



Environmental Statement Chapter 22. Economy, Tourism and Recreation

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22.0 Economy, Tourism and Recreation

22.1 Introduction

22.1.0.1 This Chapter of the Environmental Statement (ES) assesses the potential socio-economic impacts at local and regional levels of the Swansea Bay Tidal Lagoon ('the Project') in terms of the economy, tourism and recreation. The Chapter also assesses the extent to which the Project conforms to relevant socio-economic planning policy at appropriate spatial levels. The Chapter comprises:

- i. An economic impact assessment, including employment impact on the labour market and additional local spending; and
- ii. A review of other relevant socio-economic impacts, including the impact on recreation and leisure provision and tourism within the local area.

22.1.0.2 This Chapter describes the national, regional and local planning policy context; the assessment methods used; the baseline conditions; the potential direct, indirect and induced impacts during the construction, operation and decommissioning phases of the Project; the wider socio-economic impacts of the Project; and presents mitigation measures for any adverse effects identified. Residual effects are then considered following the implementation of mitigation and any impacts of moderate or major significance will be referred to as the likely significant environmental effects. Cumulative and in-combination effects of the Project are also considered.

22.2 Legislation, planning policy and guidance

22.2.1 *Planning Policy Wales*

22.2.1.1 Planning Policy Wales (PPW) (WG, 2012a) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), circulars and policy clarification letters, and these documents together comprise national planning policy for the area in which the Project is situated.

22.2.1.2 Chapter 7 of PPW sets out the Welsh Government's economic development objectives. These are to support economic and employment growth alongside social and environmental considerations within the context of sustainable development. This is to be achieved by encouraging local authorities to facilitate the provision of sufficient land required by the market, except where there are good reasons to the contrary.

22.2.1.3 In promoting economic growth, as set out within Chapter 7 of PPW, local planning authorities should aim to steer economic development to the most appropriate locations, rather than to prevent or to discourage such development.

22.2.1.4 Chapter 11 of PPW outlines the Welsh Government's development objectives for Tourism, Sport and Recreation. Principally, the Government's objective for tourism is to encourage sustainable tourism within Wales through promoting local prosperity and protecting natural and cultural heritage. Tourism within Wales is to be encouraged in ways which enable it to contribute to economic development, conservation, rural diversification, urban regeneration and social inclusion.

22.2.1.5 With regard to sport and recreation, the Welsh Government aims to promote social inclusion and improved health and well-being, by ensuring that everyone (including children and young people, the elderly and those with disabilities) has easy access to the natural environment and to good quality, well-designed facilities and open space.

22.2.1.6 Chapter 11 of PPW also states that development plans should contain clear policies for the provision, protection and enhancement of tourism, sport, recreation and leisure facilities.

22.2.2 Technical Advice Notes

22.2.2.1 Technical Advice Note (TAN) 16: Sport, Recreation and Open Space (WAG, 2009) advises on the role of the planning system in making provision for sport and recreational facilities and informal open space, as well as protecting existing facilities and open spaces in urban and rural areas in Wales.

22.2.3 Local planning policy

22.2.3.1 Since April 1996, Wales has been divided into 21 local unitary authority areas. Twelve of these, including Swansea and Neath Port Talbot, are in the South-East Wales Region. As with the other authorities in this region, the City and County of Swansea Council (CCSC) and Neath Port Talbot County Borough Council (NPTCBC) are each currently preparing a Local Development Plan (LDP). However, until the full adoption of the LDPs, the existing Unitary Development Plans (UDP) remain in force.

22.2.4 City and County of Swansea Council Unitary Development Plan, 2008

22.2.4.1 The CCSC UDP was adopted in November 2008. The UDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within the City and County up to 2016. The UDP is based on sustainable planning principles. This is reflected in its spatial strategy and overall approach to the pattern, form and distribution of new development. The strategic policies of the UDP are to:

- i. Create a quality environment;
- ii. Develop the economy;
- iii. Provide homes and community facilities;
- iv. Use resources efficiently; and
- v. Improve accessibility.

22.2.4.2 Policy R11: Renewable Energy is relevant to the Project. It states that the provision of renewable energy sources will be permitted provided:

- I. The social, economic or environmental benefits of the scheme in meeting local and national energy targets outweigh any adverse impacts;
- II. The scale, form, design, appearance and cumulative impacts of proposals can be satisfactorily incorporated into the landscape, seascape or built environment and would not significantly adversely affect the visual amenity, local environment or recreational/tourist use of these areas;
- III. There would be no significant adverse effect on local amenity, highways, aircraft operations or telecommunications; and

- IV. There would be no significant adverse effect on natural heritage and the historic environment.

22.2.5 City and County of Swansea initiative – Beyond Bricks and Mortar

- 22.2.5.1 The Beyond Bricks and Mortar initiative¹, started in 2009, aims to ensure that members of the Swansea community, especially young people and those who have been out of a job for some time, are given opportunities of meaningful training and employment.
- 22.2.5.2 The initiative has arisen from the Swansea 2020 Economic Regeneration Strategy (City and County of Swansea (2010)) specifically addressing the issues of deprivation in Swansea linked to low income and low levels of employment. It is designed to bring added value to the delivery of physical regeneration projects and other Council contracts.
- 22.2.5.3 Social benefit clauses are requirements made of a development or a contract that would not normally include them as a defined or measured outcome. These clauses can be included to influence the following areas:
- i. targeted training and recruitment, e.g. long term unemployed;
 - ii. supply chain initiatives, committing to local sourcing;
 - iii. community consultation (considerate contractors);
 - iv. contributions to education;
 - v. promotion of social enterprises; and
 - vi. environmental benefits during works and at completion.

22.2.6 Neath Port Talbot County Borough Council Unitary Development Plan, 2008

- 22.2.6.1 The NPTCBC UDP was adopted in March 2008. The purpose of the document is to guide development, conservation and the use of land within the County Borough for the fifteen years from 2001 to mid-2016. The following policies relate to the economy, tourism and recreation:
- 22.2.6.2 Policy 9: The diversification and strengthening of the local economy will be encouraged through tourism-related proposals and, in particular, those which seek to promote social inclusion and more environmentally sustainable practices.
- 22.2.6.3 Policy 17: Provision for sport, recreation and open space will be protected and enhanced by:
- I. Encouraging new and enhanced provision provided no unacceptable impacts would be created; and
 - II. Encouraging and promoting the appropriate improvement of opportunities for access to and enjoyment of the coast and the countryside.
- 22.2.6.4 Policy RO4: Access to the Countryside and Coast. Proposals that improve and extend access to the countryside and coast will be supported. Proposals should take into account of the following: *'No unacceptable impacts being created on the landscape, seascape, biodiversity or built environment'*.

¹ <http://www.swansea.gov.uk/index.cfm?articleid=43938>

- 22.2.6.5 Policy 18: The Plan will encourage the best and most efficient use of infrastructure and resources, but proposals which would place unacceptable demands on existing and programmed resources and facilities will be resisted.
- 22.2.6.6 Policy 19: Opportunities to create energy from renewable resources will be encouraged provided that unacceptable impacts are not created.
- 22.2.6.7 Policy IE6: Renewable energy. Proposals for the creation of renewable energy will be supported provided that their impacts are acceptable and where appropriate they include measures to reinstate the land.

22.3 Methodology

22.3.1 Introduction

- 22.3.1.1 This section presents the methodology used to undertake the socio-economic assessment. The methodology and study area used within this assessment were informed by comments received from consultation undertaken on the Project as described in Chapter 2 of this Environmental Statement, knowledge of the local area and professional judgement. Fuller details of the consultation responses are given in the Consultation Report that forms part of and accompanies the application for development consent in respect of the Project.
- 22.3.1.2 This ES proceeds on the basis of the outline construction programme as discussed in Chapter 4, Section 4.5.2, which anticipates construction starting in 2015 and with the main construction lasting for about three years. The assessments contained in this chapter are not materially sensitive to works commencing within the anticipated validity of the DCO, which is five years, or to an extension of (say) a further year-or-so.

22.3.2 Assessment methodology and significance criteria

- 22.3.2.1 The following assessment seeks to establish the potential economic and social impacts of the Project and assess these against current baseline conditions. The impacts of the Project are considered at varying spatial levels according to the nature of the impact considered. This approach is consistent with English Partnerships Guidance 'Additionality Guide, A Standard Approach to Assessing the Additional Impact of Projects, 3rd Edition' (2008). It remains appropriate to use the English Partnerships approach because it is considered the 'industry standard' approach to measuring the additional economic impacts of interventions in the UK context and is consistent with the HM Treasury 'Green Book'.
- 22.3.2.2 The principal labour market is commonly known as the Travel to Work Area (TTWA) and has been defined by the Office for National Statistics (ONS) through analysing 2001 Census data². The TTWA relevant to this assessment is defined as Swansea Bay and includes the local authority areas of Swansea and Neath Port Talbot as well as Llanelli and Ammanford which are within Carmarthenshire. Although the 2001 census data is now dated it is considered an appropriate TTWA as it still represents the principal labour market catchment area. The TTWA comprises the principal study area for assessment of the Project on the socio-economic resource.

² Census 2001 data has been used in this assessment as Travel to Work data from the 2011 Census has not yet been released.

- 22.3.2.3 Impacts on social, community and recreational infrastructure are assessed by various geographical impact areas, according to the most up-to-date / recent socio-economic data or policy available. Table 22.1 presents the different components of the assessment and the geographical scale at which they are assessed. For the purpose of this assessment “Swansea Bay” is the geographical area extending from Mumbles Head in the west to the southern edge of Port Talbot. The study area for the economic, tourism and recreation assessment covers Swansea and Neath Port Talbot as these two areas are the main urban and coastal areas.

Table 22.1 Potential socio-economic impacts and geographical scale of assessment

Impact	Geographical Area of Impact	Rationale for Impact Area
Employment generation during the construction phase (direct, indirect and induced impacts)	Swansea Bay*	Travel to Work Area, Census 2001
Employment generation during the operational phase (direct, indirect and induced impacts)	Swansea Bay	Travel to Work Area, Census 2001
Additional local spending	Swansea Bay	Travel to Work Area, Census 2001
Impact on tourism	Swansea and Neath Port Talbot Bay	Local authority area
Impact on recreational infrastructure	Swansea Bay (potentially National)	A tourist destination with recreational facilities which would be locally routinely used with potential for hosting more significant national events.
Impacts on Mariculture	Swansea Bay	Travel to Work Area, Census 2001
Impacts on Arts and Education	Swansea Bay	Local authority areas (Swansea and NPT)
Impact on fishing	Swansea Bay	Local authority areas (Swansea and NPT)
Impact on Swansea University Campus (SUBC)	Swansea Bay	Local authority areas (Swansea and NPT)

*Note: Swansea Bay catchment includes Swansea, Neath Port Talbot, Llanelli and Ammanford.

22.3.3 Significance criteria

- 22.3.3.1 In this Chapter, reference to policy objectives³ where appropriate and expert judgement are used to assess the scale of significance of the impacts of the Project on socio-economic and tourism receptors against baseline conditions. The magnitude of an impact is its severity (in the case of adverse impacts) or scale (Table 22.2). The sensitivity of a receptor or resource is also factored into the assessment of significance. This is explained further below and at Table 22.3. The magnitude of an impact on a receptor reflects consideration of information and analysis relating to:

³ For example, local planning policy objectives seeking to boost local employment

- i. Spatial extent (localised/isolated versus widespread with potential secondary effects, having regard to published standards, where existing);
- ii. Extent/Scale (number of groups and/or people, households or businesses affected);
- iii. Duration (short term (less than 12 months), medium term (1 – 5 years) and long-term (+ 5 years) impacts);
- iv. Permanency of the impact;
- v. Likelihood of the impact occurring;
- vi. The scope for mitigation; and
- vii. Value of the resource.

22.3.3.2 The complexity of interactions between the above factors when impacting on socio-economic receptors means that it is difficult to set out precise quantitative measures. However, based on professional judgement the following impact magnitude criteria are shown at Table 22.2 below.

Table 22.2 Socio-economic impact magnitude criteria

Impact magnitude	Definition
Major	An impact that will be very severe/beneficial or very likely to affect large numbers of people, businesses or groups usually anticipated at a Swansea-wide or sub-regional level, and/or will continue beyond the project life and effectively constitutes a permanent, long term impact on the base case conditions.
Moderate	An impact that will be likely to affect a moderate number of people, businesses or groups in the wider local area (e.g. Swansea-wide), and/or will continue beyond the project life so that there is an effect on the base case experienced for a medium to long term duration.
Minor	An impact that may affect a small number of people, businesses or groups in the local authority area and does not extend beyond the life of the project so that the base case is not affected beyond a short or medium term duration.
Negligible	An impact that is temporary in nature and is unlikely to measurably affect the wellbeing of people or a lower value resource so that the existing base case remains constant.

22.3.3.3 Guideline criteria have also been established using professional judgement to determine the sensitivity of the receptors. Receptor in this context means a person or entity that experiences the impact. This is shown in Table 22.3 below.

Table 22.3 Socio-economic and tourism receptor value/sensitivity criteria

Receptor value and/or sensitivity	Definition
High	Individuals, businesses or groups who are already at risk and that have little or no capacity to experience the impact without incurring a significant economic loss (or gain), loss (or gain) of access to a social or economic resource, or loss (or gain) of amenity; or Resources that are scarce and not easily re-provided within an accessible distance.
Medium	Individuals, businesses or groups that have a limited or average capacity to experience the impact without incurring a significant economic loss (or gain), loss (or gain) of access to a social or economic resource, or loss (or gain) of amenity ⁴ ; or Resources that are available elsewhere within an accessible distance.
Low	Individuals, businesses or groups that generally have adequate capacity to experience impacts without incurring a significant economic loss (or gain), loss (or gain) of access to a social or economic resource, or loss (or gain) of amenity; or Resources that are abundant and for which there are readily available alternatives nearby that are readily accessible.

22.3.3.4 The significance of a socio-economic and tourism effect is a product of the likely magnitude of the impact and the likely sensitivity of the socio-economic or tourism receptor. The criteria for judging the significance of effects is based on professional judgement.

22.3.3.5 The overall significance of effect is shown in Table 22.4 below. Impacts that are 'moderate' or 'major' are regarded as being significant for the purposes of this assessment..

Table 22.4 Socio-economic and tourism significance of effect

Significance		Sensitivity of Receptor		
		High	Medium	Low
Impact magnitude	Major	Major adverse/beneficial – significant	Major adverse/beneficial – significant	Moderate adverse/beneficial – significant
	Moderate	Major adverse/beneficial – significant	Moderate adverse/beneficial – significant	Minor adverse/beneficial – not significant
	Minor	Moderate adverse/beneficial – significant	Minor adverse/beneficial – not significant	Negligible – not significant
	Negligible	Minor adverse/beneficial – not significant	Negligible – not significant	Negligible – not significant

⁴ Amenity in this context is defined as a resource that provides enjoyment to an individual such as a park, seafront, restaurants, etc.

22.4 Baseline conditions

22.4.0.1 This section establishes the current baseline with regard to the following characteristics relevant to the Project for the TTWA and the Project Area itself:

- i. Project Area;
- ii. Population;
- iii. Skills and education;
- iv. Labour force and employment;
- v. Occupational profile;
- vi. Commercial and recreational fishing;
- vii. Recreation and leisure provision; and
- viii. Tourism.

The Project Area

22.4.0.2 Components of the Project are situated within and adjacent to the Port of Swansea, which provides berths and facilities for different cargo types ranging from handling of bulks, minerals and ores, as well as forestry products. The Port is accessed via the River Tawe dredged channel and it has three docks, the King's and Queen's Dock and the Prince of Wales dock. There are dry dock facilities at the mouth of King's Dock. The port can handle vessels up to 30,000 deadweight tonnage (DWT).

22.4.0.3 Figure 22.1 shows the Port in more detail.



Source: ABP (2013)

Figure 22.1 Port of Swansea context map

- 22.4.0.4 The Port of Swansea has previously provided a Roll-on, Roll-off ferry service to Cork in the Republic of Ireland. In 2006, the ferry service ceased operations, but there were campaigns in 2008 for its reinstatement. In March 2010, the ferry services resumed, but due to rising fuel costs (it is understood)⁵, services ceased again in April 2012. The ferry service is still not in operation, although a linkspan, berths and other facilities remain in situ. These facilities, and, therefore, any subsequent reinstatement of the ferry service, will not be affected by the Project.
- 22.4.0.5 The area of dock immediately adjacent to the Project is Queen's Dock. This was built to handle imports for the nearby oil refinery at Llandarcy and Baglan Bay chemicals works. The land adjacent to the Queen's Dock oil terminal was used for oil / chemical tank storage, prior to transfer of these products to the former refinery and chemical works (see Chapter 18: Land Quality and Hydrogeology). However, since the oil refinery and chemical works ceased operations, all former storage tanks and above ground infrastructure has been removed. The Queen's Dock now has limited use for shipping and is now used as a shellfish production area with seed mussels grown on long lines for harvesting. Thomas Shellfish Ltd, the company that operates shellfish production in Swansea Bay, has been in operation here for over 20 years⁶.
- 22.4.0.6 Immediately adjacent to the Port, on its northern boundary, is Swansea's SA1 development. The SA1 development comprises the re-development of brownfield land into business, residential and leisure related facilities. This area also ties into the maritime quarter waterfront development located to the west of the Port on the west of the River Tawe.
- 22.4.0.7 The eastern landfall of the Lagoon seawall is to be located adjacent to the new Swansea University Bay Campus (SUBC), which is within the administrative area of NPTCBC. The site currently comprises an area of vacant land, the majority of which was formerly in industrial use by BP as a transit oil tank farm for the storage of liquid petroleum hydrocarbon. A small proportion of the southern part of the site, measuring approximately 3 hectares, is sand dune. The SUBC, of which Phase 1 construction commenced in May 2013, will provide an opportunity for Swansea University to expand in order to provide key facilities for more effective teaching and learning, research, innovation and to promote better links with business. Once completed, the campus will contain residential accommodation for up to 4,000 students and provide academic facilities for approximately 5,100 undergraduate and postgraduate students.
- 22.4.0.8 Chapter 15: Onshore Transport describes the existing public transport network serving the area. Bus services operate regularly in the vicinity of the Project, with 12 services operating along Fabian Way, Elba Crescent or Baldwin's Crescent. All of these services start from Swansea Bus Station and travel between Swansea and various towns and villages to the east. Service 7 runs between Swansea Bus Station and Swansea Marina. The nearest bus stops to the site of the Project are on Fabian Way, near the junction with Wern Terrace, at a distance of approximately 3.7km, via Bevans Row and the new Lagoon access road. There is a pedestrian overbridge crossing Fabian Way providing access to the eastbound stop. The second location is near the SUBC, to the east of Junction 4. The bus stop near the SUBC is approximately 950m from the perimeter cycle and footpath that will run around the Lagoon, approximately 3.3km from the western landfall, and is presently accessed from Fabian Way via Baldwin's Bridge. The Park & Ride facility is

⁵ Source http://en.wikipedia.org/wiki/Swansea_Cork_ferry

⁶ source: <http://thomasshellfish.co.uk/Story.php>

located just to the north of Fabian Way at the same location. An average walking speed of approximately 1.4 m/s is generally assumed for pedestrians. This equates to approximately three miles per hour. The Western Landfall is therefore a 44 minute walk from the bus stops close to the Park and Ride junction on Fabian Way. From the bus stops near the SUBC site it is an 11 minute walk to the perimeter cycle and footpath, and a 39 minute walk to the Western Landfall.

Population

- 22.4.0.9 The population of Swansea has increased from 223,301 in 2001 to 239,023 in 2011 (ONS 2011a), an increase of 6.6% over the 10-year time period. This is a somewhat higher rate of growth than recorded for Wales as a whole (5.2%) and comparable with Great Britain (6.5%) over the same period.

Skills and education

- 22.4.0.10 In 2012, the workforce of Swansea had skills levels broadly comparable to Wales and Great Britain as a whole. The proportion of the workforce qualified to National Vocational Qualification (NVQ) Level 3 (see glossary) in Swansea (55.3%) is slightly above that recorded within Wales as a whole (51.7%) and comparable to that within Great Britain (55.1%). The proportion of Swansea's workforce with no qualifications (10.7%) is slightly below that within Wales (11.4%) but is slightly higher than within Great Britain as a whole (9.7%) (ONS, 2012b). Details are presented in Table 22.5 below.

Table 22.5 Workforce qualifications (2012)

Qualifications	Swansea		Wales	Great Britain
	No.	%	%	%
NVQ4+	49,100	32.8	30.3	34.4
NVQ3	82,800	55.3	51.7	55.1
NVQ2	108,200	72.3	69.7	71.8
NVQ1	125,500	83.8	82.0	84.0
Other Qualifications	8,200	5.5	6.6	6.3
No Qualifications	16,000	10.7	11.4	9.7

Source: Nomis (2013), Annual Population Survey 2012 (ONS, 2012b)

Labour force and employment

- 22.4.0.11 As shown in Table 22.6 below, in 2012, the working age population (classified as people aged 16-64) of Swansea who were economically active stood at approximately 105,100 (70%). This is slightly lower than in both Wales (73.5%) and Great Britain (76.9%) (ONS, 2012c).
- 22.4.0.12 The economic activity rate within Swansea has varied over the last few years, with economic activity rates fluctuating more so than the averages within Wales and Great Britain. Economic activity rates within Swansea were comparable with Wales as a whole in 2007, although they reached a low in 2010. Whilst they have increased slightly in 2012 they still remain below the averages for Wales and Great Britain.

Table 22.6 Economic activity (2007-2012)

Year	Swansea		Wales	Great Britain
	No.	%	%	%
2007	107,800	73.5	73.2	76.5
2008	106,100	71.8	73.2	76.7
2009	105,800	71.2	72.6	76.7
2010	99,400	66.6	72.5	76.2
2011	104,300	69.5	72.9	76.3
2012	105,100	70.0	73.5	76.9

Source: ONS (2013), Nomis Labour Market Statistics, Annual Population Survey 2011 (ONS, 2011b)

- 22.4.0.13 Between 2011 and 2012, unemployment has decreased slightly in Swansea, Wales and Great Britain. In January 2012, the number of working age (16-64 years old) people claiming Job Seekers Allowance (JSA) in Swansea was reported at 5,630 (3.7% of the workforce), whilst in Wales 4.3% of the workforce were JSA Claimants. In January 2013, in Swansea, numbers had fallen to 5,260 (3.4% of the workforce) and 4.2% in Wales as a whole. Over the same period, JSA Claimants fell from 4% to 3.8% in Great Britain.

Occupational profile

- 22.4.0.14 The occupational profile for the Swansea area is broadly similar to Wales and Great Britain as a whole. Details are provided within Table 22.7.
- 22.4.0.15 According to the 2012 Business Register and Employment Survey (BRES), 4,113 people are employed within the construction sector in Swansea. The figure for Wales according to the ONS is 51,286 (NOMIS, 2012).
- 22.4.0.16 Comparably, Swansea employs a somewhat greater proportion of people in Public Administration and Defence (11.6%) than within Wales (7.6%) and significantly more than within Great Britain as a whole (5.0%). Employment in Health (17.5%) is also higher than the national average (16.5% for Wales and 13.4% for Great Britain).

Table 22.7 Employment by occupation - broad industrial groups (2012) (Top 6 sectors)

Occupation	Swansea		Wales	Great Britain
	No.	%	%	%
Health	17,329	17.5%	16.5%	13.4%
Retail	11,772	11.9%	11.6%	10.2%
Public Administration & Defence	11,507	11.6%	7.6%	5.0%
Education	10,308	10.4%	10.7%	9.5%
Accommodation and Food Services	7,303	7.4%	7.5%	6.8%
Business Administration & Support Services	7,036	7.1%	6.0%	8.3%

Source: Nomis (2013), Business Register and Employment Survey 2012 (NOMIS, 2012).

- 22.4.0.17 Table 22.6 suggests that Swansea has suffered relatively more during the recent economic downturn (since 2008) than the rest of Wales and Great Britain. This could be because Swansea has a greater reliance on public sector employment than the other two areas (as shown in Table 22.7), which as an employment sector has been more significantly affected by the UK Central Government efforts to reduce budget deficits. This suggests that greater diversification of the local employment base would generate benefits to the local economy.

- 22.4.0.18 Chapter 14: Navigation and Chapter 9: Fish, including Recreational and Commercial Fisheries further discuss commercial fishing, examining catches and vessel movements within the vicinity of the Project. However, high level baseline data on the fishing industry in Wales is provided below. Recreational fishing interests on rivers beyond the waters of the Bay itself, such as those located along the Rivers Tawe and Neath are also discussed in detail in Chapter 9: Fish, and are addressed further below.
- 22.4.0.19 As shown in Table 22.8, the fishing industry in Swansea and Neath Port Talbot represents a marginal proportion of employment (employees and proprietors). According to the latest available BRES data, employment in fishing occupations in Swansea and Neath Port Talbot in 2012 was 11, compared to 187 in South Wales, 514 in Wales and 9,223 in Great Britain as a whole. All areas showed an increase in employment from levels reported in 2009. Marine fishing and marine aquaculture activities account for the greatest proportion of employment in the fishing industry across both geographies.

Table 22.8 Employment within the fishing industry (2009-2012)

Fishing Occupation	Swansea NPT		South Wales		Wales		Great Britain	
	2009	2012	2009	2012	2009	2012	2009	2012
Marine fishing	1	6	104	137	218	370	4,799	6,109
Freshwater fishing	0	0	3	9	*	11	134	252
Marine aquaculture	0	5	15	27	61	92	1,805	1,971
Freshwater aquaculture	0	0	27	14	40	41	832	891
Total	1	11	149	187	319	514	7,570	9,223

Source: Nomis (2013), Business Register and Employment Survey 2012 (NOMIS, 2012). (*disclosive figures).

South Wales includes: Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Carmarthenshire, Merthyr Tydfil, Monmouthshire, NPT, Newport, Pembrokeshire, RCT, Swansea, VOG, Torfaen

Note: The BRES data collected by the ONS is subject to standard estimation variance. Therefore the actual figure may be marginally higher or lower than the published figure. This is especially relevant at the lower geographical level such as Swansea and NPT. Also, BRES employment data excludes certain elements of the self employed. Working owners of very small businesses not registered for VAT or PAYE are not included in the BRES estimates. This is likely to be relevant for commercial fishing as they are often small financial operations.

Commercial and recreational fishing

- 22.4.0.20 The Swansea Bay area is popular for recreational boating and fishing and a number of clubs exist around the Bay. Effects on fisheries, both commercial and recreational, are discussed further in Chapter 9: Fish, including Recreational and Commercial Fisheries. The navigation assessment (Chapter 14) presents further information about vessel movements within the Bay. This section outlines the key socio-economic aspects of commercial and recreational fishing.
- 22.4.0.21 Recreational fishing from charter and private boats occurs within the Project Area, particularly during the summer months, targeting both flatfish (e.g. plaice and dab) and roundfish (e.g. bass). Swansea Marina provides berths for commercial and recreational fishing boats. Swansea Bay is important for charter boats based locally (see below) which offer fishing trips for anything from a few hours to multi day throughout the year. In winter the Bay provides sheltered fishing grounds for these charter boats and thus a limited income through the quieter months.

- 22.4.0.22 The area of Swansea Bay, the Mumbles and the Port Talbot seafront has a number of angling clubs including Brynmill and District, Swansea Angling Club, and Skewen Angling Club. These clubs have dedicated fishing lakes available at Fendrod Lake, Singleton Lake and Pond, Clyne, and Pluck Lakes. Sea fishing is also a popular pursuit from Swansea with the South West Wales Association of Sea Angling Clubs as a focal point for clubs and individuals in the area. Founded in 1981, one of their key objectives is to try and prevent the rapid decline of the fish stocks namely to “preserve in order to achieve conservation”. In this way, fishing can be enjoyed in the future by all. In addition to land-based fishing, commercial sea fishing enterprises offering charter boats include Sarah Louise Charter Fishing, Sea Jay Fishing Charters and Susan Jane Deep Sea Angling. Altogether, 9 charter boat companies are identified in Swansea on seafishingonline.com (December 2013). The majority of the charter companies operate from Swansea’s Maritime Quarter on the River Tawe.
- 22.4.0.23 The majority of the land used for the Onshore Works associated with the Project is privately owned by ABP, with no public access at present. Consultation carried out in respect of the Project has identified that, although public access for fishing off the eastern seawall of the Tawe is generally not allowed, a few clubs have permits granted by ABP, which allow limited access. Fishing can also occur off the existing western seawall to the Tawe. Some shore-based angling is known to occur where the proposed eastern seawall of the Lagoon makes landfall, which is the location of the SUBC.
- 22.4.0.24 A licence was granted in September 2013 to the Mumbles Oyster Company Ltd to lay 10,000 young oysters on a 70 acre historic oyster bed within Swansea Bay. Thomas Shellfish farm rope grown mussels (*Mytilus Edulis*) within Queens Dock, Swansea.
- 22.4.0.25 According to the findings of Chapter 14: Navigation and Chapter 9: Fish, including Commercial and Recreational Fisheries, there is little evidence that the area of Swansea Bay in which the Project would be located yields significant landings of fish and is therefore used by commercial fishing companies. It appears from their research, which includes satellite sightings from the Marine Management Organisation (MMO) and Automatic Identification System (AIS) data, that fishing vessels mainly travel out of the Port of Swansea to fishing grounds outside the study area. There are potentially some small vessels that use the area for fishing, as landings data is only required for vessels over 10 metres. However, in summary, it can be said that fishing in terms of commercial and recreational activities in the area of the Project is negligible, and its economic value to the wider economy is similarly small.
- 22.4.0.26 In addition to commercial and recreational fishing within Swansea Bay, there are a number of recreational fishing bodies along the rivers which flow into Swansea Bay in the vicinity of the Project. Those with the potential to be affected by the Project are the Rivers Tawe and Neath.
- 22.4.0.27 The assessment reported in Chapter 9: Fish, Including Commercial and Recreational Fisheries, considers the effect of the project on migratory fish species utilising rivers including the Tawe, Neath, Afan, Kenfig and Ogmore. The Ogmore was excluded from that assessment since it is hydrographically isolated from Swansea Bay tidal circulation. Effects upon the Afan and Kenfig were assessed to be very small indeed, to the extent that they are not identifiable at all. This has meant that the assessment has focussed on the behaviour of migratory species returning to the Tawe and Neath.

- 22.4.0.28 The baseline for the purposes of assessing effects upon recreational fisheries has regard to the relative performance of the fisheries in question. In this regard, reported catch records have been used. It is notable that the inter-yearly variation in the number of fish kept is significant (Table 22.9), as is the number of fish caught. Importantly, the numbers presented are not representative of the total population of the rivers in question, representing catches, and care must be taken to interpret the data, as the relationship between catch and stock size is complex.

Table 22.9 Reported catches between 2002 and 2011⁷ on the R. Neath and Tawe.

Year	River			
	Neath		Tawe	
	Reported	Returned	Reported	Returned
2002	90	44	148	56
2003	35	15	61	8
2004	73	21	155	50
2005	37	14	164	50
2006	85	48	184	72
2007	53	32	183	74
2008	99	32	195	63
2009	62	26	114	45
2010	76	30	230	105
2011	77	17	109	37

- 22.4.0.29 It is also important to note that the capacity of the River Tawe, in particular to host migratory fish populations for spawning, is affected by the presence of a physical barrier in the form of the Tawe Barrage which affects the movements of migratory fish.

Tourism

- 22.4.0.30 According to the Great Britain Tourism Survey (Visit Britain 2013) and International Passenger Survey (ONS, 2012b) in 2012 there were an estimated 10.5 million overnight trips to Wales. The vast majority (9.6 million) were generated by GB residents with the remaining being international visitors, with the four top generating countries being the Republic of Ireland, France, Germany and the USA.
- 22.4.0.31 According to the Wales Tourism Alliance, total tourism spending (direct, indirect and induced) in Wales is approximately £6.2 billion per annum (Wales Tourism Alliance, 2012). This represents a Tourism Gross Value Added (TGVA) of £2.7 billion, or 5.8% of the total GDP of the Welsh economy. Overall, 172,000 jobs are supported by this spend, which is around 12.7% of the total for Wales.
- 22.4.0.32 According to Swansea's official tourism volume and value data, the city received 4.1 million visitors in 2012, who spent £337 million in the local economy (Swansea, 2012b). It should be noted that this will include day visitors as well as overnight tourists. Altogether, this spend supported 5,400 FTE jobs.
- 22.4.0.33 Swansea, as the second largest city in Wales, is a city destination, but one which also benefits from being associated with popular coast and countryside destinations such as The Mumbles and the Gower Area of Outstanding Natural Beauty (AONB). Together, these areas support an estimated 21,000 camping and caravan bedspaces, 5,600 serviced bedspaces and 4,100 self-catering bedspaces (Swansea Tourism Statistics, 2012).

⁷ (<http://www.environment-agency.gov.uk/research/library/publications/33945.aspx>)

- 22.4.0.34 The Fabian Way Transport Assessment (Welsh Assembly Government, 2010) describes a strategy of improvements to Fabian Way transport corridor. Fabian Way is the main transport corridor to the north of the Project site. The preferred strategy includes proposals to increase capacity on the roads and bridges, improve buses and public transport and walking and cycling facilities. According to the report these proposals should be implemented over the next 25 years and could help to improve accessibility to the area, which could help to boost tourism.
- 22.4.0.35 Swansea City contains a high level of serviced accommodation stock, including large hotels (e.g. Premier Inn Waterfront (132 rooms), Mercure Hotel (120 rooms)). The city also contains the area's main conferencing facilities with Brangwyn Hall (1,070 capacity in theatre style), Liberty Stadium (450 capacity) and Swansea University (380 capacity) providing sizeable venues for meetings, conferences and exhibitions. Swansea also benefits from the Grand Theatre that showcases an annual programme of music, theatrical and comedy performances from acts of national repute. This demonstrates that, as with other major cities in the UK, Swansea has a strong business and cultural tourism market.
- 22.4.0.36 There are a number of tourist attractions located within Swansea maritime quarter, the Mumbles and Port Talbot's seafront. The main attractions are clustered in the Swansea maritime quarter (See Figure 22.2) to the west of where the western arm of the Project makes landfall. The attractions here include:
- Swansea Museum (See 1 on Figure 22.2) – reputedly the oldest museum in Wales providing a glimpse of Swansea life, past and present. Current exhibits include an Egyptian mummy, Tramway Centre, and maritime vessels on display at the adjacent pontoon;
 - National Waterfront Museum (2) – tells the story of Welsh industry and innovation over the past 300 years using interactive technology, events and exhibitions;
 - The LC Leisure Complex (3) – a multi-activity family centre with 3 core zones: The Edge (waterpark), The Core (aquatic themed interactive play area), and the Peak (fitness centre and spa);
 - The Dylan Thomas Centre (4) – a permanent Dylan Thomas exhibition that provides an insight into the life and work of Swansea's most charismatic poet; and
 - Plantasia (5) – a covered botanic garden in the centre of Swansea with tropical plant and fish species.
- 22.4.0.37 Visit Wales figures for these five attractions – as listed below in Table 22.10 – indicate that these attractions are amongst the most important in terms of visitor footfall.

Table 22.10 Visitor numbers – nearest significant tourist attractions

Attraction	Visitor numbers
LC Leisure Complex	708,180
National Waterfront Museum	256,471
Swansea Museum	118,112
Plantasia	72,740
Dylan Thomas Centre	70,247
Total	1,225,750

Source: Welsh Government (2011)

22.4.0.38 Other notable attractions in the area include:

- i. Parks and Gardens – Victoria Park (6), Singleton Park Botanical Gardens (7), Clyne Gardens (8), Brynmill Park (9);
- ii. Swansea Market (10) – large indoor market;
- iii. Swansea Castle (11) – castle which dates back to the 12th Century. Now in a ruinous state and closed to visitors (see below); and
- iv. Oystermouth Castle (12) – 12th Century castle located in Mumbles overlooking Swansea Bay.

22.4.0.39 Within the Bay itself there are two designated bathing beaches (Aberavon Beach (13) and Swansea Bay (14)) as well as a number of beaches along the coast from Mumbles and the Gower AONB, all of which have strong links to the tourist industry within Swansea. Table 22.11 presents a summary of water quality under the Bathing Water Directive (BWD)⁸ for designated bathing beaches within Swansea Bay and the Gower between 1988 and 2013. The City and County of Swansea note that “*Gower beaches easily pass the EU standards but Swansea Bay is a little more complex*”⁹. Swansea Bay bathing water is influenced by multiple sources including discharges from Waste Water Treatment Works (WWTWs) and private sewers, groundwater, Combined Sewer Outfalls (CSOs) and inputs from agricultural and urban runoff to rivers and streams. Bathing water quality is discussed in detail in Chapter 7: Marine Water Quality. In addition, the village of Mumbles sits at the south western end of Swansea Bay and is renowned as a significant tourist resort.

Table 22.11 Summary of Swansea Bay water quality under the BWD

		Year																								
Bathing Water	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
Aberafan	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	H	H	H	F	H	H	H	H	M	M	H
Swansea Bay	F	M	F	M	F	F	M	F	F	F	F	M	M	M	M	M	M	M	M	H	M	M	M	M	M	H
Bracelet Bay	M	M	M	M	M	M	M	M	M	M	M	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Limeslade Bay	M	F	M	M	M	M	F	M	M	F	M	H	M	M	H	H	H	H	H	H	H	M	H	H	H	H
Langland Bay	M	F	M	M	M	F	M	M	M	M	M	H	M	H	H	H	H	H	H	H	H	H	H	H	H	H
Caswell Bay	M	M	M	M	F	M	M	M	M	H	M	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H = Higher (Guideline Standard), M = Minimum (Imperative standard); F = Fail

22.4.0.40 Within the study area, a number of Second World War features are present, including pill boxes and a gun emplacement on the existing harbour seawall and several concrete tank blocks (used to stop tanks landing) are located close to the north-eastern edge of the Project. These are currently inaccessible to the public as they are within the restricted operational Port area. The visitor attraction, 1940s Swansea Bay, is nearby at Baldwin’s Crescent and a link to these previously inaccessible sites as part of the Project, could broaden the experience. Terrestrial Cultural heritage is discussed further in Chapter 21. Swansea Castle, which is currently not open to the public (December 2013), is undergoing restoration and renovation works to allow safe entry.

⁸ EC 76/160/EEC of 8 December 1975 concerning the quality of bathing water. This directive is to be repealed by EC 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC.

⁹ <http://www.swansea.gov.uk/index.cfm?articleid=29433> (accessed 06/12/2013)

Recreation

- 22.4.0.41 In terms of recreation, in addition to the numerous visitor attractions in close proximity to the Project, Swansea Bay and the adjacent coastal and countryside zones also benefit from the availability of recreational amenities and resources.
- 22.4.0.42 The City and County of Swansea has recently sought to maximise the potential of its key recreational and leisure assets and to increase its visitor profile to become a distinctive European City by 2020 (Swansea 2020 – Swansea’s Economic Development Strategy). In particular, a £4 million investment package was initiated in 2010 to establish Swansea Bay as a Watersports Centre of Excellence. These funds were designed to help develop a new 360 Beach and Watersports Centre (L) opposite St Helen’s, a new pontoon at Swansea Marina, and a purpose-built facility at Knab Rock that includes public toilets, showering facilities, changing rooms, an office and a tourism information distribution point. It will also lead to the refit of the historic Olga pilot cutter vessel moored in the city’s Maritime Quarter.
- 22.4.0.43 The ‘Swansea Bay for Water Sports Project’ was also established in 2012. The watersports projects, as highlighted within the tourism section of this chapter, constitute new leisure and recreation amenities which will mainly lie to the west of the study area and are intended to support a range of watersport activities such as sailing, kayaking, power boating, jet skiing and wind surfing.
- 22.4.0.44 As discussed previously there are two designated bathing waters within Swansea Bay itself (Aberavon Beach (A) and Swansea Bay (B) from Figure 22.2). In addition, there are a further seven beaches which extend along the Gower AONB to Rhossili Head (see Table 22.11 and Chapter 7: Marine Water Quality).
- 22.4.0.45 Aberafan Beach is located to the east of Swansea Bay and is a particularly popular site for surfing, windsurfing and kite surfing with Surf School Wales located on the beach offering surf tuition and equipment hire. The Welsh Surf Federation Surf School also uses Llangennith Beach on the west of the Gower AONB and Gower Kite Riders are based at The Mumbles. However, the prevailing weather and swell conditions influence the conditions at these sites, and users can generally be noted throughout the area.
- 22.4.0.46 In addition to this, Jersey Marine beach (C) lies within the study area and stretches from the River Neath estuary to Swansea Port. The foreshore has limited access and there are no formal parking areas. Access by foot is gained through Crymlyn Burrows SSSI (D) from Fabian Way either adjacent to the SUBC development, or via a tarmac track beside the "Amazon roundabout", the latter being popular for dog walkers. A creek crosses the sand dune system which also restricts access through Crymlyn Burrows to the beach. Due to the limited access, it is understood that the beach is not frequently used as a recreational amenity and it is only occasionally used by local residents, dog walkers, bait diggers or bird watchers.
- 22.4.0.47 There is no direct public access to the beach via Swansea Port or from the east, with all access to this area being controlled by Port security. The beach at this location is bounded by the Port’s rock armour breakwater wall, which is topped by a 2m concrete wall. This wall runs the full length of the Port beach frontage preventing easy access.
- 22.4.0.48 Marinas are an important amenity supporting recreational watersports. Within the study area, the main facility is the Swansea Marina set within the Maritime Quarter (E) (Figure

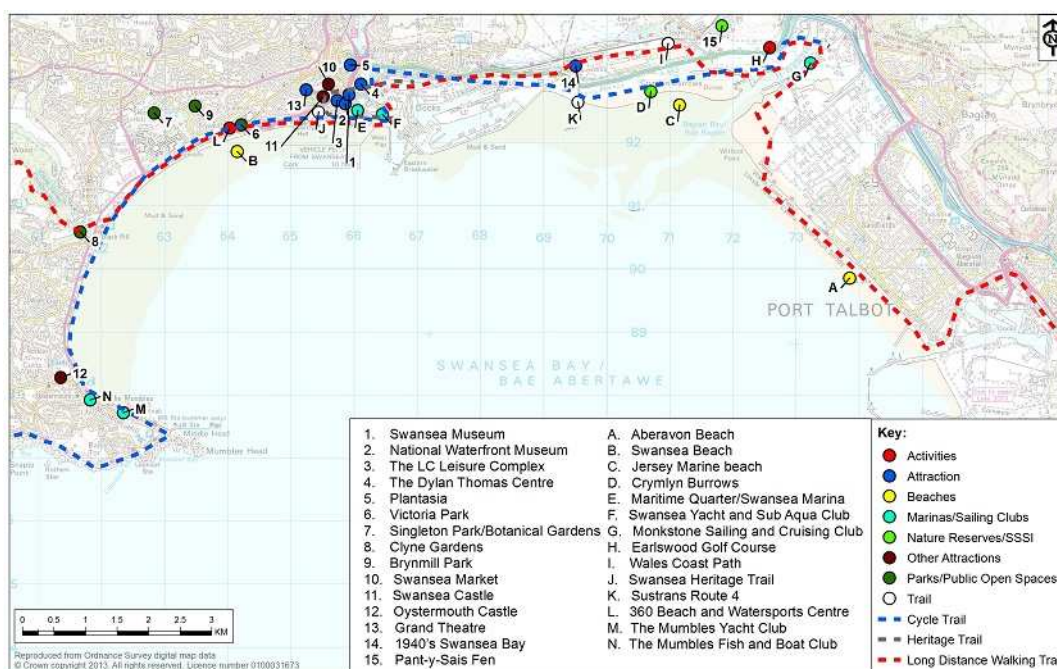
22.2). Swansea Marina itself is one of the main focal points in the Bay and it has held the Blue Flag award for environmental and water quality for a number of years. The Marina originally opened in 1982 with 385 berths, and has subsequently been expanded to accommodate 780 boats. At present the Marina accommodates about 550 permanent boats and around 500 additional visiting boats per year. The Maritime Quarter is emerging as a popular visitor hub that contains residential and retail areas and a range of cafés and restaurants.

- 22.4.0.49 Outside the main marina lock, but within the River Tawe, the Marina provides berths for a further 22 commercial fishing vessels, and approximately 200 recreational boats belonging to the Swansea Yacht and Sub Aqua Club (SYASAC) F) (Figure 22.2). The Swansea Yacht and Sub-Aqua Club has approximately 450 members ranging from yachtsmen (both cruising and racing), motor boat users, rowers, anglers, divers and social members.
- 22.4.0.50 Monkstone Sailing and Cruising Club (G) is a small marina and boat club located on the river Neath just below the M4 road bridge. This site accommodates approximately 70 small leisure craft. In addition, on the river Tawe, based in the Pill behind the East Pier, there is the Tawe Boat Club which has around 50 members and around 26 moorings.
- 22.4.0.51 Further to the west, beyond Swansea city, is the Mumbles Boat and Fishing Club. This club has around 200 members who participate in a range of sea-based activities including fishing and sailing. In addition to private boats, the club owns a 10m catamaran club boat which is kept in Swansea Marina and used for fishing trips on most weekends and at least once a week. The Mumbles Yacht Club is another important sailing amenity, and is an official RYA Training Centre. The Club is home to cruiser, dinghy, catamaran and youth sailing/racing. Also in Mumbles is the Bristol Channel Yacht Club which promotes and encourages yacht sailing and racing in the Swansea Bay and elsewhere in the Bristol Channel.
- 22.4.0.52 In terms of diving, as identified above, SYASAC are based in Swansea with their recreational boats being moored in the marina. The club also has two dive boats (RIBs) which are stored on trailers to allow both local diving, with slipway access to the bay, or diving further afield. In addition to this “Bay Divers” are also based in Swansea and identify themselves as “Swansea’s premier dive school and dive club”. In terms of dive sites in the area, there are a few within the Bay (e.g. Mumbles Pier, Swansea Pier), although with the tendency for high suspended solids in the Bay, visibility can be poor. The more popular sites for diving are around the bays and inlets of the Gower (e.g. Limeslade Bay, Langland Beach). Along this stretch there are a number of wrecks and Oxwich Bay is noted as a good diver training site¹⁰.
- 22.4.0.53 Other than water based recreation, the Bay area hosts a number of other sporting activities. Golf is a popular pastime, attracting both residents and visitors. Earlswood and Swansea Bay Golf Courses (H) are to the north of the study area, while a further five golf courses lie within the Gower AONB area.
- 22.4.0.54 Walking and cycling are also popular leisure activities pursued by both residents and visitors. The Wales Coast Path (I), which was launched in 2012, is an 870 mile route encompassing the whole of the Welsh coastal zone. In Swansea, the trail utilises the Tennant Canal Towpath which passes to the north of the study area before linking into

¹⁰ http://www.baydivers.co.uk/index.php?option=com_content&view=article&id=49&Itemid=58

the beach fronts of Swansea Bay and Aberafan Beach respectively. Another formalised walking trail is the Swansea Heritage Trail that encompasses the city centre, Maritime Quarter and part of the historic port (J). Swansea Bay, Mumbles and Gower AONB also include a collection of defined easy, moderate and challenging walks which utilise sections of the 400-miles of Rights of Way Network.

- 22.4.0.55 The area also supports a range of cycle trails on and off road. In particular, National Cycle Route 4 (K) (which also forms part of the Swansea to Glyncorrwg Loop) runs along the north of the study area along the A483 (Fabian Way).



Source: URS (2013)

Figure 22.2 Coastal recreational facilities - Swansea Bay

- 22.4.0.56 The study area only forms part of the tourism offer of the Swansea, Gower and Neath Port Talbot areas, with visitors likely to utilise other resources, assets and attractions as part of any leisure-based visit. Other commercial activities provided in the area include:

- Guided boat tours along the Swansea Bay and Gower Coast – e.g. Gower Coast Adventures;
- Go Ape! at Margam Country Park;
- Skidz Karting Ltd;
- Dryad Bushcraft;
- Teamforce Paintball & Activities Centre;
- Parc-le-Breos Pony Trekking Centre.
- Clyne Farm Riding & Activity Centre; and
- Skylines Cycles at Afan Forest Park.

- 22.4.0.57 Any new attraction needs to ensure that its offer is suitably complementary but also sufficiently different to any existing products and services that already exist.

- 22.4.0.58 The value of game angling to the Welsh and English economy has been estimated at £545 million per year¹¹, including expenditure on tackle, permits, travel and accommodation – based on an average expenditure of £682 per person. Salmon and trout fisheries are also of significant economic value.
- 22.4.0.59 In a specific study of the River Teifi in southwest Wales, the annual contribution made by salmon and sea trout anglers to the local economy (within 25 miles of the river) was estimated to be around £1 million, with a further expenditure of £50,000 in the rest of southwest Wales. It is estimated that this funds the equivalent of around 20 full-time jobs, principally in the hotel and accommodation sector. In reality, much of this work will be part-time and hence anglers' expenditure contributes to the livelihoods of many more individuals.

Future tourism and recreation vision and aspirations

- 22.4.0.60 The baseline assessment highlights that Swansea and its wider area comprise a varied visitor destination that already supports an active visitor economy. However, the vision for Swansea is for the city to become a distinctive European City by 2020, with the Council indicating that greater capacity exists to strengthen the visitor economy. This is to be achieved through new development in a series of strategically important sectors, particularly those which will strengthen the city centre (e.g. the waterfront, retail experience, attractions) and the natural assets of the Mumbles and Gower.
- 22.4.0.61 As outlined above, Swansea has recently sought to maximise the potential of its other key assets and to increase its leisure visitor profile (e.g. the Beach and Watersports Centre). In 2013, a new emphasis is being placed on supporting 'Rural Swansea' (for example, Bishopston, Pennard, Gower, Fairwood, Llangyfelach, Pontarddulais, Mawr and Penclawdd) in order to develop, enhance and protect the area's natural and cultural heritage (South Wales Evening Post, July 3 2013¹²). This is being supported by a £5 million Rural Development Programme (RDP) funded by the Welsh Government and the European Agricultural Fund for Rural Development. Emphasis is to be placed on those developments that meet the needs of Swansea's growing leisure visitor profile, with scenery/landscape sightseeing, walking and watersports considered to be vital themes to target growth.
- 22.4.0.62 Ultimately, according to the review of relevant policies and strategies the aspiration is for Swansea to support a year-round visitor economy that is suitably attractive to visitors because of its range of leisure activities and interests; and with a sufficient critical mass to encourage longer durations of stay. This is to be achieved by connecting the city centre to the sea and the wider countryside to provide a multi-faceted and high quality experience.
- 22.4.0.63 The development aspirations for tourism in Neath Port Talbot are outlined in the Neath Port Talbot Tourism Development Action Plan – 2011 to 2014 (Neath Port Talbot CBC, 2011). The overall aim is to increase the contribution that the tourism industry makes to the economy by attracting investment in tourism infrastructure. The study outlines the key assets and resources of the area, with countryside leisure pursuits – especially walking, cycling, mountain biking (Afan Forest Park) – and its close proximity to the Gower Peninsula and the Brecon Beacons being highlighted as particular strengths. The

¹¹ http://www.environment-agency.gov.uk/static/documents/Research/fisheries_eng_764655.pdf

¹² <http://www.southwales-eveningpost.co.uk/Experts-drafted-help-boost-tourism/story-19463635-detail/story.html>

coastal zone of the county, particularly Aberavon Beach, is to be promoted as a regional destination for families, with new infrastructure and brown signage being established to improve the visitor experience.

- 22.4.0.64 The association of Port Talbot, especially Aberavon Beach, with Swansea Bay is also identified as a strength for the area, with the Port Talbot and Swansea being interlinked by the Wales Coastal Path and the National Cycle Network Route 4. Port Talbot also contains a significant (24%) supply of accommodation stock for the County, predominantly in the serviced sector. With Port Talbot being largely an industrial centre, it is likely that this provision will attract a high proportion of business visitors.

22.5 Potential impacts and mitigation measures

22.5.1 Introduction

- 22.5.1.1 This section analyses the socio-economic impacts resulting from the Project relative to the baseline established in the previous section. Mitigation measures required (if any) to mitigate potential impacts are also discussed. Impacts are assessed at the three phases of the Project: construction, operation and decommissioning.
- 22.5.1.2 The Project will enclose part of Swansea Bay, from the eastern side of the River Tawe (western landfall) to the eastern edge of the new Swansea University Bay Campus (SUBC, previously known as the Science and Innovation Campus) and which is currently under construction (eastern landfall). The new seawalls that impound the Lagoon will extend approximately 1.5km directly offshore from the campus, adjacent to Crymlyn Burrows Site of Special Scientific Interest (SSSI). The seawalls will then extend in a southwest direction along the western boundary of the training wall of the River Neath Channel. A turbine and sluice gate housing will be located in the south west of the Lagoon, at an oblique angle to the dredged channel of the river Tawe. The seawall will then extend north towards Swansea Port, close to the mouth of the River Tawe parallel but off-set by 100m to the dredged channel for the River Tawe. In total, this will form an approximately 9.5km-long, U-shaped, seawall which will encompass approximately 11.5km² of the seabed, foreshore and intertidal area of Swansea Bay.
- 22.5.1.3 Access to the Project (western and eastern landfalls and supporting onshore facilities) will be from Fabian Way, the main route from the M4 into Swansea city centre, via the two (western and eastern) landfalls.
- 22.5.1.4 A route along the crest of the seawall will be open to the public for walking, running, cycling etc., a though access will be controlled outside daylight hours and in extreme weather. Facilities to allow provision of a 'water shuttle' are also proposed between the Project and the western bank of the Tawe. The Project includes visitor facilities and other embedded amenities including art, education, mariculture and sporting/recreational facilities which are discussed further below and described in detail in Chapter 4: Project Description.

22.5.2 Construction phase

- 22.5.2.1 In this section, the employment potential of construction of the Project has been considered. In addition, potential effects on tourism and recreation are identified. The estimates of construction employment are based on detailed research into the economic significance of the Project provided by the Welsh Economy Research Unit Cardiff

University. The Welsh Economy Research Unit Cardiff University report is provided in full at Appendix 22.1, Volume 3. This report notes that each of the phases in the development of any electricity generation facility supports economic activity. This occurs through the capital investment incurred in developing and constructing the installation, and the expenditure incurred in operating and maintaining it.

Potential employment generation

- 22.5.2.2 The construction of the Project will create a range of new jobs, both directly and indirectly, across a wide range of sectors and skills. The jobs provided during the construction phase (up to 3 years throughout the duration of construction period) represent a positive economic impact that can be estimated as a function of the scale and type of construction.
- 22.5.2.3 The Welsh Economy Research Unit Cardiff University estimates the economic effects of the Project associated with the construction of the Project. The headline economic effects from the Welsh Economy Research Unit Cardiff University report are as follows:
- i. The project would represent £756m¹³ of capital investment, lever in around £300m of regional spending over a three year period and result in an additional £454m of additional output in Wales;
 - ii. The development phase of the project could lead to the creation of £173m of gross value added for Wales and would lead to 5,540 person years of employment; and
 - iii. The operational phase would lead to £5m in extra output for Wales And approximately £2.2m annual GVA.
- 22.5.2.4 Potential direct and indirect employment is estimated by Welsh Economy Research Unit Cardiff University during the construction phase using a tailored Welsh economy input/output model. The Welsh input/output model contains data on similar electricity generation projects and detailed information about the Welsh economy. To estimate the economic effects of the Project, information on planned investments, for example planned investment in installation and commissioning, is input into the model. The model then estimates the output in terms of direct jobs and Gross Value Added (GVA) for the Welsh economy using tailored assumptions. This process is performed for each element of the construction process and aggregated to provide the total gross direct employment by employment sector.
- 22.5.2.5 The Welsh input/output model then follows the same process to estimate indirect jobs that are part of the local supply chain. From this it then estimates jobs in the local economy that would result from the spending of wages by direct and indirect employees. The model takes account of any displaced jobs, deadweight, or jobs that would have occurred even if the Project did not occur, and leakage of benefits outside the Welsh economy. All these elements are added together to provide the total net employment generated by the Project during the construction phase. This is shown in Table 22.12.

¹³ The Welsh Economy Research Unit (Cardiff University) report is based on a Project capital cost figure of £756m, dating from October 2013. In January 2014, the capital cost of the Project was revised to £835m.

Construction employment summary

- 22.5.2.6 Table 22.12 presents the temporary employment created by the Project in the construction phase as estimated by the Welsh Economy Research Unit Cardiff University. Employment is broken down by broad employment sector. The estimate takes account of leakage, displacement and multiplier effects. For the Project, the total net additional employment created within Swansea is estimated to be 5,540 jobs (person years) over the three years of the construction phase or an average of 1,850 jobs per year.

Table 22.12 Net construction employment in Swansea

Sector	Employment (person years over 3 year construction phase)	Average annual employment (person years)
Manufacturing & Production	1,160	387
Construction	3,450	1,150
Distribution, Retail & Hospitality	290	97
Transport & Communications	100	33
Financial & Professional Services	470	157
Other	70	23
Total Net Employment	5,540	1,847

Source: Welsh Economy Research Unit Cardiff University (2013) See Appendix 22.1, Volume 3 for further information. Information may not sum due to rounding.

- 22.5.2.7 Given the length of the construction phase (approximately 39 months), many of the jobs created would be for the duration of construction. Therefore, there would be a mix of medium and long term employment opportunities for workers. A procurement strategy is currently being developed which will focus on maximising local procurement through working with the following organisations:
- Welsh Government;
 - Confederation of British Industry & Institute of Directors;
 - CCSC and NPTCBC;
 - Chambers of commerce in Swansea, and South and West Wales;
 - Local further education facilities, such as Neath Port Talbot College; and
 - Local organisations working with long term unemployed, such as Jobs Growth Wales.
- 22.5.2.8 The strategy will be given high importance within the procurement process. So far as European law permits, it is proposed to focus on the following:
- Local employment;
 - Local / UK supply and manufacture;
 - Training and up-skilling of local workforce; and
 - Opportunities for long-term unemployed.
- 22.5.2.9 Where specialist suppliers are based outside the UK, such as turbine manufacturers, TLSB is already working with those potential suppliers in order to maximise the potential in developing a supply chain within Wales to meet TLSB's target spend of 50% in Wales, and

65% in the UK. TLSB has recruited Industry Champions, who are based in Wales, working across both mechanical and electrical disciplines to advise how best to maximise the Welsh and UK spend. Joint meetings have already been undertaken between TLSB, Welsh Government, prospective turbine suppliers and those Industry Champions, in order to conduct early scoping as to what capacity and capability Wales has in delivering against those major turbine component parts which the potential turbine suppliers will require. From here, exchange visits are planned where parties can build on early work already carried out.

- 22.5.2.10 In addition to the net construction jobs arising as a result of the Project, as identified within Chapter 3: Site Selection and Option Appraisal, there are a number of options for sourcing stone for major works from sites within the UK. Sourcing stone from within the UK would be anticipated to provide approximately 80 further jobs over the three year construction period. The current plan is to source the stone from Dean Quarry which can provide enough stone (approximately 2.8 million tonnes) for construction of the Project, as well as a second and subsequent lagoon projects (depending on the scale of those subsequent projects).
- 22.5.2.11 The impact magnitude is considered to be major given there is likely to be around 1,150 new net construction jobs and 697 wider direct and indirect jobs in the context of a relatively small labour pool of construction workers in Swansea Bay area (approximately 4,300)¹⁴. The sensitivity of workers is considered to be medium given the current economic climate, meaning that alternative employment is relatively difficult to obtain. Therefore the direct, indirect and induced employment and expenditure created by the temporary construction phase of the Project is likely to have a major beneficial, short-term effect on the Swansea economy.

Existing Site

- 22.5.2.12 As identified in Chapter 4, the Port of Swansea will form the main focal point for construction works both as access to the offshore works and to construct the onshore elements.
- 22.5.2.13 To minimise potential impacts on the Port in relation to construction traffic, subject to agreement with ABP in relation to land access and the remediation of any potential land contamination, a separate access road will be constructed between the McDonalds Restaurant (Junction off Fabian Way opposite the Park and Ride) and the Swansea Waste Water Treatment Works (see Chapter 4: Project Description and Chapter 15: Onshore Transport). This new road will then be used as the permanent Project access road. It is anticipated that this route will be available for use approximately 6 months after the start of construction. Up until such time that this alternative route is available, it would be necessary to share the current access roads into and through the Port. To access the temporary construction compounds (see below) existing access routes would need to be shared with ABP and other Port users. The new access road to the Western Landfall Building along the southern extent of Queens Dock would be built in year 2 of construction (after completion of the turbine/sluice gate structure) (see Chapter 4: Project Description for more details of Project Construction Programme).

¹⁴ Data from Welsh Economy Research Unit, Cardiff University (2013) Turning Tide: the economic significance of the Tidal Lagoon Swansea Bay (Appendix 22.1)

- 22.5.2.14 A number of temporary construction compounds have been identified within and adjacent to the Port as shown in Figure 22.3. The areas provided allow maximum flexibility for siting, whilst minimising potential effects on the Port or other users of the area. The areas are as follows:
- Area A – offices, stores, car parking, site access control and plant yard;
 - Area B (two possible locations) – concrete batching plant, stockpiling area and pre-casting yard;
 - Area C (two possible locations) – steelwork fabrication yard; and
 - Area D (two possible locations) – storage yard.
- 22.5.2.15 Where possible, the footprint of the permanent Project elements, such as public realm areas, will be used to accommodate the construction support sites appropriately.

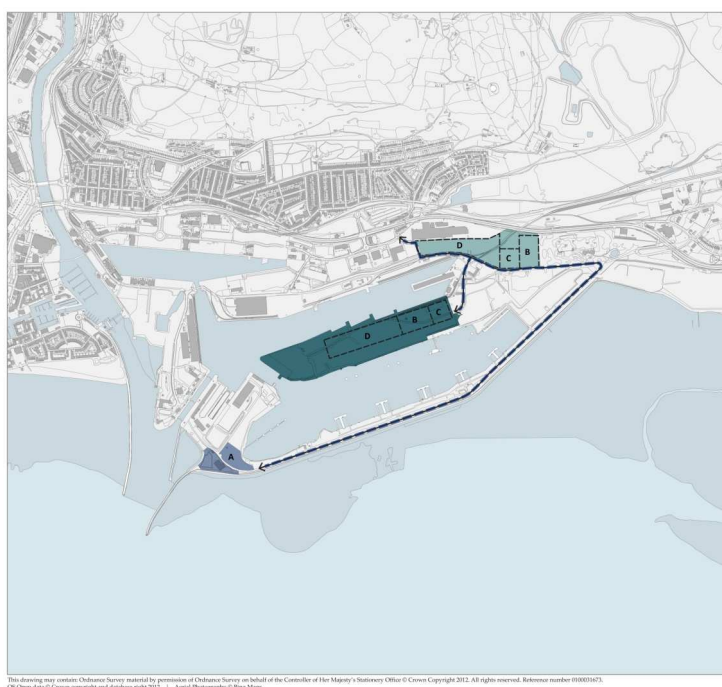


Figure 22.3 Potential locations for construction support sites

- 22.5.2.16 With the options of construction compounds both within and outside the Port, there are opportunities to minimise potential disruption effects on the Port and maximise potential opportunities. Further discussions will be held with the Ports and adjacent landowners such that the most agreeable arrangement can be found. Potential effects on landowners in the vicinity of the Project resulting from construction activities associated with the Projects have been discussed in other chapters of the ES, including noise (Chapter 19), air quality (Chapter 16), onshore transport (Chapter 15), hydrology and flood risk (Chapter 17), land quality and hydrogeology (Chapter 18) and all impacts were considered to be non-significant. Construction works will be managed through the implementation of the Construction Environmental Management Plan (see Chapter 4: Project Description) and employment of an Environmental Liaison Officer to minimise disturbance or disruption.

Commercial and recreational fishing

- 22.5.2.17 Chapter 9: Fish, describes the likely impacts during the Project's construction phase on both commercial and recreational fisheries. The baseline section above describes how there is little evidence of commercial fishing in the area of sea to be impounded by the lagoon. For example, Chapter 9 reports that the average value of fish caught in the statistical rectangle (32E6) relevant to the Project is only £7,612 per year. This is less than 1% of the total fish landed in the wider Swansea Bay area. Notwithstanding this, a limited number of smaller boats (<10m) are reported to use the area and there is no statutory requirement for these boats to declare their catches.
- 22.5.2.18 The same chapter reports on the potential impacts on recreational fishing in the Bay. This is based on consultation with angling clubs and associations and provides inconclusive evidence that there will be any impact to angling and recreational fishing in the area during the construction phase. Chapter 14: Navigation and Marine Transport does not identify any impacts of the Project on commercial or recreational fishing vessels that would lead to an economic effect during the construction phase.
- 22.5.2.19 As noted previously, there are riverine recreational angling activities (other than sea angling) in addition to those within Swansea Bay, which may be affected by construction of the Project. These are located primarily along the rivers which flow into Swansea Bay in the vicinity of the Project. The Rivers Tawe and Neath support a number of fishing interests. Those fish species which may have a particular economic value, in recreational angling terms, in Swansea Bay and its rivers, are salmon and sea trout.
- 22.5.2.20 Based on the evidence assessed in Chapter 9: Fish, Chapter 14: Navigation and Marine Transport and the baseline section, the impact magnitude on commercial fishing is considered to be negligible. The sensitivity of people involved in commercial fishing is likely to medium. This is because fishing is a specialist industry that relies on access to fishing grounds which if removed could lead to economic loss but also there are numerous and extensive alternative fishing areas nearby. Therefore, assuming a negligible impact magnitude and medium sensitivity, the likely effect on commercial and recreational fishing during the construction phase is **negligible**.
- 22.5.2.21 Based on the assessments in Chapter 9: Fish, and for the reasons given above, the impact magnitude on recreational fishing both within the Bay, and along the banks of the Rivers Tawe and Neath is considered to be negligible. As such, assuming a medium sensitivity based upon the value of salmon and trout as valued ecological receptors, the socio-economic effect upon fishery interests is similarly considered to be **not significant** at worst.

Effects on tourism

- 22.5.2.22 As identified above, the main construction works will be within the Port area, which is private land and not a tourist destination. In terms of indirect impacts, such as increased traffic, dust or noise, detailed assessments have been undertaken in Chapter 15, Chapter 16 and Chapter 19 respectively.
- 22.5.2.23 In terms of traffic, the findings of the assessment confirm that with access from Fabian Way (which carries some 32,000+ vehicles a day) there is expected to be a moderate impact magnitude given this will affect a moderate number of people. The sensitivity of tourist drivers to disruption is likely to be low given that they are likely to have capacity to experience the impact without incurring significant economic loss and/or be dissuaded

from visiting the area due to localised travel disruption. Therefore taking these two factors into account there is likely to be a short-term **minor adverse** impact on the local highway network and therefore the tourists who might use it.

- 22.5.2.24 With respect to air quality, the assessment confirmed that dust emissions from the proposed work are considered to be not significant with respect to potential effects on health and amenity. Air quality due to exhaust emissions from plant and from construction vehicles will be short-term and temporary, and, as the concentrations are well below the annual mean objectives (see Chapter 16), the overall impact is negligible. As such potential direct impacts and indirect impacts on tourism during the construction phase are assumed to be **negligible**.

Effects on recreation

- 22.5.2.25 During the construction phase there will be some disruption for recreational users of Swansea Bay. For example, as identified in Chapter 14: Navigation and Marine Transport, recreational boat fishing and recreational boating will be unable to use parts of the Bay normally in use, and transit routes will be altered due to construction of the structures within the Bay. Effects on navigation are discussed further in Chapter 14 of this ES and this assessment found that the residual impacts associated with the Project on changes to transit routes for recreational boats would be **minor adverse**. Mitigation would involve promulgation of information to specific receptors to ensure that alternative navigation routes were understood.
- 22.5.2.26 Access to the marinas (Swansea and Monkstone) for recreational vessels is via the main navigation channels, which are also used by commercial shipping vessels. Access would be maintained at all times during construction and, as such, vessels using the marinas should not be temporarily displaced to other marinas/harbours along the coast (e.g. Burry Port, Cardiff). Appropriate liaison will be undertaken with the ports and marinas during construction, such that any temporary disruption is minimised (see Chapter 14: Navigation and Marine Transport).
- 22.5.2.27 In terms of dive sites, as discussed previously, there are a few sites within the Bay, and the majority are located further around the Mumbles headland along the Gower. As identified in Chapter 6, Coastal Processes there will be increased suspended sediment associated with the construction phase. However, most sediments will be re-deposited in the immediate vicinity of the construction works. The coastal process modelling also shows that increased suspended sediments only exceed 60mg/l within Swansea Bay along an approximate 500 to 1,500m track extending from the dredge/geotube fill location towards Mumbles Head, and also towards the Swansea shoreline. This compares with results from the recent metocean survey which indicated that that mean background near-bed SSCs are in the vicinity of 113mg/l and 54mg/l across the intertidal and shallow subtidal areas of Swansea Bay, respectively (Titan, 2012b), with peak concentrations in the order of 460 to 570mg/l. As such, although there will be temporary increase in suspended sediments associated with the plume from the construction phase, with alternative dives sites which are more frequently used on the Gower, limited impact is anticipated.
- 22.5.2.28 As there are few recreational dive sites used within the vicinity of the Project, the sensitivity would be minor and, because there are a number of nearby alternative destinations to pursue similar activities, sensitivity would be medium/low. There would

be a **negligible to potentially minor adverse** impact on recreational divers during the construction phase.

22.5.3 Operational phase

22.5.3.1 Within the operational phase of the Project, the potential for employment generation has been considered. An overview is given of the offshore and onshore facilities and Project enhancements that are being provided, followed by an assessment of the potential effects of these facilities on tourism and recreation. In addition, benefits to the wider community have also been examined.

22.5.3.2 As outlined in Chapter 4: Project Description, the Project encompasses a number of onshore and offshore facilities and enhancements that will affect the socio-economic environment, both locally and in the wider area. Key to this assessment are the following:

- i. The impounded water of the Lagoon provides opportunities for a water sports venue capable of providing a permanent body of water of adequate depth for hosting local, regional and national events, with spectator areas along the Lagoon seawall. The Western Landfall Building will incorporate clubhouse-type facilities to support such activities, with associated boat parking and public realm. The Lagoon is conceived as a multi-purpose watersports venue with core sports identified as dinghy sailing, coastal rowing, openwater swimming and triathlon. The development of the concepts behind the use of the Lagoon has been subject to consultation with a number of organisations and feedback through the consultation process has informed the design proposal. Onshore and offshore facilities to support these activities are described in detail in Chapter 4 and the Design and Access Statement. The Design and Access Statement is a separate document which supports the application for the Development Consent Order.
- ii. Provision of bus stop(s) at the western landfall of the lagoon to enable bus service departures and arrivals and provision of a shuttle bus service to the Project from the Park & Ride facility on Fabian Way subject to investigation of its viability.
- iii. Public access on and around the seawall for pedestrians and cyclists in daylight hours and appropriate weather conditions.
- iv. All recreational facilities will be compliant with the requirements of the Disability Discrimination Act 1995.
- v. Increased opportunities for recreational fishing off the seawall.
- vi. Provision of a jetty on the western lagoon seawall to facilitate a water shuttle serving the Project from the west bank of the River Tawe and/or Mumbles.
- vii. Offshore visitor centre comprising education facilities, café and function area, viewing spaces and access to the turbine housing, all within a highly-sustainable building (whilst also serving Operations & Maintenance (O&M) functions).
- viii. Western landfall – combined facilities building for O&M and visitor orientation as described above, with associated outdoor recreation space including hard standing areas for boats, car parking, play areas and open space, a beach and attractive public realm.

- ix. Eastern landfall – the establishment of Crymlyn Burrows SSSI information facility and saltmarsh, coastal grassland, dunes and beach areas and associated publically access cycle and footpath routes south of SUBC and adjoining land to the west.

Potential employment generation

- 22.5.3.3 In terms of generating employment, the Project will create new jobs as a result of both the operation of the Project, as well as from employment associated with both onshore and offshore leisure and recreation facilities, such as the visitor centre. The Welsh Economy Research Unit Cardiff University report and input/output model is not used directly to make estimates of employment in the operational phase. Information on operational employment is provided by the Project team, based on their understanding of potential direct employment and then additionality factors are applied to arrive at an estimate of indirect and total net employment.

Operation and maintenance employment

- 22.5.3.4 During the operation phase, the Project would generate a requirement for employment in respect of operational, management and maintenance roles in relation to the electricity generating element of the Project. Given the bespoke nature of the Project, a comparison of the Project was undertaken with similar existing projects in France and Canada, in order to estimate the number of permanent operational jobs¹⁵.
- 22.5.3.5 In total, based on conservative assumptions, it has been estimated that for operation and maintenance, approximately 21 long-term, full time, permanent jobs could be created (8 jobs in operations, 5 jobs in maintenance and 8 jobs in security).

Additional Onshore/Offshore Employment

- 22.5.3.6 In addition to employment associated with the electricity generating aspects of the scheme, the Project will be also open to visitors with onshore facilities and access along the seawall to the visitor centre associated with the turbines/generators. Estimates of total job numbers for the visitor centres are presented in Table 22.13. Additional temporary jobs would be created e.g. for the sporting events that would be held at the Lagoon, but expected job numbers for these events have not been included in this assessment.

Table 22.13 Potential estimated permanent new jobs during operation in visitor facilities

Location	Activity	Est no.
Offshore Visitors Centre	Centre Reception	3
	Centre Café	5
	Retail outlet	3
	Management team	3
	Electric bus/train operatives	2
	Centre support services	4
	Tour guides	3
Western Landfall Building	Site security including health and safety, rescue	6

¹⁵ The La Rance Tidal Barrage in France employs a total of 28 people in operational activities and routine maintenance (http://electricalline.com/images/mag_archive/18.pdf)

	Visitor orientation	2
	Clubhouse Café/Bar	4
	Clubhouse management (Club Manager and Duty Manager)	2
	Sports professionals	4
	Administration and lagoon services	6
	Mariculture Oyster and Lobster hatchery	4
Total		51

Source: URS professional judgement and TLSB Project Information (2013)

22.5.3.7 To gain an understanding of potential permanent job opportunities from the visitor centre element, similar tidal range precedent projects were again considered in France and Canada. La Rance in Brittany attracts some 70,000 visitors per year with the closest city to La Rance being St Malo (7km away) which has a population of 47,000¹⁶. The Annapolis Royal Generating station in Nova Scotia, attracts approximately 40,000¹⁷ visitors per year. This station is located on the edge of Annapolis Royal which had a recorded population of 481¹⁸ in 2011. The nearest city to this facility is Halifax some 200km away and with a population of approximately 400,000¹⁹. These projects attract between 40,000 and 70,000 visitors per annum. Based on professional judgement, it is therefore anticipated that the Project may result in a greater number of visitors, partly due to its unique nature, but also due to its proximity to other major attractions within Swansea, such as the Waterfront museum, which itself attracts over 250,000 visitors annually.

22.5.3.8 As identified in Table 22.13 above, based on conservative figures, the Project could generate approximately 51 gross FTE jobs once completed and fully operational.

Leakage

22.5.3.9 Leakage impacts are the benefit to those outside the study area. Travel to Work Areas analysis carried out by the ONS on the 2001 Census data indicated that 18% of people working in Swansea live outside the area²⁰ (ONS, 2001). This corresponds to a low leakage as set out by English Partnerships Additionality Guidance (English Partnerships, 2008), and implies that the majority of employment opportunities will go to people living within the Swansea area. An 18% discount was applied to the estimated peak 51 direct jobs created by the operational phase. It is thus estimated that 42 persons from within Swansea and 9 persons from outside Swansea will be directly employed during the operational period.

Displacement

22.5.3.10 Displacement measures the extent to which the benefits of a development (or a project) are offset by reductions of output or employment elsewhere. Any additional demand for labour cannot simply be treated as a net benefit – it removes workers from other posts

¹⁶ <http://www.france-voyage.com/towns/saint-malo-12418.htm>

¹⁷ http://electricalline.com/images/mag_archive/18.pdf

¹⁸ <http://www.annapolisroyal.com/business-demographics.php>

¹⁹ <https://www12.statcan.gc.ca/census-recensement/2011/as-sa/fogs-spg/Facts-cma-eng.cfm?LANG=Eng&GK=CMA&GC=205>

²⁰ Swansea Bay TTWA covers two complete LAs (Swansea and Neath Port Talbot) along with a 'fringe' of wards from the LAs to the north (including the Llanelli area).

and the net benefit is reduced to the extent that this occurs. This consideration is referred to as a displacement.

- 22.5.3.11 It is assumed that, due to the flexibility of the labour market, and the fact that workers at the Project represent a relatively small proportion of the South Wales labour force, displacement impacts of the direct operational employment would be low. Taking this into account, and following the English Partnerships Additionality Guide (English Partnerships, 2008), a 'ready reckoner' for low displacement of 25% is used. Applying this discount to the estimated 51 gross direct jobs created by the operation phase results in an estimate of 13 jobs being displaced by the Project during the operational period. Net direct jobs during the operation period are therefore estimated to be 38.

Multiplier Effect

- 22.5.3.12 In addition to the direct employment generated by the operation of the Project, there will be an increase in local employment arising from indirect and induced effects of operation of the Project. Employment growth will arise locally through goods and services supplied to the operational process (indirect or supply side multipliers). Additionally, part of the income of the workers and suppliers will be spent in Swansea, generating further employment (induced or income multipliers).
- 22.5.3.13 The multiplier used for the operational phase of the Project is taken from the English Partnerships' Additionality Guide (English Partnerships, 2008) which provides a 'ready reckoner' of composite multipliers (i.e. the combined effect of indirect and induced multipliers). Given the size and significance of the Swansea local economy in the UK context, it is likely to have 'average' supply linkages. Therefore, a multiplier of 1.5 at a regional level (defined as South Wales) is determined from the English Partnerships guidance to be the most appropriate measure of multiplier effects.

Deadweight

- 22.5.3.14 Deadweight represents the economic effects that would occur anyway, regardless of whether the Project went ahead. The deadweight should be deducted from the gross effects to provide the net additional effects of the Project. There are currently no businesses located in the area that will be displaced by the Project, and so a deadweight loss of zero is applied to estimates of net jobs.
- 22.5.3.15 Some offshore fishing does occur within the area to be impounded for the Lagoon, and a detailed assessment of the potential effects of the Project on commercial fishing has been undertaken. Further information is given within Chapter 9: Fish, Recreational and Commercial Fisheries and Chapter 14: Navigation. Both these chapters identify mitigation measures that will be implemented to reduce potential impacts on commercial fisheries. However, based on the assessment in these chapters it is assumed that there is no displacement of commercial fishing jobs.
- 22.5.3.16 It is estimated that the total net employment for the Project will result in a gain of 94 jobs, of which 77 will be from the Swansea area. The total net employment is presented within Table 22.14.
- 22.5.3.17 The impact magnitude is considered to be minor given there is likely to be around 51 permanent jobs in the visitor facilities of the Project in the context of a total labour pool of around 107,500 workers in Swansea area. The sensitivity of workers is considered to be medium as the current economic climate means that alternative employment is

relatively difficult to obtain. Therefore, direct, indirect and induced employment created by the visitor facilities of the Project, is likely to have a **minor beneficial** long-term impact on the Swansea economy.

Table 22.14 Total net employment of the visitor facilities only

	Employees		
	Swansea	Outside Swansea	Total
Gross Direct Employment (with leakage)	42	9	51
Displacement	10	2	13
Net Direct Employment	31	7	38
Net Indirect Employment	16	3	19
Total Net Employment	47	10	57

Source: URS calculations 2013. Note that figures do not always add up due to rounding.

- 22.5.3.18 The above findings correspond to the overview of operational employment proposed by Welsh Economy Research Unit Cardiff University (see Appendix 22.1, Volume 3). Welsh Economy Research Unit Cardiff University identifies that operational requirements of this novel technology are not completely understood. However, indicative data are estimated (see Table 22.15 below) that illustrate that the Project, will, in its operational phase, generate reasonable employment opportunities locally, estimated as some 60 full time equivalent jobs. Around half of these would be in the construction sector, but it is expected that the operational phase will maintain varied types of employment encompassing activities as diverse as inspection, dredging, environmental monitoring, and control room tasks.

Table 22.15 Operations related economic impact

Sector	Welsh Economic Activity (Output) Supported £m	GVA £m	Employment FTEs
Manufacturing & Production	0.9	0.3	5
Construction	1.8	0.7	30
Distribution, Retail & Hospitality	0.2	0.1	5
Transport & Communications	0.8	0.3	5
Financial & Professional Services	0.9	0.6	10
Other	0.5	0.3	5
Total	5.2	2.2	60

Note: Assumes half of maintenance contingency estimate of £2m pa is spent each year; and 50% of this expended in Wales.

Existing Site

- 22.5.3.19 The permanent land take of the Project within ABP land is approximately 120 hectares. This land take has been developed based on the requirements of the Project and ongoing consultation with ABP and other landowners in the vicinity. The proposed land take, where possible, has looked to accommodate future development proposals where there is a level of certainty within the existing site.

Commercial and recreational fishing

- 22.5.3.20 For commercial fishing vessels, the operation of the Project will result in changes to available fishing grounds and a small change in transit routes. However, the Lagoon seawalls are expected to increase fish biodiversity within the Bay and so improve fishing locally. Chapter 9: Fish, including Recreational and Commercial Fisheries, and Chapter 14: Navigation further discusses these impacts. Chapter 9 suggests that the loss of fishing ground in the area of sea impounded by the lagoon will have a negligible impact on commercial fishing. Chapter 14 describes the impact of the Project on commercial fishing vessels. It concludes that, although commercial fishing vessels generally do not cross the Lagoon boundary when transiting to fishing zones, with the majority travelling to fishing grounds to the west of Swansea Bay, there would be a **minor adverse** impact due to the permanent nature of the impact. This can be translated to a minor impact magnitude, per the criteria described at Table 22.2 above, as it will affect a small number of people; the scale is minimal but the impact is permanent. The sensitivity of people involved in commercial fishing is likely to be medium. This is because fishing is a specialist industry that relies on access to fishing grounds which, if taken away, could lead to economic loss, but also that there are alternative fishing areas nearby. Therefore, assuming a minor impact magnitude and medium sensitivity the likely effect on commercial and recreational fishing during the construction phase is **minor adverse**.
- 22.5.3.21 In terms of recreational sea fishing, public access to the seawall (in appropriate weather conditions), will enable new areas of sea fishing to become available. As mentioned previously, the Lagoon seawalls, which are expected to increase fish biodiversity, will also be of benefit to recreational shore-based sea fishermen (see Chapter 9: Fish including Recreational and Commercial Fisheries). Disabled access to the Lagoon wall will be provided thereby opening up further opportunities, including for recreational fishing. The impact magnitude is anticipated to be moderate because although it will affect a relatively small number of people who fish in Swansea Bay it will be a permanent impact. The sensitivity of recreational fishers is considered to be low as there are alternative resources readily available to them for fishing. Therefore the overall effect of the Project on recreational sea fishing is considered to be long term **minor beneficial**.
- 22.5.3.22 Chapter 9: Fish assesses the potential effect of the Project on these species' migratory behaviour in returning to the Rivers Tawe and Neath for the purposes of spawning during the operational phase of the Project. It demonstrates that worst case prediction, without mitigation, there may be a reduction in the numbers of fish of some 0.87% for salmon and 3.40% for sea trout in the Rivers Tawe and Neath. Chapter 9 demonstrates that such a level of potential reduction will have no discernible effect on the population being fished along the Tawe and the Neath.
- 22.5.3.23 Based upon recorded catches, this equates to a reduction in individuals returning to the rivers of approximately two salmon or around 31 sea trout per annum. However, as noted at paragraph 24.4.0.28, this cannot be translated into a reduction in the number of individuals caught by anglers within a fishery - it relates to the number of individuals returning to the river. Nonetheless, even assuming that a relationship exists between catches and individuals returning to the Tawe and Neath, the effect on numbers of fish caught would reduce by no more than two or three individuals across each entire fishery. Based upon the reported catches in Table 22.9, this would be within the annual variation for the fisheries in question and not discernible.

- 22.5.3.24 The economic effect of a reduction in reported salmonid catches in the Tawe and Neath fisheries would depend upon whether as a result of the reduction in catches, game fishing activity reduced on those rivers. There is no reason to suppose that a reduction in individuals caught, that is not perceptible/measurable and within the annual variation on the rivers, would have such an effect.
- 22.5.3.25 A further way of considering the effect of the Project upon fishing rights is to consider whether there would be a reduction in value of fishing rights. Again, and bearing in mind that there are a number of separate fishing rights on each river; that the reduction in catches is no more than two or three individuals across the relevant river system; and that such a reduction would not be perceptible as a result of natural variation, the impact is again not perceptible in relation to land values. There is no measurable effect.
- 22.5.3.26 The socio-economic impact magnitude is anticipated to be negligible as the change in number of fish caught is not discernible, whilst given the value and sensitivity of salmonid fish in a game fishery is high, leading to a **minor adverse** effect.

Mariculture

- 22.5.3.27 As part of the Project, mariculture opportunities will be developed. The Project will provide an opportunity for the encouragement of the re-introduction of native oysters within Swansea Bay through spatting ponds within the Lagoon and placement on the lagoon walls. Options to enhance native oyster habitat within Swansea Bay are being investigated as part of the Lagoon in conjunction with SEACAMS (see Chapter 8: Intertidal and Subtidal Benthic Ecology). In addition, within the Western Landfall Building, it is proposed to locate a lobster hatchery and laboratory facility in the Western Landfall Building. The hatchery will initially look at rearing lobster for placement on the lagoon wall. Other opportunities to culture other species including fish will also be explored. An area for future mussel rearing may also be provided, and the advancement of this would be based on confirmation of water quality once the lagoon is operational.
- 22.5.3.28 Further details of mariculture proposals are included in Chapter 4: Project Description. This work might also help the Swansea Bay Local Fisheries Action Group 21 achieve some of the objectives within its main themes, namely:
- i. Theme 1: Strengthening competitiveness of local fisheries
 - ii. Theme 2: Restructuring and redirection of economic activities
 - iii. Theme 3: Diversification activities including creation of additional jobs outside the fisheries sector
 - iv. Theme 4: Adding value to fisheries products
- 22.5.3.29 In the long term, it is anticipated that these proposals will create employment, providing additional commercial fishing opportunities and will have a positive effect through the local multiplier effect on the local economy. The impact magnitude is considered to be moderate given that the mariculture industry is relatively small and underdeveloped in the area and the opportunity offers the chance to diversify the local economy which could have knock-on effects in terms of raising the profile of the area in terms of it being a centre for local produce. The sensitivity of the receptors (people who could work in the industry) is also considered to be medium given that the current economic climate

²¹ <http://www.swansea.gov.uk/index.cfm?articleid=48756>

means that alternative employment is relatively difficult to obtain. Given the scale of the employment generated the Project will have a **moderate beneficial**; long-term effect on the local economy.

Impacts on tourism

- 22.5.3.30 Opportunities to walk and cycle around the seawall will provide a unique draw for tourists and are likely to help boost the local tourist offer in Swansea. The proposal to provide water shuttle facilities will assist with the connection from the existing SA1 development, which is an attractive tourist destination. As noted in the baseline section, the proposals outlined in the Fabian Way Transport Corridor Strategy (Welsh Government, 2010) should help to improve accessibility and congestion in the area which will have a knock on effect in helping to boost tourism.
- 22.5.3.31 With the recreational and sporting facilities proposed, the Project has the potential to provide a significant niche for Welsh tourism with regard to activity-led holidays. Activity-led holidays account for over 10% of the UK tourism market and, with an increase in domestic tourism, the Project represents a significant opportunity for Swansea to enhance its appeal as a tourism destination.
- 22.5.3.32 Overall, the Project will provide a new year-round unique maritime and leisure themed amenity that will add to Swansea's portfolio of 'things to see and do'. The combination of facilities (visitor centre, walking, cycling trails, watersports, fishing), public realm, and unique vistas overlooking Swansea Bay and port area afforded by the seawall, suggest that the Project will have the capacity to be viewed as visitor hub in its own right. This is supported by the seascape and landscape visual impact assessment (SLVIA) (Chapter 13) which identifies that the developments will positively contribute to the ongoing regeneration of the coastal areas of Swansea and reinforce the area as a location for recreation. It also has the potential to directly support the strategic focus on establishing Swansea Bay as a Watersports Centre of Excellence by providing additional opportunities in the Swansea Bay area.
- 22.5.3.33 Chapter 13, SLVIA assesses 22 different views across the study area that are potentially relevant to tourist, visitors and recreational user receptors. The conclusion of the SLVIA chapter, based on the consultants professional judgement, was that the Project would generally have neutral or beneficial impact on views around Swansea Bay including: Swansea Promenade near the Lido (Viewpoint 7); Meridian Quay (10); Swansea Promenade (11); and Swansea University Bay Campus (16). It is concluded that there would be adverse impacts on the view at Crymlyn Burrows (17). Taken together, the conclusions of the SLVIA chapter suggest that, during the operation phase of the Project, the views available to visitors, tourists and recreational users will be improved, which could serve to boost tourism.
- 22.5.3.34 There are significant economic benefits to attracting tourists to new developments such as the Project. Visitors consume local services, creating demand for shops, leisure activities and bars and restaurants. Tourism is already a significant contributor to economic activity in Swansea and Wales, with total tourism spending in Swansea and Wales (direct, indirect and induced) reaching £337 million and £6.2 billion respectively in 2012.
- 22.5.3.35 Providing a new attraction in the form of the Swansea Bay Tidal Lagoon will potentially have a dual benefit to the tourism sector in the area, encompassing Port Talbot and the

Gower Peninsula. As an innovative and sustainable energy solution, the Project will have the capacity to broaden the appeal of Swansea Bay to new, and potentially international, business visitors either interested in, or helping to maintain, the new technologies being employed. As a leisure amenity, the Project will also represent an additional amenity adding to the critical mass of attractions within the Bay area. This, in turn, will have the capacity of encouraging new stays and, perhaps more importantly, longer durations of stay within the area.

- 22.5.3.36 Creating additional visitor volume corresponds with the aims of the tourism strategies of the area to increase the benefits of tourism to the economy, and will particularly benefit accommodation providers in Swansea, Port Talbot and around the Gower Peninsula. In addition, the interrelationship between these areas is strong, with the propensity for visitors in one of these zones to explore the wider environment likely to be high. This is exemplified by Neath Port Talbot which attracts a high proportion of day visitors from those staying elsewhere, such as Swansea City, the Gower and the Brecon Beacons National Park. Creating an amenity such as the Project, which has the capacity to attract new visitors, will therefore generate benefits across the wider area.
- 22.5.3.37 Initial estimates from the Welsh Economy Research Unit Cardiff University (Appendix 22.1) have concluded that between approximately 70,000 to 100,000 people could visit the Project each year. These visitors could be expected to contribute to significant additional local spending within the local area and wider Swansea economy. Based on the findings of the Welsh Economy Research Unit Cardiff University report (Appendix 22.1, Volume 3), this spending by tourists and visitors would equate to between 65 and 90 full time equivalent jobs per annum. The impact magnitude is considered to be minor given there is likely to be around 60 jobs generated in the context of a total labour pool of around 107,500 workers in Swansea area. The sensitivity of workers is considered to be medium as the current economic climate means that alternative employment is relatively difficult to obtain. Therefore employment created as a result of tourist and visitor spend is likely to have a **minor beneficial** long-term impact on the Swansea economy.

Impacts on recreation

- 22.5.3.38 As identified for the construction phase, to minimise potential impacts associated with traffic accessing the Project during the operational phase, a new Project access road will be built. This new road will accommodate cycle and pedestrian routes. Further details about the transport proposals for the operational project are discussed in Chapter: 4 Project Description and Chapter 15: Onshore Transport.
- 22.5.3.39 The Project will result in the creation of 9.5km of public access routes around the lagoon seawall, new beach areas, accessible to the public and a further 3.5km of public access routes along the seafront between the landfalls of the Lagoon seawalls. This demonstrates that the Project will lead to improvements to the recreation offer in the local area. The sensitivity of recreational users is likely to be low because there are numerous alternative recreational activities available, but the impact magnitude is moderate given the number of people affected. This represents a minor beneficial effect on recreational users.
- 22.5.3.40 The results of the marine water quality (Chapter 7) assessment identify that there will be a small net improvement in water quality within Swansea Bay at bathing beaches in the vicinity of (but outside) the operational Project. This is due to proposed improvements

to be undertaken by DCWW, changes in hydrodynamic processes as a result of the Project, and the enclosure of the Swansea Waste Water Treatment Works long sea outfall within the Lagoon footprint. Two optimisation/mitigation options for improving water quality within the Lagoon footprint are being considered (see Chapter 4: Project Description, and Chapter 7: Marine Water Quality).

- 22.5.3.41 The Project has scope to provide better assurance as to the availability of bathing waters at Swansea within its area, particularly if optimisation is deployed [assess impact]. The coastal processes, sediment transport and contamination (Chapter 6) assessment confirms that neither structures (eastern or western seawalls) will impact upon wave conditions at Aberavon Sands, which are of recreational importance to local surfers.
- 22.5.3.42 In terms of diving, once operational it is anticipated that there will be no impact from the Project on dive sites within the Bay. The noise assessment (Chapter 19) concluded that once operational, the Project will not increase underwater background sound levels beyond the very close proximity of the turbines themselves.
- 22.5.3.43 The cycle and pedestrian access along the seawalls and the new public realm environments created including the beach areas will provide recreational opportunities for visitors to the Project and also to occupiers of the SUBC development. It is proposed that a new pontoon will be provided in order to facilitate a water shuttle from the western bank, and crossing, the River Tawe. Bus stops will be provided at the western landfall of the Project, and the viability of a shuttle bus service to access the Project from the Park and Ride will be investigated. Racks for bicycles for visitors to the Project will also be provided.
- 22.5.3.44 As outlined above, the new watersports facilities will provide opportunities for recreation, accommodating openwater swimming, triathlon, sailing and coastal rowing in local, national and international event formats within the Lagoon (see Chapter 4: Project Description. In terms of sporting events, these are anticipated to range from sailing competitions and training for a variety of classes of boat, to triathlon, swimming or running events once or twice a year, with between 2,000 and 8,000 visitors attending individual events. The design of the public realm and buildings provides for this anticipated demand and flexibility of layout to cater for peak demand for any activities at the lagoon.
- 22.5.3.45 In addition, the increase in and management of traffic (including parking provision) associated with these national and international events has been considered in Chapter 15: Onshore Transport. This Chapter outlines the requirement for Major Event Travel Plans, which will be prepared prior to an event occurring in order to minimise potential impacts.
- 22.5.3.46 It is also envisaged that, through partnerships with Sport Wales, and other national governing bodies (NGBs) of sport (including Welsh Sailing, Welsh Rowing and Swim Wales), the Project would provide a new recreational centre which will help to grow and sustain the numbers of people participating in sport and improve talent development to help more people excel. The Project could also aid Swansea Council's aspirations for growth in participation in sports following the 2012 Olympic Games. In addition Swansea University has expressed interest in potential partnerships and making use of the facilities.

- 22.5.3.47 It is predicted that the recreational and sporting facilities will provide a catalyst for inward investment, creating new jobs and creating an iconic venue for leading regional and national events (Welsh Economy Research Unit Cardiff University, 2013 and TLSB (2013)).
- 22.5.3.48 The effect of the Project on recreational fishing is discussed under commercial and recreational fisheries above.
- 22.5.3.49 The impact magnitude of the effects on the Project on recreation is considered to be moderate as the Project has the potential to affect a relatively large number of people, with current estimates for visitors to sporting events being around 2,000-8,000 for individual events. The sensitivity of people using the recreational and sports facilities is considered to be medium, as there are a number of alternative options for users of these types of facilities, there are few national sporting venues within close proximity. In conclusion, based on the scale and magnitude of the new and enhanced recreational and sports facilities provided by the Project, there could be a **moderate beneficial** long-term impact on local recreation during the operational phase.

Education/research and Arts

- 22.5.3.50 The Project will provide a setting for art and educational programmes at all levels for Swansea Bay and beyond.

Arts

- 22.5.3.51 TLSB has made a commitment to incorporate locally-inspired art into the Project, whilst acknowledging the scientific side of tidal lagoon power. In collaboration with Swansea University, Swansea Metropolitan University and the Low Carbon Research Institute (LCRI), an art and science study project is ongoing, considering the potential impacts the proposed tidal lagoon development will have on the local community and beyond. This began with a two-day, rural and urban expedition around Swansea in 2013, bringing art and design students together with scientists in order to stimulate a creative response to the Lagoon proposals. The project is ongoing, with regular meetings to examine the potential that the Lagoon has to impact the lives of local communities.
- 22.5.3.52 In addition, the Project will support the development and production of high quality public art projects, possible examples of which include:
- i. imaginative interpretation of the natural and man-made landscape, and the power generating process;
 - ii. way markers and pointers along the route around the Lagoon seawalls;
 - iii. adding to the quality of the physical infrastructure of the Project by means of integrated works, designed in collaboration by artists, architects and engineers;
 - iv. establishing an ongoing art programme with an rolling temporary installation programme; and
 - v. documenting the processes of construction and power generation facilitated by harnessing the tides of Swansea Bay by supporting a film-maker-in-residence to film the development and construction phases of the Project.
- 22.5.3.53 TLSB has established three programmes to progress the public art research and development phase in respect of the Project, and will be working closely with the Arts

Council Wales and Cape Farewell for their implementation. These programmes comprise:

- I. The Major Piece Programme – Opened up to the international artist community – a programme looking at the major art installations based on the Lagoon;
- II. Community Workshop Programme – Made up of members of the Swansea Bay artistic community – involvement of community artist-led group projects in the commissioning and development of areas of the public realm;
- III. Public Realm Programme – Consisting of members of the broader Wales based artist community – a programme to support the initial research and scoping of a range of art commissions that could potentially be incorporated into the Lagoon seawall and surrounds.

Summary

- 22.5.3.54 The sensitivity of receptors is likely to be low given that people in the Swansea area are likely to have alternative means of accessing art ‘products’, for example at other galleries, public art installations and pieces and through modern media communications. The impact magnitude is likely to be moderate based on the large range of quite significant additional art opportunities being offered by the Project - particularly the Major Piece Programme which has the opportunity to raise awareness of Swansea and the Tidal Lagoon to the international arts community. Therefore based on these factors it is anticipated that the Project will have a **minor beneficial**, long-term impact on arts within Swansea and South Wales as whole.

Education/Research

- 22.5.3.55 TLSB has created an education programme and resource for the schools and colleges of Swansea and Neath Port Talbot known as the ‘TLSB Education Programme and Resource’. This programme aims to help young people develop their skills and knowledge to allow them to make their own choices for the future environment and develop their understanding of global climate change and renewable energy.
- 22.5.3.56 The education programme aims to contribute to improving opportunities, health and wellbeing in Swansea Bay and support economic development in South Wales through developing its education and outreach programmes based on the potential impact of the Project, whilst encouraging the development of self-discovery, boosting physical wellbeing, and inspiring young people to consider energy projects and new technology in relation to their local environment.
- 22.5.3.57 The education programme will work with local and national institutions at all levels of the education sector to consider the future of tidal lagoons and the potential impact this new industry will have on South Wales. The programme aims to develop these plans in parallel with the Swansea Bay City Region development plan and Wales Enterprise Zones.
- 22.5.3.58 TLSB appointed Cape Farewell as its educational partner in early 2012. A pilot project was run with three primary schools with strategic positions in Swansea Bay (St Thomas’s, The Grange and Tywyen Primary Schools). A series of school-based workshops were held during the autumn term in 2012 to raise awareness about climate change and renewable energy. The schools also considered the benefits and challenges this ground-breaking project could have on Swansea Bay, the local community and beyond, through debates, expeditions, questionnaires, dance and art projects. A short film was created which acts as an introduction to the tidal lagoon energy project and shows the creative work which

has taken place with the schools. An exhibition of the creative outcomes was shown at the Waterfront Museum in February 2013.

- 22.5.3.59 Following on from this pilot project, TLSB has now implemented a primary and secondary school programme and resource. A full time education officer has been appointed who is facilitating the resource implementation, carrying out workshops in schools and developing partnerships with local initiatives.
- 22.5.3.60 As part of the development of the Project, links with the local educational community will be developed to progress plans for how the Project can best benefit Swansea Bay and the surrounding areas. The key themes TLSB is working on are:
- i. **Science, Engineering, Energy and Enterprise** – objectives: to share knowledge and inspire local people to engage with tidal power as a response to climate change and an innovative new industry; support primary, secondary and HE college visits and resources.
 - ii. **Arts, Culture and Heritage** – objectives: to facilitate a continued dialogue with the local community and ensure that the Project is relevant to and celebrates the local area; support primary, secondary and HE college visits and resources; and 16-18yrs competition (in connection with Arts and Culture Programme).
 - iii. **Skills, Training and Employability** – objectives: to work with local authorities and Welsh Government schemes to ensure that the Project has the highest possible impact in terms of local sustainable development, jobs and skills with a focus on local businesses, up-skilling the workforce and opportunities for young people not in education or training.
- 22.5.3.61 The Project has been working to establish links with the following organisations/initiatives: Regional Learning Partnership; NSA Afan Community Regeneration; Jobs Growth Wales Internships; undergraduate/Post Graduate research; EU Leonardo or Erasmus placements, alongside year-in-industry placements; and future opportunities with Bricks and Mortar, Work Ways and the Sector Skills Councils.
- 22.5.3.62 Further research is also being carried out on similar facilities in the UK and beyond to develop programmes for the Project. Activities offer the local community the opportunity to inform design and planning for visitor facilities and activities, and produce output for exhibitions throughout the planning process and following construction. In addition, TLSB is seeking input into the visitor centre development (as a core educational resource) and the education trail which would be created around the Lagoon seawall.
- 22.5.3.63 TLSB believe there is also an opportunity for integration with the education institutions to look at the development of sport sciences based on the proposed core watersports activities, as discussed above.
- 22.5.3.64 In addition to the education programmes discussed above, monitoring programmes have been developed as part of the Project. These monitoring programmes will be carried out during the pre-construction, construction and operational phases of the Project. Monitoring will be undertaken on various aspects, such as coastal birds, terrestrial ecology, marine mammals, water quality, coastal processes, intertidal and subtidal benthic ecology and fish. Monitoring is discussed in detail in Chapter 23: Mitigation and Monitoring.

- 22.5.3.65 In addition to, and linked with, the monitoring programme(s) relating to the Project, a programme of work (work packages) is being progressed with the SEACAMS team based at Swansea University. Integral to this is the enhancement of the native oyster and the development of hatchery facilities. One of the core aims associated with this is to offer opportunities for other research on the biology and ecology of oysters and the ecosystem services of bivalve reefs. As such, this work is being designed to facilitate long-term research (10-years plus), and research methods and oyster stock management will be adapted according to results. The Project would provide a wide range of research opportunities, from pure research to applied subjects, which would inform best practice for future lagoon developments.

Summary

- 22.5.3.66 The sensitivity of receptors is likely to be low given that people in the Swansea area are likely to have alternative means of accessing educational and research programmes. The impact magnitude is likely to be moderate based on the significant range of educational and research opportunities being offered by the Project, and the potential contribution and collaboration of the Project with major educational and academic institutions and research programmes within Swansea and South Wales. Therefore based on these factors it is anticipated that the Project will have a minor beneficial, long-term impact on education/research within Swansea and South Wales as whole.

22.5.4 Decommissioning phase

- 22.5.4.1 There are two main options for future decommissioning: either continuous operation or removal of turbines and sluice gates (Chapter 4: Project Description). The effects of decommissioning will be different for each of the options. If the proposed use of the Project is maintained, then any potential impacts will be the same as those identified for the operational phase.
- 22.5.4.2 If the turbines and sluice gates are removed, options to maintain the continued use of the Lagoon for recreation will be considered. These could include maintenance dredging to prevent build-up of sediment which could result in creation of intensive intertidal mudflat and saltmarsh areas. Although of potential interest to ornithologists and of notable ecological benefit, the saltmarsh area would not be inherently suitable for recreation.

22.6 Residual effects

- 22.6.0.1 No significant adverse impacts are anticipated for the construction, operation and decommissioning phases of the Project in terms of economy, tourism and recreation.
- 22.6.0.2 Table 22.16 summarises the residual impacts associated with the Project.

Table 22.16 Residual impacts of the Project

Measure	Significance	Explanation
Combined Tidal Lagoon and Associated Development		
Employment creation during construction	Major Beneficial	1,850 jobs on average/year of construction
Impacts on tourism during construction	Minor adverse	Minor disruption as a result of traffic
Impacts on commercial fishing during construction	Negligible	No significant fishing in area impounded by lagoon and availability of alternative fishing grounds.
Impact on recreational fishing during construction	Negligible	Alternative sea fishing locations. Riverine fisheries not predicted to be adversely affected (see Chapter 9)
Impacts on recreation during construction	Negligible to minor adverse	Minor disruption for divers and recreational boat users.
Employment creation during the Project during operation (Direct O&M and Visitor centre facilities).	Minor Beneficial	c 72 direct new jobs
Impacts on mariculture and encouragement of the re-introduction of native oyster during operation	Moderate Beneficial	Opportunities to diversify local economy
Impacts on tourism during operation	Moderate Beneficial	Marked change in local tourism.
Impacts on recreation during operation	Moderate Beneficial	Significant new sports and recreational facilities and opportunities.
Impacts on education during operation	Minor Beneficial	Contribution to better understanding of marine renewables and partnerships with local and regional academic institutions.
Impacts on arts during operation	Minor Beneficial	Large range of quite significant additional art opportunities being offered by the Project.
Impacts on commercial fishing during operation	Minor Adverse	Minor disruption to transit routes taken by commercial fishermen. Reduction in area available for fishing close to Swansea harbour.
Impacts on recreational sea fishing during operation	Minor Beneficial	Increased opportunities created to carry out sea angling on the lagoon wall. Creation of artificial reef will increase diversity of fish. No impact on river fisheries.
Impacts on recreational river fishing during operation	Minor Adverse	Small reduction in number of returning fish may reduce catches, but within natural variation.

22.7 Cumulative and in-combination assessment

22.7.0.1 There are a number of schemes in the vicinity of the Project, either submitted for planning, consented, or under construction, which may result in cumulative or in-combination impacts with regard to the socio-economic environment. Table 22.17 provides a high level screening of those projects outlined in Chapter 2: EIA Process and Assessment of Significance.

Table 22.17 Schemes in the vicinity of the Project

Project and location	Current Status	Assessed/ screened out
Swansea University Bay Campus, adjacent to Crymlyn Burrows	Construction Feb 2013 – Sept 2015	Potential positive effects in terms of education.
St Modwen land development - east of Swansea Docks, to west of Neath estuary.	Remediation of land, and potential future developments – no details available	No details available.
Mumbles pier, foreshore and coastal strip redevelopment	Due to be completed by the end of 2013.	Potential for positive effects in terms of tourism.
Construction of new RNLI Lifeboat Station, Mumbles	Expected completion 2014	Screened out
SA1 development, Swansea.	Development currently taking place, completion date unknown.	Potential for positive effects
Construction of the southern access road to Coed Darcy Urban Village, crossing nearby Crymlyn Bog	Yet to commence.	Screened out
Swansea Boulevard project – work between Princess way and the Strand, and the River Tawe bridges and The Strand.	Phase to be complete in November 2013. Phase 2 to start 2014.	Screened out
Wind turbine – on Welsh water site on Fabian Way	Application- Unsuccessful 25/10/13	Screened out
Five wind turbines – at Mynydd Marchywel between Rhos and Cilfrew Neath	Submitted Jan 2012. Consultation finished Jan 2013. Still in planning.	Screened out
Sixteen wind turbines – at Mynydd Y Gwair, Swansea	Approved – unknown construction timetable	Screened out
Five wind turbines – on land at Mynydd Brombil Farm, Margam Port Talbot	Submitted June 2012, still in planning. Consultation finishes April 2013	Screened out
Atlantic Array Wind Farm – off North Devon Coast approx 35km distant	DCO application withdrawn in November 2013.	Not considered since the project is not proceeding.
Seventy Six turbine Pen y Cymoedd windfarm near Neath.	Planning approved – construction 2014	Screened Out
Llynfi Afan Renewable Energy Park - fifteen turbine windfarm – on land 500m southwest of Cynnonville Port Talbot	Planning permission refused. Application was allowed on appeal on 27/08/2013.	Screened Out
Mynydd y Betws- fifteen turbine windfarm located on land to the east of Ammanford in Camarthenshire	Granted planning consent 2009. Started operating April 2013.	Screened Out
Mynydd y Gwrhyd - windfarm in the Upper Amman and Swansea valleys	Approved on appeal 07/05/2009	Screened Out
Swansea Port single wind turbine	Operational	Screened out
Newlands Farm, single wind turbine- Margam	Application submitted January 2013	Screened out

Project and location	Current Status	Assessed/ screened out
Kenfig Industrial Estate single wind turbine	Application submitted. Expected decision by Feb 2014	Screened out
Port Talbot Harbour redevelopment	Potential future activities/development. Status unknown.	No information currently available and therefore cumulative assessment cannot be undertaken at this stage.
Upgrading of the existing coastal defence of Aberavon West Promenade, Sandfields, Port Talbot	Completed August 2013	Screened out
Porthcawl regeneration scheme includes Porthcawl Marina project and 19th century lighthouse restoration.	Approved by BCBC – timescale unknown.	Potential for positive effects in terms of tourism for wider area.
Tata Steel works- Internal power generation enhancement for Port Talbot steel works- installation of two new boilers and two new turbines housed in new power station building.	Application expected to be submitted 2014.	Screened Out.
Underground coal gasification under Swansea Bay	License potentially to be extended.	Screened out
Underground coal gasification under Llanelli	Conditional Licence issued	Screened out
Navigational dredging along the Swansea (Tawe), Neath and Port Talbot Channels.	On-going	Screened out
Dredging at Monkston cruising and sailing club and Swansea Marina	On-going maintenance as required	No effect on marina during operation anticipated.
Mumbles Oyster project: Plan to put 10,000 oysters on seabed off the village of Oystermouth	Permission granted September 2013.	Potential positive effects in terms of employment diversification
Severn Barrage	Not within the foreseeable future	Not considered. See note in Chapter 2.
Swansea Barrage	Operational	Screened Out
Cardiff Barrage	Operational	Screened Out
Baglan Power station	Operational	Screened Out
Prenergy Biomass Power Station, Port Talbot- 350 MW wood chip fuelled thermal generating station	Granted condition approval by BERR on the 20 November 2007. While large scale construction has not been begun, a lawful start of development has occurred and as such the planning permission remains extant.	Potential positive effects in terms of employment diversification.
Abernedd Power Station was granted conditional approval by DECC on the 23 February 2011 for construction of a 870MW gas fired combined cycle gas turbine power plant.	No lawful start has yet been made to this development.	Potential positive effects in terms of employment diversification.
Nobel Banks aggregate extraction site	Ongoing	Screened out
The Swansea Bay (Thomas Shellfish Limited) Mussel Fishery Order	Ongoing	Potential for positive effects in relation to commercial fisheries

Project and location	Current Status	Assessed/ screened out
Ro-Ro Ferry – Swansea Port	Currently not operational	Ferry not anticipated to recommence in the foreseeable future. No cumulative assessment undertaken.
Rhiannon Offshore Windfarm	Pre-application stage.	Distant - screened out
Burbo Bank Offshore Windfarm extension	Existing and extension sought 2013.	Distant - screened out
Tidal Energy Ltd Deltastream Installation Ramsey Sound	Consent secured. Installation 2014.	Distant - screened out
Seagen Skerries Tidal Stream Array	Consent secured. Installation 2014.	Distant – screened out
Tidal Stream Energy Demonstration Array St David's Head, Pembrokeshire	Construction is planned to commence in 2017	Distant – screened out

22.8 Conclusion

- 22.8.0.1 This Chapter analyses the potential socio-economic effects of the Project and concludes that the Project will have an overall positive impact on the Swansea economy. It will generate new employment and spending in the local area and South Wales, through the provision of employment and associated multiplier effects. The Project will help to boost tourism within Swansea and provide new onshore and offshore facilities which will enhance and improve sports and recreational opportunities within the local area.
- 22.8.0.2 In addition to the positive impacts the Project has on the study area, the scale of the Project implies the likely generation of catalytic impact. This particularly relates to the long term benefits to the local economy that would be generated by the new tourist attractions and the unique draw of the Project and related sports and recreation facilities.

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