (beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (beneficial)**	**Negligible (beneficial)**

28.6.1.3.3.2 Significance of Effect – the Projects Concurrently

190. Based on the assessments of magnitude and sensitivity, the effect of employment resulting from the construction of the Projects Concurrently is assessed as **minor** with regard to the Humber Region economy and as **negligible** for the UK economy. This is shown in **Table 28-36.**

Table 28-36 Significance of Employment Effect - DBS East and DBS West Concurrently

	Humber Region	**UK**
Magnitude of Impact	Low (beneficial)	Negligible (beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (beneficial)**	**Negligible (beneficial)**

28.6.1.3.3.3 Significance of Effect – DBS East and DBS West Sequentially

191. Based on the assessment of sensitivity and magnitude, the effect associated with the employment supported by the construction of DBS East or DBS West Sequentially is assessed as **minor** with respect to the Humber Region economy and as **negligible** with respects to the UK economy. This is shown in **Table 28-37.**

Table 28-37 Significance of Employment Effect - DBS East and DBS West Sequentially

	Humber Region	**UK**
Magnitude of Impact	Negligible (beneficial)	Negligible (beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (beneficial)**	**Negligible (beneficial)**

28.6.1.3.4 Mitigation and Residual Significance of Effect

192. Since construction spending is expected to result in a beneficial effect on employment, no additional mitigation measures are envisaged.

28.6.1.4 Impact 3: Change in Demographics Due to Immigration

193. By creating employment opportunities in the Humber Region, the development and construction of the Projects may result in immigration and demographic changes.

194. The potential change in demographics from the development and construction of the Projects is linked to the number of jobs that are supported.

195. On average the population of the Humber Region is projected to grow by 993 per year over the period 2020-2043. However, this growth is driven by those aged 65 or over. The working age population is projected to decrease by an average of 1,130 per year. Reductions in the working age population would have an adverse effect on the economy, therefore any impacts that would increase the working age population are considered to be beneficial.

196. The majority of the economic activity within the Humber Region would be focused around the activities of the construction port and on the construction of the onshore infrastructure, such as the cable route and Onshore Converter Stations. Offshore wind has been identified at local level as providing a long-term opportunity for the area. This is based on a pipeline of offshore wind energy projects in the North Sea that would have demand for construction and manufacturing facilities in the Humber area. It would therefore be expected that most of the employment supported in the area would use a workforce that is based in the area (assumed to be 75%).

28.6.1.4.1.1 Magnitude of Impact – DBS East or DBS West In Isolation

197. The peak employment supported in the Humber Region during the development and construction of DBS East or DBS West In Isolation is estimated to be 760 jobs. This is equivalent to 76% of the projected annual population growth for the Humber Region.

198. If it was assumed that 25% of the workforce employed during the peak activity came from outside the Humber Region, this would be equivalent to 19% of annual population growth if DBS East of DBS West were developed and constructed In Isolation.

199. In line with the approach to determining the magnitude of demographic impacts, the magnitude of this impact has been assessed as negligible beneficial and is shown in **Table 28-38**.

Table 28-38 Construction and Development: Magnitude of Demographic Impacts in the Humber Region

	DBS East or DBS West In Isolation
Peak population increase	190
Average population increase (2020-2043)	994
Peak population increase as % Normal population growth	19%
Magnitude of Impact	Negligible (Beneficial)

28.6.1.4.1.2 Magnitude of Impact – DBS East and DBS West Concurrently

200. The peak employment supported in the Humber Region during the development and construction of DBS East or DBS West Concurrently is estimated to be 1,520 jobs. This is equivalent to 153% of the projected annual population growth for the Humber Region.

201. If it was assumed that 25% of the workforce employed during the peak activity came from outside the Humber Region, this would be equivalent to 38% of annual population growth.

202. In line with the approach to determining the magnitude of demographic impacts, the magnitude of this impact has been assessed as low beneficial and is shown in **Table 28-39.**

Table 28-39 Construction and Development: Magnitude of Demographic Impacts in the Humber Region

	DBS East and DBS West Concurrently
Peak population increase	380
Average population increase (2020-2043)	994
Peak population increase as % Normal population growth	38%
Magnitude of Impact	Low

28.6.1.4.1.3 Magnitude of Impact – DBS East and DBS Sequentially

203. The peak employment supported in the Humber Region during the development and construction of DBS East or DBS West Sequentially is estimated to be 930 jobs. This is equivalent to 93% of the projected annual population growth for the Humber Region.

204. If it was assumed that 25% of the workforce employed during the peak activity came from outside the Humber Region, this would be equivalent to 23% of annual population growth.

205. In line with the approach to determining the magnitude of demographic impacts, the magnitude of this impact has been assessed as negligible beneficial and is shown in **Table 28-40.**

Table 28-40 Construction and Development: Magnitude of Demographic Impacts in the Humber Region

	DBS East and DBS West Sequentially
Peak population increase	233
Average population increase (2020-2043)	993
Peak population increase as % Normal population growth	23%
Magnitude of Impact	Negligible

28.6.1.4.1.4 Sensitivity of Receptor

206. As set out in section 28.5.9.3, the sensitivity of the Humber Region to changes in its demographics is assessed as medium.

28.6.1.4.1.5 Significance of Effect – DBS East or DBS West In Isolation

207. Based on the assessments of magnitude and sensitivity and shown in **Table 28-41**, the effect of changes in demographics on the population structure of the Humber Region is assessed as **minor (beneficial)**.

Table 28-41 Significance of Population Effect in The Humber Region – DBS East and West in Isolation

	DBS East or DBS West In Isolation
Magnitude of Impact	Negligible (Beneficial)
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.1.4.1.6 Significance of Effect – DBS East and DBS West Concurrently

208. Based on the assessments of magnitude and sensitivity as shown in **Table 28-42,** the effect of changes in demographics on the population structure of the Humber Region is assessed as **minor (beneficial)**.

Table 28-42 Significance of Population Effect in the Humber Region – DBS East and West Concurrently

	DBS East and DBS West Concurrently
Magnitude of Impact	Low
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.1.4.1.7 Significance of Effect – DBS East and DBS West Sequentially

209. Based on the assessments of magnitude and sensitivity as shown in **Table 28-43,** the effect of changes in demographics on the population structure of the Humber Region is assessed as **minor (beneficial)**.

Table 28-43 Significance of Population Effect in the Humber Region – DBS East and West Sequentially

	DBS East and DBS West Sequentially
Magnitude of Impact	Negligible
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.1.5 Mitigation and Residual Significance of Effect – All Scenarios

210. Given the effect associated with demographic changes is beneficial, no additional mitigation measures would be required. No specific monitoring requirements with regards to demographic changes have been identified.

28.6.1.6 Impact 4: Loss of, Disruption to or Pressure on Local Infrastructure

211. The potential for a significant influx of transient workers having an impact on community and social assets has been scoped into this assessment. This section considers the potential impacts associated with a change in demand for housing, educational and healthcare facilities.

28.6.1.6.1 Magnitude of Impact – DBS East or DBS West In Isolation

212. The magnitude from any loss of, disruption to or pressure on local infrastructure would depend on temporary changes in the population of the Humber Region associated with the construction and development of the Projects. These impacts would occur if the infrastructure is not able to adapt to meet the demands of the changing demographics, and would therefore be adverse.

213. As set out in section 28.6.1.4.1.1, the population of the Humber Region at the peak of construction activity is estimated to increase by 190. Since the magnitude of impact on population is assessed as negligible, it is unlikely to lead to result in any significant pressures on housing.

214. Similarly, given the temporary nature of construction and development activity and its involvement of people of working age, any impacts on educational provision are likely limited in scale.

215. Temporary migration of the scale required to fulfil the contracts for the construction of the Projects is also unlikely to result in additional pressures on local health provision.

216. For all these reasons, the magnitude of impact from loss of, disruption to or pressure on local infrastructure is assessed as negligible (adverse).

28.6.1.6.1.1 Magnitude of Impact – DBS East and DBS West Concurrently

217. As set out in section 28.6.1.4.1.2, the population of the Humber Region at the peak of construction activity is estimated to increase by 380. Since the magnitude of impact on population is assessed as low, it is unlikely to lead to result in any significant pressures on housing.

218. Similarly, given the temporary nature of construction and development activity and its involvement of people of working age, any impacts on educational provision are likely limited in scale.

219. Temporary migration of the scale required to fulfil the contracts for the construction of the Projects is also unlikely to result in additional pressures on local health provision.

220. For all these reasons, the magnitude of impact from loss of, disruption to or pressure on local infrastructure is assessed as negligible (adverse).

28.6.1.6.1.2 Magnitude of Impact – DBS East and DBS West Sequentially

221. As set out in section 28.6.1.4.1.3, the population of the Humber Region at the peak of construction activity is estimated to increase by 233. Since the magnitude of impact on population is assessed as negligible, it is unlikely to result in any significant pressures on housing.

222. Similarly, given the temporary nature of construction and development activity and its involvement of people of working age, any impacts on educational provision are likely limited in scale.

223. Temporary migration of the scale required to fulfil the contracts for the construction of the Projects is also unlikely to result in additional pressures on local health provision.

224. For all these reasons, the magnitude of impact from loss of, disruption to or pressure on local infrastructure is assessed as negligible (adverse).

28.6.1.6.2 Sensitivity of Receptor

225. The sensitivity of the Humber Region to changes in its local infrastructure is assessed as low.

28.6.1.6.3 Significance of Effect - DBS East or DBS West In Isolation

226. Based on the assessments of magnitude and sensitivity as shown in **Table 28-44**, the effect from loss of, disruption to or pressure on local infrastructure is assessed as **negligible (adverse)** during the development and construction of the projects.

Table 28-44 Significance of Loss of, Disruption to or Pressure on Local Infrastructure in the Humber Region – DBS East and West In Isolation

	The Humber Region
Magnitude of Impact	Negligible (Adverse)
Sensitivity of Receptor	Low
Significance of Effect	**Negligible (Adverse)**

28.6.1.6.4 Significance of Effect – DBS East and West Concurrently

227. Based on the assessments of magnitude and sensitivity as shown in **Table 28-45**, the effect from loss of, disruption to or pressure on local infrastructure is assessed as **negligible (adverse)** during the development and construction of the projects.

Table 28-45 Significance of Loss of, Disruption to or Pressure on Local Infrastructure in the Humber Region – DBS East and West Concurrently

	The Humber Region
Magnitude of Impact	Negligible (Adverse)
Sensitivity of Receptor	Low
Significance of Effect	**Negligible (Adverse)**

28.6.1.6.5 Significance of Effect – DBS East and West Sequentially

228. Based on the assessments of magnitude and sensitivity as shown in **Table 28-46**, the effect from loss of, disruption to or pressure on local infrastructure is assessed as **negligible (adverse)** during the development and construction of the projects.

Table 28-46 Significance of Loss of, Disruption to or Pressure on Local Infrastructure in the Humber Region – DBS East and West Sequentially

	The Humber Region
Magnitude of Impact	Negligible (Adverse)
Sensitivity of Receptor	Low
Significance of Effect	**Negligible (Adverse)**

28.6.1.6.6 Mitigation and Residual Significance of Effect – All Scenarios

229. Given the negligible effect associated with loss of, disruption to or pressure on local infrastructure, no additional mitigation measures would be required.

28.6.1.7 Impact 5: Disturbance (Noise, Air Quality, Visual and Traffic) to Social Infrastructure

230. In addition to potential disruption and pressure on social infrastructure, the construction of the Projects may result in disturbance from noise, air quality, visual and traffic impacts. The analysis in this section is carried out with reference to the findings from the following chapters:

- **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**;
- **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**;
- **Volume 7, Chapter 25 Noise (application ref: 7.25)**; and
- **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**.

231. The review of other chapters focuses on those assets experiencing significant effects. Air quality, noise, and traffic and transport are not considered since **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24), Volume 7, Chapter 25 Noise (application ref: 7.25)** and **Volume 7, Chapter 26 Air Quality (application ref: 7.26)** did not find any significant residual effects during the construction of the Projects.

232. Any visual impacts on recreational users from **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)** are considered as part of **Volume 7, Chapter 29 Tourism and Recreation (application ref: 7.29).** This is because views and their amenity value are one of several aspects with the potential to affect visitor behaviour. Any changes to visitor decision-making may then result in impacts on spending and on the tourism economy.

233. **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)** found moderate (adverse) significant visual effects on residential receptors at Bentley, Walkington, Beverley, Bramble Hill Farm, Model Farm, and Butt Farm, all within approximately 500m of the Onshore Substation Zone boundary. However, in the context of this chapter, effects on individual properties have no bearing on overall social infrastructure, which would include school and hospitals. For this reason, the effect on residential assets would not lead to changes in the overall quality and provision of social infrastructure.

234. On this basis, the magnitude of impact on social infrastructure from noise, traffic and transport, air quality and landscape is assessed as negligible (adverse).

28.6.1.7.1 Sensitivity of Receptor

235. As set out in 28.5.9.4, the sensitivity of local social infrastructure within the Humber Region is assessed as low.

28.6.1.7.2 Significance of Effect

236. Based on the assessments of magnitude and sensitivity as shown in **Table 28-47**, the effect of the construction of the Projects on noise, air quality, visual and traffic is assessed as **negligible (adverse)**.

Table 28-47 Significance of Effect from Disturbance (Noise, Air Quality, Visual and Traffic) to Social Infrastructure

	Humber Region
Magnitude of Impact	Negligible (Adverse)
Sensitivity of Receptor	Low
Significance of Effect	**Negligible (Adverse)**

28.6.1.7.3 Mitigation and Residual Significance of Effect – All Scenarios

237. Given the negligible effect associated with disturbance (noise, air quality, visual and traffic) to social infrastructure, no additional mitigation measures would be required, beyond the mitigation measures proposed in the relevant chapters.

28.6.2 Potential Effects During Operation

238. Impacts associated with the operation and maintenance phase are considered under each scenario in turn.

239. Based on the Scoping Report, the following impacts are scoped into the assessment:

- Impact from expenditure associated with the Projects;
- Impact from increased employment;
- Impact from a change in demographics due to immigration; and
- Impact from disturbance (noise, air quality, visual and traffic) to social infrastructure.

28.6.2.1 Impact 6: Expenditure

240. The operation and maintenance of the Projects would generate economic impacts through the expenditure that would be required throughout their lifetime.

241. It is expected that a fixed offshore wind farm project in the UK would spend around £59 million per GW installed (BVG Associates, 2019) each year on operations and maintenance activities.

242. Total operations and maintenance spending is expected to vary depending on the development's size and could be up to:

- £2.6 billion if DBS East or DBS West are built In Isolation; and
- £5.3 billion if DBS East and DBS West are built together (sequential or concurrent).

243. This expenditure would include logistics costs, operational management, grid charges and the maintenance and service of both the wind turbines and the wider balance of plant. The largest component of this would be the costs associated with the maintenance and service of the wind turbines. It is expected that this activity would increase over time.

244. **Table 28-48** outlines the spending estimates during the operations and maintenance phase. In a typical year, it is estimated that:

- £77 million would be spent on maintenance and £12 million would be spent on operations, if DBS East or DBS West are built In Isolation; and
- £153 million would be spent on maintenance and £24 million would be spent on operations if the Projects are built together (sequential or concurrent).

Table 28-48 Operations and Maintenance: Potential Expenditure by Category

	Annual Spend per GW	Total Annual Spend	Lifetime Spend
DBS East or West In Isolation			
Operations	£8m	£12m	£358m
Maintenance	£51m	£77m	£2,295m
Total	**£59m**	**£88m**	**£2,653m**
DBS East and West Together (sequential or concurrent)			
Operations	£8m	£24m	£716m
Maintenance	£51m	£153m	£4,590m
Total	**£59m**	**£177m**	**£5,306m**

245. The economic impacts from the operation and maintenance of the Projects have been estimated for the Humber Region and the UK.

246. Under the UK Offshore Wind Sector Deal (UK Government, 2019), there is a target that projects constructed in 2030 would achieve 60% of UK content during their lifetime. The majority of the UK expenditure is expected to occur during the operation and maintenance phase.

247. In line with the worst case scenario analysis, it has been assumed that the Projects would not achieve this target but would achieve the level of UK content that is typical of offshore wind projects in the UK that have been built to date. Analysis by BVG Associates (BVG Associates, 2021) has found that on average 81% of total operation and maintenance spending for UK offshore wind projects is sourced domestically. The distribution of UK content by category is shown in **Table 28-49**. The distribution of contracts within the Humber Region is based on current industrial capabilities. The Humber Region study area has also been defined based on the assumption that the primary operations and maintenance port would be within the region.

Table 28-49 Operations and Maintenance: Potential Expenditure by Category and Study Area

	Humber Region	**UK**	**Imports**
Operations	35%	98%	2%
Maintenance	72%	79%	21%
Total	**67%**	**81%**	**19%**

248. On this basis across the three scenarios, the following annual average spending was estimated:

- £59 million in the Humber Region and £72 million in the UK if DBS East or DBS West are built In Isolation;
- £118 million in the Humber Region and £144 million in the UK if DBS East and DBS West are built Concurrently; and
- £118 million in the Humber Region and £144 million in the UK if DBS East and DBS West are built Sequentially.

249. The increased turnover in these companies would support employment and generate GVA within these economies.

28.6.2.1.1 Magnitude of Impact

250. For the purposes of assessment, only the direct and indirect economic impacts are considered when determining the magnitude of the impact from operations and maintenance spending. These describe the economic activity required to realise the Projects and are the focus of other economic assessments associated with offshore wind projects.

251. The induced impacts are quantified and presented for completeness but are not used in the assessment of magnitude. This is in line with the focus on direct and indirect activity included in the Contracts for Difference supply chain plans.

28.6.2.1.1.1 Magnitude of Impact – DBS East or DBS West In Isolation

252. As set out in **Table 28-50**, the operations and maintenance of the Projects In Isolation could result each year in a total (direct and indirect) impact of:

- £37 million GVA in the Humber Region; and
- £51 million GVA across the UK.

Table 28-50 Operations and Maintenance: Total GVA – DBS East or DBS West In Isolation

	Humber Region	**UK**
Direct GVA (£m)	23	28
Indirect GVA (£m)	14	24
Total GVA (£m)	37	51
Induced GVA (£m)	11	22
Total GVA Including Induced (£m)	48	73

253. As shown in **Table 28-51**, the total GVA supported each year by the operations and maintenance of DBS East or DBS West In Isolation is equivalent to 0.18% of the annual GVA generated across the Humber Region and less than 0.01% of the UK economy. On this basis, the magnitude of operations and maintenance activity is assessed as negligible with respects to both the Humber Region and the UK economy.

Table 28-51 Operations and Maintenance: Magnitude of GVA impact - DBS East and DBS West In Isolation

	Humber Region	**UK**
Peak GVA (£m)	37	51
Current GVA of Study Area (2020, £m)	20,600	1,949,600
Peak GVA as % Current GVA	0.18%	<0.01%
Magnitude of Impact	Negligible	Negligible

254. **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13), Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** and **Volume 7, Chapter 21 Land Use (application ref: 7.21)** did not find any significant effects during the Projects' operations. On this basis, no impact on economic activity is expected as a result of operational activity interacting with commercial fisheries, shipping and navigation and land use.

28.6.2.1.1.2 Magnitude of Impact – DBS East and DBS West Concurrently

255. The magnitude of the GVA impact would be greater if the Projects are built Concurrently.

256. As set out in **Table 28-52**, the operations and maintenance of the Projects could result each year in a total (direct and indirect) impact of:

- £74 million GVA in the Humber Region; and
- £103 million GVA across the UK.

Table 28-52 Operations and Maintenance: Total GVA – DBS East and DBS West Concurrently

	Humber Region	**UK**
Direct GVA (£m)	46	55
Indirect GVA (£m)	28	48
Total GVA (£m)	74	103
Induced GVA (£m)	21	43
Total GVA Including Induced (£m)	95	146

257. As shown in **Table 28-53**, the total GVA supported each year by the operations and maintenance of the Projects is equivalent to 0.36% of the annual GVA generated across the Humber Region and 0.01% of the UK economy. The magnitude of operations and maintenance activity is assessed as low (beneficial) with respects to the Humber Region economy and as negligible (beneficial) with respects to the UK economy.

Table 28-53 Operations and Maintenance: Magnitude of GVA impact - DBS East and DBS West Concurrently.

	Humber Region	**UK**
Peak GVA (£m)	£74	£103
Current GVA of Study Area (2020, £m)	£20,600	£1,949,600
Peak GVA as % Current GVA	0.36%	0.01%
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)

258. A review of **Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13), Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** and **Volume 7, Chapter 21 Land Use (application ref: 7.21)** confirms that no impact on economic activity is expected as a result of operational activity interacting with commercial fisheries, fishing and navigation, and land use.

28.6.2.1.1.3 Magnitude of Impact – DBS East and DBS West Sequentially

259. As set out in **Table 28-54**, the operations and maintenance of the Projects could result each year in a total (direct and indirect) impact of:

- £74 million GVA in the Humber Region; and
- £103 million GVA across the UK.

Table 28-54 Operations and Maintenance: Total GVA – DBS East and DBS West Sequentially

	Humber Region	UK
Direct GVA (£m)	46	55
Indirect GVA (£m)	28	48
Total GVA (£m)	74	103
Induced GVA (£m)	21	43
Total GVA Including Induced (£m)	95	146

260. As shown in **Table 28-55**, the total GVA supported each year by the operations and maintenance of the Projects is equivalent to 0.36% of the annual GVA generated across the Humber Region and 0.01% of the UK economy. The magnitude of operations and maintenance activity is assessed as low (beneficial) with respects to the Humber Region economy and as negligible (beneficial) with respects to the UK economy.

Table 28-55 Operations and Maintenance: Magnitude of GVA impact - DBS East and DBS West Concurrently.

	Humber Region	UK
Peak GVA (£m)	£74	£103
Current GVA of Study Area (2020, £m)	£20,600	£1,949,600
Peak GVA as % Current GVA	0.36%	0.01%
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)

28.6.2.1.2 Sensitivity of Receptor – All Scenarios

261. The relative sensitivity of the two study areas to socio-economic changes is assessed as:

- medium for the Humber Region; and
- low for the UK.

28.6.2.1.3 Significance of Effect

28.6.2.1.3.1 Significance of Effect – DBS East or DBS West In Isolation

262. Based on the assessments of magnitude and sensitivity as shown in **Table 28-56,** the effect of expenditure resulting from the construction of DBS East or DBS West In Isolation is assessed as **minor (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-56 Significance of Expenditure Effect - DBS East or DBS West In Isolation

	Humber Region	UK
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.1.3.2 Significance of Effect – DBS East and DBS West Concurrently

263. Based on the assessments of magnitude and sensitivity as shown in **Table 28-57**, the effect of expenditure resulting from the construction of DBS East and West Concurrently is assessed as **minor (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-57 Significance of Expenditure Effect - DBS East and DBS West Concurrently

	Humber Region	**UK**
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.1.3.3 Significance of Effect – DBS East and DBS West Sequentially

264. Based on the assessments of magnitude and sensitivity as shown in **Table 28-58,** the effect of expenditure resulting from the construction of DBS East and West Sequentially is assessed as **minor (beneficial)** with regards to the Humber Region economy and as **negligible (beneficial)** for the UK economy.

Table 28-58 Significance of Expenditure Effect - DBS East and DBS Sequentially

	Humber Region	**UK**
Magnitude of Impact	Low (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.1.4 Mitigation and Residual Significance of Effect – All Scenarios

265. Since operations and maintenance spending is expected to result in a beneficial effect on GVA, no additional mitigation measures are envisaged.

28.6.2.2 Impact 7: Employment

28.6.2.2.1 Magnitude of Impact

266. The operations and maintenance of the Projects would result in an increase in the turnover of those businesses supporting operational activities. Changes in turnover would support the jobs required to fulfil contracts.

267. The assessment of impacts on employment relies on the same assumptions that were adopted in the estimation of GVA impacts occurring during the construction period.

268. For the purposes of assessment, only the direct and indirect economic impacts are considered when determining the magnitude of the impact. These describe the economic activity required and are the focus of other economic assessments associated with offshore wind projects.

269. The induced impacts are quantified and presented for completeness but are not used in the assessment of magnitude in line with the approach followed for spending on operations and maintenance.

28.6.2.2.1.1 Magnitude of Impact – DBS East or DBS West In Isolation

270. As set out in **Table 28-59**, the operations and maintenance of DBS East or DBS West In Isolation are expected to support each year a total:

- 400 jobs in the Humber Region; and
- 580 jobs across the UK.

Table 28-59 Operations and Maintenance: Employment – DBS East or DBS West In Isolation

	Humber Region	**UK**
Direct Employment	230	290
Indirect Employment	170	290
Total Employment	400	580
Induced Employment	110	210
Total Employment including Induced	510	790

271. As shown in **Table 28-60**, the annual employment supported by DBS East or DBS West is equivalent to 0.09% of total employment in the Humber Region and less than 0.01% of total employment across the UK. On this basis, the magnitude of the impact on employment is assessed as negligible for both the Humber Region and the UK economy. The impact is beneficial.

Table 28-60 Operations and Maintenance: Magnitude of Employment Impact – DBS East or DBS West In Isolation

	Humber Region	**UK**
Peak Employment (Jobs)	400	580
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.09%	<0.01%
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)

28.6.2.2.1.2 Magnitude of Impact – DBS East and DBS West Concurrently

272. The magnitude of the employment impacts would be greater if the Projects are built Concurrently.

273. As set out in **Table 28-61**, the operations and maintenance of the Projects are expected to support each year a total:

- 810 jobs in the Humber Region; and
- 1,120 jobs across the UK.

Table 28-61 Operations and Maintenance: Total GVA – DBS East and DBS Concurrently

	Humber Region	**UK**
Direct Employment	470	560
Indirect Employment	340	560
Total Employment	810	1,120
Induced Employment	220	430
Total Employment including Induced	1,030	1,550

274. As shown in **Table 28-62**, the annual employment supported by the Projects is equivalent to 0.19% of total employment in the Humber Region and less than 0.01% of total employment across the UK. On this basis, the magnitude of the impact on employment is assessed as negligible (beneficial) for both the Humber Region and UK economy.

Table 28-62 Operations and Maintenance: Magnitude of Employment Impact - DBS East and DBS Concurrently

	Humber Region	**UK**
Peak Employment (Jobs)	810	1,120
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.19%	<0.01%
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)

28.6.2.2.1.3 Magnitude of Impact – DBS East and DBS West Sequentially

275. As set out in **Table 28-63**, the operations and maintenance of the Projects are expected to support each year a total:

- 810 jobs in the Humber Region; and
- 1,120 jobs across the UK.

Table 28-63 Operations and Maintenance: Total GVA – DBS East and DBS Sequentially

	Humber Region	**UK**
Direct Employment	470	560
Indirect Employment	340	560
Total Employment	810	1,120
Induced Employment	220	430
Total Employment including Induced	1,030	1,550

276. The annual employment supported by the Projects is equivalent to 0.19% of total employment in the Humber Region and less than 0.01% of total employment across the UK summarised in **Table 28-64**. On this basis, the magnitude of the impact on employment is assessed as negligible (beneficial) for both the Humber Region and UK economy.

Table 28-64 Operations and Maintenance: Magnitude of Employment Impact - DBS East and DBS Concurrently

	Humber Region	**UK**
Peak Employment (Jobs)	810	1,120
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.19%	<0.01%
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)

28.6.2.2.2 Sensitivity of Receptor – All Scenarios

277. The relative sensitivity of the two study areas to socio-economic changes is assessed as:

- Medium for the Humber Region; and
- Low for the UK.

28.6.2.2.3 Significance of Effect – DBS East and DBS West In Isolation

278. Based on the assessments of magnitude and sensitivity as shown in **Table 28-65,** the effect of employment resulting from the operations and maintenance of the Projects is assessed as **minor** with regards to the Humber Region economy and as **negligible** for the UK economy.

Table 28-65 Significance of Employment Effect - DBS East and DBS West In Isolation

	Humber Region	UK
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.2.4 Significance of Effect – DBS East and DBS West Concurrently

279. Based on the assessments of magnitude and sensitivity as shown in **Table 28-66,** the effect of employment resulting from the operations and maintenance of the Projects is assessed as **minor** with regards to the Humber Region economy and as **negligible** for the UK economy.

Table 28-66 Significance of Employment Effect - DBS East and DBS West Concurrently

	Humber Region	UK
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.2.5 Significance of Effect – DBS East and DBS West Sequentially

280. Based on the assessments of magnitude and sensitivity summarised in **Table 28-67**, the effect of employment resulting from the operations and maintenance of the Projects is assessed as **minor** with regards to the Humber Region economy and as **negligible** for the UK economy.

Table 28-67 Significance of Employment Effect - DBS East and DBS West Sequentially

	Humber Region	UK
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.2.2.6 Mitigation and Residual Significance of Effect – All Scenarios

281. Since the employment supported during operations and maintenance is expected to result in a beneficial impact, no additional mitigation measures are envisaged.

28.6.2.3 Impact 8: Change in Demographics Due to Immigration

28.6.2.3.1 Magnitude of Impact

28.6.2.3.1.1 Magnitude of Impact – DBS East and West In Isolation

282. On average the population of the Humber Region is projected to grow by 993 per year over the period 2020-2043. The annual employment that would be supported in the Humber Region during the operations and maintenance of DBS East or DBS West In Isolation is estimated to be 400 jobs. This is equivalent to 40% of the projected annual population growth for the Humber Region.

283. Based on the same approach applied to immigration during the construction of the Projects, it is assumed that most jobs (75%) may be carried out by people who are already living in the Humber Region. Consequently, around 10% of population growth in the Humber Region would be associated with the operations and maintenance of DBS East or DBS West In Isolation.

284. On this basis, the magnitude of impact from changes in demographics resulting from operations and maintenance activity is assessed as negligible (beneficial). This is shown in **Table 28-68**.

Table 28-68 Operations and Maintenance: Magnitude of Demographic Impacts in The Humber Region – DBS East and West In Isolation

	DBS East or DBS West In Isolation
Population increase	100
Average population increase (2020-2043)	994
Population increase as % Normal population growth	10%
Magnitude of Impact	Negligible (Beneficial)

28.6.2.3.1.2 Magnitude of Impact – DBS East and West Concurrently

285. During any given year of the operations and maintenance phase, a total 810 people are expected to be working on the Projects.

286. If it is assumed that most jobs (75%) may be carried out by people who are already living in the Humber Region, the population increase if the Projects are constructed together (sequential or concurrent) is expected to be equivalent to a 20% increase in normal population growth for the Humber Region.

287. On this basis, the magnitude of impact from changes in demographics resulting from operations and maintenance activity is assessed as negligible (beneficial). This is shown in **Table 28-69**.

Table 28-69 Operations and Maintenance: Magnitude of Demographic Impacts in the Humber Region – DBS East and West Concurrently

	DBS East and DBS West Concurrently
Population increase	203
Average population increase (2020-2043)	994
Population increase as % Normal population growth	20%
Magnitude of Impact	Negligible (Beneficial)

28.6.2.3.1.3 Magnitude of Impact – DBS East and West Sequentially

288. During any given year of the operations and maintenance phase, a total 810 people are expected to be working on the Projects when built Sequentially.

289. If it is assumed that most jobs (75%) may be carried out by people who are already living in the Humber Region, the population increase if the Projects are constructed together (sequential or concurrent) is expected to be equivalent to a 20% increase in normal population growth for the Humber Region.

290. On this basis, the magnitude of impact from changes in demographics resulting from operations and maintenance activity is assessed as negligible (beneficial). This is shown in **Table 28-70**.

Table 28-70 Operations and Maintenance: Magnitude of Demographic Impacts in the Humber Region – DBS East and West Sequentially

	DBS East and DBS West Sequentially
Population increase	203
Average population increase (2020-2043)	994
Population increase as % Normal population growth	20%
Magnitude of Impact	Negligible (Beneficial)

28.6.2.3.2 Sensitivity of Receptor - All Scenarios

291. The sensitivity of the Humber Region to changes in demographics is assessed as Medium.

28.6.2.3.3 Significance of Effect – DBS East and DBS West In Isolation

292. Based on the assessments of magnitude and sensitivity summarised in

293. **Table 28-71**, the effect of changes in demographics on the population structure of the Humber Region is assessed as **Minor (beneficial)** in both scenarios.

Table 28-71 Significance of Population Effect – in the Humber Region, DBS East and West In Isolation

	DBS East or DBS West In Isolation
Magnitude of Impact	Negligible (Beneficial)
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.2.3.4 Significance of Effect – DBS East and DBS West Concurrently

294. Based on the assessments of magnitude and sensitivity summarised in **Table 28-72** the effect of changes in demographics on the population structure of the Humber Region is assessed as **Minor (beneficial)** in both scenarios.

Table 28-72 Significance of Population Effect – in the Humber Region, DBS East and West Concurrently

	DBS East and DBS West Concurrently
Magnitude of Impact	Negligible (Beneficial)
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.2.3.5 Significance of Effect – DBS East and DBS West Sequentially

295. Based on the assessments of magnitude and sensitivity as shown in **Table 28-73,** the effect of changes in demographics on the population structure of the Humber Region is assessed as **Minor (beneficial)** in both scenarios.

Table 28-73 Significance of Population Effect – in the Humber Region, DBS East and West Sequentially

	DBS East and DBS West Sequentially
Magnitude of Impact	Negligible (Beneficial)
Sensitivity of Receptor	Medium
Significance of Effect	**Minor (Beneficial)**

28.6.2.3.6 Mitigation and Residual Significance of Effect

296. No additional mitigation measures are expected as the effect associated with the demographic changes is beneficial.

28.6.2.4 Impact 9: Disturbance (Noise, Air Quality, Visual and Traffic) to Social Infrastructure

28.6.2.4.1 Magnitude of Impact – All Scenarios

297. A similar approach is followed in assessing impacts on social infrastructure during the operations and maintenance phase as for those arising during the construction of the Projects. In particular, the assessment is based upon review of the following chapters:

- **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**;
- **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**;
- **Volume 7, Chapter 25 Noise (application ref: 7.25)**; and
- **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**.

298. The assessment focuses on those chapters where significant effects were found. No significant effects during the operational period were identified with respects to **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**, **Volume 7, Chapter 25 Noise (application ref: 7.25)** and **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**.

299. **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)** found a series of residual significant effects on visual amenity during the operational phase. While a discussion of effects on recreational receptors is provided in **Volume 7, Chapter 29 Tourism and Recreation (application ref: 7.29)**, significant effects on residential receptors included:

- Moderate residual effect on Viewpoint 1: Butt Farm; and
- Moderate residual effect on Viewpoint 2: Coppleflat Lane, Bentley.

300. Residual effect significance is based on the implementation of an **Outline Landscape Management Plan (Volume 8, application ref: 8.11)**, including woodland and hedge planting. The screening of these would over time limit visibility of the lower elements of the Onshore Converter Stations.

301. It is not expected that visual impacts on residential receptors would affect the overall quality, provision and availability of social infrastructure across The Humber Region.

302. Based on the analysis in this section, the magnitude of impact on social infrastructure from disturbance associated with noise, air quality, visual and traffic is assessed as negligible (adverse).

28.6.2.4.2 Sensitivity of Receptor - All Scenarios

303. As set out in 28.5.9.4, the sensitivity of local social infrastructure within the Humber Region is assessed as low.

28.6.2.4.3 Significance of Effect – All Scenarios

304. Based on the assessments of magnitude and sensitivity as shown in **Table 28-74,** the effect on social infrastructure from noise, air quality, visual and traffic associated with the operation of the Projects is assessed as **negligible (adverse)**.

Table 28-74 Significance of Effect From Disturbance (Noise, Air Quality, Visual and Traffic) to Social Infrastructure

	Humber Region
Magnitude of Impact	Negligible (Adverse)
Sensitivity of Receptor	Low
Significance of Effect	**Negligible (Adverse)**

28.6.2.4.4 Mitigation and Residual Significance of Effect – All Scenarios

305. As no significant effects from loss of, disruption to or pressure to local infrastructure are expected, no additional mitigation measures are envisaged.

28.6.3 Potential Effects During Decommissioning

28.6.3.1 Impact 10: Economic Activity

306. The decommissioning of the Projects would also generate economic activity. The number of offshore wind developments that have undergone decommissioning to date is limited, therefore estimates of the costs and activities associated with decommissioning an offshore wind farm of this scale are based on projections from sectoral research (BVG Associates, 2019), rather than experience.

307. The costs associated with decommissioning would depend on the number of turbines to decommission and were estimated as:

- £455million if DBS East or DBS West are decommissioned In Isolation; and
- £909million if the Projects are decommissioned Concurrently.

308. Decommissioning activity would require the removal of the wind turbines, foundations, cables, and the Onshore Converter Stations. The split of decommissioning costs is outlined in **Table 28-75** and the works would be completed by companies that are currently involved in the installation of these assets.

Table 28-75 Decommissioning: Potential Expenditure by Category

	Value (£m, 2022 Prices) – DBS East or DBS West In Isolation	**Value (£m, 2022 Prices) – DBS East and DBS West Together (sequential or concurrent)**	**Share**
Wind Turbine Decommissioning	60	120	13%
Foundation Decommissioning	105	210	23%
Cable Decommissioning	210	420	46%
Converter Stations Decommissioning	75	150	17%
Decommissioning Port	5	9	1%

	Value (£m, 2022 Prices) – DBS East or DBS West In Isolation	Value (£m, 2022 Prices) – DBS East and DBS West Together (sequential or concurrent)	Share
Total Decommissioning Spend	**455**	**909**	**100%**

Note: BiGGAR Economics Analysis of (BVG Associates, 2019). Totals may not sum due to rounding.

309. The operational life of the Projects is expected to be 30 years and therefore any decommissioning impacts would occur in the 2060s. At this stage, there is the potential for significant supply chain development within the UK to meet the installation and decommissioning demands of the offshore wind sector.

28.6.3.1.1 Magnitude of Impact – All Scenarios

310. As highlighted in **Table 28-76** the economic activity associated with the decommissioning of the Projects Together (sequential or concurrent) would be approximately double the level of activity of either DBS East or DBS West In Isolation.

311. Based on a similar methodology as for the previous section, it was estimated that decommissioning activity for the Projects Together summarised in **Table 28-77** (Sequential or Concurrent) could support a total:

- £112 million GVA and 540 years of employment in the Humber Region; and
- £138 million GVA and 680 years of employment across the UK.

312. The decommissioning of the Projects was assumed to last four years. As such, at its peak this activity would support 135 jobs in the Humber Region and 170 jobs across the UK.

Table 28-76 Decommissioning: Economic Impacts

	Humber Region	UK
Total Decommissioning Impact		
Total GVA Impact (£m)	112	138
Total Jobs Impact (Years of Employment)	540	680
Peak Decommissioning Economic Impact		
Peak GVA Impact (£m)	28	35
Peak Jobs Impact (Jobs)	135	170

Note: Totals may not sum due to rounding.

313. Discounted peak values of GVA are shown in **Table 28-77.**

Table 28-77 Decommissioning: Discounted GVA Impacts

	The Humber Region	UK
Peak GVA Impact (£m)	28	35
Peak GVA Impact Discounted (£m)	6	8

Note: totals may not sum due to rounding.

314. The magnitude of the economic impacts associated with the decommissioning of the Projects together (sequential or concurrent) is determined based on the change in GVA or employment, relative to the current GVA or employment levels. The value of GVA and the number of jobs in each of the study areas in the 2060s is not known and so current values are used to give an indicative measure of magnitude.

315. As shown in **Table 28-78** the change in employment and GVA is equivalent to less than 0.1% of the current GVA and jobs in each of the study areas. The magnitude of all economic impacts during the decommissioning phase has therefore been assessed as negligible (beneficial).

Table 28-78 Decommissioning: Magnitude of Economic (Employment and GVA) Impacts

	Humber Region	UK
Magnitude of employment impacts		
Peak Employment (Jobs)	135	170
Current Jobs	437,000	35,231,000
Peak Jobs as % Current Jobs	0.03%	0.00%
Magnitude of Effect	Negligible (Beneficial)	Negligible (Beneficial)
Magnitude of GVA Impacts		
Peak GVA Impact Discounted (£m)	6	8
Current GVA of Study Area (2020, £m)	20,600	1,949,600
Peak GVA as % Current GVA	0.03%	0.00%
Magnitude of Effect	Negligible (Beneficial)	Negligible (Beneficial)

316. The magnitude of the impact associated with the decommissioning of either DBS East or DBS West In Isolation would therefore also be negligible (beneficial) across all areas.

317. The interaction of decommissioning activity with commercial fisheries, fishing and navigation is expected to lead to smaller or similar effects as for construction. On this basis, no significant socio-economic effects are envisaged.

28.6.3.1.2 Sensitivity of Receptor – All Scenarios

318. Based on existing data, it was not possible to predict the sensitivity of the two study areas in the 2060s. For the purposes of this assessment, the sensitivity of the two study areas is assessed as:

- Medium for the Humber Region economy; and
- Low for the UK economy.

28.6.3.1.3 Significance of Effect - All Scenarios

319. Based on the assessments of magnitude and sensitivity, the effect of the Projects' decommissioning on the economy of the Humber Region summarised in **Table 28-79**, is assessed as **minor (beneficial)** and the effect on the economy of the UK is assessed as **negligible (beneficial)**.

Table 28-79 Decommissioning: Significance of Economic Assets Impacts

	Humber Region	**UK**
Magnitude of Impact	Negligible (Beneficial)	Negligible (Beneficial)
Sensitivity of Receptor	Medium	Low
Significance of Effect	**Minor (Beneficial)**	**Negligible (Beneficial)**

28.6.3.1.4 Mitigation and Residual Significance of Effect – All Scenarios

320. Since the economic activity supported during decommissioning is expected to result in a beneficial impact on GVA and employment, no additional mitigation measures are envisaged.

28.6.3.2 Impact 11: Population and Social Infrastructure

321. As with the construction period, the potential for a significant influx of transient workers to have an impact on community and social assets has been scoped into this assessment. The assessment considers the potential impacts associated with a change in demand for housing, educational and healthcare facilities because of this workforce.

28.6.3.2.1 Magnitude of Impact – All Scenarios

322. On average the population of the Humber Region is projected to grow by 993 per year between 2020 and 2043. The ONS does not publish population projections beyond the 2040s and therefore, it has been assumed that this growth would continue and form the basis of the assessment for the 2060s. Based on the analysis at 28.6.3.1.1, the peak employment that would be supported in the Humber Region during the decommissioning of the Projects Together (sequential or concurrent) is estimated to be up to 135 jobs. This is equivalent to 14% of the projected annual population growth for the Humber Region.

323. The majority of the economic activity within the Humber Region would be focused on the activities of the decommissioning port and on the decommissioning of offshore infrastructure, such as the wind turbines. The offshore wind sector has been identified as a long-term opportunity for the area. This is based on a pipeline of offshore wind energy projects in the North Sea that would have demand for installation and decommissioning facilities in the Humber area. It would therefore be expected that most of the employment supported in the area would use a workforce that is based in the area.

324. If it was assumed that 25% of the workforce that was employed during the peak activity came from outside the Humber Region, this would be equivalent to 3% of average annual population growth. In line with the approach to determining the magnitude of social and community asset impacts, the magnitude of this impact has been assessed as negligible.

325. As shown in **Table 28-80**, the impact has been assessed as negligible beneficial for the Humber Region, on the assumption that trends in a declining working age population continue up to the period of decommissioning.

Table 28-80 Decommissioning: Magnitude of Social and Community Asset Impacts

	Humber Region
Peak Population Increase	34
Average Population Increase (2018 – 2043)	993
Peak Population Increase as % Normal Population growth	3%
Magnitude of Impact	Negligible (Beneficial)

326. The decommissioning of either DBS East or DBS West In Isolation is expected to result in approximately half the population increase as that associated with the Projects Together (sequential or concurrent).

327. On this basis, the magnitude of the impact associated with the decommissioning of either DBS East or DBS West In Isolation would also be negligible (beneficial) in the Humber Region.

28.6.3.2.2 Sensitivity of Receptor – All Scenarios

328. The sensitivity of the social and community assets within the Humber Region have been identified as low, based on data to 2022. The relative performance of the housing market, healthcare provision and education facilities in the Humber Region in the 2060s is not possible to predict. Over the long-term, all these assets, in theory, have a high level of adaptability and would adjust to meet the needs of the community in the Humber Region. For example, the allocation of public funding for healthcare and education is linked to the demographic needs of communities. No changes have been made to the sensitivity of the community and social assets within the Humber Region for the decommissioning period.

28.6.3.2.3 Significance of Effect – All Scenarios

329. Based on the assessments of sensitivity and magnitude summarised in **Table 28-81**, the effect of decommissioning on the social and community assets of the Humber Region is assessed as **negligible**.

Table 28-81 Decommissioning: Significance of Social and Community Asset Impacts

	Humber Region
Sensitivity of Receptor	Low
Magnitude of Impact	Negligible
Significance of Effect	**Negligible**

28.6.3.2.4 Mitigation and Residual Significance of Effect – All Scenarios

330. No additional mitigation measures are expected with regards to demographic changes and impacts on social and community assets.

28.7 Potential Monitoring Requirements

331. Since the analysis identified positive benefits from the spending and employment supported by the Projects' construction, and operations and maintenance, no additional mitigation measures were identified.

332. However, as part of the application for future Contracts for Difference Allocation Rounds, there would be a requirement to produce a supply chain plan, or their replacement under the Contracts for Difference regime, setting out the supply chain content associated with the Projects. Any commitments made under the supply chain plan would be monitored through evaluation of activity, including local and national content achieved.

333. Based on the non-significant effects associated with impacts on demographics, local and social infrastructure, no monitoring requirements have been identified.

28.8 Cumulative Effects Assessment

334. Cumulative effects are defined as:

- Effects upon a single receptor to arise as a result of impact interaction between different environmental topics from the Projects; and
- Incremental effects on that same receptor from other proposed and reasonably foreseeable schemes and developments in combination with the Projects. This includes all schemes that result in a comparative effect that is not intrinsically considered as part of the existing environment and is not limited to offshore wind projects.

335. The overarching method followed in identifying and assessing potential cumulative effects in relation to the onshore environment is set out in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** and **Volume 7, Appendix 6-1 (application ref: 7.6.6.1)**. The approach is based upon the Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS 2017). The approach to the CEA is intended to be specific to the Projects and takes account of the available knowledge of the environment and other activities around the Onshore Development Area.

336. The CEA has followed a four-stage approach developed from the Planning Inspectorate Advice Note Seventeen. These stages are set out in **Table 6-1-2** of **Volume 7, Appendix 6-1 (application ref: 7.6.6.1).** Stage four of this process, the CEA assessment is undertaken in two stages. The first step in the CEA is the identification of which residual impacts assessed for the Projects on their own have the potential for a cumulative impact with other schemes, plans, projects and activities. This information is set out in **Table 28-82** which sets out the potential impacts assessed in this chapter and identifies the potential for cumulative effects to arise, providing a rationale for such determinations. Only potential impacts assessed as negligible or above are included in the CEA. Those assessed as 'no impact' are not taken forward as there is no potential for them to contribute to a cumulative impact.

Table 28-82 Potential Cumulative Impacts

Potential Impact	Potential for Cumulative Effect	Justification
Construction		
Economic Activity	Yes	Multiple construction projects have the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of GVA supported by each project. At the same time, they could lead to labour shortages within certain sectors.
Employment	Yes	Multiple construction projects have the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of employment supported by the construction of each project. At the same time, they could lead to labour shortages within certain sectors.
Demographics	Yes	The wider development of offshore wind in the North Sea and other energy projects have the potential to have longer term effects on the demography of The Humber Region.

Potential Impact	Potential for Cumulative Effect	Justification
Loss of, Disruption to or Pressure on Social Assets	Yes	Changes in population may affect existing services by adding pressure on social assets, including health care and educational provision.
Disturbance to Social Infrastructure	No	Impacts are specific to communities living in proximity of the onshore infrastructure and construction port. Based on a review of **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23), Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24), Volume 7, Chapter 25 Noise (application ref: 7.25)** and **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**, no potential for cumulative impacts with other projects has been identified.
Operation		
Economic Activity	Yes	Operations and maintenance of multiple projects have the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of GVA supported by each project.
Employment	Yes	A series of operational projects have the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of employment supported by the operations and maintenance of each project.
Demographics	Yes	The wider development of offshore wind in the North Sea and other energy projects have the potential to have longer term effects on the demography of The Humber Region.
Disturbance to Social Infrastructure	No	Impacts are specific to communities living in proximity of the operations and maintenance port. Based on a review of **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**, **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**,

Potential Impact	Potential for Cumulative Effect	Justification
		Volume 7, Chapter 25 Noise (application ref: 7.25) and **Volume 7, Chapter 26 Air Quality (application ref: 7.26),** no potential for cumulative impacts with other projects has been identified.
Decommissioning		
Economic Activity	Yes	Decommissioning of multiple projects has the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of GVA supported by each project. At the same time, they could lead to labour shortages within certain sectors.
Employment	Yes	Decommissioning of multiple projects has the potential to lead to the attraction of investment and to strengthen local supply chains, with implications on the level of employment supported by the decommissioning of each project. At the same time, they could lead to labour shortages within certain sectors.
Demographics	Yes	The wider development of offshore wind in the North Sea and other energy projects, including future decommissioning activity, have the potential to have longer term effects on the demography of The Humber Region.
Loss of, Disruption to or Pressure on Social Assets	Yes	Changes in population may affect existing services by adding pressure on social assets, including health care and educational provision.
Disturbance to Social Infrastructure	No	Impacts are specific to communities living in proximity of the onshore infrastructure and decommissioning port. Based on a review of **Volume 7, Chapter 23 Landscape and Visual Impact Assessment (application ref: 7.23)**, **Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**, **Volume 7, Chapter 25**

Potential Impact	Potential for Cumulative Effect	Justification
		Noise (application ref: 7.25) and **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**, no potential for cumulative impacts with other projects has been identified.

337. The second stage of the CEA is a project specific assessment of the potential for any significant cumulative effects to arise due to the construction and/or operation and maintenance of the Projects. To do this, a short list of schemes for CEA has been produced relevant to socio-economics following the approach outlined **in Volume 7, Appendix 6-1 (application ref: 7.6.6.1).** The second stage of this assessment is only undertaken if the first stage identifies that cumulative effects are possible.

338. The CEA has been based on information available on each potential scheme (e.g. as set out on the East Riding of Yorkshire Council and Hull City Council planning portals and the Planning Inspectorate website) as of January 2024. It is noted that the other scheme details available may change in the period up to construction or may not be available in detail at all. The assessment presented here is therefore considered to be conservative, with the level of impacts expected to be reduced compared to those presented here.

339. A total of 15 schemes have been identified for inclusion on the short list of schemes to be assessed cumulatively for socio-economics. Schemes have not been included if they are unlikely to have significant cumulative effects for socio-economics as a result of their scale, labour requirements and skills needed for their delivery.

340. Summary information on the short list schemes progressing through this exercise (i.e., the short list of other schemes) is provided below in **Table 28-83**. This presents the scenarios whereby the Projects and the other schemes / developments that have been identified on the short list could potentially result in cumulative effects for socio-economics.

Table 28-83 Short List of Schemes Considered within the Socio-economics Cumulative Effects Assessment

Scheme Name	Tier	Discussion	Likelihood and Significance of Cumulative Effects
Dogger Bank A	1	There is overlap with the operational phase of this scheme, which could lead to cumulative effects.	High likelihood and negligible significance of operational cumulative effects.
Dogger Bank B	1	There is overlap with the operational phase of this scheme, which could lead to cumulative effects.	High likelihood and negligible significance of operational cumulative effects.
Dogger Bank D	2	This scheme has only submitted a Scoping Report. So, construction timescales are unlikely to overlap to a significant extent. Overlap of operational timescales is expected.	Medium likelihood and negligible operational cumulative effects.
Hornsea 4 Offshore Wind Farm	1	Potential for some overlapping in construction, and during operations and maintenance.	High likelihood; negligible construction and operational cumulative effects.
A164 and Jocks Lodge Improvement Scheme	1	Overlapping timescales for construction and operations and maintenance.	High likelihood; negligible construction and operational cumulative effects.
JBM Peartree Hill Solar Farm	2	Potential overlap depending on consenting process timescales	Medium likelihood and negligible construction and operation cumulative effects.
Creyke Beck Solar Farm	1	Construction activity expected to last around six months. So, at worst only	High likelihood; negligible

Scheme Name	Tier	Discussion	Likelihood and Significance of Cumulative Effects
		temporary overlapping. Operational activity is likely limited in scale.	construction and operational cumulative effects.
Scotland England Green Link 2 (SEGL2)	2	Limited information is available on this development with regards to economic impact. Overlap in construction timescales is expected.	High likelihood; negligible construction effects
Ferry Road Carr Plantation	1	Construction activity expected to last around six months. So, at worst only temporary overlapping. Operational activity is likely limited in scale.	High likelihood; negligible construction and operational cumulative effects.
Carr Lane Tickton	3	Scheme pending consideration; potential for overlapping operational activity.	Medium likelihood; negligible operational cumulative effects.
Tickton Bridge Solar	1	Application approved; potential for overlap in operational activity.	High likelihood; negligible operational effects.
White Hall	3	Construction activity expected to last around six months. So, at worst only temporary overlapping. Operational activity is likely limited in scale.	Medium likelihood; negligible construction and operational cumulative effects.
Proposed Birkhill Wood National Grid Substation	2	Limited information is available on this development with regards to economic impact.	Medium likelihood; negligible construction effects
North Humber to High Marnham grid upgrade	2	Limited information is available on this development with regards to economic impact. Overlapping in timescales is expected.	High likelihood; negligible construction effects

Scheme Name	Tier	Discussion	Likelihood and Significance of Cumulative Effects
Creyke Beck Substation Extension	2	Limited information is available on this development with regards to economic impact.	High likelihood; negligible construction effects

28.8.1 Assessment

28.8.1.1.1 Construction

341. The short-list considers both offshore developments with implications for economic activity at shore, and a series of onshore developments of a relatively large scale.

342. Within the East Riding of Yorkshire Council's planning portal, Hull City Council Planning Portal and the Planning Inspectorate website, there is limited information for most projects on their relative economic impact. On this basis, a search on the Planning Inspectorate's NSIP portal was also carried out, alongside a review of project websites. Data on economic impact were available for the following projects:

- Hornsea 4 Offshore Wind Farm: construction activity, if carried out in the Humber Region, could support average annual employment of 1,600 jobs (different port would result in lower employment in the Humber Region);
- Creyke Beck Solar Farm – Land south of Creyke Beck Substation: construction activity to support a total 116 jobs over a six month period;
- Tickton Bridge Solar – Land east and west of West of Tickton Bridge Plantation: construction activity to support a total of 116 jobs over a six month period; and
- Scotland England Green Link 2 – the ES chapter finds a minor beneficial impact on employment.

343. Construction at Dogger Bank A and B is not expected to overlap with activity from the Projects. However, the construction of these projects is expected to contribute in establishing a local supply chain that the Projects could benefit from. This would support maximising economic benefits and employment from the Projects.

28.8.1.1.1.1 Economic Activity

344. Based on the available information from the schemes included in the CEA, economic activity overlapping with the Projects is expected to be limited in scale, with the exception of Hornsea Four. This project and Dogger Bank A and B, which are not expected to overlap with the Projects' construction, could, in theory, lead to additional supply chain development and indirectly support the Projects.

345. For this reason, the cumulative effects on economic activity are assessed as minor (beneficial) for the Humber Region and negligible (beneficial) for the UK.

28.8.1.1.1.2 Employment

346. Overlap in timescales is considered limited for most schemes. In particular, construction of the solar schemes lasts for around six months. So, even if overlapping with the Projects, pressures on labour supply would remain so for relatively short periods.

347. Based on the available evidence, the cumulative effects on employment are assessed as minor (beneficial) for the Humber Region and negligible (beneficial) for the UK.

28.8.1.1.1.3 Demographics

348. As set out earlier in this chapter, when considering effects on demographics, it is expected part of the economic activity would be carried out by existing local workforce (75%). As such, any population effects would be smaller in scale than the equivalent employment supported by those projects across the region.

349. Given a lack of overlap with the construction timescales of some of the larger offshore wind projects, it is unlikely there would be a sizable increase in the population of the Humber Region during the construction phase. For this reason, the cumulative effect on demographics is assessed as minor (beneficial) for the Humber Region and negligible (beneficial) for the UK.

28.8.1.1.1.4 Impacts on Social Infrastructure

350. Pressures on social infrastructure are a function of changes in demographics. This is especially the case over short time periods, where existing provision is less responsive to change.

351. Based on the limited demographic changes expected as a result of cumulative construction activity, cumulative effects on social infrastructure are assessed as negligible in the Humber Region and negligible for the UK.

28.8.1.1.2 Operations and Maintenance

352. Most of the schemes identified are unlikely to require continuous operational activity or do require relatively low levels of maintenance. This is likely the case for the solar developments planned, as well as substation-related activities. Relatively little information on operational activity was found in planning documents.

353. Evidence on the scale of activity is available for Hornsea Four, where there is an expectation of annual employment during operations and maintenance of 200 within the Humber Region. Around 200 jobs are also expected as part of the operations and maintenance of Dogger Bank A and B.

28.8.1.1.2.1 Economic Activity

354. Based on the evidence set out above, whilst providing a stream of long-term jobs in the offshore wind sector, the scale of annual impacts is not considered significant from the perspective of the Humber Region and UK economies.

355. For this reason, the cumulative effects on economic activity during operations and maintenance are assessed as minor for the Humber Region and negligible for the UK.

28.8.1.1.2.2 Employment

356. Similar considerations apply to the cumulative effects on employment. Consequently, these effects during the operations and maintenance phase are assessed as minor for the Humber Region and negligible for the UK.

28.8.1.1.2.3 Demographics

357. As a result of supporting long-term employment, operations and maintenance jobs could drive population growth and retention in the area. At the same time, it is expected some of these jobs would be carried out by people already living in the study areas, as it was assumed as part of the assessment for the construction phase. For this reason, migration of people into the study areas is expected to be limited.

358. On this basis, the cumulative effect on demographics during operations and maintenance is assessed as minor for the Humber Region and negligible for the UK.

28.8.1.1.3 Decommissioning

359. Given the timescales within which decommissioning activity would take place, there is a high degree of uncertainty with regards to which projects would happen at the same time.

360. For this reason, as done elsewhere in this chapter, it is assumed that, under a worst case scenario, cumulative effects during decommissioning would be the same as during the construction and development phase.

28.8.1.1.3.1 Summary of Findings from CEA

361. The CEA for socio-economics has not identified any schemes where significant cumulative effects could arise.

28.9 Transboundary Effects

362. There are no transboundary effects with regard to socio-economics as the Offshore Development Area would not be sited in proximity to any international boundaries. Transboundary effects are therefore scoped out of this assessment and not considered further.

28.10 Interactions

363. The effects identified and assessed in this chapter have the potential to interact with each other. The areas of potential interaction between effects are presented in **Table 28-84**. This provides a screening tool for which effects have the potential to interact. **Table 28-85** and **Table 28-86** provide an assessment for each receptor (or receptor group) as related to these impacts. This is done with reference to the three scenarios considered.

364. **Table 28-85** considers the highest significance level from interactions between different effects within the same project phase. This is followed by a lifetime assessment setting out the overall effect from these interactions.

365. As the analysis in the chapter already took account of the relationship between the level of economic activity associated with the Projects and all these receptors, consideration of inter-relationships did not result in different findings.

Table 28-84 Interactions Between Impacts - Screening

Potential Interactions between Impacts					
Construction					
	Impact 1: Expenditure	Impact 2: Employment	Impact 3: Change in Demographics	Impact 4: Disturbance to social infrastructure	Impact 5: Loss of, disruption to or pressure on local infrastructure
Impact 1: Expenditure		Yes	Yes	Yes	Yes
Impact 2: Employment	Yes		Yes	Yes	Yes
Impact 3: Change in Demographics	Yes	Yes		Yes	Yes
Impact 4: Disturbance to social infrastructure	Yes	Yes	Yes		Yes
Impact 5: Loss of, disruption to or pressure on local infrastructure	Yes	Yes	Yes	Yes	
Operation					

Potential Interactions between Impacts				
	Impact 6: Expenditure	Impact 7: Employment	Impact 8: Change in Demographics	Impact 9: Disturbance to social infrastructure
Impact 6: Expenditure		Yes	Yes	Yes
Impact 7: Employment	Yes		Yes	Yes
Impact 8: Change in Demographics	Yes	Yes		Yes
Impact 9: Disturbance to social infrastructure	Yes	Yes	Yes	
Decommissioning				
	Impact 10: Economic Impact of Decommissioning	Impact 11: Population and Social Infrastructure		
Impact 10: Economic Impact of Decommissioning		Yes		
Impact 11: Population and Social Infrastructure	Yes			

Table 28-85 Interaction Between Impacts - Phase and Lifetime Assessment, DBS East and DBS West In Isolation

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the Humber Region - GVA	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment already accounts for the relationship between local spending, GVA and employment. Knock-on effects from demographic changes are also captured, at least in part, by induced GVA impacts.	**No greater than individually assessed impacts** Activity across different phases is likely to benefit turnover and economic activity across different sectors and businesses. On that basis, the scope for re-enforcing additive lifetime effects is limited.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the UK - GVA	Negligible	Negligible	Negligible	**No greater than individually assessed impacts** The assessment already accounts for the relationship between UK spending, GVA and employment.	**No greater than individually assessed impacts** Activity across different phases is likely to benefit turnover and economic activity across different sectors and businesses. When related to the size of the UK economy lifetime changes do not affect the assessment.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the Humber Region - Employment	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment already accounts for the relationship between local spending, GVA and employment. Knock-on effects from demographic changes are also captured, at least in part, by induced job impacts.	**No greater than individually assessed impacts** Activity across different phases is likely to draw on employment and skillsets from different sectors and businesses. On that basis, the scope for re-enforcing lifetime effects is limited.
Economy of the UK - Employment	Negligible	Negligible	Negligible	**No greater than individually assessed impact** The assessment already accounts for the relationship	**No greater than individually assessed impact** Activity across different phases is likely to draw on

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
				between UK spending, GVA and employment.	employment and skillsets from different sectors and businesses. When related to the size of the UK labour market, lifetime impacts remain negligible.
Demographics of the Humber Region	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment of demographic impacts already draws on expected changes as a result of increased economic activity and local employment.	**No greater than individually assessed impact** The type of jobs supported across construction and operations are different in their duration (temporary vs long-

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
					term) and character. On this basis, there is limited scope for additive lifetime impacts.
Social Infrastructure of the Humber Region	Negligible	N/A	Negligible	**No greater than individually assessed impacts** The analysis already accounts for the impact that demographic changes and increased economic activity would have on social infrastructure.	**No greater than individually assessed impacts** Pressures on social infrastructure would vary depending by Project phase and are unlikely to result in additive lifetime significant impacts.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Local Infrastructure of the Humber Region	Negligible	Negligible	N/A	**No greater than individually assessed impact** The analysis already accounts for the impact that demographic changes and increased economic activity would have on local infrastructure.	**No greater than individually assessed impact** Pressures on local infrastructure would vary depending by Project phase and are unlikely to result in additive lifetime significant impacts.

Table 28-86 Interaction Between Impacts - Phase and Lifetime Assessment, DBS East and DBS West Together (Sequential or Concurrent)

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the Humber Region - GVA	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment already accounts for the relationship between local spending, GVA and employment. Knock-on effects from demographic changes are also captured, at least in part, by induced GVA impacts.	**No greater than individually assessed impacts** Activity across different phases is likely to benefit turnover and economic activity across different sectors and businesses. On that basis, the scope for re-enforcing additive lifetime effects is limited.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the UK - GVA	Negligible	Negligible	Negligible	**No greater than individually assessed impacts** The assessment already accounts for the relationship between UK spending, GVA and employment.	**No greater than individually assessed impacts** Activity across different phases is likely to benefit turnover and economic activity across different sectors and businesses. When related to the size of the UK economy lifetime changes do not affect the assessment.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Economy of the Humber Region - Employment	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment already accounts for the relationship between local spending, GVA and employment. Knock-on effects from demographic changes are also captured, at least in part, by induced job impacts.	**No greater than individually assessed impacts** Activity across different phases is likely to draw on employment and skillsets from different sectors and businesses. On that basis, the scope for re-enforcing lifetime effects is limited.
Economy of the UK - Employment	Negligible	Negligible	Negligible	**No greater than individually assessed impact** The assessment already accounts for the relationship	**No greater than individually assessed impact** Activity across different phases is likely to draw on

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
				between UK spending, GVA and employment.	employment and skillsets from different sectors and businesses. When related to the size of the UK labour market, lifetime impacts remain negligible.
Demographics of the Humber Region	Minor	Minor	Minor	**No greater than individually assessed impacts** The assessment of demographic impacts already draws on expected changes as a result of increased economic activity and local employment.	**No greater than individually assessed impact** The type of jobs supported across construction and operations are different in their duration (temporary vs long-

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
					term) and character. On this basis, there is limited scope for additive lifetime impacts.
Social Infrastructure of the Humber Region	Minor	Negligible	Negligible	**No greater than individually assessed impacts** The analysis already accounts for the impact that demographic changes and increased economic activity would have on social infrastructure.	**No greater than individually assessed impacts** Pressures on social infrastructure would vary depending by Project phase and are unlikely to result in additive lifetime significant impacts.

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Local Infrastructure of the Humber Region	Negligible	Negligible	N/A	**No greater than individually assessed impact** The analysis already accounts for the impact that demographic changes and increased economic activity would have on local infrastructure.	**No greater than individually assessed impact** Pressures on local infrastructure would vary depending by Project phase and are unlikely to result in additive lifetime significant impacts.

28.11 Inter-relationships

366. For socio-economics there are potential inter-relationships with other topics assessed within the ES including commercial fisheries, shipping and navigation, land use, traffic and transport, landscape and visual, noise and air quality. A summary of the potential inter-relationships between socio-economics and other disciplines is provided in **Table 28-87**.

Table 28-87 Socio-economics Inter-relationships

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
Construction			
Fisheries	**Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)**	28.6.1.2.1 and 28.6.1.3.1	Economic impact on fisheries from activity associated with the construction of the Projects.
Commercial Shipping	**Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**	28.6.1.2.1 and 28.6.1.3.1	Economic impact on commercial shipping from activity associated with the construction of the Projects.
Land Use	**Volume 7, Chapter 21 Land Use (application ref: 7.21)**	28.6.1.2.1 and 28.6.1.3.1	Economic impact on land use associated with construction activity.
Traffic and Transport	**Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**	Paragraph 229 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of construction activity.
Landscape and Visual	**Volume 7, Chapter 23 Landscape and Visual Impact Assessment**	Paragraph 229 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of construction activity.

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
	(application ref: 7.23)		
Noise and Vibration	**Volume 7, Chapter 25 Noise (application ref: 7.25)**	Paragraph 229 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of construction activity.
Air Quality	**Volume 7, Chapter 26 Air Quality (application ref: 7.26)**	Paragraph 229 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of construction activity.
Operation			
Fisheries	**Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)**	28.6.2.1.1 and 28.6.2.2.1	Economic impact on fisheries from activity associated with the operations of the Projects.
Commercial Shipping	**Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**	28.6.2.1.1 and 28.6.2.2.1	Economic impact on commercial shipping from activity associated with the operations of the Projects.
Land Use	**Volume 7, Chapter 21 Land Use (application ref: 7.21)**	28.6.2.1.1 and 28.6.2.2.1	Economic impact on land use associated with the operations of the Projects.
Landscape and Visual	**Volume 7, Chapter 23 Landscape and Visual Impact Assessment**	28.6.2.1.4 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of the operations and maintenance of the Projects.

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
	(application ref: 7.23)		
Traffic and Transport	**Volume 7, Chapter 24 Traffic and Transport (application ref: 7.24)**	28.6.2.1.4 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of the operations and maintenance of the Projects.
Noise and Vibration	**Volume 7, Chapter 25 Noise (application ref: 7.25)**	28.6.2.1.4 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of the operations and maintenance of the Projects.
Air Quality	**Volume 7, Chapter 26 Air Quality (application ref: 7.26)**	28.6.2.1.4 and 28.6.2.2.4	Impact from any disturbance on social infrastructure because of the operations and maintenance of the Projects.
Decommissioning			
Fisheries	**Volume 7, Chapter 13 Commercial Fisheries (application ref: 7.13)**	28.6.3.1.1 and 28.6.3.1.3	Economic impact on fisheries from activity associated with the decommissioning of the Projects.
Commercial Shipping	**Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**	28.6.3.1.1 and 28.6.3.1.3	Economic impact on commercial shipping from activity associated with the decommissioning of the Projects.
Land Use	**Volume 7, Chapter 21 Land Use (application ref: 7.21)**	28.6.3.1.1 and 28.6.3.1.3	Economic impact on land use associated with the decommissioning of the Projects.

28.12 Summary

367. This chapter provided a characterisation of the existing environment for socio-economics based on publicly available data. It considered evidence on demography, the economy, and the social infrastructure of The Humber Region, and compared it against UK-level performance.

368. The analysis was based on sectoral evidence and industry best practice. No data limitations with the potential to affect the findings from the assessment have been identified.

369. The chapter considered the socio-economic impacts associated with the construction, operations and decommissioning of the Projects. This is done under three scenarios – one involving the construction of a single development; another involving the construction of both the Projects Concurrently; and a third one involving the construction of the Projects Sequentially.

370. In all scenarios, the assessment identified multiple beneficial effects, including a significant effect for The Humber Region during the construction of the two projects Concurrently. These included:

- Either DBS East or DBS West In Isolation would support;
  - Up to 1,190 jobs supported across the UK, including 760 jobs supported across the Humber Region during the development and construction;
  - £488 million GVA in the UK, including £200 million GVA in the Humber Region during the development and construction;
  - 580 jobs in the UK, including 400 in the Humber Region during the operations and maintenance phase;
- Both DBS East and DBS West built Concurrently would support;
  - Up to 2,380 jobs supported across the UK, including 1,520 jobs supported across the Humber Region during the development and construction;
  - Almost £1 billion GVA in the UK, including £400 million GVA in the Humber Region during the development and construction;
  - 1,120 jobs in the UK, including 810 in the Humber Region during the operations and maintenance phase;
- Both DBS East and DBS built Sequentially would support;
  - Up to 1,550 jobs supported across the UK, including 930 jobs supported across the Humber Region during the development and construction;

  - Almost £1 billion GVA in the UK, including £400 million GVA in the Humber Region during the development and construction;
  - 1,120 jobs in the UK, including 810 in the Humber Region during the operations and maintenance phase; and
- Across the three scenarios the job creation would have a beneficial impact on the projected declining working age population in the Humber Region.

371. The assessment also considered the potential for adverse effects as a result of loss of, disruption to or pressure on local infrastructure, and any disturbance to social infrastructure. It found no significant adverse effects regardless of the scenario and Projects' phase considered.

372. **Table 28-88**, **Table 28-89** and **Table 28-90** provide a summary of the assessment across the three scenarios considered, In Isolation, concurrent or sequential.

Table 28-88 Summary of Potential Likely Significant Effects on Socio-economics, DBS East or DBS West In Isolation

Potential Impact	Receptor	Sensitivity	Magnitude of Impact	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
Construction						
Expenditure	The Humber Region	Medium	Minor (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Loss of, disruption to or pressure on local infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Operation						
Expenditure	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)

Potential Impact	Receptor	Sensitivity	Magnitude of Impact	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Decommissioning						
Economic Activity	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Economic Activity	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Population and Social Infrastructure	The Humber Region	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)

Table 28-89 Summary of Potential Likely Significant Effects on Socio-economics, DBS East and DBS West Concurrent

Potential Impact	Receptor	Sensitivity	Magnitude of Impact	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
Construction						
Expenditure	The Humber Region	Medium	Medium (Beneficial)	Moderate (Beneficial)	N/A	**Moderate** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Loss of, disruption to or pressure on local infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Operation						
Expenditure	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Decommissioning						
Economic Activity	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Economic Activity	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Population and Social Infrastructure	The Humber Region	Low	Negligible	Negligible	N/A	**Negligible**

Table 28-90 Summary of Potential Likely Significant Effects on Socio-economics, DBS East and DBS West Sequential

Potential Impact	Receptor	Sensitivity	Magnitude of Impact	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
Construction						
Expenditure	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Loss of, disruption to or pressure on local infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Operation						
Expenditure	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Expenditure	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Employment	The Humber Region	Medium	Low (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Employment	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Change in demographics	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Disturbance (noise, air quality, visual and traffic) to social infrastructure	The Humber Region	Low	Negligible (Adverse)	Negligible (Adverse)	N/A	**Negligible** (Adverse)
Decommissioning						
Economic Activity	The Humber Region	Medium	Negligible (Beneficial)	Minor (Beneficial)	N/A	**Minor** (Beneficial)
Economic Activity	UK	Low	Negligible (Beneficial)	Negligible (Beneficial)	N/A	**Negligible** (Beneficial)
Population and Social Infrastructure	The Humber Region	Low	Negligible	Negligible	N/A	**Negligible**

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