



## **Appendix 4.1**

### **Construction Environmental Management Plan**



## **The Tidal Lagoon Swansea Bay Project**

### **Construction Environmental Management Plan (CEMP)**



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### Appendix 1 Project Aspects Register (Template)

### Appendix 2 Construction Travel Management Plan

**PART A: GENERAL ISSUES****1.0 The Tidal Lagoon Swansea Bay Project**

1.0.0.1 Tidal Lagoon (Swansea Bay) plc (TLSB) proposes to construct a new tidal-powered generating station, with a nominal rated capacity of 240MW, on land in Swansea Bay and adjacent to Swansea Docks, between the dredged channels of the Rivers Tawe and Neath (the Project). The Project involves the construction of a c. 9.5km long u-shaped seawall impounding an area of some 11.5km<sup>2</sup> of seabed and foreshore to create a Lagoon. The water impounded in the Lagoon provides the head - or build-up - of water needed to store kinetic energy that can be turned into electric power. Electricity will be generated as water flows through the bi-directional turbines when the Lagoon fills and empties after a holding period to create the head required. The electricity generated will be fed into the National Electricity Transmission System (NETS) at an existing substation in Baglan Bay via an underground cable.

1.0.0.2 The Project comprises three main elements:

**Offshore works**

- Dredging and construction of the seawalls
- Construction of a temporary cofferdam
- Concrete works for turbine and sluice gate housing
- Installation turbines and sluice gates and associated M&E works
- Offshore Building including visitor centre and O&M
- Concrete crest and public realm works
- Widening of River Neath channel and replacement of training wall
- Works to Swansea Port channel
- Water Quality enhancement works
- Temporary rock storage areas
- Environmental enhancement measures
- Water shuttle pontoon

**Onshore works**

- Temporary construction support sites and storage areas
- Decontamination/land remediation works
- Material handling facilities
- Western Landfall Building with parking area and slipway
- Eastern landfall works (adjacent to SSSI and university)
- Public realm works
- Access infrastructure
- Environmental enhancement measures

**Cable connection to the NETS**

- Lay cables in western seawall
- Lay cables along port road and through SSSI
- River Neath crossing (existing ducts or directional drill)
- Lay cables through industrial area to existing substation
- Connection at substation



1.0.0.3 This document has been prepared for and on behalf of TLSB in relation to the construction of the Project. It forms part of the suite of application documents supporting an application by TLSB to the Secretary of State for Climate Change for authority to construct operate and maintain the Project (the Application). It is an important and relevant consideration in the determination of the Application and will be secured by a requirement attached to the development consent order (DCO) sought by TLSB pursuant to the Application.

1.0.0.4 The Project site (or Application site) for the purposes of the CEMP is defined as shown on the land and works plans relating to construction of the Project and where physical works are carried out.

## **2.0 Construction and site management**

2.0.0.1 Construction activities relating to the Project will be the ultimate responsibility of TLSB's Construction Project Manager (CPM). The CPM will ensure that construction is managed and monitored appropriately in terms of H&S, quality, design and programme. The CPM will be supported by a firm of consultants specialising in engineering (including maritime engineering), procurement and construction, acting as Construction Manager (CM). The CM will manage all construction interfaces and ensure that construction of the Project is implemented by the various contractors in accordance with approved standards, design and procedures, etc. and will monitor, inspect and conduct surveillance of construction activities at the Project site. The CM will manage and coordinate with the various contractors' construction managers, supervisors, engineering staff and any local consultants.

2.0.0.2 The CM and his construction management team of discipline engineers, H&S manager, quality manager, etc. will be responsible for monitoring and ensuring that the various construction contractors act in accordance with the requirements of this CEMP.

## **3.0 The purpose and aims of the CEMP**

3.0.0.1 The purpose of this CEMP is to define the measures required to mitigate and monitor the construction of the Project so as to protect the environment. The CEMP covers legislative requirements and compliance with regulatory and best practice requirements. It also provides for mitigation measures set out in the Environmental Statement (ES) which accompanies the Application. The provision of the CEMP will be incorporated into the contract(s) for construction of the Project, and will be required to be adhered to as a requirement of the DCO. TLSB and its contractors implementing the Project will be required to comply fully with the terms of the CEMP.

3.0.0.2 The CEMP sets out provisions for the management, mitigation and monitoring of environmental effects during construction of the Project. It also outlines provisions for auditing, reporting and action to be taken to rectify any breach(es) to the CEMP during the course of construction of the Project.

3.0.0.3 Some of the environmental topics addressed within the CEMP are developed to a greater degree of detail than others. This is because the mitigation in some areas will require final, detailed approval once the construction methodologies to be adopted by



TLSB are known. However, in all cases the mitigation is specified at a sufficient level of detail to allow environmental effects of the Project to have been properly addressed

#### **4.0 Compliance with legislation, standards and guidance**

- 4.0.0.1 All works will be undertaken in accordance with the relevant Codes, Standards, Regulations, Acts of the UK Parliament or any Acts or Measures of the National Assembly for Wales that cover environmental and related matters.
- 4.0.0.2 Notwithstanding these references, compliance with the CEMP will not absolve any person from compliance with all legislative requirements applicable at the time of construction of the Project. Wherever the CEMP makes reference to legislation, Standards or Codes it will be the contractor's responsibility to ensure that current versions are used at all times.

#### **5.0 Public information and complaints**

- 5.0.0.1 The need for accountability and responsibility for environmental issues should be recognised by everyone involved in construction of the Project. This will include site staff and operatives who are a key determinant of environmental performance, and senior management staff who will ensure that the works are undertaken in accordance with the CEMP.
- 5.0.0.2 It will be necessary to establish and maintain contact with the local planning authorities and local residents and keep them informed of construction matters likely to affect them. It will be necessary to demonstrate compliance with the CEMP through the management, monitoring, auditing and training procedures in place.

##### *Points of contact*

- 5.0.0.3 From notification of commencement of development, the public within consultation zones 1<sup>1</sup> and 2<sup>2</sup> (enhanced to accommodate community council boundaries) will be informed how they can obtain information relating to the Project generally and construction phases specifically.
- 5.0.0.4 A Project Liaison Officer will be provided to manage public relations, information and press related matters, who will liaise with the local planning authorities, other statutory bodies, members of the public, press and the media on matters relating to construction of the Project.
- 5.0.0.5 A request for information or complaint about construction can be made:
  - i. In person at [ ];
  - ii. By telephone at [ ]; or
  - iii. By letter to [ ] or by email at [ ].

<sup>1</sup> Consultation zone 1 - seafront and other wards with significant visibility of the Project;

<sup>2</sup> Consultation zone 2 - wards with limited visibility of the Project



- 5.0.0.6 Any requests for information relating to the Project, or complaints relating to construction will be dealt with provided the individual:
- i. Identifies themselves;
  - ii. Gives a method of communication by which they wish to receive a response;
  - iii. Makes a request for information or a complaint which can be addressed; and
  - iv. Behaves in a cordial manner.

- 5.0.0.7 All requests for information and complaints will be treated courteously. However, TLSB will not tolerate abusive behaviour towards its staff and reserves its right to withdraw from exchanges if staff feel threatened or otherwise abused.

*Proactive information*

- 5.0.0.8 Information relating to this service will be publicised in the following manner:
- I. On site notice board(s);
  - II. By press release to the local media;
  - III. On the Tidal Lagoon Swansea Bay Project website;
  - IV. In newsletters to residents within consultation zones 1 and 2 (enhanced to accommodate community council boundaries);
  - V. By letter to the local planning authorities;
  - VI. By letter to the community councils within the consultation footprint; and
  - VII. In general correspondence to stakeholders.
- 5.0.0.9 TLSB will announce at least two weeks before commencement of construction:
- i. The date construction is due to begin;
  - ii. the key construction milestones; and
  - iii. how to make a complaint relating to construction activities.
  - iv. This announcement will be in the form of a local press advertisement.

*Complaints procedure*

- 5.0.0.10 If an organisation or individual wishes to make a complaint it will be treated confidentially. TLSB will deal with the complaint as swiftly as possible, thoroughly, rigorously and in a consistent manner. Through investigation into the nature of the complaint TLSB will analyse the cause of the problem and take the necessary action rectifying action to resolve the complaint.
- 5.0.0.11 The complaints procedure has two stages:



#### Stage 1 - Response from a manager

1. TLSB will acknowledge a complaint within three working days;
2. TLSB will advise the complainant of the name and position of the manager who is handling the complaint;
3. the complaint will be logged;
4. the complaint will receive a full response within 10 working days - if this is not possible a letter or email will be sent within 10 working days explaining why a time extension is needed; and
5. if the complainant is not happy with the reply they will be asked to explain why.

#### Stage 2 - Investigation by a senior manager or director

1. TLSB will acknowledge the start of Stage 2 within three working days;
2. Stage 2 will not be investigated by the same person who dealt with the original complaint;
3. this stage may include an interview with the complainant;
4. the person investigating the complaint will write a report on procedures and actions; and
5. the report will be sent to the complainant within 20 working days.

#### *Site visitors and staff identification*

5.0.0.12 As a construction site, visitors will be discouraged from entering it. However, from time to time, TLSB may relax this rule (e.g. visits from stakeholders, local councils representatives, the media, etc.). In order to comply with health and safety regulations, visitors to the site must contact TLSB by the contact details given at 5.5 above.

5.0.0.13 Contractors will be required to ensure that all site construction (and associated) staff are easily identifiable to the public, by use of branded clothing, equipment (including vehicles), identity cards or other effective methods.

5.0.0.14 Vehicles using the construction site (staff and construction vehicles) will be required to report to the site security office who will direct them to the (relevant) parking area.

### **6.0 Hours of working**

6.0.0.1 During the construction period, the normal hours of working for all works will be:

Monday to Sunday: 24 hour continuous.

6.0.0.2 Onshore works may be carried out throughout the year. Offshore hours of working will be limited by season, in terms of both weather conditions and environmental impacts. Further details of specific seasonal limitation of offshore hours of working are provided in Part B of the CEMP.



- 6.0.0.3 It is envisaged that non-intrusive and internal activities comprised in the onshore works, such as electrical installation, commissioning, building fit out and non-destructive testing could be undertaken outside these hours in order to minimise overall construction time.
- 6.0.0.4 In certain circumstances, when onshore work is required to be undertaken at specific times to maintain the construction programme, such as concrete pouring, which must be a continuous process, or where emergency works are required, different working hours may be required, in which case the necessary approvals would be applied for in accordance with the relevant regulatory procedures.
- 6.0.0.5 The local planning authority(ies) will be informed of any emergency works outside normal or agreed working hours.

## **7.0 Site arrangements**

### *Site housekeeping*

- 7.0.0.1 Best practice construction site housekeeping should be applied at all times. This should include the following requirements:
- i. Staff will be made aware of energy efficiency issues and measures to be implemented to reduce energy consumption;
  - ii. Measures to promote efficient use of water on site will be adopted where possible;
  - iii. All working areas shall be kept in a clean and tidy condition;
  - iv. All site waste and litter will be collected at regular intervals, adequately contained and sorted for recycling where possible;
  - v. Site waste susceptible to spreading by wind or liable to cause litter shall be stored in enclosed containers;
  - vi. Adequate toilet facilities shall be provided for all site staff and checks made to ensure that they are connected to the local foul sewer or that chemical toilets are disposed of appropriately;
  - vii. Spill kits will be retained on site and maintained;
  - viii. All working areas shall be non-smoking. Specific areas within the site may be designated as smoking areas and shall be equipped with containers for smoking waste. These shall not be located at the boundary of working areas;
  - ix. Open fires are prohibited at all times;
  - x. All necessary measures shall be taken to minimise the risk of fire and the contractor(s) shall comply with the requirements of the local fire authority;
  - xi. Hoardings and boundary fences shall be frequently inspected, repaired and repainted as necessary; and
  - xii. Properly contained wheel washing facility areas shall be provided for all vehicles and cleaned regularly.

*Fencing and hoarding*

- 7.0.0.2 So far as appropriate, all working areas shall be sufficiently fenced off from members of the public and to prevent animals from straying on to a working area. Hoardings shall be selected to suit the location, but may include the following:
- i. A wire mesh fence, where appropriate for minimum security needs; or
  - ii. A 2.4m minimum height, plywood faced, timber framed boundary hoarding, of a surface density of not less than 7kg/m<sup>2</sup> or other hoarding providing equivalent security and noise attenuation, in the vicinity of noise sensitive neighbours; or
  - iii. Other designs where a particular appearance is required and as agreed with the local planning authority.
- 7.0.0.3 More details of noise mitigation are provided at section 13. The location and design of site boundaries, hoarding and temporary structures on the public highway should permit adequate visibility at junctions and appropriate forward visibility along highways in accordance with Department for Transport advice and the requirements of the local highway authority(ies).
- 7.0.0.4 Where hoardings are provided, they will be painted on the side facing away from the construction site in a colour and style to be approved by the local planning authority, including identification of the Project and contact information.
- 7.0.0.5 All hoardings and boundary fences should be maintained in a neat and tidy condition.
- 7.0.0.6 No advertisement, notice, etc. including illicit bill or fly posting will be permitted on any fence or hoarding. All graffiti, flyposting or defacement to the hoardings will be removed and made good or obscured as soon as reasonably practicable.
- 7.0.0.7 An information board shall be provided at each site entrance detailing information on the construction programme and estimated duration of the works, together with the web address and 24 hour telephone number for use by members of the public who wish to lodge complaints or comments.
- 7.0.0.8 All temporary fencing or hoarding shall be removed as soon as reasonably practicable after the completion of works.

*Lighting and Visual Intrusion*

- 7.0.0.9 Construction buildings, equipment and lighting shall be sited so as to minimise visual intrusion and light spillage at nearby residential properties, in so far as is consistent with the safe and efficient operation of each worksite.
- 7.0.0.10 Site lighting shall be positioned and directed to minimise nuisance to residents and to minimise distractions or confusion to navigation or adjoining public highways. This provision will apply particularly to sites where work after dark will be carried out. Appropriate lighting for these sites shall be provided.



7.0.0.11 So far as is practicable, all power to temporary traffic signals, lighting etc shall be taken from mains supplies rather than from portable generators. Where portable generators are used, industry best practice shall be followed to minimise noise and pollution from such generators.

7.0.0.12 The method of implementing the works shall comply with the Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light 2005 in so far as is reasonably practicable and applicable to the construction works.

*Site security*

7.0.0.13 Adequate security shall be exercised by the contractor to protect the public and prevent unauthorised entry to or exit from the site. Site gates shall be closed and locked when there is no site activity and proper security measures shall be implemented.

7.0.0.14 Where site security cameras are used they shall be placed in locations which will not impinge upon the privacy of local residents.

*Living accommodation*

7.0.0.15 No living accommodation shall be provided within any construction working area. Mess rooms, locker rooms, toilets and showers will be permitted.

*Clearance of site on completion*

7.0.0.16 All working areas and accesses shall be cleared and cleaned as work proceeds and when no longer required for the works.

*Pest control*

7.0.0.17 The risk of infestation by pests or vermin shall be minimised by adequate arrangements for the disposal of food waste or other material attractive to pests. If infestation occurs such action shall be taken to deal with it as required by the local authority.

*Emergency contacts and procedures*

7.0.0.18 An Emergency Contacts Set of Procedures shall be maintained for the worksite which shall be displayed prominently at each site. These procedures shall be followed in any site emergency.

7.0.0.19 They shall contain emergency phone numbers and the method of notifying local authority/services for action by the Contractor. Copies of the procedure will be issued to the Local Authority, the Fire Brigade, the Police, the Ambulance Service and other relevant statutory authorities.

*Safety*

7.0.0.20 The Health and Safety at Work etc. Act 1974, the Construction (Design and Management) Regulations 2007 and the Approved Code of Practice (ACoP), the Construction (Health, Safety and Welfare) Regulation 1996, the Electricity at Work



Regulation 1989, the Management of Health and Safety at Work Regulation 1999 and all relevant European Directives shall apply.

*Contaminated materials (special precautions)*

- 7.0.0.21 At those sites where contaminated material is encountered, the Safety Officer shall ensure that a Workers' Safety Information Sheet is prominently displayed in rest/mess rooms and wash rooms covering hygiene, work practices, clothing requirements etc.
- 7.0.0.22 General provisions concerning disposal of contaminated materials are described in Section C11.

*Crane arcs*

- 7.0.0.23 Crane arcs shall be confined within the Site boundaries unless agreed otherwise with the local planning authority(ies) and the Police.

*Protection of existing installations*

- 7.0.0.24 Investigations and all appropriate actions shall be required concerning existing foundations, buildings, structures, walls, roadways, sewers, cables and other services, apparatus and installations.

*Safeguarding*

- 7.0.0.25 All buildings, structures, works, services or installations shall be safeguarded from harm, disturbance or deterioration during the construction period. All necessary measures required for the support and protection of all buildings, structures, pipes, cables, sewers, and other apparatus during the construction period shall be taken.



## **PART B: ENVIRONMENTAL ISSUES - GENERAL**

### **1.0 Introduction**

- 1.0.0.1 The CEMP establishes the arrangements to manage the environmental risks associated with the Project and details how monitoring will be used to ensure that the agreed environmental procedures are adhered to and supported operationally by the relevant documentation. The CEMP explicitly defines the procedures relevant to the site and construction activity but will continue to be developed throughout construction, in order to reflect any new findings and to meet relevant guidance and legislative requirements.
- 1.0.0.2 All contractors providing a product or service will be required to provide evidence, for example a method statement, to show how they will control environmental risks that may arise from undertaking their works.
- 1.0.0.3 An Environmental Liaison Officer will be appointed for the construction phase. Details of their role and responsibilities are provided below.

### **2.0 Environmental Liaison Officer**

- 2.0.0.1 An Environmental Liaison Officer (ELO) will be appointed for the duration of the construction period. The post of the ELO is intended to provide a focus for environmental issues related to works carried out on behalf of TLSB as part of construction of the Project. The ELO's role in no way exempts TLSB, its contractor(s) and/or designers, from their responsibilities in relation to the protection of the environment. These responsibilities include complying with all relevant legislation, guidance and policy in force in the UK. The key responsibilities of the ELO will include:
- i. working from the Project site office;
  - ii. assessing contractors' method statements and emergency response procedures;
  - iii. liaising with contractors to provide advice on the provision of suitable induction training for all site personnel;
  - iv. weekly audit of compliance with agreed contractors' working practices, pollution prevention measures, DCO requirements, and to provide advice to the contractor;
  - v. acting as an interface between TLSB, project design team and contractor and relevant statutory and non-statutory bodies e.g. Natural Resources Wales, local authorities;
  - vi. attending site progress meetings as necessary, as well as, where required, meetings with interested parties to provide a focus for any environmental concerns;
  - vii. being empowered to request that working practices are varied to help protect the environment and request that works are suspended whilst an environmental issue is investigated, if necessary;
  - viii. in the event of an environmental incident, to respond quickly, liaise with the relevant authorities and/or regulators, provide recommendations on remediation



where necessary, and follow up implementation of remediation & future prevention;

- ix. assisting, where necessary, in obtaining licences (such as discharge consent), and be aware of the conditions of any such licence, or similar, in place;
- x. being responsible for carrying out such water quality monitoring under both emergency and routine conditions as may be required and co-ordinate any other surveys, such as flora and fauna, as required; and
- xi. recording in writing any advice given on site and keep a written record of any liaison with statutory bodies, ensuring TLSB is advised of progress and environmental performance, via progress reports, site progress meetings, updates, meeting minutes or similar format.

### **3.0 Key environmental issues, procedures and mitigation**

3.0.0.1 Procedures and mitigation for environmental aspects on the contract for the construction phase have been identified following appropriate environmental impact assessment of the Project, as detailed in the Environmental Statement (ES) submitted with the Application. Specific procedures and measures of appropriate mitigation and/or management have been identified in respect of the following topics:

- I. General construction mitigation and procedures;
- II. Coastal processes, sediment transport and contamination;
- III. Marine water quality;
- IV. Intertidal and subtidal benthic ecology;
- V. Fish, including commercial and recreational fisheries;
- VI. Marine mammals;
- VII. Coastal birds;
- VIII. Terrestrial ecology;
- IX. Navigation;
- X. Onshore transport;
- XI. Air quality;
- XII. Hydrology and flood risk;
- XIII. Land quality and hydrogeology;
- XIV. Noise and vibration;
- XV. Cultural heritage: marine archaeology; and
- XVI. Cultural heritage: terrestrial archaeology.

3.0.0.2 Issues relating to monitoring are addressed separately in the Adaptive Environmental Monitoring Plan.

3.0.0.3 Lastly, an environmental project aspects register (a framework for which is at Appendix 1) will further detail the mitigation and procedures required and will be continually developed prior to construction commencing and throughout the construction phase. It will take the mitigation measures identified during the ES and incorporate these with standard environmental mitigation measures.



## **PART C: ENVIRONMENTAL ISSUES - SPECIFIC**

### **1.0 Coastal processes, sediment transport and contamination**

#### **Re-suspension of historic contamination**

- 1.0.0.1 TLSB will undertake a Geotechnical Investigation (GI) survey to identify sediment quality at sites proposed for construction works. The final CEMP will identify measures required to take place where contaminated sediment is identified as a result of GI.

#### **Changes in sedimentation in the navigational channel to Swansea and Neath Docks**

- 1.0.0.2 TLSB will undertake additional dredging in navigation channels if deemed necessary during construction. TLSB will consider the necessity of additional dredging in navigation channels and review and liaise with the Ports of Swansea and Neath in respect of existing monitoring and any additional survey(s) required to inform the need for maintenance dredging.



## **2.0 Marine water quality**

### **Sediment and contaminants**

- 2.0.0.1 Good practice and available guidelines will be incorporated in the final CEMP including CIRIA publications and Pollution Prevention Guidance 5.

### **Spills and incidents affecting water quality**

- 2.0.0.2 Spill kits will be retained on site and maintained and staff will be trained in their use.
- 2.0.0.3 TLSB will devise a marine contingency plan to minimise potential spills/incidents during construction which may affect local water quality and to identify action measures to deal with potential incidents.

### **Water quality and disturbance of contaminated sediment**

- 2.0.0.4 A GI study will identify dredging areas with appropriate sediment quality and nature to avoid high quantities of suspended materials during dredging and construction of seawalls (see Coastal processes, sediment transport and contamination).
- 2.0.0.5 Sediments for use in seawall and cofferdam construction will be targeted based on their quality, to reduce potential for re-suspension of contaminated materials.



### **3.0 Intertidal and subtidal benthic ecology**

#### **Habitat loss**

- 3.0.0.1 Construction workers will receive an environmental briefing to advise on sensitive habitats and minimise the extent of effects on such receptors.
- 3.0.0.2 There will be no unplanned works or tracking across Crymlyn Burrows SSSI intertidal area. All works within the intertidal area of the SSSI will be agreed in advance with Natural Resources Wales.

#### **Discharge and spillages into the marine environment**

- 3.0.0.3 TLSB will ensure the adoption of good practice to ensure that substances released into the marine environment are minimised.
- 3.0.0.4 All storage facilities will be bunded to contain and prevent the release into the marine environment of fuel, oils and chemicals associated with plant and refuelling and construction/maintenance equipment.

#### **Introduction of invasive non-native species (INNS)**

- 3.0.0.5 Standard marine protection measures will be implemented to minimise potential introduction or spread of INNS where possible.
- 3.0.0.6 TLSB will comply with appropriate legislation, and published guidelines (e.g. the Green Blue and Royal Yachting Association) and implement best practice to limit the introduction or spread of INNS.



## **4.0 Recreational and commercial fisheries**

### **Impact on fish and shellfish - suspended sediment and deposition**

- 4.0.0.1 Seafloor disturbance shall be limited to the Project boundary, with the use of buoys and distribution of worker awareness information.
- 4.0.0.2 The contractor(s) shall adhere to best practice guidance and other industry standards (Marine Minerals Guidance 1: Extraction by dredging from the English seabed, ODPM, 2002)
- 4.0.0.3 Dredging equipment will be appropriate to the depths and material types to be dredged to minimise the creation of plumes.
- 4.0.0.4 Disposal of dredge spoil not used for seawall construction will be undertaken at Swansea Bay licenced outer disposal grounds.
- 4.0.0.5 Material passing through spillways outside the dredging area will be minimised to reduce the spread of sediment plumes.
- 4.0.0.6 Use of appropriate geotextile lining to minimise the release of fine sediment into the water column and, if appropriate, containment of any finer silts within central wall cavity to minimise reduction in water quality during works.
- 4.0.0.7 TLSB will target sediments approved by CEFAS for re-use in seawall construction.

### **Underwater noise and vibration**

- 4.0.0.8 TLSB will use vibro-piling techniques where possible and, where percussion/impact piling is required, "soft-start" piling procedures will be used.

### **Directional drilling under River Neath - effects on migratory fish**

- 4.0.0.9 Works to drill under the River Neath will be timed to avoid the migratory period of vibration-sensitive Shad species.
- 4.0.0.10 Siting of the drill compound will be at a suitable distance from the river's edge.
- 4.0.0.11 Standard pollution control measures will be implemented during works.

### **Habitat loss and modification**

- 4.0.0.12 Construction of the western seawall and cofferdam dredging shall be timed to avoid herring spawning seasons.
- 4.0.0.13 Spawning material (recycled from within the Project work areas where possible) will be introduced at the base of the seawall for use by fish which utilise substrate to spawn (e.g. herring). Media to be placed by end August in year 1 where possible for use in September spawning run.



**Drainage of temporary cofferdam**

- 4.0.0.14 Fish-friendly pumps shall be used for cofferdam dewatering where appropriate to minimise bodily damage, and provision of netting to ensure no fish in area. Netting to be carried out prior to dewatering to remove trapped fish. Shellfish to be removed from cofferdam in advance of dewatering, and fish rescue undertaken, if necessary.

**Loss of recreational fishing grounds**

- 4.0.0.15 Safety exclusion zones will be identified and minimised, where works allow, to allow greatest possible degree of free transit for fishing vessels across the Bay during construction.



## **5.0 Marine mammals**

### **Marine Mammal Observer**

- 5.0.0.1 TLSB will retain a Marine Mammal Observer (MMO) for the duration of the offshore works. The remit of the Marine Mammal Observer and duties to liaise with the ELO shall be specified in the final CEMP]

### **Noise disturbance**

- 5.0.0.2 Low-noise piling techniques, such as vibro piling, will be used wherever possible.
- 5.0.0.3 TLSB will devise and implement procedures to allow for transition from vibro-piling to percussive piling during the hours of darkness or poor visibility.
- 5.0.0.4 Where possible, percussive piling works will commence within 20 minutes of cessation of vibro-piling. If 20 minutes have elapsed the following procedures will be followed for the transition to percussive piling only:
- i. Establishment of a 'mitigation zone' of radius 500m around the piling site, prior to any piling;
  - ii. Within this mitigation zone, detection would be undertaken by the MMO and acoustically using appropriate Passive Acoustic Monitoring (PAM) equipment;
  - iii. Both the MMO and equipment will be deployed at least 20 minutes before percussive piling is due to commence;
  - iv. Percussive piling would not commence if marine mammals are detected within the mitigation zone or until 20 minutes after the last visual or acoustic detection; and
  - v. The MMO/ Passive Acoustic Monitoring operative should track any marine mammals detected and ensure that they are satisfied that the animals have left the mitigation zone before they advise the crew to commence percussive piling activities.
- 5.0.0.5 Percussive piling will commence using an agreed soft start procedure (the gradual increase of piling power, incrementally, until full operational power is achieved). The soft-start procedure will vary according to hammer and pile design and other factors.

### **Collision risk**

- 5.0.0.6 Work vessels will avoid speeds above 6knots where possible when moving about the site.
- 5.0.0.7 JNCC guidance on reducing the risk of corkscrew injuries (linked to the use of ducted propellers) will be followed.



**6.0 Coastal birds**

**Disturbance to foraging and roosting**

- 6.0.0.1 Where practical, seawall construction works will be in phases moving around the Project site, leaving areas with lower levels of disturbance.
- 6.0.0.2 Seawall construction works will be timed to be outside over-wintering bird season (October to March) where possible.
- 6.0.0.3 Removal of existing structures will be outside the bird breeding season (March to August) where possible, or areas to be checked for nests prior to demolition.



## 7.0 Terrestrial ecology

### Impacts on Crymlyn Burrows SSSI

- 7.0.0.1 Wherever practicable, the existing track will be used for access to the eastern section of the SSSI.
- 7.0.0.2 Any invasive species will be removed if found within the working area. Goldenrod will be sprayed in the working corridor and any stands adjacent to the cable route.
- 7.0.0.3 The construction area will be minimised as much as possible.
- 7.0.0.4 Construction works will be seasonally timed to occur during autumn/winter where possible, and time spent in sensitive habitats will be minimised.
- 7.0.0.5 Membranes and protective mats will be used for top and subsoil storage, and the amount of time soil is stored and reinstated will be minimised.
- 7.0.0.6 Laydown areas will be carefully sited where necessary, with clearance of agreed scrub vegetation within dune slacks.
- 7.0.0.7 Where practicable the cable trench will be installed immediately adjacent to existing tracks.
- 7.0.0.8 Scrub clearance will take place outside bird breeding season (March to August), or a pre-check by an ornithologist will be made should clearance works be required inside breeding season.
- 7.0.0.9 The ELO will supervise any cable works within the SSSI
- 7.0.0.10 Reinstatement will be through a spread of subsoil, followed by a spread of topsoil to allow for natural recolonisation by vegetation.
- 7.0.0.11 During construction of eastern landfall, the dune slack habitat will be restored by means of removal of scrub and woodland, as well as accumulated topsoil, if appropriate for grid connection works through the SSSI.
- 7.0.0.12 A non-intervention management regime will be implemented in respect of clearance of strandline natural litter to encourage invertebrates.

### Loss of bare ground, ephemeral and short perennial vegetation

- 7.0.0.13 Works on the eastern bank of the Neath will be scheduled to take place during autumn/winter where possible in order to avoid destruction of annual plants before they have the opportunity to set seed.
- 7.0.0.14 Substrate (docks estate) supporting Rock Sea-lavender will be stored and reused in artificial rocky shore habitat creation areas of lagoon seawalls. Habitat with the potential to support Rock Sea-lavender will be formed on appropriate areas of the tidal lagoon seawalls.



### **Loss of coastal grassland**

- 7.0.0.15 Strips (at least 3m wide) of coastal grassland associated with the grassland in the lea of the sea wall towards the south-east of Queens Dock will be retained.
- 7.0.0.16 A grassland will be created along the landward side of new saltmarsh following removal of the existing sea wall (1.04ha). Colonisation of existing rock armoured sea defences will also be encouraged through infilling of large gaps with aggregate and localised topping with sandy spoil / topsoil.
- 7.0.0.17 A dedicated coastal grassland plot to the seaward edge at the south-eastern end of the docks estate will be created.
- 7.0.0.18 Creation of grassland habitat at the periphery of parking bays at the western end of the project.
- 7.0.0.19 Grassland turves will be translocated and topsoil reused from areas of species-rich sward to encourage the establishment of coastal grassland habitat in the newly created areas with plants of local provenance.

### **Artificial rock shore habitat**

- 7.0.0.20 Robust plants (such as Golden-samphire) or substrates containing target species seeds (such as Rock Sea-lavender) will be translocated to holding areas where they can be relocated to newly created habitats on lagoon walls.
- 7.0.0.21 Purpose-designed artificial rocky shore habitat on new lagoon walls will be created.

### **Disturbance, injury or mortality of breeding birds**

- 7.0.0.22 Scrub cover or rank grassland to be removed/cut outside of the bird breeding season (end of February to end of August).
- 7.0.0.23 Pre-construction checks will be undertaken in areas with residual potential for nesting birds.
- 7.0.0.24 Reinstatement and site clearance will be undertaken following construction to provide bare and open areas to support the potential for ground nesting birds.

### **Disturbance, injury or mortality of reptiles**

- 7.0.0.25 Where possible, habitat retention, demarcation and protection (reptile fencing and visibility fencing) will be carried out, designed to facilitate in-situ protection of reptiles in part of the grassland verge to the south-east of Queens Dock.
- 7.0.0.26 Habitat manipulation will be undertaken to reduce reptiles cover (scrub removal and grass strimming to 10-15 cm) in areas identified for clearance.



- 7.0.0.27 Artificial refugia will be provided (100-200 tins per hectare) within areas identified for clearance.
- 7.0.0.28 A reptile capture and translocation programme will be implemented.
- 7.0.0.29 Clearance will take place under the supervision of an ecologist.
- 7.0.0.30 Features such as rock piles within grassland habitat creation areas at the south-eastern edge of Swansea Docks will be provided in order to encourage re-colonisation of reptiles from contiguous habitat to the east.
- 7.0.0.31 Temporary reptile fencing will be removed as soon as localised construction works have finished to allow reptiles to re-colonise new habitat.

**Disturbance, injury or mortality of invertebrates**

- 7.0.0.32 Grassland habitat plots will be retained in order to ensure the presence of food plants for colonisation in addition to adult, eggs or pupae of invertebrates.
- 7.0.0.33 Grassland turves or topsoil will be reused to encourage re-establishment of diverse grassland plots.
- 7.0.0.34 Infertile substrates will be used in habitat creation areas to encourage colonisation by a diverse assemblage of plants more likely to support a diverse invertebrate fauna.

**Disturbance, injury or mortality of otters**

- 7.0.0.35 Directional lighting will be used at construction compounds in order to avoid light spill onto open water of the docks.
- 7.0.0.36 Exclusion fencing to high risk areas will be installed and alternative access routes for otter provided.
- 7.0.0.37 Access between the docks and coastline is to be maintained at all times and barriers that could impede movement of otter will not be created.

**Disturbance of bats**

- 7.0.0.38 A sympathetic lighting regime will be implemented during construction.

**Colonisation of invasive species**

- 7.0.0.39 A pre-construction treatment programme will be implemented and/or mechanical removal and disposal will take place during construction.
- 7.0.0.40 Any invasive species infestations will be identified and demarked.
- 7.0.0.41 An invasive species construction management plan will be devised and implemented aimed at setting out a strategy to avoid the spread of invasive species.



## **8.0 Navigation**

### **Increased vessel to vessel collision risk**

- 8.0.0.1 Notices to mariners should be publicised prior to commencement of construction and operated throughout construction in consultation with the relevant harbour and navigation authorities.

### **Vessel to structure collision risk and impact on transit routes**

- 8.0.0.2 Additional Aids to Navigation will be implemented as set out in the final CEMP.
- 8.0.0.3 A safety vessel will be on site at all times during construction.
- 8.0.0.4 Work procedures will be planned having regard to the activities of other users of the Bay.
- 8.0.0.5 Appropriate safety zones will be established during construction the details of which will be specified in the final CEMP.
- 8.0.0.6 Appropriate lighting and demarcation of construction works.
- 8.0.0.7 The pilot boarding station to be relocated (to the south) to increase distance between pilot boarding station and lagoon wall.



## **9.0 Onshore transport**

### **Impacts of increased road traffic transport during construction**

- 9.0.0.1 A Construction Phase Travel Plan (CPTP) will be prepared and approved by the City and County of Swansea and Neath Port Talbot County Borough prior to construction commencing. A copy of the draft CPTP is annexed to this CEMP at Appendix 2.



## **10.0 Air quality**

### **Construction vehicle emissions**

10.0.0.1 A programme to manage air quality during construction will be devised and will include the following:

- i. Use of catalytic converters and other emissions control devices and regular maintenance of vehicle engines;
- ii. On-road vehicles shall comply with national and EU emissions standards; and
- iii. Where possible, all vehicles will switch off engines when not in use, i.e. minimise idling vehicles.

### **Construction dust and vehicle tracks**

10.0.0.2 Machinery and dust-causing activities will be located away from sensitive receptors where possible.

10.0.0.3 The speeds of vehicles tracking across unmade surfaces will be reduced.

10.0.0.4 Water will be used as a dust-suppressant, where appropriate, during dry weather.

10.0.0.5 Drop heights will be minimised for delivery of aggregates.

10.0.0.6 Regular vehicle cleaning and covered loads will be carried out.

10.0.0.7 Mud tracked onto the public highway will be cleaned where necessary.



## **11.0 Hydrology and flood risk**

### **Release of suspended sediment**

- 11.0.0.1 Cut-off ditches and/or geotextile silt-fences will be installed around excavations or exposed ground and stockpiles where required.

### **Build up of dust and mud**

- 11.0.0.2 Site access points will be regularly cleaned.

### **Construction silt combining with run off**

- 11.0.0.3 Earth movement will be controlled to reduce risk.

### **General pollution**

- 11.0.0.4 A pollution prevention plan will be devised and implemented.
- 11.0.0.5 An emergency Spill Response Plan (ESRP) will be produced, which site staff must have read and understood.
- 11.0.0.6 Provision will be made on site to contain a serious spill or leak through the use of bunding and absorbent material.

### **Unmanaged surface water run-off, ground water seepage and de-watering**

- 11.0.0.7 Silty water abstracted during excavations will be discharged to settlement tanks and cleaned run-off discharged to an appropriate location via temporary soakaways or pipes.

### **Leakage of oils and hydrocarbons**

- 11.0.0.8 Oils and hydrocarbons to be stored in designated locations with specific measures to prevent leakage and release of their contents, including the siting of storage areas away from surface water drains and on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain 110% of the contents.
- 11.0.0.9 Valves and trigger guns will be protected from vandalism and kept locked when not in use.
- 11.0.0.10 Wherever possible, plant and machinery to be kept away from drainage system.
- 11.0.0.11 Drip trays are to be placed beneath oil tanks, engines, gearboxes and hydraulics and checked and emptied regularly by a licensed waste disposal operator.

### **Concrete entering the drainage system**

- 11.0.0.12 Wherever possible, mixing and handling of wet concrete on-site would be undertaken in designated, impermeable areas, away from any drainage channels, surface water or tidal waters.



11.0.0.13 A designated, impermeable area would be used for any washing down or equipment cleaning associated with concrete or cementing processes.

11.0.0.14 Wastewater would be discharged to an agreed point.

#### **Disturbance of contaminated land**

11.0.0.15 GI will be conducted on the Project site prior to construction in respect of potential or known contamination.

11.0.0.16 Where contaminated land is disturbed, a scheme of remediation works will be developed and agreed with NRW, and any actions agreed with the relevant planning authority in consultation with NRW.

11.0.0.17 Possibly contaminated, excavated materials should be stockpiled and appropriate management, such as positioning away from any drainage systems and subsequent covering to prevent run-off or infiltration of contaminants into the ground, will be undertaken, so far as possible to minimise the risk of pollution of water bodies.

11.0.0.18 If using cast-in-place or bored piles, measures such as the use of pile casing and isolating and sealing features from surface water will be implemented to minimise the potential risk of contamination of underlying aquifers.

11.0.0.19 Depending on the results of the risk assessment process and proposed terrestrial ground investigation, contaminated hotspots present within the made ground underneath the area of the Project will be removed, treated or isolated prior to development.

#### **Disturbance of existing drainage network**

11.0.0.20 All existing utilities will be identified and marked prior to works commencing.

11.0.0.21 Exposed, disused drainage piping, such as abandoned overflows, will be isolated from surface water run-off and decommissioned.

11.0.0.22 Any damage to the drainage network will be immediately repaired.

#### **Disturbance to groundwater**

11.0.0.23 Where complete cut-off is provided, then groundwater can be controlled on excavation using normal pumping equipment.

11.0.0.24 Where partial cut-off is considered, dewatering systems using sump trenches or well points directing groundwater from the excavation may be used.

11.0.0.25 Measures, such as cut-off trenches, will be put in place to prevent potentially polluted run-off from the project entering the excavation.

#### **Foul and sewerage waste**

11.0.0.26 Wastewater will be kept separate from surface water runoff.



11.0.0.27 The volume of water used will be reduced by use of water-efficient fixtures and fittings and re-use of water in construction activities, where applicable.

11.0.0.28 Foul water will be drained to the private sewer network, where existing, and then connected to public sewerage.

**Pathways for contaminated run off to reach deeper groundwater**

11.0.0.29 Geotextile bunding will be used to isolate and minimise the ingress of surface water runoff to non-decommissioned boreholes or exposed surface water drainage pipes.

11.0.0.30 Surface water drainage networks and exposed boreholes will be decommissioned to the satisfaction of NRW.

11.0.0.31 Pile casing during piling and isolation of the area around the piling from surface water will be carried out until piling is complete.

**Flood response plan**

11.0.0.32 A flood response plan will be prepared in liaison with NRW and flood warning areas identified for the construction period.



## **12.0 Land quality**

### **Disposal of soil off-site**

- 12.0.0.1 Site materials will be reused to level the Project where possible.
- 12.0.0.2 A Materials Management Plan will be devised and implemented during construction to govern the procedure for managing the reuse of soil.
- 12.0.0.3 Where surplus soil needs to be disposed of, it will be done at an appropriate, licensed landfill facility, in accordance with current duty of care responsibilities and other statutory requirements.
- 12.0.0.4 As required by the Landfill Directive, inert, non-hazardous and hazardous waste will require pre-treatment prior to disposal.
- 12.0.0.5 Prior to disposal, soil will need to be characterised following the methodology described in the Environment Agency publications 'Framework for the Classification of Contaminated Soils in Hazardous Wastes', version 1 and 'Guidelines on sampling and testing of wastes to meet landfill waste acceptance procedures' version 1.

### **Accidental fuel and chemical spills**

- 12.0.0.6 Fuel and chemicals will be stored within bunded areas to contain chemical spillages during construction.
- 12.0.0.7 Emergency procedures shall be put in place to manage the eventuality of an accidental spill in line with relevant regulatory guidance.

### **Disturbance of unexploded ordnance**

- 12.0.0.8 Explosive Ordnance Safety and Awareness Briefings shall be carried out for personnel conducting intrusive works.
- 12.0.0.9 Unexploded Ordnance Site Safety Instructions shall be made available for site personnel.
- 12.0.0.10 A desktop study to review risk shall be undertaken and Explosive Ordnance Disposal Engineer shall be present on site to supervise open excavations where appropriate.
- 12.0.0.11 Down-hole intrusive magnetometer surveys of all deep intrusive works and target investigation of suspect anomalies will be undertaken.



## **13.0 Noise and vibration**

### **Site preparation and construction noise**

- 13.0.0.1 Best practice for haulage contractors will be implemented, in accordance with BS5228.
- 13.0.0.2 Noise relating to construction works shall be monitored and controlled in the following ways:
  - i. Screening of potentially noisy construction works;
  - ii. Control of working hours; and
  - iii. Regular maintenance of construction equipment.
- 13.0.0.3 Soft start procedures for percussive piling offshore will be implemented.



## **14.0 Marine archaeology**

### **Damage or disturbance of archaeological sites**

- 14.0.0.1 A watching brief during dredging to be implemented following approval of the Written Scheme of Investigation, to allow for the identification of those sites for which a significance rating was not possible during EIA and for the monitoring of activity in the vicinity of other identified sites. The watching brief will involve the implementation of a protocol for the reporting of material recovered from the dredge head, with provision for monitoring of dredging by a suitably qualified archaeologist where the discovery of material suggests the present of an archaeological site. The protocol will include provision for the recording and investigation of any recovered material, and for the assessment of any sites that are discovered during dredging.



**15.0 Terrestrial archaeology**

**Damage or disturbance of archaeological sites**

- 15.0.0.1 Mitigation to be implemented following approval of Written Schemes of Investigations for any removal of structures. A watching brief to be implemented during construction of the cable route running through previously undisturbed ground.



# **APPENDIX 1**

## **Project Aspects Register (Template)**



### Project Aspects Register (Template)

The Project Aspects Register represents an overview of the typical environmental risks associated with the construction of this type of project. The initial aspects register will be used to assist and guide the development of specific project plans required in the contract and which accurately reflect the project specific and geographical variations effecting the environmental risk and liabilities. The methodology is in line with the International Environmental Management System standard ISO 14001. The initial aspects register is completed at the start of the project and is reviewed regularly i.e. at scope of work change.

A template of the register is provided. This will be completed prior to construction commencing on site and will incorporate mitigation measures identified in this CEMP

The Project Aspects Register represents an overview of the typical environmental risks associated with the construction of this project. The initial Aspects Register will be used to assist and guide the development of specific project plans required in the contract and which accurately reflect the project specific environmental risk and liabilities. The initial aspects register is completed at the start of the project and is to be reviewed regularly i.e. at changes to scope of works.

**Project:** Tidal Lagoon  
Swansea Bay

**Date:** \_\_\_\_\_

| Task               | Environmental Aspect (Activity) | Environmental Impact | Category | Significance (before controls) |            |      | Control (reference to site control plan or RAMS) | Significance (After controls in place) |            |      |
|--------------------|---------------------------------|----------------------|----------|--------------------------------|------------|------|--------------------------------------------------|----------------------------------------|------------|------|
|                    |                                 |                      |          | Severity of Consequence        | Likelihood | Risk |                                                  | Severity of Consequence                | Likelihood | Risk |
| Pre - Construction |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
|                    |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
|                    |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
|                    |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
| Construction       |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
|                    |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |
|                    |                                 |                      |          |                                |            |      |                                                  |                                        |            |      |



## **APPENDIX 2**

### **Draft Construction Phase Travel Plan**



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## **1.0 Introduction**

### **1.1 Introduction**

- 1.1.0.1 This Draft Construction Phase Travel Plan has been prepared on behalf of the Tidal Lagoon Swansea Bay plc (TLSB) as part of the supporting documentation for the environmental impact assessment for its tidal lagoon generating station project (Project).
- 1.1.0.2 It is envisaged that this Draft Construction Phase Travel Plan will provide a framework from which a more detailed Construction Phase Travel Plan will be prepared and submitted for approval prior to commencement of the construction works.
- 1.1.0.3 The Project involves the construction and operation of a tidal energy lagoon located in Swansea Bay. The tidal lagoon will generate renewable energy in the form of electricity using the large tidal range in the Bay. The lagoon will have a rated capacity of 240 MW, or enough electricity to supply approximately 121,000 homes.
- 1.1.0.4 The tidal lagoon will be built by forming a 9.5km long U-shaped seawall running from the Port of Swansea out to sea before curving back to re-join land adjacent to the site of Swansea University Bay Campus (SUBC). Access to the Project, and supporting onshore facilities at the two landfall locations, will be from Fabian Way.
- 1.1.0.5 In addition to generating electricity, the Project also aims to provide visitor facilities and other amenities including art, education, mariculture and sporting and recreational facilities. The seawall is expected to be open to the public during daylight hours for walking, running, cycling, etc., although access will be controlled in extreme weather.
- 1.1.0.6 During construction there will be a short-term increase in traffic associated with construction personnel, and an increase in HGV traffic from the import of construction materials. The measures to be taken to minimise the impact on the local highway network are set out in this document.



## 2.0 Planning Policy

### 2.1 Planning Policy Wales

- 2.1.0.1 Edition 5 of Planning Policy Wales (PPW) was published in November 2012. It sets out the land use planning policies of the Welsh Government emphasising its commitment to sustainable development in the planning system so that it can play an appropriate role in moving towards sustainability.
- 2.1.0.2 Chapter 4 of PPW (Planning for Sustainability) affirms the Welsh Government's objectives regarding sustainable development and the need of Local Development Plans to reflect the policy goals of the Wales Spatial Plan and provide a framework to stimulate, guide and manage change towards sustainability.
- 2.1.0.3 Chapter 8 (Transport) of PPW confirms the Welsh Government's commitment to sustainability identifying one of its key aims *'to extend choice in transport and secure accessibility in a way which supports sustainable development and helps to tackle the causes of climate change by encouraging a more effective and efficient transport system, with greater use of the more sustainable and healthy forms of travel, and minimising the need to travel'*.

### 2.2 Technical Advice Note 18

- 2.2.0.1 Technical Advice Note 18 (TAN 18) was published in March 2007 in support of PPW. The document sets out the Welsh Government's objectives on planning with regard to transport issues. TAN 18 acknowledges that *'by guiding the location of new development, reducing the need to travel, and promoting transport choices which are less polluting, land-use planning can contribute to long term environmental improvement.'*
- 2.2.0.2 TAN 18 states that in order to meet sustainable development policy objectives, local authorities should be:
  - Promoting resource and travel efficient settlement patterns;
  - Ensuring new development is located where there is, or will be, good access by public transport, walking and cycling thereby minimising the need for travel and fostering social inclusion; and
  - Encouraging the location of development near other related uses to encourage multi-purpose trips.

### 2.3 Wales Transport Strategy

- 2.3.0.1 The Wales Transport Strategy: One Wales - Connecting the Nation was published in May 2008 and is a key document to developing an effective transport strategy for Wales. The document outlines how the transport policy approach is more responsive in its delivery of the Welsh Government's wider policy agenda, and has attempted to be flexible to reflect different regional circumstances.



2.3.0.2 The four main regions in Wales are each represented by one of four regional transport consortia which have been created through partnerships between neighbouring Local Authorities. CCSC is part of the South West Wales Transport Consortium known as SWWITCH.

2.3.0.3 The stated goal of the Transport Strategy is for Wales to promote sustainable transport networks that safeguard the environment while strengthening Wales' economic and social life.

## 2.4 Walking and Cycling Action Plan for Wales 2009-2013

2.4.0.1 The Welsh Government presented a Walking and Cycling Action Plan for Wales in December 2008 setting out its aim to maximise opportunities for walking and cycling and to reduce car use, particularly for short journeys. In addition, it identifies that the provision of walking and cycling facilities is an important element in creating equal opportunities. Its mission statement is *'to encourage more people to walk and cycle more safely and more often'*.

## 2.5 Regional Transport Plan

2.5.0.1 The Regional Transport Plan (RTP) is the result of joint working between the four local authorities (Carmarthenshire, Neath Port Talbot, Swansea and Pembrokeshire) as part of the South West Wales Integrated Transport Consortium known as SWWITCH. It replaces the individual local transport plans previously adopted by the four councils. As well as acting as a bidding document for major transport schemes it has and will continue to shape transport policy in the region for the period 2010-2015 and beyond.

2.5.0.2 The plan was adopted by the four councils in summer 2009. It was submitted to the Welsh Government in September 2009 and approved at the end of December 2009.

2.5.0.3 SWWITCH has worked with a range of stakeholders to examine a variety of options that could potentially deliver RTP objectives. The RTP explains that no single option would be appropriate across such a diverse region as South West Wales, and advocates a 'mix and match' approach to transport.

2.5.0.4 The RTP lists a number of objectives, including the following:

- To improve access for all to a wide range of services and facilities including employment and business, education and training, health care, tourism and leisure activities;
- To improve the sustainability of transport by improving the range and quality of, and awareness about, transport options, including those that improve health and well-being;
- To implement measures which make a positive contribution to improving air quality and reducing the adverse impact of transport on health and climate change, including reducing carbon emissions;
- To implement measures which help to reduce the negative impact of transport across the region on the natural and built environment including biodiversity; and



- To improve road safety and personal security in South West Wales.

2.5.0.5 The long term strategy set out in the RTP for the Swansea urban area emphasises improved public transport and walking and cycling facilities, including Bus Rapid Transit.

2.5.0.6 In relation to the Fabian Way corridor, the RTP states that *'new development sites and corridors, such as Fabian Way will be planned so that they can be effectively served by public transport and walking and cycling facilities. All these measures will be supported by intensive use of smarter choices measures, including comprehensive personalised travel planning'*.

## **2.6 City and County of Swansea Unitary Development Plan**

2.6.0.1 The CCSC Unitary Development Plan (CCSC, 2008) 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 & County up to 2016. The UDP is based firmly on sustainable planning principles. This is reflected in its spatial strategy and overall approach to the pattern, form and distribution of new development.

2.6.0.2 Chapter 5 of the UDP relates to Improving Accessibility, and includes the following policies.

2.6.0.3 Policy AS1 - New development associated with housing, employment, shopping, leisure and service provision should be located in areas that are currently highly accessible by a range of transport modes, in particular public transport, walking and cycling, or in areas where a good level of such provision can realistically be achieved.

2.6.0.4 Policy AS2 - New developments should be designed to:

- Promote the use of public transport and facilitate sustainable travel choices,
- Provide suitable facilities and an attractive environment for pedestrians, cyclists and other non-motorised modes of transport,
- Allow for the safe, efficient and non-intrusive movement of vehicles, and
- Comply with the principles of accessibility for all.

2.6.0.5 Policy AS5 - Development proposals will be required to consider the access requirements for pedestrians and cyclists and, where necessary, provide appropriate facilities and/or infrastructure to encourage their use.

2.6.0.6 Policy AS6 - Parking provision to serve development will be assessed against adopted maximum parking standards to ensure that proposed schemes provide appropriate levels of parking for private cars and service vehicles. Account will also need to be taken of the need to provide facilities for the parking of motorcycles and cycles.



## **2.7 Neath Port Talbot County Borough Council Unitary Development Plan**

- 2.7.0.1 The NPTCBC Unitary Development Plan (NPTCBC, 2008) 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 up to mid 2016.
- 2.7.0.2 The following policies relate to transport:
- 2.7.0.3 Policy 12- Improvements to the transport system will concentrate on:
- improving accessibility and highway safety and reducing congestion, pollution and disturbance generated by traffic;
  - encouraging travel by public transport, cycling and walking as alternatives to the car; and
  - encouraging the movement of freight by rail and sea as alternatives to road.
- 2.7.0.4 Policy 13- The location and design of development should contribute to more sustainable communities through reducing dependency on the motorcar and encouraging the use of public transport, cycling and walking.
- 2.7.0.5 Policy 14- Proposals will be resisted which would be likely to cause unacceptable adverse impact in terms of:
- traffic generation and highway safety;
  - poor accessibility by public transport, cycling and walking including people with disabilities; and
  - preventing the use or re-use of docks, harbours, wharfs or routes of railway lines.

## **2.8 Fabian Way Corridor Transport Study**

- 2.8.0.1 The Fabian Way Corridor, from the River Tawe to the M4, has numerous sites for future development including employment, residential and leisure uses. The area has been identified as a sub-regional focus for economic growth with several major regeneration schemes ongoing e.g. SA1, Coed Darcy and Swansea University Bay Campus.
- 2.8.0.2 The Welsh Assembly Government (WAG) commissioned Arup to undertake a strategic assessment of the transportation options for the Fabian Way Corridor. The study commenced in November 2008 with the Main Report issued in January 2010. The overall aim of the study was to develop a transport strategy to support the regeneration of the corridor.
- 2.8.0.3 Client steering group meetings including officers from CCSC and NPTCBC, stakeholder consultation with workshops and a community Newsletter were included as part of the process.
- 2.8.0.4 The Preferred Strategy incorporates highway, rail, Public Transport, walking and cycling, canal, Intelligent Transport Systems, demand management and a Strategic Travel Plan. Proposed targets for mode splits and a provisional programme for implementation are



also included. The Preferred Transport Strategy has been approved in principle by both CCSC and NPTCBC.

2.8.0.5 Measures for the delivery of the Strategy from 2010 to 2029 include:

- Short term - Bus only bridge over River Tawe, segregated busway, transport hub at Swansea University site;
- Short, Medium and Long Term - Walking and cycling route improvements, improvement to bus services, reduction of speed limits;
- Medium Term - Capacity improvements at Tawe Bridges, improvement to Park & Ride, upgraded pedestrian/cycle bridge; and
- Long term - Additional Park & Ride north of Amazon, new grade separated junction at Baldwin's Bridge.



### **3.0 Objectives of the Travel Plan**

#### **3.1 Principal Objectives**

- 3.1.0.1 This Plan demonstrates the commitment of TLSB to take all reasonable steps to minimise the impact of construction related travel on the environment by reducing the level of unnecessary travel, and encouraging those who have to travel to do so in a more environmentally friendly way.
- 3.1.0.2 The aim of the Travel Plan is to promote greener, cleaner travel choices, reducing reliance on the private car. The Travel Plan is aimed at employee journeys to and from work and also considers travel issues relating to deliveries of construction materials. The aims of the Travel Plan are:
- Reducing the number of vehicles, with emphasis on single occupancy vehicles travelling to the site;
  - Providing the minimum possible parking provision to encourage other travel modes;
  - Improving overall accessibility;
- 3.1.0.3 Through changes in travel habits this Travel Plan will provide benefits for:
- Individuals - through improved travel choices and potential cost savings;
  - The employers/sub-contractors - through reduced congestion and improved access to site for employees;
  - Local community – minimising local pollution, noise levels and congestion; and
  - The Environment - through improved air quality with less noise, dirt and fumes, as well as by reducing the impact of other national and global environmental problems such as photochemical smog and global warming.

## 4.0 Development Proposal

### 4.1 Introduction

- 4.1.0.1 TLSB is proposing to construct and operate a tidal energy lagoon, located in Swansea Bay, South Wales (Figure 4.1). The tidal Lagoon will generate renewable energy in the form of electricity using the large tidal range (the difference between high and low water) which is a distinguishing feature of the Bay. The Project will have a rated capacity of 240 Megawatts (MW), generating 400GWh net annual output. This is enough electricity for approximately 121,000 homes: more than Swansea's annual domestic electricity use (109k households); around 70% of Swansea Bay's annual domestic electricity use (Swansea, Neath & Port Talbot, 173k households); or approximately 9% of Wales' annual domestic electricity use (based on 1,369k households).



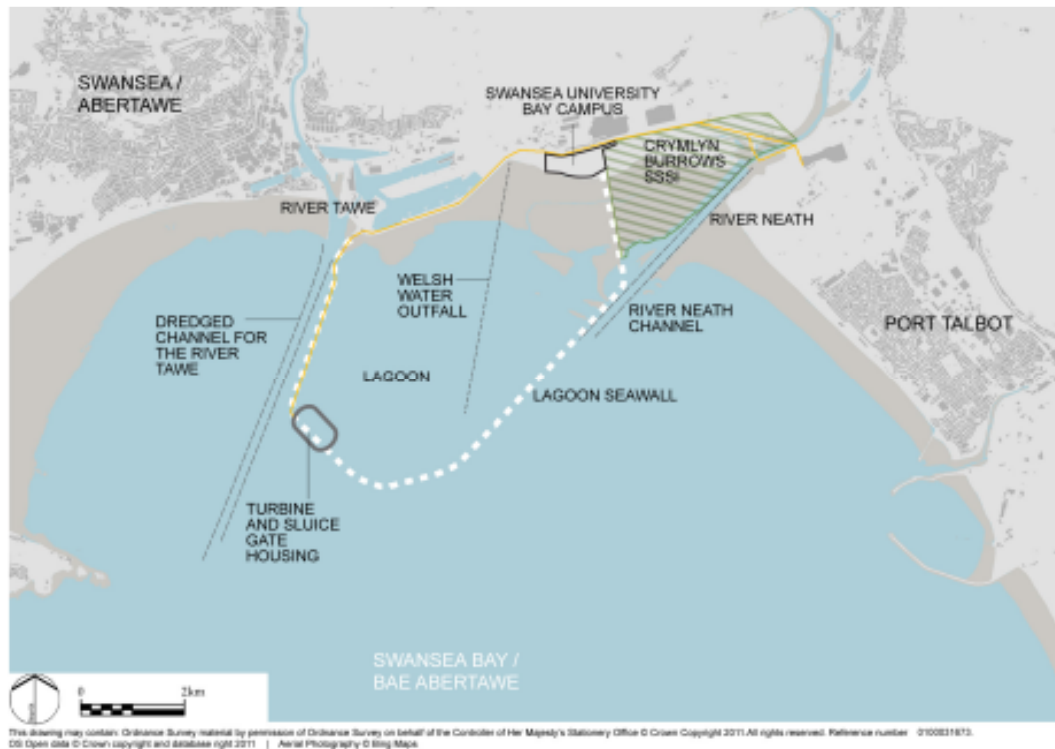
**Figure 4.1: Location of Project**

- 4.1.0.2 In addition to generating electricity, the Project also aims to provide visitor facilities and other amenities including art, education, mariculture and sporting/recreational facilities. The seawall is expected to be open to the public during daylight hours for walking, running, cycling etc, though access will be controlled in extreme weather.

### 4.2 Overview of the Project

- 4.2.0.1 The Project is situated in Swansea Bay, adjacent to the Port of Swansea, approximately 2.2 km southeast of Swansea City Centre. The Project as a whole spans the administrative areas of the City and County of Swansea Council (CCSC) and Neath Port Talbot County Borough Council (NPTCBC). The main onshore development lies within the Port area, immediately south of Fabian Way (A483) which is the main trunk road from Junction 42 of the M4 into Swansea.

- 4.2.0.2 The onshore development area (Figure 4.2) provides an indication of where the structures associated with the Project will be located. Immediately west of the site, adjacent to the boundary, is the mouth of the River Tawe and to the east of the site, is the River Neath.
- 4.2.0.3 Figure 4.2 provides an indication of the Project and the wider extent to the mouth of the River Neath related to the cable and grid connection at Baglan Bay substation.



**Figure 4.2: The Project**

- 4.2.0.4 The Lagoon 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) (eastern landfall). The new seawalls that impound the Lagoon will extend approximately 1.5km directly offshore from the campus, adjacent to Crymlyn Burrows 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. At this location an operation and maintenance, and visitor, facility will be located. 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 11.5km<sup>2</sup> of the seabed, foreshore and intertidal area of Swansea Bay.
- 4.3 Access**
- 4.3.0.1 Vehicle access for both the construction and operational phase of the Project will be via the Fabian Way/Langdon Road/Park & Ride junction. At the roundabout to the south of this junction, traffic will turn east along Langdon Road. From the eastern end of Langdon Road a new road to link to the south side of the Port and Queens Dock will be

provided, and a new coastal access road extending to the western landfall of the Lagoon, as shown in Figure 4.3 below. From Langdon Road the route will turn south and then east, running parallel to and immediately north of the existing port access road, up to the boundary of the Dwr Cymru Welsh Water Waste Water Treatment Works (WWTW). From here, the existing Port road will be moved south and the Lagoon access road will continue past the entrance to the WWTW. At a distance of approximately 50m east of the entrance to the WWTW the Lagoon access road will turn south, cross the Port access road, and extend west along the south of Queen's Dock. A new port security entrance will be created with the existing security hut relocated to the west of the proposed Lagoon access road. Access to the Port will remain from Baldwin's Bridge junction.



**Figure 4.3 Vehicle access**

- 4.3.0.2 Once the Lagoon access road has crossed the Port road there will be a drop off point and turning area allowing pedestrians and cyclists to join the footpath and cycleway to the eastern landfall. The Lagoon access road will extend along the south side of Queen's Dock and utilise the alignment of the existing Port road. A new Port road will be constructed immediately north of the Lagoon access road, separated by a secure fence and swale. In this way, existing operations at the Port will not be affected by the development.
- 4.3.0.3 The new Lagoon access road will also include facilities for pedestrians and cyclists along its entire length in the form of a Shared Use Path (SUP). In order to be convenient, attractive and safe to potential users the proposed SUP will be 3m wide, flat and, for the vast majority of its route, segregated from the vehicular carriageway by a 1m wide grass separation strip. A new footpath/cycleway will be created south of Langdon Road to link the existing footpath from SA1 to the start of the Lagoon access road. A small



section of the SUP along Langdon Road will not be segregated due to unavoidable land constraints.

- 4.3.0.4 At its southern end, the SUP will link up with the circular shared use path that will run atop the Lagoon seawall. The SUP will also link up with a separate SUP to the east, providing a continuous link for pedestrians and cyclists between the Lagoon visitors centre and the Swansea University Bay Campus (SUBC). The proposed SUP supports a Sustrans aspiration to consider improvements to the National Cycle Network route 4 away from Fabian Way.
- 4.3.0.5 Under the current design the WWTW, which is currently accessed via Baldwin's Crescent and the main entrance to the port, would be accessed via Langdon Road and the Lagoon access road.
- 4.3.0.6 The junction arrangement where the Lagoon access road crosses the existing Port road will be designed to prevent traffic on the Lagoon access road from accessing Fabian Way at Baldwin's Bridge, and also prevent traffic from accessing the Lagoon or Langdon Road via Baldwin's Bridge and the Port road. Signage will also be employed at the entrance to the Lagoon access road/Fabian Way Junction 3 to ensure that extraneous traffic is not attracted. Exceptional loads arising during construction may access the Lagoon site via Junction 4 if necessary.
- 4.3.0.7 The proposed access seeks to ensure that vehicle speeds are minimised by limiting the road width to 5.5m. Speed along the access road will also be regulated through the use of speed signs.
- 4.3.0.8 A temporary construction route will be provided from the new Lagoon access road to the site compound utilising existing carriageway where possible. An emergency vehicle access will also be provided from the new Lagoon access road to the eastern landfall.



## 5.0 Existing Transport Facilities

### 5.1 Local Highway Network

5.1.0.1 Fabian Way is an arterial road which forms part of the A483, connecting Swansea city centre with the M4 motorway at Junction 42. It is the main route into Swansea from the surrounding area and for traffic from further afield. It is approximately 7.6 km long and cuts through the centre of Crymlyn Burrows in the unitary authority areas of Swansea and Neath Port Talbot. Fabian Way is a dual carriageway for its whole length. The speed limit is 30 mph between Swansea city centre and Port Tennant, after which the speed limit rises to 50 mph until the Jersey Marine roundabout. The road is a standard national speed limit dual carriageway between Jersey Marine and the junction with the M4.

5.1.0.2 Access to the site during construction will be via the Fabian Way/Langdon Road/Park & Ride access signalised junction. This junction provides access to a Park and Ride facility to the north and the existing main Port of Swansea entrance to the south. Exceptional loads arising during construction may access the Lagoon site via the Baldwin's Bridge junction.

### 5.2 Public Transport

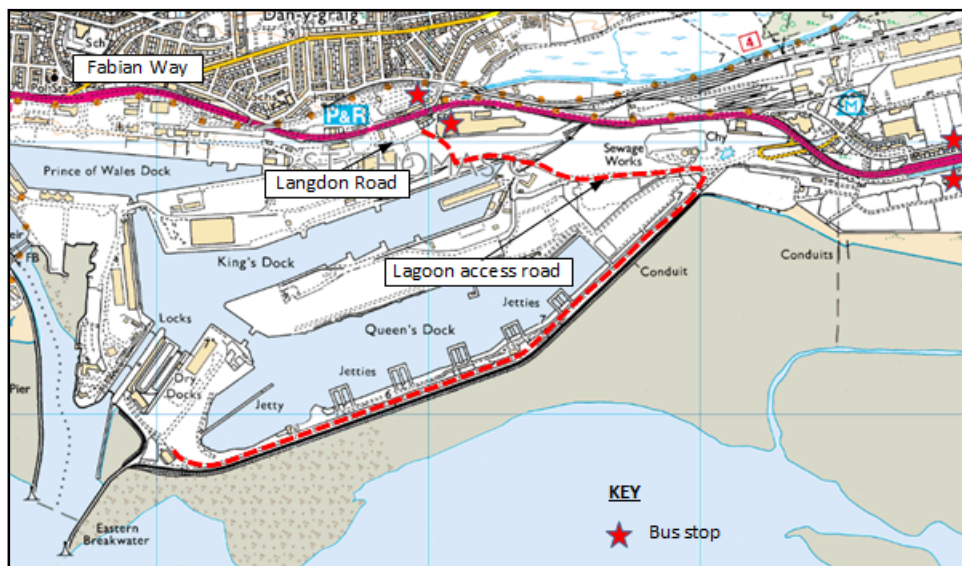
5.2.0.1 Bus services operate regularly in the vicinity of the site, with 11 services operating along Fabian Way, Elba Crescent or Baldwin's Crescent. All of these services start from Swansea Bus Station and travel between Swansea and various towns and villages to the east.

5.2.0.2 The services are summarised in Table 5.1 below.

**Table 5.1 Bus services**

| Service No. | Operator | Route                                                    | Frequency |          |         |
|-------------|----------|----------------------------------------------------------|-----------|----------|---------|
|             |          |                                                          | M - F     | Sa       | Su      |
| 7           | First    | City centre - Swansea Marina                             | Hourly    | Hourly   | -       |
| 44          | First    | Swansea - SA1 - Grenfell Park                            | Hourly    | Hourly   | -       |
| 156         | SBAC     | Swansea – Neath                                          | -         | -        | 6 / day |
| 157         | First    | Swansea - SA1 - Elba Crescent – Neath                    | Hourly    | Hourly   | -       |
| 158 / X58   | First    | Swansea - SA1 - Elba Crescent – Banwen                   | Hourly    | Hourly   | Hourly  |
| 224         | First    | Swansea - SA1 - Elba Crescent - Porthcawl                | Hourly    | Hourly   | -       |
| X1          | First    | Swansea - Elba Crescent - Neath - Port Talbot - Bridgend | 2 / hour  | 2 / hour | -       |
| X3          | First    | Swansea - Elba Crescent - Port Talbot - Maesteg          | Hourly    | Hourly   | -       |
| X5          | First    | Swansea - Neath – Glynneath                              | 2 / hour  | 2 / hour | -       |
| X6          | SBAC     | Swansea – Neath                                          | Hourly    | -        | -       |
| X63 / X64   | First    | Swansea - SA1 - Neath - Ystradgynlais                    | Hourly    | Hourly   | -       |
| X75         | FC5      | Swansea - Neath - Glynneath - Hirwaun - Merthyr Tydfil   | 4 / day   | 6 / day  | -       |

- 5.2.0.3 The nearest bus stops to the site are illustrated in Figure 5.1 below. The site can be accessed from bus stops at two locations. The first is on Fabian Way close to the Park & Ride junction, near the junction with Wern Terrace. These stops are approximately 3.7km from the western landfall, 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 Baldwin's Bridge junction. 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.
- 5.2.0.4 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 Junction 3. 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.



**Figure 5.1 Bus stop locations**

- 5.2.0.5 A Park & Ride facility is located just to the north of Fabian Way at Junction 3, at the same location as the first bus stop identified above. Service 502, operated by First, runs every 12-15 minutes between 07:00-19:07 on Monday to Saturday between the Park & Ride site and the city centre. The Park & Ride site has 550 parking spaces, including 23 disabled bays, and is open from 06:45-19:30.

### 5.3 Pedestrian and Cycle Facilities

- 5.3.0.1 There is a cycle path running along the southern side of Fabian Way between Kings Road and the junction with Port Tennant, which forms a section of both National Cycle Network route 4 (NCN 4) and the Swansea to Glyncorrwg Loop. NCN 4 provides links between Swansea, Neath, Briton Ferry, Port Talbot and several local villages.



- 5.3.0.2 To the east of the Port Tennant junction the cycle path continues running adjacent to the southern side of Fabian Way and then crosses to the north via the pedestrian/cycle and bus bridge linking to the Park and Ride facility. The cycle path runs to the north of the Park & Ride site to Wern Terrace. It is then signed along a short section on Wern Terrace to the north side of Fabian Way, where it continues east to Baldwin's Crescent.
- 5.3.0.3 NCN 4 is signed along Baldwin's Crescent and Elba Crescent until re-joining the north side of Fabian Way. It continues east to the Jersey Marine roundabout where it turns north to join Ffordd Amazon.
- 5.3.0.4 To the east of the Baldwin's Bridge junction the footpath on the south side of Fabian Way is wide and is also used as a cycle path. The path narrows as it approaches the westbound offslip at the junction, where there is an uncontrolled crossing point. This wider section is the subject of a cycle link project being promoted by NPTCBC which extends cycle provision off Fabian Way and on to the road that provides access to the Port at the Baldwin's Bridge junction.
- 5.3.0.5 From the Tawe Bridges junction the cycle path runs south alongside King's Road towards Prince of Wales Dock, where it then crosses the river via a pedestrian/cycle bridge using the Wales Coastal Path route over the Trafalgar Bridge and National Route 4 over the Sail Bridge, and on towards South Dock in the Maritime Quarter and Swansea town centre.
- 5.3.0.6 The wider road network of the SA1 development is subject to a Section 38 Agreement and as such the port road network is not presently adopted. The SA1 road network (Langdon Road) extends to meet the proposed site boundary and the Lagoon access road and associated pedestrian and cycle route improvements proposed as part of the Project.



## **6.0 Delivering the Plan**

### **6.1 Travel Plan Coordinator**

6.1.0.1 A successful Travel Plan needs commitment from staff at all levels. TLSB will ensure that the Contractor will appoint a Travel Plan Coordinator, who will have the authority to implement the Plan with the support of senior management.

6.1.0.2 The Travel Plan Coordinator will be responsible for organising, delivering and reporting the detailed aspects of the Travel Plan, including the following:

- Securing the commitment and support of senior management and other staff;
- Promoting the objectives and benefits of the Travel Plan;
- Exploring possible sustainable travel alternatives;
- Acting as a point of contact for staff with travel queries;
- Monitoring the progress achieved towards the Travel Plan targets;
- Providing feedback to senior management on the success of the Travel Plan;
- Acting as the point of contact for information and for exchanging ideas and best practice with other organisations; and
- Any other transport and travel related issues and concerns that may arise from time to time.



## 7.0 Travel Plan Initiatives

7.1.0.1 There are a number of factors which can limit the potential of Construction Phase Travel Plans, including the following:

- The origin of material deliveries is unknown at this stage;
- The locations from which construction staff will commute on a daily basis is unknown;
- The location of the site and nature of the work makes walking or cycling less appealing; and
- The transient nature of a construction workforce makes it difficult to establish routines based around sustainable transport.

7.1.0.2 However, a number of measures that will help to minimise the impact of construction traffic on the local environment will be implemented, and these are presented below.

## 7.2 Site Hours

7.2.0.1 Working hours during construction of the Project have not been finalised yet. However, it is likely that there will be 24/7 working during at least some phases of construction. In terms of impact on the local highway network, the key periods are the AM and PM commuter peaks, typically 0800-09:00 and 17:00-18:00. When work is carried out in shifts, the start and finish times generally do not coincide with the regular commuter peaks. However, to ensure that the assessment of the impact of construction traffic is robust it has been assumed that construction staff will operate typical daytime hours.

7.2.0.2 Working hours for construction projects are typically 08:00-18:00 on weekdays and 08:00-13:00 on Saturdays. However, for safety reasons it is expected that staff will not be permitted to drive their own vehicles along or close to the Lagoon wall and instead transport will be provided between the site compound and the work site. Therefore it is expected that construction staff will be required to arrive at the site compound by 07:30 in the morning, allowing 30 minutes for transport within the site. Construction staff will therefore arrive and depart outside the peak hours on the local highway network, which were shown to be 08:00-09:00 and 16:00-17:00 in the Onshore Transport chapter of the Environmental Statement.

## 7.3 Site Access

7.3.0.1 The access and egress of construction traffic will be carefully planned to minimise impacts on the surrounding highway and local road users, including any existing employees still occupying other parts of the Port of Swansea. The increase in construction traffic flows will be managed to minimise the impact on the surrounding highways and all local road users, in particular the morning and evening commuter peak periods. Discussions will be held with CCSC to agree a safe site access strategy in advance of site works commencing, and prior to each phase of the works.



- 7.3.0.2 Exceptional loads arising during construction may access the Lagoon site via the Baldwin's Bridge junction. Delivery vehicles would then leave the site via the Fabian Way/Langdon Road/Park & Ride access signalised junction.
- 7.3.0.3 Construction staff will be encouraged to travel to and from the site by sustainable means. In particular, emphasis will be given to car sharing and the use of minivans. Parking within the site for construction staff will be managed in order to prevent overspill parking on the surrounding side roads.
- 7.3.0.4 Pedestrian access to the site will be segregated from vehicular traffic at all times, with clear signage to maintain the safety of the site and the general public.

## **7.4 Travelling by Car**

- 7.4.0.1 Travel to the site by minibus or car sharing retains the directness and flexibility of car travel while allowing staff to reduce fuel bills and wear and tear on their own vehicles, and reduce demand for car parking on site. The use of minibuses or crew buses and car sharing will form a central element of this Travel Plan for the following reasons:
  - It is likely that staff will be travelling to the site from a very dispersed catchment area; and
  - Staff may need to bring equipment to the site, and so travel by public transport, walking or cycling is less practical.
- 7.4.0.2 Some common Travel Plan measures to encourage car sharing, such as setting up a database of staff willing to car share or providing access to a web site for car sharers, are not practical in the case of a construction project. The financial benefits of travel by minibus and car sharing will therefore be promoted through staff noticeboards, and preferential car parking spaces will be allocated for minibuses and car sharers, to be positioned in the most convenient location.

## **7.5 Delivery Traffic**

- 7.5.0.1 It is anticipated that the main bulk material for the construction of the lagoon seawall will be imported by sea as far as possible. It is also proposed to use a concrete batching plant within the docks. However, some raw materials for concrete production, steel reinforcement, turbine components and other materials will have to be imported by road.
- 7.5.0.2 A preliminary assessment of the number of HGV movements required during the construction phase is shown in the Project Description chapter of the Environmental Statement. It has been assumed that sand required for concrete production will be obtained from Swansea Bay, and that concrete will be produced at an on-site batching plant. Therefore these activities will not generate any HGV movements on the external road network. Based on these assumptions the maximum number of HGV deliveries on the local network is expected to be 1,975/month.



7.5.0.3 All construction traffic entering and leaving the site will be closely controlled. Vehicles making deliveries to site or removing spoil or demolition material etc. will travel via designated routes which will have been previously agreed with CCSC, NPTCBC and other relevant bodies. It is anticipated that all HGV traffic will be routed via Junction 42 of the M4, to avoid any HGV traffic travelling through Swansea city centre. Temporary signage for construction traffic will be provided in agreement with CCSC, NPTCBC and other relevant bodies.

7.5.0.4 Deliveries will be phased on a 'just in time' basis where possible. This will minimise travel time and potential congestion around the site.

## **7.6 Construction Working Group**

7.6.0.1 A Construction Working Group will be formed, comprising representatives from TLSB, the Contractor, CCSC, NPTCBC and any other interested parties including local businesses and residents.

7.6.0.2 The Working Group will provide a forum for any transport related issues to be raised with the Contractor, and for corrective action to be agreed. The frequency and format of Working Group meetings will be agreed with CCSC and NPTCBCT.



## 8.0 Monitoring and Review

### 8.1 Targets

- 8.1.0.1 The transient nature of a construction workforce and the limited opportunities to travel to the site by public transport, walking or cycling make it difficult to set realistic targets for changes in mode share. A more realistic approach is to use the estimate of construction staff numbers and associated trip generation as a target not to be exceeded during the construction phase, as it has been demonstrated in the Onshore Transport chapter of the Environmental Statement that the local highway network has sufficient capacity to accommodate the estimated peak traffic generation.

### 8.2 Monitoring

- 8.2.0.1 During the peak construction period the maximum number of employees on site is expected to be approximately 600, comprising 200 contractor's staff and 400 sub-contractors. In order to estimate the number of staff cars and vans travelling to site the following assumptions regarding vehicle occupancy have been made:

- Contractor's staff      1 person/car      = 200 vehicles
- Sub-contractors      2 people/car      = 200 vehicles
- Total      = 400 vehicles

- 8.2.0.2 At intervals to be agreed with CCSC and NPTCBC, surveys of car park occupancy will be undertaken. At the same time the number of employees on site will also be recorded. This will provide a simple but effective check on the validity of the assumptions made regarding employee travel.

- 8.2.0.3 If analysis of the results indicates that construction staff traffic is exceeding 110% of the estimated numbers, the Travel Plan will be reviewed and further measures introduced in order to address the situation in consultation with CCSC and NPTCBC.



## 9.0 Action Plan

### 9.1 Outline Timetable

- 9.1.0.1 A timetable for the ongoing monitoring and review of the Travel Plan has been produced, detailing the key elements of the process and the approximate timescales. This is shown in Table 9.1 below.

**Table 9.1 Action Plan Timetable**

| Action                                                                                                | Timescale                             |
|-------------------------------------------------------------------------------------------------------|---------------------------------------|
| Appoint Travel Plan Coordinator                                                                       | Prior to commencement of construction |
| Finalise Construction Phase Travel Plan in consultation with CCSC and NPTCBC                          | Prior to commencement of construction |
| Monitor success of Travel Plan and progress towards achieving targets; amend Travel Plan if necessary | Reviews at 6 monthly intervals        |

- 9.1.0.2 As with all elements of the Travel Plan process, these timescales are not prescriptive, but should be modified according to circumstances to ensure that they allow the Contractor to produce a Travel Plan that benefits the company and all associates, and remains relevant throughout the construction period.