12 SOCIO-ECONOMICS

Introduction

12.1 This chapter has been produced by Hardisty Jones Associates (HJA) and presents the approach and findings of the assessment of potential effects on economic receptors. It firstly presents the methodology and provides a review of the baseline conditions in the vicinity of the Application Site and surrounding area. It then presents the results of the assessment of the effect of the Proposed Development on the baseline assessment scenarios in order to determine the anticipated magnitude and significance of effects.

Assessment Methodology

Legislative and Policy Context

12.2 The legislative and policy documents that cover relevant issues relating to the Proposed Development are summarised in Table 12.1 below. Further detail on the specific content of these documents is provided in Appendix 12.1:

Table 12.1 – Summary of relevant legislative and policy documents

Title	Year	Source(s)
UK		
Climate Change Act 2008	2008	HM Government
UK Industrial Strategy	2017	HM Government
The Clean Growth Strategy: Leading the way to a low carbon future	2017	HM Government
Wales		
Environment (Wales) Act 2016	2016	Welsh Government
Well-being of Future Generations (Wales) Act 2015	2015	Welsh Government
Prosperity for All	2017	Welsh Government
Prosperity for All: Economic Action Plan	2018	Welsh Government
Planning Policy Wales	2018	Welsh Government
Technical Advice Note 23: Economic Development (2014)	2014	Welsh Government
People, Places, Futures – The Wales Spatial Plan	2008	Welsh Assembly Government
Energy Wales: A Low Carbon Transition	2012	Welsh Government
Swansea Bay City Region and Pembrokeshire		
Swansea Bay City Region Economic Regeneration Strategy 2013–2030	2017	Swansea Council, Neath Port Talbot Council, Carmarthenshire County Council, Pembrokshire County Council
Swansea Bay City Region City Deal	2017	Swansea Council, Neath Port Talbot Council, Carmarthenshire County Council, Pembrokshire County Council
Pembrokeshire County Council Local Development Plan: Planning Pembrokeshire's Future	2013	Pembrokeshire County Council

Relevant Guidance

12.3 This assessment draws on a range of source information, including best practice guidance on the assessment of economic impact (e.g. Additionality Guide, Fourth Edition, HCA, 2013).

Study Area

12.4 This assessment considers impacts upon the Pembrokeshire local authority area. The study area is shown in Figure 12.1

Baseline Methodology

12.5 Information on the economic baseline conditions within Pembrokeshire has been collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 12.2 below.

Table 12.2 – Summary of key baseline sources

Title	Year	Source(s)
An analysis of economic activity dependent on the Milford Haven Waterway	2012	MHPA
Annual Population Survey	2018	ONS
Annual Survey of Hours and Earnings	2018	ONS
Business Demography	2017	ONS
Business Register and Employment Survey	2018	ONS
Census of Population	2011	ONS
Jobs Density	2018	ONS
Jobseekers Allowance	2018	ONS
Local authority population projections	2014-based	Statistics Wales
Mid year population estimates	2018	ONS
Regional Gross Value Added	2018	ONS
Regional Gross Value Added by Local Authority	2017	ONS
State of the Sector 2019: Economic Benefits for Wales	2019	MEW
STEAM Final Trend Report for 2004-2015	2015	PCC
UK Business Counts	2018	ONS

12.6 There is no established list of baseline environment indicators for economic receptors. The baseline receptors have therefore been informed by the professional judgment of HJA.

Consultation

12.7 There are no key issues to be considered in the production of this Environmental Statement chapter on the basis of the consultation responses.

Assessment Criteria and Assignment of Significance

12.8 This section describes the approach taken to identifying the magnitude of an impact and the value of the receptor.

12.9 The criteria for determining the significance of effects is a two-stage process that involves defining the value of the receptors and the magnitude of the impacts. This section describes the criteria

applied in this chapter to assign values to the value of receptors and the magnitude of potential impacts. The definitions used for value and magnitude are presented in Tables 12.3 and 12.4, respectively.

Receptor Value

Table 12.3: Definitions of Value

Value	Descriptors
High	The receptor is identified as a policy priority (as a result of economic potential and/or need). There is evidence of major economic challenges or underperformance and vulnerability for the receptor in the study area.
Medium	The receptor is not identified as a policy priority (as a result of economic potential and/or need). There is evidence of considerable economic challenges or underperformance and vulnerability for the receptor in the study area.
Low	The receptor is not identified as a policy priority (as a result of economic potential and/or need). There is evidence that the receptor is resilient and no particular weaknesses or challenges for the receptor in the study area.
Negligible	The receptor is not identified as a policy priority (as a result of economic potential and/or need). There is evidence of good overall performance and no particular weaknesses or challenges for the receptor in the study area.

Magnitude of Impact

Table 12.4: Definitions of Magnitude

Magnitude	Descriptors
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).

Significance of Effects

12.10 The significance of the effect upon economic receptors is determined by correlating the magnitude of the impact and the value of the receptor. The particular method employed for this assessment is presented in Table 12.5.

Table 12.5: Assessment Matrix

Value	Magnitude of Impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible or minor	Minor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

12.11 Where a range of significance of effect is presented, the final assessment for each effect is based upon the professional judgement of the chapter authors.

12.12 For the purposes of this assessment, any effects with a significance level of minor or less have been concluded to be not significant in terms of the EIA Regulations.

Construction phase

12.13 The impacts identified below have been selected as those with the potential to result in the greatest effect on economic conditions during the construction phase:

- Jobs (person years)
- Wages
- GVA

Operational phase

12.14 The impacts identified below have been selected as those with the potential to result in the greatest effect on economic conditions during the operational phase:

- FTE Jobs
- Wages
- GVA

Limitations of the Assessment

12.15 There are no formal measures of effect significance for economic receptors. The assessment has therefore been informed by the professional judgment of the chapter authors.

12.16 The data sources used in this chapter are detailed above. The data used are the most up to date publicly available information which can be obtained from the applicable data sources as cited. The data is therefore limited by what is available and by what has been made available, at the time of writing the Environmental Statement.

12.17 The way sectors are defined presents some limitations with regards to assessing the existing energy sector in Pembrokeshire. It is possible that activities within the renewable energy sector are coded within other sector groupings such as R&D and manufacturing.

12.18 It is considered that the data employed in the assessment are of a robust nature and are sufficient for the purposes of the assessment presented.

Baseline Environment

12.19 This section considers the existing economic conditions in Pembrokeshire local authority based on secondary data sources.

12.20 Information on the economic baseline conditions within Pembrokeshire has been collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 12.6 to 12.11 and paragraphs 12.21 to 12.49. A full version of the Economic Statement prepared in relation to the Proposed Development is included as Appendix 12.2.

GVA

12.21 The Pembrokeshire economy contributed approximately £2.0 billion in GVA to the Welsh economy in 2015, which was around 3.5% of the Welsh economy as a whole that year (ONS). Of the 22 local authorities in Wales, Pembrokeshire ranked 14th in total GVA output.

Population

12.22 The Office for National Statistics (ONS) Mid-Year Population Estimates report a resident population of 124,700 persons in Pembrokeshire.

12.23 The population of Pembrokeshire has increased by 4.3% over the ten-year period 2007-17 (Mid-Year Estimates, ONS).

Industry

12.24 The Pembrokeshire economy is dominated by micro businesses. This is not too dissimilar to the business base of Wales and the UK as a whole, although it is slightly more pronounced in Pembrokeshire.

Table 12.6 – Business base by business size

Business size	Pembrokeshire	Wales	UK
Micro (0–9 employees)	90%	89%	89%
SME (10–249 employees)	10%	11%	10%
Large (250+ employees)	0.1%	0.3%	0.4%

Source: UK Business Counts, ONS (Note – figures may not sum due to rounding)

12.25 The number of micro and small-medium size enterprises (SME) in Pembrokeshire increased between 2014 and 2018 (UK Business Counts, ONS). It is difficult to make an accurate assessment of the change in the number of large businesses in Pembrokeshire as ONS figures are rounded to the nearest five. However, the data shows there are very few.

Table 12.7 – Change in size band distribution of businesses 2014–2018, Pembrokeshire

Business size	2014	2018
Micro (0–9 employees)	4,715	5,005
SME (10–249 employees)	505	575

Large (250+ employees)	5	5

Source: UK Business Counts, ONS

12.26 The contribution of new enterprises ('births') to the overall business base in Pembrokeshire decreased slightly between 2013 and 2017, and the share of business 'deaths' as a proportion of Pembrokeshire's business base increased slightly over the same period (Business Demography, ONS). In 2018 business deaths exceeded business births.

Table 12.8 – Change in business 'births' and 'deaths' 2013–2017, Pembrokeshire

	2013	2017
Business births (total)	465	410
Business births (% share of business base)	10.4%	8.9%
Business deaths (total)	375	430
Business deaths (% share of business base)	8.4%	9.3%

Source: Business Demography, ONS

12.27 Overall, Pembrokeshire's business base is less 'active' when compared to the picture across Wales and the UK. The number of businesses in Pembrokeshire increased by 3.3% between 2013-17, compared to an increase of 14.6% in Wales and 19.5% in the UK as a whole. Business births in Wales increased over the same period, both in absolute terms (+2,800) and as a share of the business base (+1.1%). At the UK level, business births increased (+35,610) but decreased slightly as a share of the business base (-1.0%).

12.28 The survival rate of new enterprises in Pembrokeshire is higher than the Wales average (Business Demography, ONS).

Table 12.9 – Business survival rates based on 2012 business births

Business size	1-year	2-year	3-year	4-year	5-year
Pembrokeshire	93%	81%	67%	58%	47%
Wales	92%	75%	60%	51%	44%

Source: Business Demography, ONS

Employment and Economic Activity

12.29 The economic activity rate in Pembrokeshire is 76.0%. This is lower than the Wales average (76.2%) and GB average (78.5%) (ONS Annual Population Survey, Oct 2017 - Sep 2018).

12.30 The employment rate is measured at 73.5% compared to Wales 72.6% and GB 75.1%. Self-employment is very high in Pembrokeshire, at 14.1% compared to 9.5% in Wales and 10.6% in GB. Unemployment is low at 3.8% compared to 4.6% in Wales and 4.2% GB. (all figures ONS Annual Population Survey, 2018).

12.31 The most comprehensive measure of jobs in an area is the ONS Jobs Density measure. This indicates 55,000 jobs in Pembrokeshire in 2017.

12.32 Table 3.7 shows the share of Pembrokeshire residents employed in occupation categories 1-3 (higher order occupations) is much lower than the Wales average (Annual Population Survey, ONS, 2019). The number employed in occupation categories 4-6 (middle order occupations) is much

higher than the Wales average. The number employed in occupation categories 7-9 (lower order occupations) is very similar to the Wales average.

Table 12.10 – Resident employment by SOC, Pembrokeshire (2017)

Occupation	Total employment	Share of employment (Pembs)	Share of employment (Wales)
1: Managers, directors and senior officials	5,800	10.4%	9.8%
2: Professional occupations	8,700	15.6%	18.4%
3: Associate prof & tech occupations	6,000	10.7%	13.4%
4: Administrative and secretarial occupations	5,200	9.3%	9.9%
5: Skilled trades occupations	7,900	14.2%	11.5%
6: Caring, leisure and other service occupations	6,800	12.3%	9.4%
7: Sales and customer service occupations	4,100	7.3%	8.1%
8: Process, plant and machine operatives	3,800	6.9%	7.7%
9: Elementary occupations	7,300	13.2%	11.2%

Source: HJA analysis based on Annual Population Survey, ONS

12.33 The proportion of the Pembrokeshire population aged 16–64 with NVQ4+ as a highest level of qualification is reported at 30.7% compared to 35.1% in Wales and 38.6% in GB (Annual Population Survey, ONS).

12.34 42.5% of jobs in Pembrokeshire are part time (ONS, BRES). This compares to 34.7% in Wales and 32.5% GB.

12.35 Whilst the employment and economic activity rates in Pembrokeshire indicate labour market participation levels in Pembrokeshire are at or above the Welsh average, this is based on high levels of self-employment and part time working. The occupational and skills data shows a low concentration of high skilled, higher order activity.

Sector Profile

12.36 Location Quotients (LQ) show the concentration of sectors in an area, relative to the UK economy. An LQ of 1 indicates the sector has an equal concentration to the UK, an LQ>1 shows a relative concentration of activity in that sector. An LQ<1 shows an under-representation of that sector.

12.37 Table 12.11 reports the number of businesses and the equivalent LQ of each sector in Pembrokeshire. This shows that the Energy and Tourism (proxy based on Accommodation and food services, and Arts, entertainment and recreation) sectors are well represented in the Pembrokeshire economy (UK Business Counts, ONS).

12.38 Table 3.6 reports the employment sectoral profile in Pembrokeshire. The tourism sector, based on a proxy comprising the 'Accommodation and food services' sector and 'Arts, entertainment and recreation' sector, is very well represented in Pembrokeshire in terms of employment (Business Register and Employment Survey (BRES), ONS, 2018). The 'Energy' sector's LQ falls below 1.

Table 12.11 – Total Business LQ by sector, Pembrokeshire (2018)

Sector	Total bus.	LQ	Total emp.	LQ
A : Agriculture, forestry and fishing	1,385	1.85	6,000	2.95

B : Mining and quarrying	5	1.32	125	1.97
C : Manufacturing	300	0.96	2,000	0.40
D : Energy	15	1.43	225	0.89
E : Water supply	20	0.92	350	0.80
F : Construction	620	0.89	2,500	1.17
G : Wholesale and retail trade	725	0.84	8,000	1.22
H : Transportation and storage	140	0.67	1,750	1.15
I : Accommodation and food services	650	1.40	7,000	1.93
J : Information and communication	130	0.54	1,250	0.66
K : Financial and insurance activities	60	0.61	300	0.28
L : Real estate activities	90	0.60	500	0.81
M : Professional, scientific and technical activities	500	0.77	2,000	0.80
N : Administrative and support service activities	345	0.83	1,500	0.47
O : Public administration and defence	40	1.56	2,000	0.63
P : Education	55	0.78	4,000	0.90
Q : Human health and social work activities	185	0.77	7,000	0.96
R : Arts, entertainment and recreation	145	1.19	900	1.46
Total	**5,585**		**48,000**	

Source: HJA analysis based on UK Business Counts and BRES, both ONS (Note – figures may not sum due to rounding)

Energy Sector

12.39 The energy sector in Pembrokeshire is heavily biased towards oil and gas. The energy sector in Pembrokeshire accounts for around £92 million in wages per annum (Milford Haven Port Authority (MHPA), 2012). Of the £323.7 million of GVA associated with economic activity in the Milford Haven Waterway, over 60% is estimated to be generated in the energy sector - roughly 12% of the Pembrokeshire economy (MHPA, 2012).

12.40 In 2019, total historic investment in the marine energy sector in Wales stood at £96.2 million (Marine Energy Wales (MEW)). The sector has directly supported 566 person years of employment in Wales, and the contribution increases when effects are included from elsewhere in the supply chain (MEW).

Income

12.41 The Annual Survey of Hours and Earnings reports that earnings in Pembrokeshire are much lower than in Wales as a whole. The median annual earnings of a Pembrokeshire resident in full-time employment is £24,824, compared to £27,039 for Wales. Workplace based measures show a similar picture with median earnings approximately 90% of the Wales average.

12.42 The ONS reports that, in 2015, GVA per job in Pembrokeshire was £36,370[i] compared to an average of £41,917 in Wales and £51,619 in the UK[ii].

Commuting

12.43 Travel to work patterns indicate a functional economic area that is contained almost entirely within Pembrokeshire local authority. Census 2011 data on Origin Destination indicates that 91% of

Pembrokeshire residents that are in employment work within the Pembrokeshire local authority, and 92% of workers who work in Pembrokeshire are residents of Pembrokeshire local authority.

12.44 Of the 54,697 Pembrokeshire residents in employment, 18% work mainly at or from home and 9% have no fixed place of work (Census 2011, ONS). In Pembrokeshire, 87% of jobs with a fixed workplace outside the home are filled by residents of Pembrokeshire, and 13% are taken by in-commuters (Census 2011, ONS).

Future Baseline Conditions

12.45 Based on Statistics Wales' local authority population projections, Pembrokeshire's population is expected to decrease by around 1.6% between 2019 and 2039.

12.46 Employment in extraction and mining (capturing oil and gas activities) and utilities (capturing other energy activities) are estimated to remain at roughly the same level between 2017 and 2033. GVA in these sectors is also expected to remain largely static (Local Employment Trends Background Paper, PCC, 2018). The value of fuel refining is expected to fall over the same period, from £189.1 million in 2017 to £146.5 million in 2033.

12.47 Despite an important economic contribution, non-renewable elements of the energy sector in Pembrokeshire are under an increasing regulatory burden, with concerns that firms are finding it more difficult to invest profitably (MHPA, 2012). There are opportunities for investment in renewable energy activities to diversify the energy sector in Pembrokeshire and create better conditions for growth in the future. The absence of the Proposed Development might slow down this diversification process.

12.48 Nearly half of Wales' electricity generation in 2016 could be decommissioned by 2030, mostly consisting of coal and gas power stations, which would have negative consequences for the significant non-renewable elements of Pembrokeshire's energy sector (Carbon Trust, 2018).

12.49 Given the energy sector in Pembrokeshire is heavily reliant on non-renewable energy sources, the future base case for energy-related activities in Pembrokeshire is unlikely to experience significant change. The absence of the Proposed Development could exacerbate this lack of growth, as it would inhibit the energy sector's capacity for exploiting one possible avenue of diversification.

Mitigation Measures Adopted as Part of the Project

12.50 The assessment of significance of effects set out below determines that the Proposed Development is likely to have a beneficial effect on economic receptors, ranging from Moderate to Major significance.

12.51 On the basis of the economic effects assessed in this chapter, there are no mitigation measures required to minimise, reduce or offset the possible effects on the receiving environment, given that all effects are assessed to be beneficial. The integrated package of measures around the Pembroke Dock Marine initiative as a whole provides the range of supporting activity to maximise the beneficial effects on the receiving environment.

Assessment of Construction Effects

12.52 This section considers the economic impacts arising from the construction of the Proposed Development. This is considered separately to the operational phase impacts given the time-limited nature of the construction and engineering works.

12.53 Economic impacts will be felt through the employment of labour, purchase of materials, and the expenditure of workers and businesses in the local area.

12.54 All impacts are based on currently available information with any assumptions stated and sourced. The assessment of economic impact can be refined as detailed design work is undertaken. The figures quoted are therefore set out as indicative.

12.55 Impacts are considered at site level and Pembrokeshire local authority level.

12.56 The construction phase has the potential to deliver substantial economic impact given the scale and complexity of the Proposed Development, requiring not only ground works and building construction, but also installation of substantial and technologically complex structures.

Costs and Investment

12.57 The total cost of these deliverables is estimated as £36.2 million (Full Business Case (FBC)). This will create the opportunity for local sub-contracting and labour supply as well as materials and plant supply-chain linkages. The total construction and installation period is estimated at 2–3 years.

Gross Direct Economic Impacts

12.58 Gross direct economic impacts are included for fullness, although are they are not assessed for significance as these figures have not been subjected to additionality factors as per HCA guidance. Therefore, only net additional impacts are assessed for significance.

Gross direct employment

12.59 Total construction phase capital expenditure is estimated at £36.2 million.

12.60 Employment impacts are expressed as 'person years' of employment. This measure is used to represent one full time equivalent post for a single year. This approach captures the contract nature of much construction work, encompassing a range of trades on varying contract lengths. An estimate of person years is generated on the basis of average turnover per worker in the construction sector taken from the ONS Annual Business Survey. Based on estimated turnover per worker for the UK construction sector the anticipated level of capital expenditure will support 203 person years of construction sector employment in the UK. This gross direct impact will be spread across the anticipated 2–3 years construction phase. This equates to an average annual requirement for 68–101 person years of employment.

Gross direct wages

12.61 Data from the Annual Survey of Hours and Earnings (ONS, 2015) has been used to determine the earnings impacts associated with this employment. Data has been used for the most appropriate industrial sector. Gross direct wages are estimated at £6.3 million over the entire construction phase.

Gross direct GVA

12.62 Gross Value Added is a measure of local economic output. Data from the Annual Business Survey (ONS, 2015) has been used to determine the GVA impacts associated with this employment. Data has been used for the most appropriate industrial sector.

12.63 Gross direct GVA is estimated at £16.1 million over the entire construction phase.

Summary of gross direct construction phase economic impacts

12.64 It is estimated the development will generate 68–101 person years of employment for Pembrokeshire, supporting £2.1 million–£3.1 million in wages and £5.4 million–£8.1 million in GVA annually for the estimated 2-3 years construction phase.

Table 12.12 – Summary of gross direct construction phase economic impacts

Impact	Annual	Total
Jobs (person years)	68 –101	203
Wages	£2.1–£3.1 million	£6.3 million
GVA	£5.4–£8.1 million	£16.1 million

Source: HJA analysis

Net Additional Economic Impacts

12.65 The impacts outlined above are gross direct impacts. It is best practice to allow for 'additionality' factors in order to arrive at a net additional local impact. This allows an assessment of the net effects at site level and Pembrokeshire local authority level. This assessment allows for leakage, deadweight, displacement and substitution, and multiplier effects. These are explained in more detail below. Unless otherwise stated assumptions are informed by HCA (2014) Additionality Guide: Fourth Edition. These only apply to jobs and wages.

Leakage

12.66 Leakage is a measure of the impacts which 'leak' outside the impact area being considered. For example, jobs which are taken by those living outside Pembrokeshire.

12.67 A 10% reduction to gross direct employment has been made to allow for HQ and project management functions, assuming a lead contractor with a HQ outside Pembrokeshire. The remainder are assumed to be site based.

12.68 For the remainder, the 2001 Census of Population provides detailed assessment of the origin and destination of workers by sector. Whilst this dataset is now somewhat out of date, it provides some insight into the workings of the economy. At 2001 some 92% of construction workers employed in Pembrokeshire lived within this area. The 2011 Census of Population data does not provide the sectoral data but does suggest overall levels of commuting are broadly similar to those in 2001. We have therefore adopted the 2001 Census sectoral data to assess leakage of construction employment. On this basis, leakage is assessed as 8%.

Deadweight

12.69 Deadweight is a measure of what impacts would have occurred without the proposed development. The base case during the operational phase is discussed in more detail earlier in the section. There

is no major construction investment planned at the site in the absence of the proposed development. No investment in the construction of a similar scheme is anticipated to take place elsewhere in the impact area i.e. Pembrokeshire, given the lack of suitable alternative locations. Therefore, for the construction phase there is no deadweight to be accounted for.

Displacement and substitution effects

12.70 Displacement and substitution effects are used to discount the proportion of gross impacts which offset other impacts which would otherwise have occurred. For example, a construction firm securing a contract to work on the proposed development therefore turns down another contract that would otherwise have kept the team gainfully employed. Or a new firm establishes a construction operation to secure a contract and secures an opportunity that would otherwise have gone to another local construction firm.

12.71 The primary concern in this analysis is with substitution effects upon local construction firms - this is assumed as very low.

12.72 The construction sector in Pembroke Dock and Pembroke currently provides 350 jobs, with 2,500 jobs provided across Pembrokeshire local authority. The average annual requirement for construction labour is therefore equivalent to up to 29% of the local construction workforce and up to 4% of the Pembrokeshire construction labour force. In addition, across the Swansea Bay City Region there are currently (November 2018) 175 jobseekers seeking construction-related employment within process, plant and machine operative, or elementary occupations. The proposed development will therefore provide opportunities for contracts into the local construction sector without putting a strain on the local sector that will create distortions.

12.73 A 'very low' displacement deduction[iii] of 10% has been applied at the Pembrokeshire level.

Multipliers

12.74 Multipliers are a tool used to assess the ongoing and repeated effects of expenditure in the economy through supply chains and by workers. In this analysis we are using Type II multipliers which incorporate both the supply chain (indirect) effects of investment and the induced effects as incomes earned by workers are spent in the local economy.

12.75 The construction sector has particularly high multipliers, with high levels of locally retained expenditure. This reflects the local sourcing of labour and the expenditure of earned incomes in the local area, as well as the often localised purchase of building materials, particularly non-specialised materials.

12.76 A multiplier of 1.5 is therefore applied at the Pembrokeshire level.

Summary of net additional economic impacts

12.77 The assumptions outlined above are applied to the gross direct effects previously set out. It is estimated the development will generate 75–113 person years of employment for Pembrokeshire, supporting £2.3 million–£3.5 million in wages and £6.0 million–£9.0 million in GVA annually for the estimated 2–3 year construction phase.

Table 12.13 – Summary of net additional construction phase economic impacts

Impact	Annual	Total
Jobs (person years)	75–113	225
Wages	£2.3–£3.5 million	£7.0 million
GVA	£6.0–£9.0 million	£17.9 million

Source: HJA analysis

- Jobs (person years): It is estimated the development will generate 75–113 person years of employment for Pembrokeshire. On the basis of the figures for construction sector employment in Table 12.11, this is approximately 3.0%–4.5% of construction employment in Pembrokeshire. Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be medium beneficial. The effect is therefore assessed to be of moderate (beneficial) significance, which is significant in EIA terms. The effect is assessed as medium term given that the construction phase is expected to last for 2–3 years.

- Wages: Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be medium beneficial. The effect is therefore assessed to be of moderate (beneficial) significance, which is significant in EIA terms. The effect is assessed as medium term.

- GVA: Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be medium beneficial. The effect is therefore assessed to be of moderate (beneficial) significance, which is significant in EIA terms. The effect is assessed as medium term.

Assessment of Operational Effects

12.78 This section considers the economic impacts arising from the on-going operation of the Proposed Development. There will be a range of direct on-site impacts including jobs, wages, and GVA arising from activities taking place within the employment premises delivered as part of the Proposed Development.

Base Case

12.79 To gauge the benefit of the Proposed Development, it is necessary to establish the 'base case' scenario in which the proposed development does not go ahead (TAN 23, 2014). In the event that the Proposed Development does not come forward, an assessment of the future base case has been carried out and is described within this section.

On-site

12.80 The data on current on-site[iv] activity has been provided by MHPA. There is currently 11,230 sq m of occupiable floorspace, made up of approximately 39 units. Of the existing floorspace, 5,500 sq m is scheduled for demolition as part of the Proposed Development, with 5,730 sq m set to remain. Occupancy rates are very good across the site (floorspace 93%, units 90%), with around 20 businesses, individuals, and public sector organisations occupying units at the site.

Table 12.14 – Lease status of on-site units (as of March 2019)

Status	Occupiable floorspace (sq m)	Occupied floorspace (sq m)	Occupiable units	Occupied units
Scheduled for redevelopment	5,501	5,485	22	21
Not scheduled for redevelopment	5,729	4,929	17	14
Total	11,230	10,414	39	35

Source: HJA analysis based on tenancy data provided by MHPA

12.81 MHPA has provided estimates of employment levels supported by current tenants.

12.82 Based on MHPA estimates, the site currently supports 119 FTE jobs. This level of employment is estimated to support around £3.2 million in wages, and £8.0 million in GVA on an annual basis.

Table 12.15 – Estimated existing employment levels on site

Status	MHPA-based estimate
FTE Jobs	119
Wages	£3,196,000
GVA	£8,010,100

Source(s): MHPA and HJA

12.83 Based on the Pembroke Dock Marine Full Business Case (Working Draft Report)[v], in the absence of the Proposed Development it is expected the premises will continue to be used by current tenants, although a lack of private investment will lead to deterioration of the units and eventually lead to the site becoming redundant. However, this assessment adopts current conditions as the base case, as there is a degree of uncertainty as to how market failures will impact the site, and over what timeframe the site will become redundant.

Employment Assumptions

12.84 The Proposed Development has a range of potential uses and users. As a result, the scale of potential employment and economic impact is uncertain. This analysis seeks to identify a reasonable estimated range of the potential economic impact based on the available evidence, including guidance on standard workspace employment densities, and published material on potential operator activity levels.

12.85 Three estimates of potential on-site employment have been made. These can be summarised as follows:

- Applying standard employment densities to internal workspaces (Scenario 1);
- Analysis based on McAlpine contractor estimates (Scenario 2); and
- Analysis based on Farran contractor estimates (Scenario 3).

12.86 For all scenarios estimates take account of shift working and report employment impacts in terms of full-time equivalents (FTEs).

Scenario 1 – Standard employment densities for internal work areas

12.87 This approach applies standard employment densities from Employment Density Guide, 3rd edition, HCA, (2015) to the internal work areas. This scenario excludes any external areas.

12.88 The employment activities that will be facilitated by each Unit in the Gate 4 redevelopment are described in the Masterplan (Revision N). RPS has provided additional information on the expected use class of each unit. This information is summarised in in Table 12.16 below.

Table 12.16 – Scenario 1 unit floorspace, description, and use class

Unit	Area (sq m)	Description	Use Class
A	11,900	Manufacturing & Assembly	B2
B	4,900	Ship Repair and Fabrication	B2
C	2,500	Light Assembly and Maintenance	B1c
C1	5,000	Open/External Light Assembly	N/A
D	12,937	Open/External Batching Plant and Storage	N/A
E		Employee Car Park	
F1	8,058	Open/External Final Assembly	N/A
F2	4,836	Open/External Final Assembly	N/A
J	11,838	Slipway	N/A
Former Foreman's Office*	279	Additional area not in Rev N plan	B1a

Note: *An inclusion has been made to allow for the reuse of the Former Foreman's Office, which is vacant currently, for B1a office use.
Source: Masterplan Revision N and RPS advice

12.89 Based on standard employment densities the internal work areas include capacity for 506 FTEs as summarised in Table 12.17 below.

Table 12.17 – Summary of Scenario 1 Site Employment Capacity (single shift)

Use class	Density assumption, per employee (HJA)	FTE employment
B1a	11 sq m	20
B1c	47 sq m	43
B2	36 sq m	443
Total		**506**

Source: HJA analysis

12.90 No allowance has been made for external working areas as no standard employment density assumptions are available. Scenarios 2 and 3, drawing on potential operator workforce estimates have been used to illustrate how a single large site could be used, including both internal and external work areas. If internal areas were used at standard densities, and external areas also utilised, potentially at a lower density, then total employment capacity could be greater than stated.

12.91 Table 12.18 estimates total on-site FTE jobs based on daytime and night time shift patterns. It is assumed operation will take place 7 days per week, with two shifts (day and night). The night shift is assumed to operate at 50% of the day shift workforce. It is assumed each employee will work an average of 4 shifts per working week. A 4 day on/4 day off shift pattern for both day and night shifts has been assumed, which provides shift patterns of 8-day blocks[vi].

12.92 Building B and the former Foreman's Office are excluded from shift working assumptions and are expected to operate on a single shift.

12.93 Under Scenario 1 conditions, the proposed development is estimated to deliver 1,219 FTE jobs. The assessment of Scenario 1 is summarised in Table 12.18 below. Maximum on-site employment at any one time is estimated at 506 FTEs as per Table 12.17 above.

Table 12.18 – Summary of Scenario 1 Shift Working FTE Estimates

Employment element	FTE employment
Day shift (2 shifts of workers on rotation)	713
Night shift (2 shifts of workers on rotation)	357
Unit B (retained)	129
Former Foreman's Office (retained)	20
Total	**1,219**

Source: HJA analysis

Contractor estimates

12.94 The UK Government Department for Energy and Climate Change commissioned research into the potential for the development of Articulated Wind Columns (AWCs)[vii]. This research included analysis from two potential manufacturing and assembly contractors (McAlpine and Farrans) of workforce and employment requirements associated with the fabrication of 50 AWCs per annum at a single site.

12.95 The Pembroke Dock Gate 4 site has been assessed as having capacity for the fabrication of 26 AWCs per annum. In addition, building B as identified within Pembroke Dock Marine Revision M Masterplan, RPS Group (2018) would be retained for other employment uses, as would the former Foreman's Office. Employment estimates for building B and the former Foreman's Office are based on standard densities. HJA has therefore estimated the potential employment impacts associated with the production of 26 AWCs per annum in line with the contractor estimates.

12.96 Figures are provided for on-site workers based on daytime and night time shift patterns. It is assumed operation will take place 7 days per week, with two 10–12 hour shifts. It is assumed each employee will work an average of 4 shifts per average working week, which equates to a 35–42 hour working week (average). A 4 day on/4 day off shift pattern for both day and night shifts has been assumed, which provides shift patterns of 8-day blocks. This means that each worker participates in 44 blocks per annum. This equates to between 1,760–2,112 hours per annum, which is safe to be taken as equivalent to 1 FTE[viii].

12.97 In addition to the contractor-based employment estimates, both Scenario 2 and 3 assume the retention of Unit B and the Foreman's Office, therefore density-based employment estimates for these two premises are included in the assessment of both scenarios and assumed as operating on a single day shift.

Scenario 2 – McAlpine employment estimates

12.98 Using McAlpine employment estimates[ix], and applying the assumptions detailed above, the proposed development is estimated to deliver 1,172 FTE jobs. The assessment of Scenario 3 is

summarised in Table 12.19 below. Peak on-site workforce at any point in time (day shift) is estimated at 483 FTEs.

Table 12.19 – Summary of Scenario 2 Shift Working FTE Estimates

Employment element	FTE employment
Day shift (2 shifts of workers on rotation)	667
Night shift (2 shifts of workers on rotation)	356
Unit B (retained)	129
Former Foreman's Office (retained)	20
Total	**1,172**

Source: HJA analysis

Scenario 3 – Farrans employment estimates

12.99 Using Farrans employment estimates[x], and applying the assumptions detailed above, the proposed development is estimated to deliver 453 FTE jobs. The assessment of Scenario 3 is summarised in Table 12.20 below. Peak on-site workforce at any point in time (day shift) is estimated at 228 FTEs.

Table 12.20 – Summary of Scenario 3 Shift Working FTE Estimates

Employment element	FTE employment
Day shift (2 shifts of workers on rotation)	157
Night shift (2 shifts of workers on rotation)	147
Unit B (retained)	129
Former Foreman's Office (retained)	20
Total	**453**

Source: HJA analysis

Gross Direct Economic Impacts

12.100 Gross direct economic impacts are included for fullness, although are they are not assessed for significance as these figures have not been subjected to additionality factors as per HCA guidance. Therefore, only net additional impacts are assessed for significance.

Gross direct FTE jobs

12.101 Applying the above assumptions in line with the AWC Summary Report operational requirements, it is estimated the Proposed Development will generate 453–1,219 FTE direct on-site jobs. Table 12.21 summarises the results of all three scenario approaches. Total FTEs are based on shift working patterns. The peak on-site workforce is estimated at 228–506 FTEs.

Table 12.21 – Summary of scenario-based FTE employment assessment

Employment element	Peak On-Site Workforce	FTE employment
Scenario 1	506	1,219
Scenario 2	483	1,172
Scenario 3	228	453

Source: HJA analysis

Gross direct wages

12.102 Data from the Annual Survey of Hours and Earnings (ONS, 2017) has been used to determine the earnings impacts associated with this employment. Median gross annual full-time earnings figures have been used for the most appropriate industrial sector[xi]. There is a premium for this kind of employment opportunity (median wage = £34,205) when compared to the average national wage for both Manufacturing (£30,025) and all sectors (£29,574). The FBC also identifies a wage premium for the anticipated employment activity. This indicates the proposed development will deliver an increase in high value employment in Pembrokeshire.

12.103 The redevelopment of Gate 4 is estimated to generate annual wages of £14.4 million–£40.6 million.

Gross direct GVA

12.104 Unless otherwise stated, data from the Annual Business Survey (ONS, 2018) has been used to determine the GVA impacts associated with this employment. GVA per FTE data has been used for the most appropriate industrial sector[xii].

12.105 The redevelopment of Gate 4 is estimated to generate annual GVA in excess of £26.6 million–£67.7 million.

Summary of gross direct economic impacts

12.106 It is estimated the development will generate 453–1,219 FTE jobs for Pembrokeshire, supporting £14.4 million–£40.6 million in wages and £26.6 million–£67.7 million in GVA annually.

Table 12.22 – Summary of gross direct economic impacts

Impact	Total
FTE jobs	453–1,219
Wages	£14.4–£40.6 million
GVA	£26.6–£67.7 million

Source: HJA analysis

Net additional economic impacts

Leakage

12.107 The 2011 Census of Population indicated that 91% of all jobs with a fixed workplace in Pembrokeshire are filled by residents of the region. Therefore, a leakage value of 9% has been adopted.

Deadweight

12.108 Deadweight is a measure of what impacts would have occurred without the proposed development. Following the application of all other additionality factors the assessed impacts of the base case are deducted to arrive at a net additional figure. The base case is described in more detail in above.

Displacement and substitution effects

12.109 Displacement and substitution effects are used to discount the proportion of gross impacts which offset other impacts which would otherwise have occurred. Low displacement and substitution

effects are anticipated given the absence of similar activities within the impact areas, therefore a Displacement and Substitution value of 25% has been adopted.

Multipliers

12.110 Multipliers are a tool used to assess the ongoing and repeated effects of expenditure in the economy through supply chains and by workers. Type II multipliers are used in this analysis, which incorporate both the supply chain (indirect) effects of investment and the induced effects as incomes earned by workers are spent in the local economy. A medium multiplier factor is assumed, which is 1.3 at the Pembrokeshire level.

Summary of net additional economic impacts

12.111 The assumptions outlined above are applied to the gross direct impacts to derive net additional impacts at the Pembrokeshire level.

12.112 It is estimated the development will generate 288–975 FTE jobs for Pembrokeshire, supporting £10.1 million–£33.6 million in wages and £16.7 million–£53.6 million in GVA annually.

Table 12.23 – Summary of net additional economic impacts

Impact	Total
FTE jobs	288–975
Wages	£10.1–£33.6 million
GVA	£16.7–£53.6 million

Source: HJA analysis

- FTE Jobs: It is estimated the Proposed Development will generate 288–975 FTE jobs for the Pembrokeshire economy. On the basis of the figures for total employment in Table 12.11, this is approximately 0.6%–2.0% of total employment in Pembrokeshire. It is difficult to make a clear comparison with employment in the energy sector in Pembrokeshire, as the 'energy sector' in this case involves a gamut of sectoral activity, from design and R&D, through to manufacturing, installation, maintenance and more. However, using the employment figures in Table 12.8 for the Energy, Manufacturing, Transport and Storage, and Professional, Scientific and Technical Activities sectors suggests the FTE jobs associated with the Proposed Development will account for approximately 5%–16% of employment in these sectors as a collective. Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be high beneficial. The effect is therefore assessed to be of moderate or major (beneficial) significance, which is significant in EIA terms. The effect is assessed as long term, although it should be noted the site will not be used for the stated economic activity indefinitely.

- Wages: Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be high beneficial. The effect is therefore assessed to be of moderate or major (beneficial) significance, which is significant in EIA terms. The effect is assessed as long term.

- GVA: Overall, the value of the receptor is considered to be medium and the magnitude of the impact is deemed to be high beneficial. The effect is therefore assessed to be of moderate or major (beneficial) significance, which is significant in EIA terms. The effect is assessed as long term.

Assessment of Cumulative Effects

12.113 The Cumulative Impact Assessment (CIA) takes into account the impact associated with the Proposed Development together with other projects and plans. The projects and plans selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (Table 12.24). Each project has been considered on a case by case basis for scoping in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

Table 12.24 – Summary of other projects and plans considered within the CIA

Project title	Further consideration required?	Justification
Pembroke Port Hangar Annexes	Yes	This project will deliver approximately 2,000 sq m of commercial floorspace immediately adjacent to the Proposed Development. Given the close proximity of the Hangar Annexes, there is significant overlap with the impact pathways of the Proposed Development.
Marine Energy Test Area (META)	Yes	Given that the Proposed Development is one of the elements of the PDM project as is META, there is significant overlap in the impact pathways of the other project elements.
Pembrokeshire Wave Energy Demostration Zone (PDZ)	Yes	Given that the Proposed Development is one of the elements of the PDM project as is PDZ, there is significant overlap in the impact pathways of the other project elements.
Valero Refinery CoGeneration facility	Yes	Given the relevance of co-generation to the low carbon economy, the operation of the Valero Refinery CoGeneration facility will overlap with the impact pathways of the Proposed Development.
Milford Docks Mixed-use development	No	This project is likely to have some impact on economic receptors. However, given the broad scope of this project in comparison to the very focused scope of the Proposed Development, it is difficult to establish a link between the cumulative economic impacts of both schemes. The sector-based impacts associated with the commercial floorspace element of this project are very open-ended. It is likely the employment, wage, and GVA impacts resulting from this project will fall outside the scope applied to the assessment of economic impacts in this chapter. This project is too tenuous to include as part of a cumulative assessment of economic impacts. Therefore, this project will not be considered further.
Greenlink Interconnector	No	This project has negligible impact on economic receptors. Therefore, this project will not be considered further.

Source: HJA analysis

12.114 The potential impact identified for assessment as part of the economic cumulative effects assessment (CIA) is on the operational phase impacts of jobs, wages, and GVA. These are assessed qualitatively, and in combination.

Cumulative Impact of Pembroke Port Hangar Annexes, META, and PDZ

12.115 The Pembroke Dock Marine (PDM) project comprises four separate but interrelated elements that build on an emerging energy cluster around the Milford Haven Waterway: PDI, Pembroke Port Hangar Annexes, Marine Energy Test Area (META), Marine Energy Engineering Centre of Excellence (MEECE), and Pembrokeshire Demonstration Zone (PDZ). PDI is a key element of the PDM project. MEECE is non-physical development therefore is not included as part of the cumulative assessment of effects.

Value

12.116 The employment floorspace delivered by the Proposed Development will support additional employment, and consequently additional wages and GVA, in the Pembrokeshire economy, particularly within the energy sector.

12.117 The activities of local, regional, or national renewable energy developers are likely to be more vulnerable to the absence of the PDM project. It is unlikely the same level of activity relating to specialists in device manufacturing, installation, maintenance, and decommissioning would occur in Pembrokeshire without the PDM project.

12.118 The impacts on the renewable energy sector, and particularly the marine renewables sub-sector will reach across Pembrokeshire, Wales and have potential to impact at the UK and international level. The cumulative effect here is greater than that of the Proposed Development alone.

12.119 It is reasonable to assume the PDM project will have an agglomerative effect on activity in the marine energy industry, given how specialised the sector is, and how limited testing sites are for the sector's technology. If and when such agglomerative effects are established along the supply chain is challenging to predict. It is therefore impossible to quantify the extent to which activity in Pembrokeshire will be dependent on the existence of the PDM project.

12.120 However, it is reasonable to expect that the majority of employment, wage, and GVA gains would not occur at the Wales and Pembrokeshire level without the PDM project, given the lack of sites available for marine energy related activity.

12.121 The cumulative effect here is greater than that of the Proposed Development alone. The benefits are therefore of high value. No adverse impacts are anticipated.

Magnitude

12.122 The PDM project as a whole comprises separate but interrelated elements. The PDM project has been screened into the cumulative assessment of this impact. The PDM project will build on an existing energy cluster that has grown around the Pembroke Dock area. PDM will help to nurture developing technologies, most immediately acknowledging the opportunity presented by the marine energy sector and minimise risks for investors in a sector projected to be worth £76bn by 2050[xiii].

12.123 The PDM project will provide a stimulus and locational attractor for the level of design and R&D activity within the marine renewable energy sector in Pembrokeshire, the Swansea Bay City Region and Wales. The PDM project creates the opportunity to attract new and existing developers to locate part or all their operations within Pembrokeshire and Wales as well as supporting the growth

of developers already located in the area. The cumulative effect of the PDM project as a whole will be to attract more developers to locate part or all of their design and R&D operations within Pembrokeshire and Wales and provide greater levels of support for developers already located in the area.

12.124 PDM project will also require specialists in manufacturing, installation, maintenance, and decommissioning. Device deployment, inspection and maintenance, and retrieval will also place additional demands on the seaborne haulage sector. It is likely that developers will locate jobs relating to device deployment activity in Pembrokeshire, whether office-based analysts or field engineers.

12.125 The cumulative effect of the combined PDM project elements will be to: attract more developers to locate part or all of their design and R&D operations within Pembrokeshire and provide greater levels of support for developers already located in the area; attract more developers and supply chain activities to locate part or all of their installation, operation and maintenance, and decommissioning related operations within Pembrokeshire and Wales; and provide greater levels of support for elements of the supply chain already located in the area.

12.126 The PDM project will establish Pembrokeshire as one of a limited number of locations in the UK with a combination of test sites, co-located workspace, and business support. The cumulative effect of co-locating these marine energy related projects in Pembrokeshire will be to encourage the agglomeration of the renewable energy sector, and the marine energy sector in particular, in Pembrokeshire. This will provide a complementary set of infrastructures and enabling support to create the conditions for the sector to grow. The PDM project therefore presents a clear opportunity for Pembrokeshire to be firmly established as one of the UK's primary locations for marine energy R&D and production as the sector grows.

12.127 This will lead to the creation of more new employment opportunities and greater levels of wage and GVA growth. These effects could be substantial in comparison to the current size of the marine energy sector in Pembrokeshire and Wales, although they might appear muted in contrast to total levels of employment in Pembrokeshire.

12.128 The magnitude is considered as medium beneficial and long term.

Significance

12.129 Overall, the value of the receptor is considered to be high and the magnitude of the impact is deemed to be medium beneficial. The effect is therefore assessed to be of moderate or major (beneficial) significance, which is significant in EIA terms.

Cumulative Impact of Valero CoGeneration Facility on Operational Phase Impacts

Value

12.130 The employment floorspace delivered by the Proposed Development will support additional employment, and consequently additional wages and GVA, in the Pembrokeshire economy, particularly within the energy sector.

12.131 The development of the Valero CoGeneration Facility is also likely to contribute towards additional employment, wages, and GVA activity in the Pembrokeshire economy, especially the energy sector.

12.132 However, although the Valero CoGeneration Facility contributes to the low carbon economy, it does not share the renewable energy credentials of the Proposed Development. As such, the cumulative effect here is somewhat greater than that of the Proposed Development alone, but the benefits cannot be valued as anything more than low. No adverse impacts are anticipated.

Magnitude

12.133 The cumulative effect of the Proposed Development and the Valero CoGeneration Facility will be to support more jobs in the low carbon economy in Pembrokeshire and provide greater levels of support for elements of the supply chain already located in the area.

12.134 The growing low carbon economy will establish Pembrokeshire as nationally significant location in the transition to cleaner energy production. The cumulative effect of co-locating these low carbon energy related projects in Pembrokeshire will be to encourage the agglomeration of the low carbon energy sector in the area.

12.135 This will lead to the creation of more new employment opportunities and greater levels of wage and GVA growth.

12.136 The magnitude is considered as low beneficial and long term.

Significance

12.137 Overall, the value of the receptor is considered to be low and the magnitude of the impact is deemed to be low beneficial. The effect is therefore assessed to be of negligible or minor (beneficial) significance, which is not significant in EIA terms.

Inter-relationships

12.138 It is not considered that any inter-relationships exist between economics and other topics within the ES that require specific assessment. It should be noted the job creation figures have been used to inform the transportation assessment and, in turn, traffic data has been used to inform both the noise and air quality assessments.

Summary of Effects

12.139 This chapter has presented the existing economic baseline in Pembrokeshire. This establishes the strong presence of the energy sector in Pembrokeshire, which is currently heavily reliant on oil and gas resources. The future baseline scenario presented in this chapter points towards the need for the energy sector in Pembrokeshire to diversify towards renewable sources of energy, with the Proposed Development providing an opportunity to exploit one possible avenue of diversification.

12.140 Table 12.25 summarises the assessment of effects on economic receptors associated with the Proposed Development. The assessment of significance of effects has determined that the Proposed Development is likely to have a beneficial effect on economic receptors, ranging from Moderate to Major significance.

12.141 On the basis of the impacts assessed in this chapter, there are no additional monitoring or mitigation measures required to minimise, reduce or offset the possible effects on the receiving environment i.e. the economy. The integrated package of measures around PDM as a whole provides the range of supporting activity to maximise the beneficial effects on the Pembrokeshire economy.

Table 12.25: Summary of Likely Environmental Effects on Economic Conditions

Receptor	Value of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Construction phase							
Jobs (person years)	Medium	65–98 jobs (person years), annually	Medium term	Medium	Moderate beneficial	Significant	
Wages	Medium	£2.0–£3.0 million wages, annually	Medium term	Medium	Moderate beneficial	Significant	
GVA	Medium	£5.2–£7.8 million GVA, annually	Medium term	Medium	Moderate beneficial	Significant	
Operational phase							
FTE jobs	Medium	288–975 FTE jobs, annually during site operation	Long term	High	Moderate or major beneficial	Significant	
Wages	Medium	£10.1–£33.6 million wages, annually during site operation	Long term	High	Moderate or major beneficial	Significant	
GVA	Medium	£16.7–£53.6 million GVA, annually during site operation	Long term	High	Moderate or major beneficial	Significant	

References

Articulated Wind Column (AWC) (2016) Summary Report, Department for Energy and Climate Change

Carbon Trust (2018) Future Potential for Offshore Wind in Wales

MEW (2019) State of the Sector 2019: Economic Benefits for Wales

MHPA (2012) An analysis of economic activity dependent on the Milford Haven Waterway

Ocean Energy Forum (2016) Ocean Energy Strategic Roadmap 2016, building ocean energy for Europe

PCC (2015) STEAM Final Trend Report for 2004-2015

Non-Technical Summary

12.142 This chapter has presented the existing economic baseline in Pembrokeshire. This establishes the strong presence of the energy sector in Pembrokeshire, which is currently heavily reliant on oil and gas resources. The future baseline scenario presented in this chapter points towards the need for the energy sector in Pembrokeshire to diversify towards renewable sources of energy, with the Proposed Development providing an opportunity to exploit one possible avenue of diversification.

12.143 Table 12.25 summarises the assessment of effects on economic receptors associated with the Proposed Development. The assessment of significance of effects has determined that the Proposed Development is likely to have a beneficial effect on economic receptors, ranging from Moderate to Major significance.

12.144 The Pembroke Dock Marine (PDM) project comprises four separate but interrelated elements that build on an emerging energy cluster around the Milford Haven Waterway: PDI, Pembroke Port Hangar Annexes, Marine Energy Test Area (META), Marine Energy Engineering Centre of Excellence (MEECE), and Pembrokeshire Demonstration Zone (PDZ). PDI is a key element of the PDM project. The integrated package of measures around PDM as a whole provides the range of supporting activity to maximise the beneficial effects on the Pembrokeshire economy.

12.145 On the basis of the impacts assessed in this chapter, there are no additional monitoring or mitigation measures required to minimise, reduce or offset the possible effects on the receiving environment i.e. the economy.

[i] Analysis of Regional Gross Value Added, Regional and by Local Authority and Jobs Density, ONS
[ii] Nominal (smoothed) GVA (B) per hour worked indices; NUTS 2 and NUTS 3 subregions, ONS
[iii] Based on Table 4.8, HCA (2014) Additionality Guide, Fourth Edition
[iv] On-site activity in this assessment does not consider any activity taking place outside the 'red line'
[v] Prepared on behalf of the Port of Milford Haven, the Pembroke Dock Marine Full Business Case (Working Draft Report, 2018) assesses whether the proposed investment in Pembroke Dock Marine (PDM) represents value for money and is deliverable. The FBC covers all four elements of the PDM project, not just the PDI project.
[vi] This approach has been used to estimate an FTE at c42 hours per week. It is possible that there will be fewer actual workers operating much longer average working weeks.
[vii] Articulated Wind Column (AWC) Summary Report, Department for Energy and Climate Change (2016)
[viii] The AWC report sets out a range of potential shift working patterns which may include longer working weeks per worker. The total number of employees may therefore be lower than as stated in this analysis. However, to allow consistent comparison between options the analysis has sought to use a broadly consistent measure for one full time equivalent role.
[ix] 641 day shift workers and 342 night shift workers for the fabrication of 50 AWCs.
[x] 151 day shift workers and 141 night shift workers for the fabrication of 50 AWCs.
[xi] Turbine manufacture: SIC 2007 sector 2811 Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
Unit B: SIC 2007 sector C Manufacturing
Former Foreman's Office: SIC 2007 sector 82 Office administrative, office support and other business support activities
[xii] Turbine manufacture: SIC 2007 sector 2811 Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
Unit B: SIC 2007 sector C Manufacturing
Former Foreman's Office: SIC 2007 sector 82 Office administrative, office support and other business support activities
[xiii] Ocean Energy Forum (2016) Ocean Energy Strategic Roadmap 2016, building ocean energy for Europe